LONGHORN ARMY AMMUNITION PLANT KARNACK, TEXAS

ADMINISTRATIVE RECORD

Volume 49

2018

Bate Stamp Numbers
00911341 – 00912960

Prepared for

Department of the Army
Longhorn Army Ammunition Plant

1976 – 2018

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

VOLUME 49

2018

A. Title: Report (cont'd) – Draft Final Fourth Annual Remedial Action Operation Report, LHAAP-67 (Above Ground Storage Tank Farm), Lab Data, Longhorn Army Ammunition Plant, Karnack, Texas, December 2018
Author(s): Department of the Army
Recipient: Environmental Protection Agency
Date: December 18, 2018
Bate Stamp: 00911341 – 00912749

B. Title: Report – Quarterly Evaluation Report, 3rd Quarter (July–September) 2018, Groundwater Treatment Plant, Longhorn Army Ammunition Plant, Karnack, Texas, December 2018
Author(s): Bhate Environmental Associates, Inc.
Recipient: U.S. Army Corps of Engineers, Tulsa District
Date: December 18, 2018
Bate Stamp: 00912750 – 00912960

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121708.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:00
Operator : MC
Sample : 600ppm 0.3ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:10:57 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:10:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.884	196022	0.124	ppm
2)	Carbon monoxide	1.884	196022	N.D.	ppm
3)	Methane (TCD)	4.070f	88282	782.730	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.044	5189849	539.759	ppm
7)	Ethylene	1.573	10007759	590.286	ppm
8)	Ethane	1.822	10048964	583.213	ppm
9)	Propylene	4.160	13569343	562.612	ppm
10)	Propane	4.300	15251326	615.171	ppm
11)	Isobutylene	6.143	9815	NoCal	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

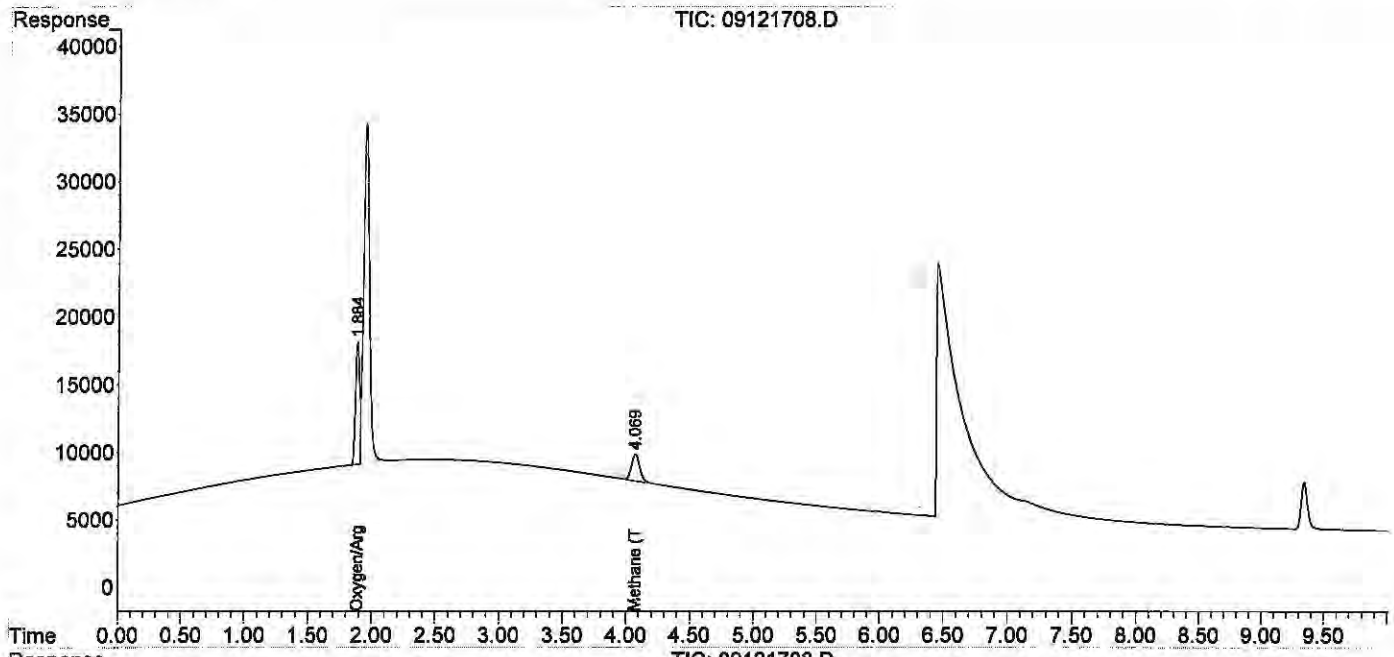
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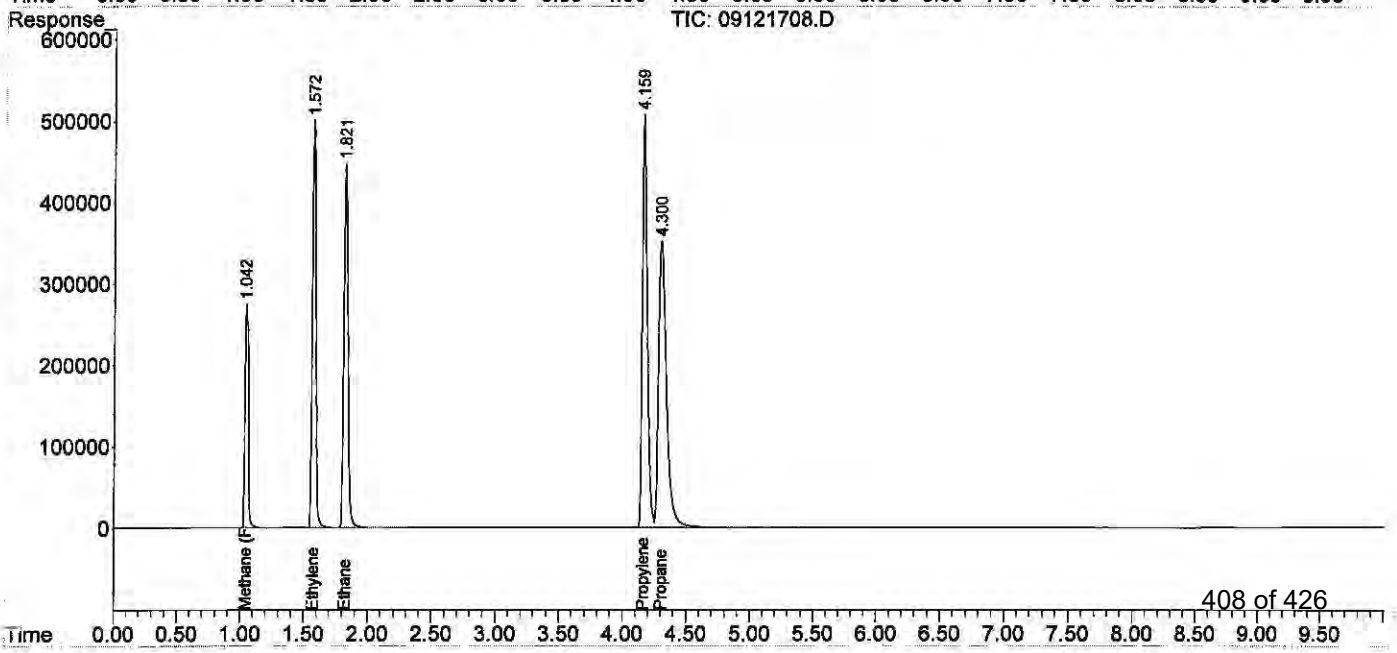
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121708.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:00
Operator : MC
Sample : 600ppm 0.3ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:10:57 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:10:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121709.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:47
Operator : MC
Sample : 1000ppm 0.5ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:11:46 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:11:38 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.879	192611	0.162	ppm
2)	Carbon monoxide	1.879	192611	N.D.	ppm
3)	Methane (TCD)	4.070f	145492	1244.729	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.039	8598534	945.644	ppm
7)	Ethylene	1.576	16608504	981.887	ppm
8)	Ethane	1.827	16709165	973.644	ppm
9)	Propylene	4.161	22494888	941.060	ppm
10)	Propane	4.298	25459411	1023.223	ppm
11)	Isobutylene	6.138	16970	8645.243	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

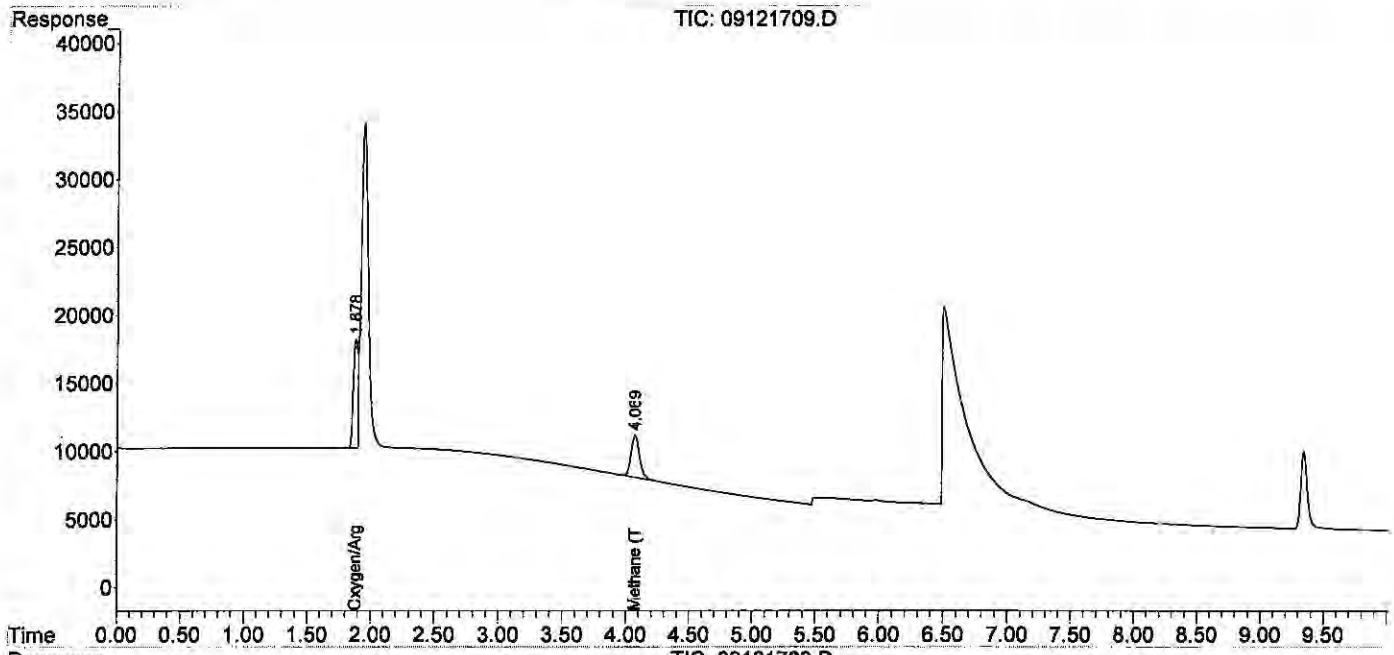
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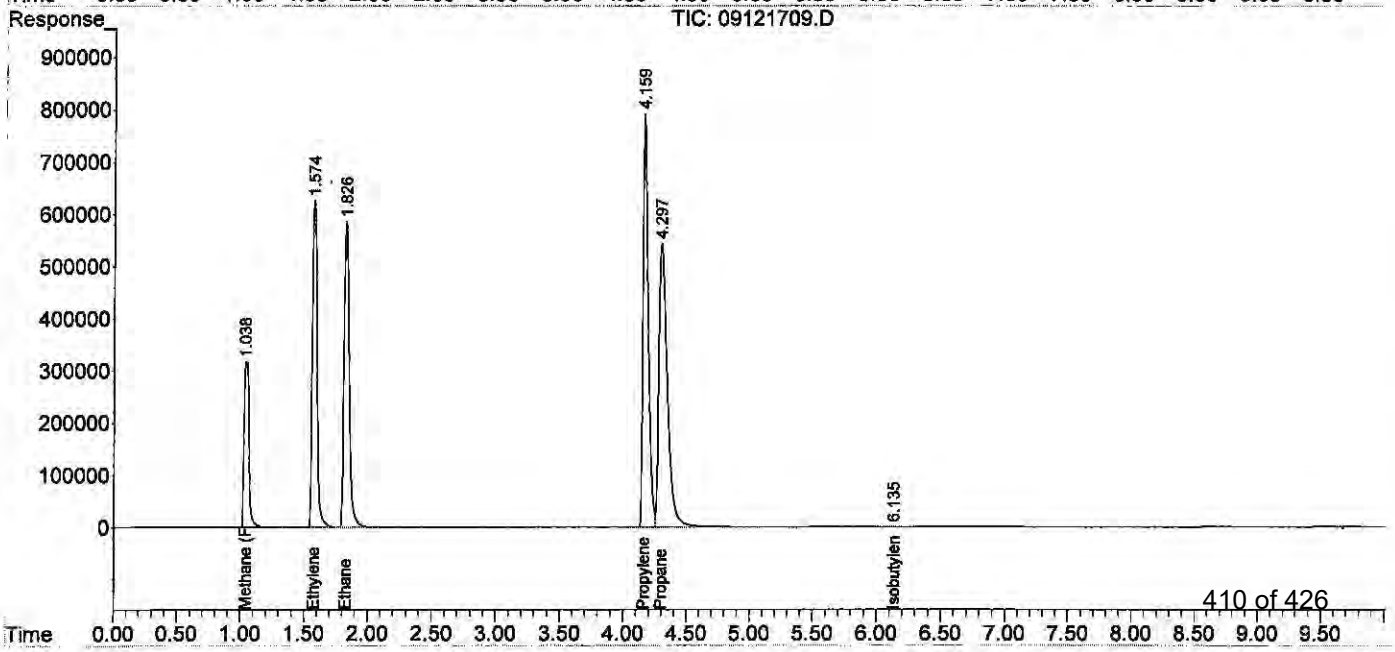
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121709.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:47
Operator : MC
Sample : 1000ppm 0.5ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:11:46 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:11:38 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase :
Signal #1 Info :
Signal #2 Phase:
Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.922f	1578147	1.659	ppm	
2)	Carbon monoxide	1.922f	1578147	N.D.	ppm	
3)	Methane (TCD)	4.057f	281651	3526.607	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.016	16098209	1763.622	ppm	
7)	Ethylene	1.552	31192444	1848.268	ppm	
8)	Ethane	1.801	31424218	1837.143	ppm	
9)	Propylene	4.129	42124690	1775.341	ppm	m
10)	Propane	4.269	48583085	1946.921	ppm	
11)	Isobutylene	6.136	33832	25613.603	ppm	
12)	Isobutane	6.576f	3845	0.120	ppm	
13)	n-Butane	6.576f	3845	0.120	ppm	

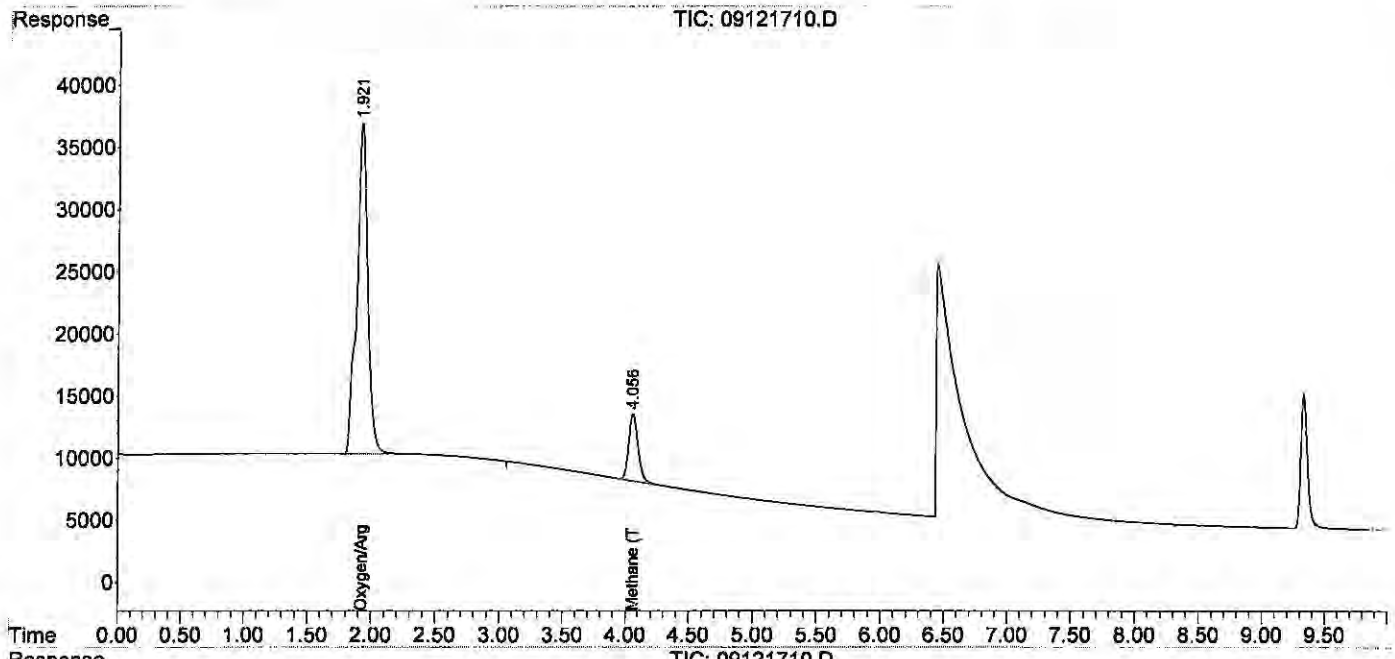
(f)=RT Delta > 1/2 Window (m)=manual int.

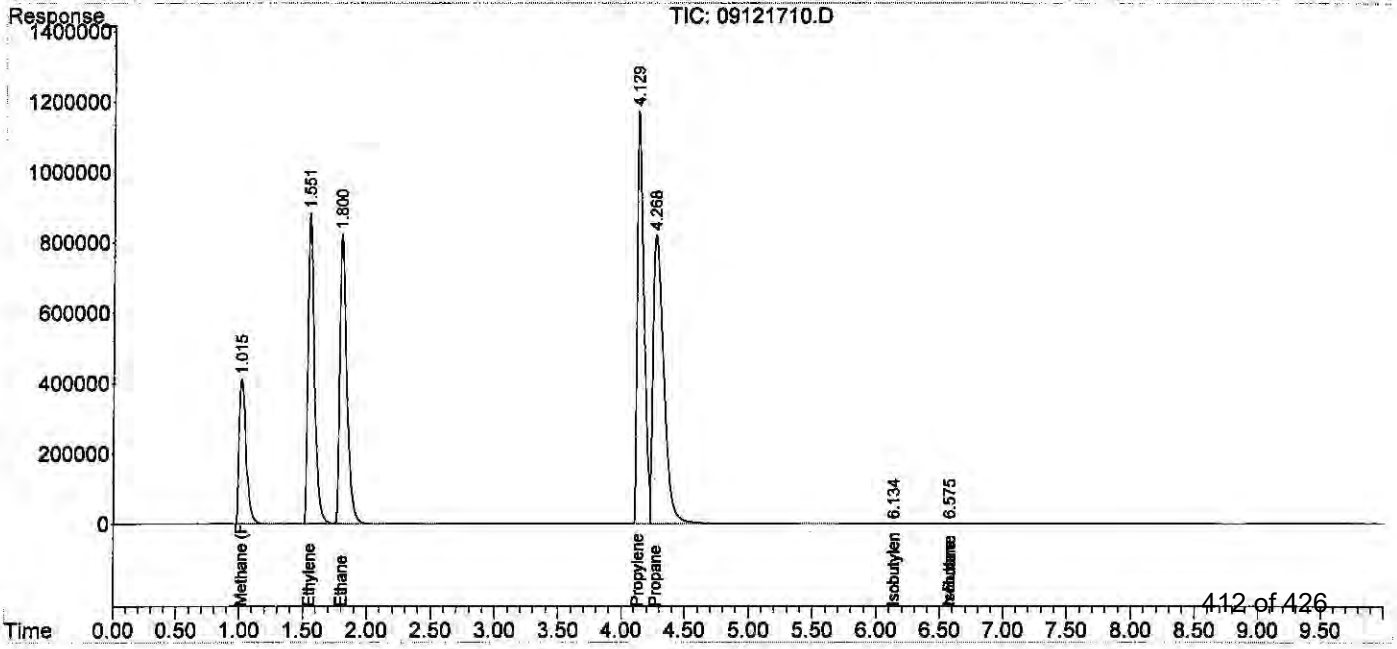
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



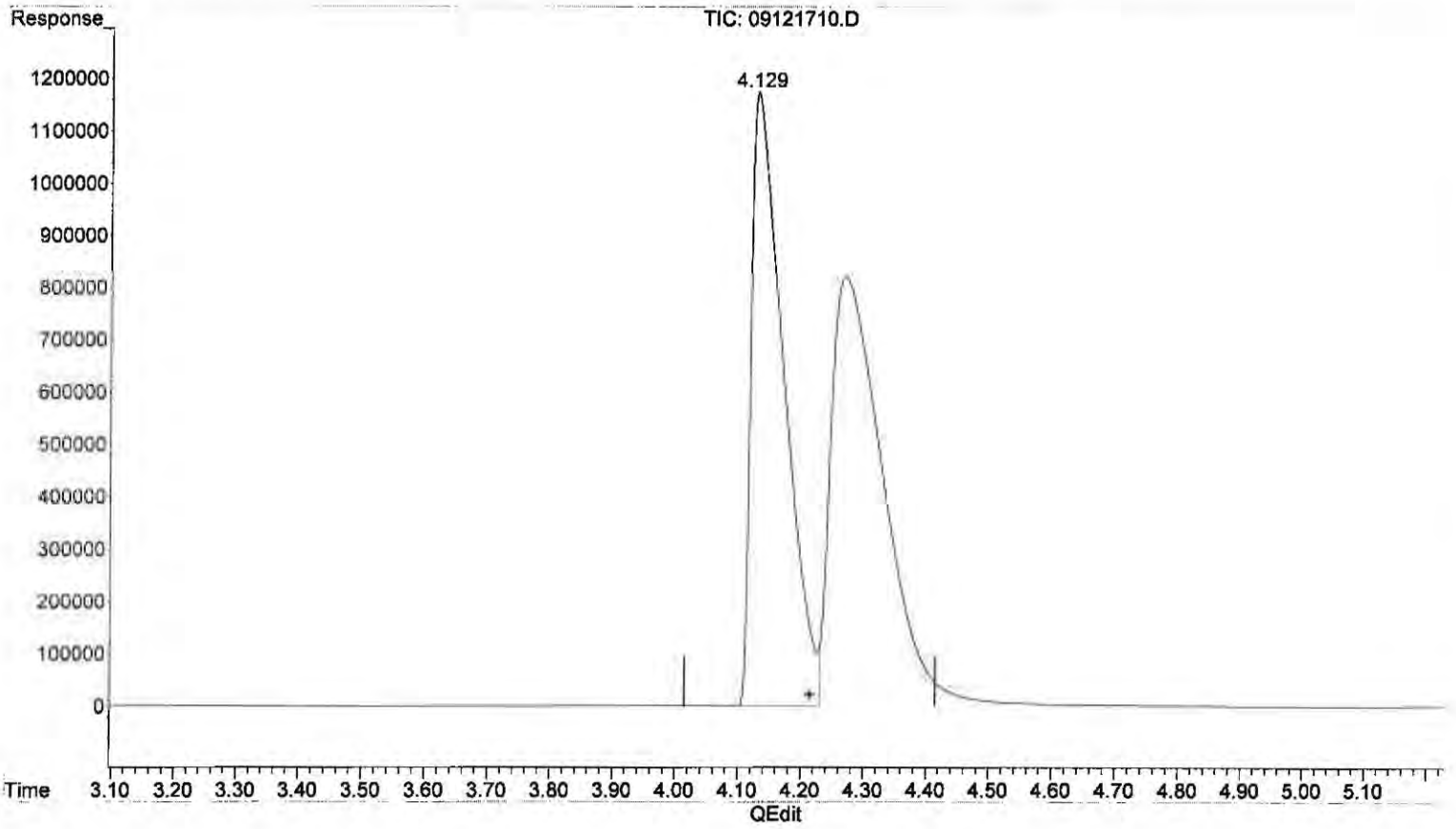


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase :
Signal #1 Info :
Signal #2 Phase:
Signal #2 Info :



(9) Propylene

4.129min 1775.341 ppm m

response 42124690

413 of 426

(+) = Expected Retention Time

RS091217_R.M Wed Sep 13 15:08:03 2017 Page: 1

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121711.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:48
Operator : MC
Sample : 4000ppm 0.1ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:13:37 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.059	35776839	3925.122	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

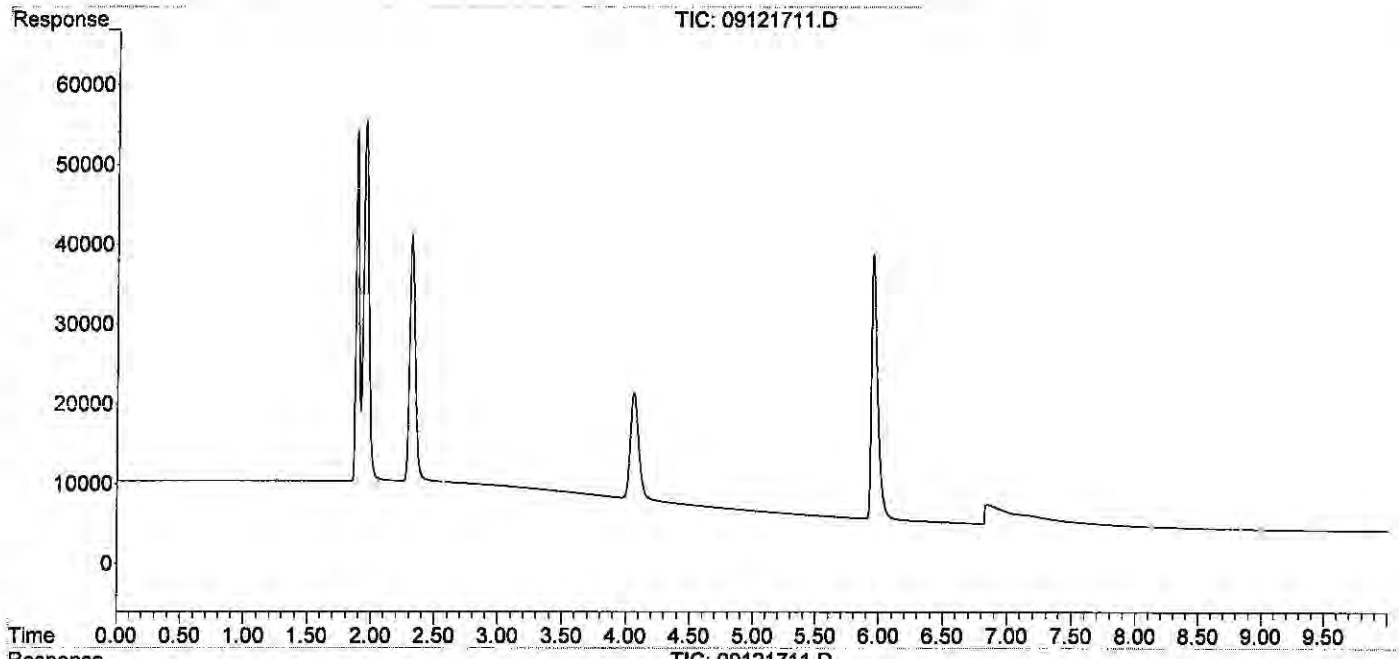
(f)=RT Delta > 1/2 Window (m)=manual int.

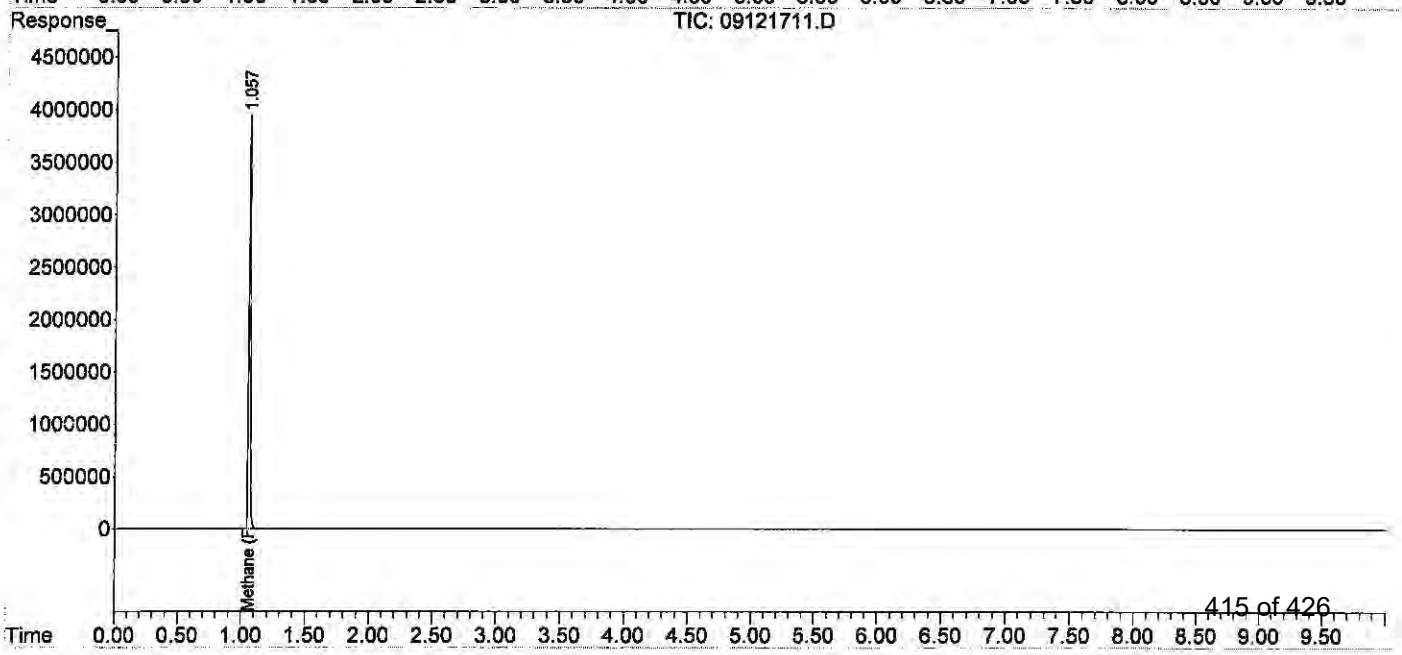
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121711.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:48
Operator : MC
Sample : 4000ppm 0.1ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:13:37 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase :
Signal #1 Info :
Signal #2 Phase:
Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121712.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 15:21
Operator : MC
Sample : 20000ppm 0.5ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:14:17 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.836	3190788	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.034	169009160	18492.064	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

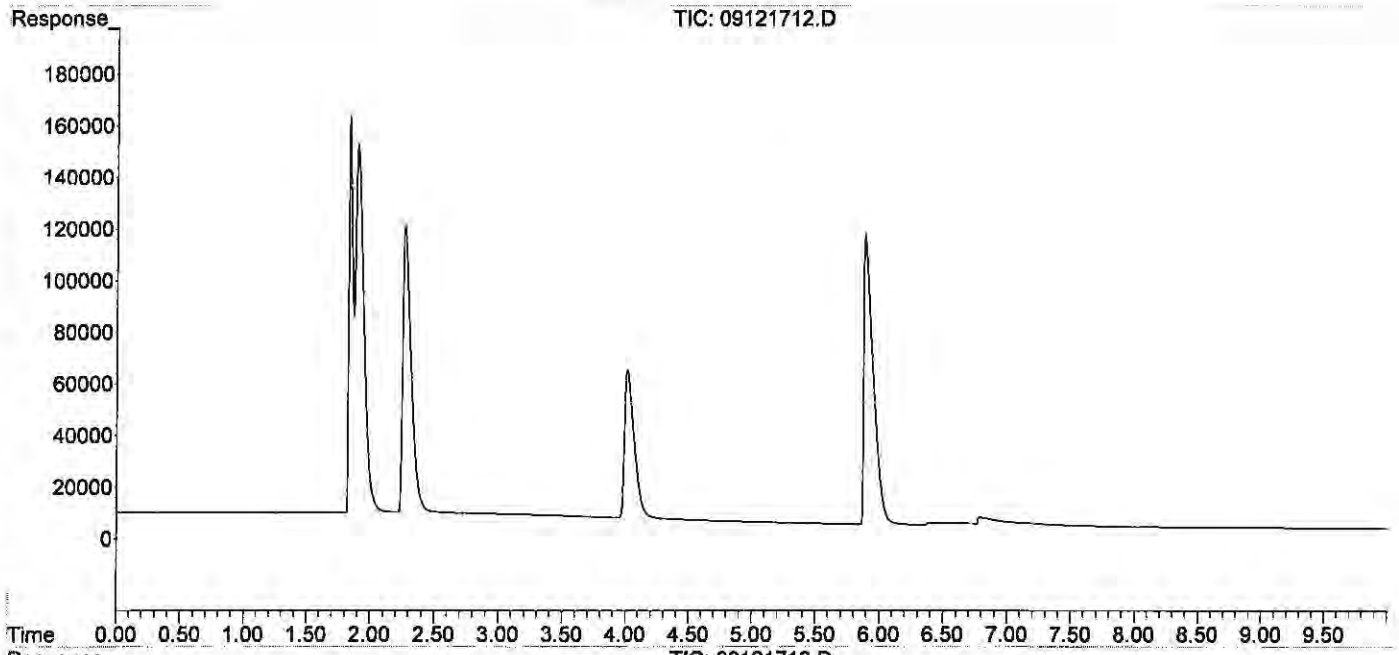
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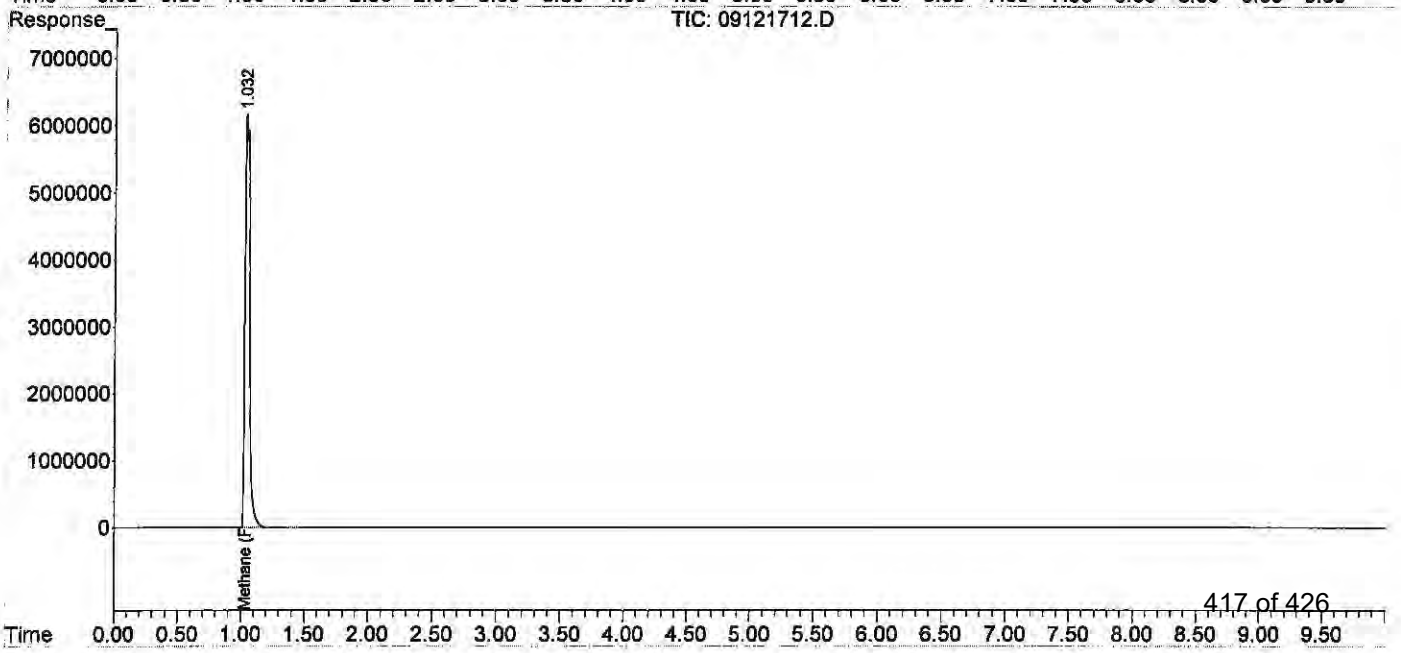
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121712.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 15:21
Operator : MC
Sample : 20000ppm 0.5ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:14:17 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 16:15
Operator : MC
Sample : icv s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:15:11 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.843	2922459	3.687	ppm	
2)	Carbon monoxide	1.843	2922459	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	actual %D
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.063	13748	1.516	ppm	1.50 101.1
7)	Ethylene	1.598	24153	1.443	ppm	1.50 96.2
8)	Ethane	1.850	24488	1.445	ppm	1.50 96.3
9)	Propylene	4.221	36004	1.537	ppm	1.50 102.5
10)	Propane	4.350	37738	1.517	ppm	1.51 100.5
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.579f	48019	1.804	ppm	9/14/2
13)	n-Butane	6.579f	48019	1.804	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

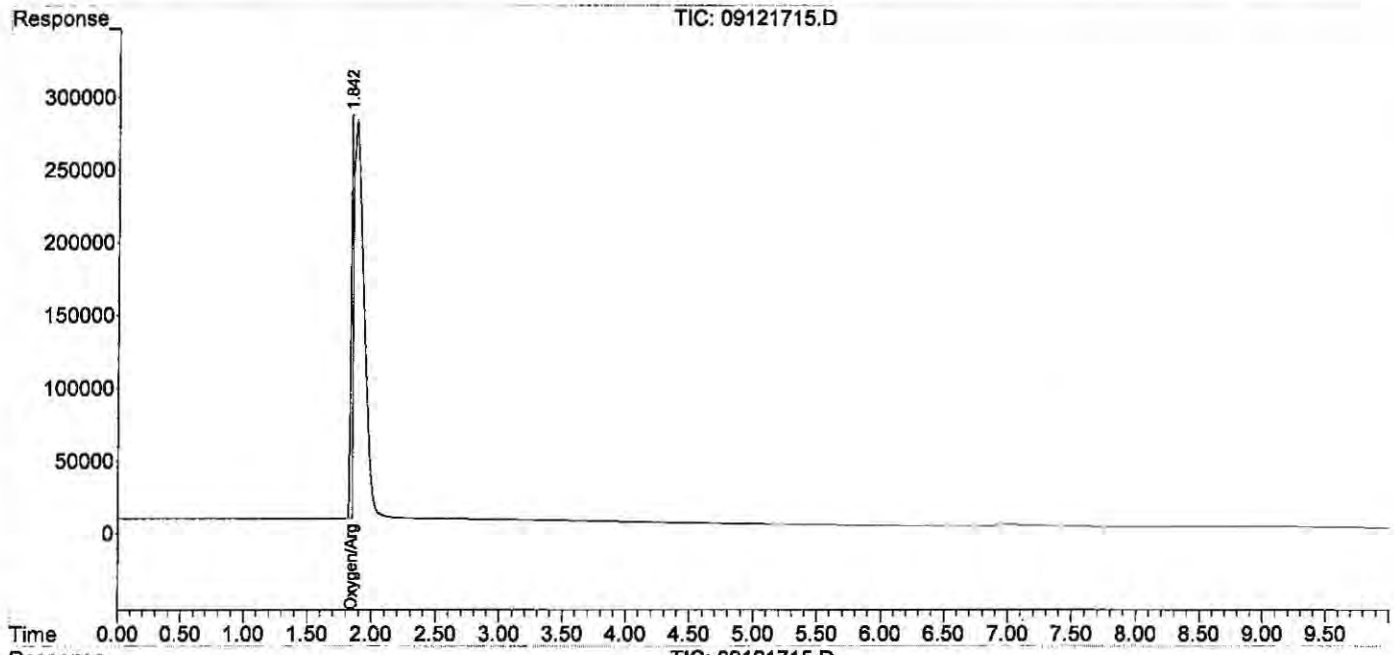
9/14/2017

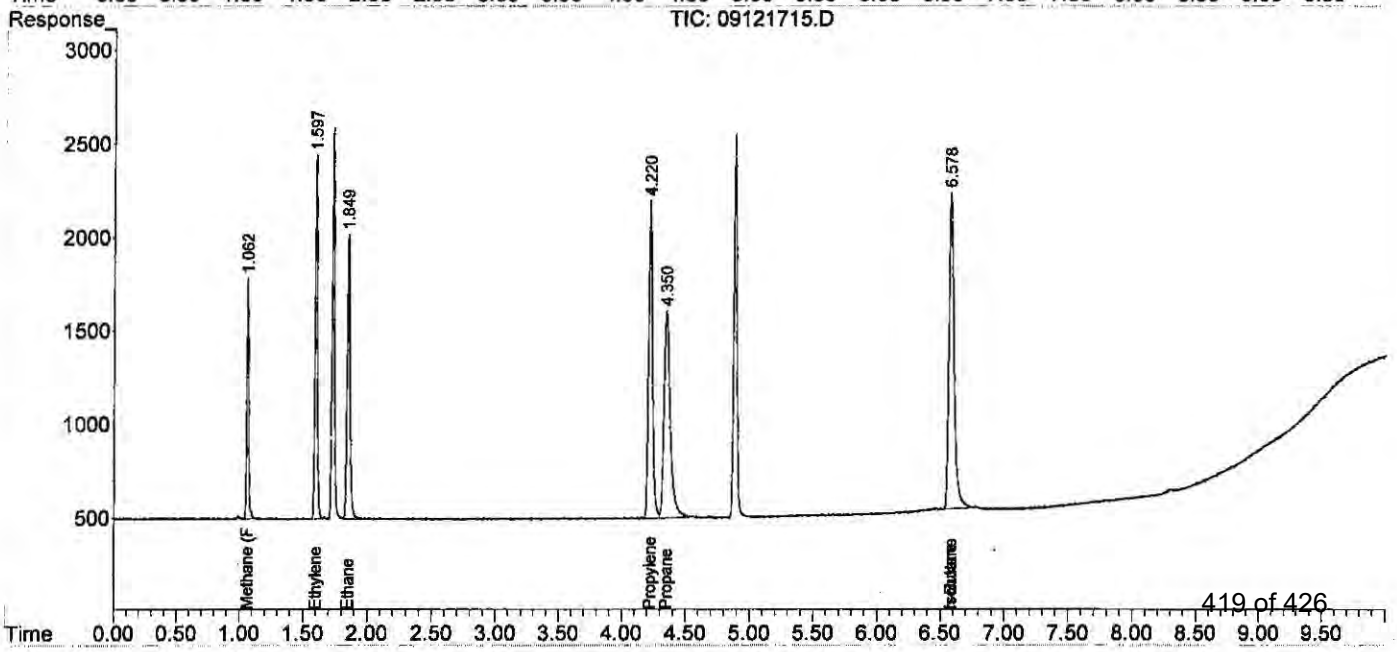
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 16:15
Operator : MC
Sample : icv s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:15:11 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





ALS Environmental

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : ALS Group USA, Corp. | Analyst : MC | Instrument : GC#10
Service Request: P1706026 | Date Analysis : 12/12/17 | Detector : FID#10, TCD#10
Sample Vol. (ml) : 32.00 ml | Head Space Vol.(ml) : 8.00 ml | Gas Constant : 24.05684 (20°C)

HEAD SPACE RESULT (ppm)

Sample ID	Inj. Vol.	Methane	Ethylene	Ethane
std s32-09051701	0.100	1.618	1.607	1.579
ACTUAL		1.51	1.51	1.51
%Difference		7.2%	6.4%	4.6%
mcs 0.1ml	0.100	0.068	0.000	0.000
rb 0.1ml	0.100	0.066	0.000	0.000
Fid lcs s30-05241604	0.100	1.461	1.035	1.202
Fid lcsd s30-05241604	0.100	1.445	1.090	1.236
P1706026-001 0.1ml	0.100	1.074	0.000	0.000
P1706026-002 0.1ml	0.100	0.834	0.000	0.000
P1706026-003 0.1ml	0.100	0.168	0.000	0.000
P1706026-003 ms 0.1ml	0.100	3021.823	0.000	0.000
P1706026-003 msd 0.1ml	0.100	2953.390	0.000	0.000
std s32-09051701		1.652	1.603	1.589
ACTUAL		1.51	1.51	1.51
%Difference		9.4%	6.2%	5.2%

FINAL HEAD SPACE RESULT (ppm)

	Methane	Ethylene	Ethane
WWt.	16.04	28.05	30.07
HENRY'S CONSTANT	3.76E+04	1.02E+04	2.63E+04
RL	1.30	1.00	0.60
mcs 0.1ml	0.680	0.000	0.000
Fid lcs s30-05241604	14.610	10.350	12.020
Fid lcsd s30-05241604	14.450	10.900	12.360
P1706026-001 0.1ml	10.740	0.000	0.000
P1706026-002 0.1ml	8.340	0.000	0.000
P1706026-003 0.1ml	1.680	0.000	0.000
P1706026-003 ms 0.1ml	30218.230	0.000	0.000
P1706026-003 msd 0.1ml	29533.900	0.000	0.000

12/13/17

00911354

Data Path : J:\GC10\DATA\RSK_FID\2017_12\12\
Data File : 12121701.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Dec-2017, 11:33
Operator : MC
Sample : std s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 12 11:45:25 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

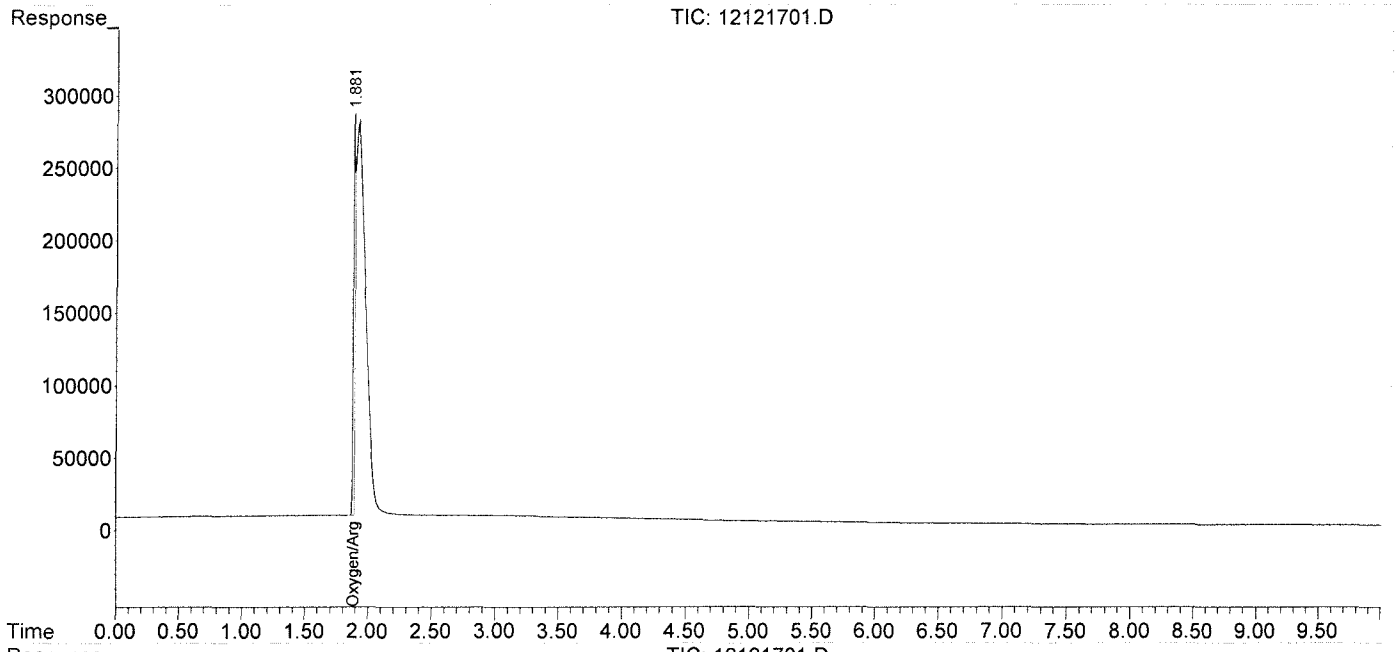
	Compound	R.T.	Response	Conc	Units
	Target Compounds				
1)	Oxygen/Argon	1.882	2562331	3.233	ppm
2)	Carbon monoxide	1.882	2562331	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.083	14674	1.618	ppm
7)	Ethylene	1.630	26885	1.607	ppm
8)	Ethane	1.888	26764	1.579	ppm
9)	Propylene	4.265	38190	1.630	ppm
10)	Propane	4.394	39056	1.570	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.617f	51746	1.944	ppm
13)	n-Butane	6.617f	51746	1.944	ppm

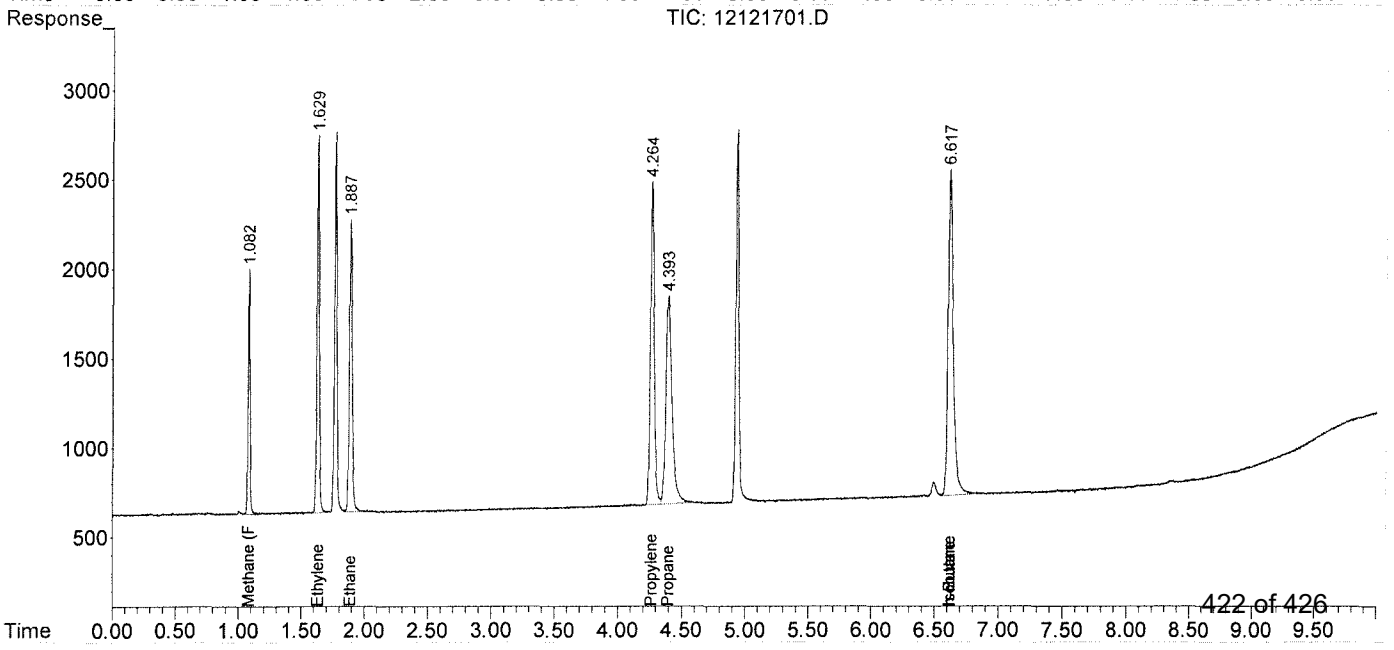
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_12\12\
Data File : 12121701.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Dec-2017, 11:33
Operator : MC
Sample : std s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 12 11:45:25 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_12\12\
Data File : 12121719.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Dec-2017, 17:34
Operator : MC
Sample : std s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 13 09:48:25 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

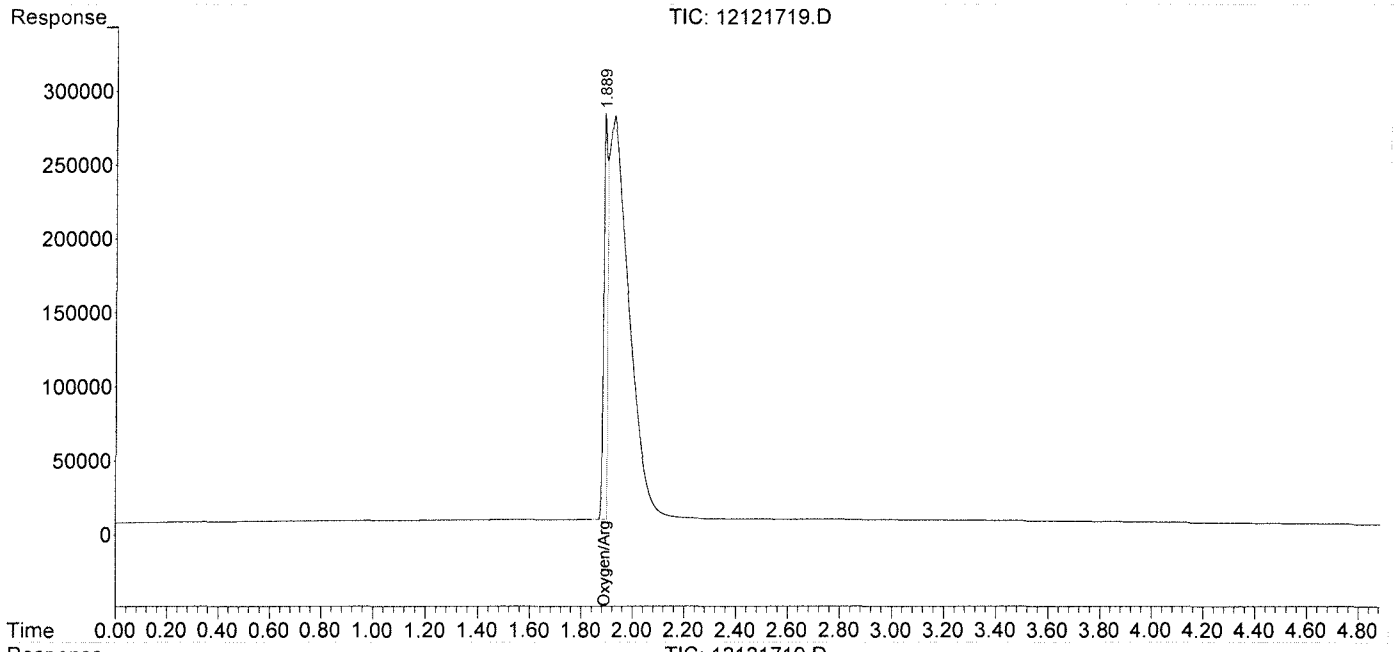
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.890	2613580	3.297	ppm
2)	Carbon monoxide	1.890	2613580	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.089	14989	1.652	ppm
7)	Ethylene	1.633	26824	1.603	ppm
8)	Ethane	1.890	26936	1.589	ppm
9)	Propylene	4.265	38583	1.647	ppm
10)	Propane	4.394	39646	1.593	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

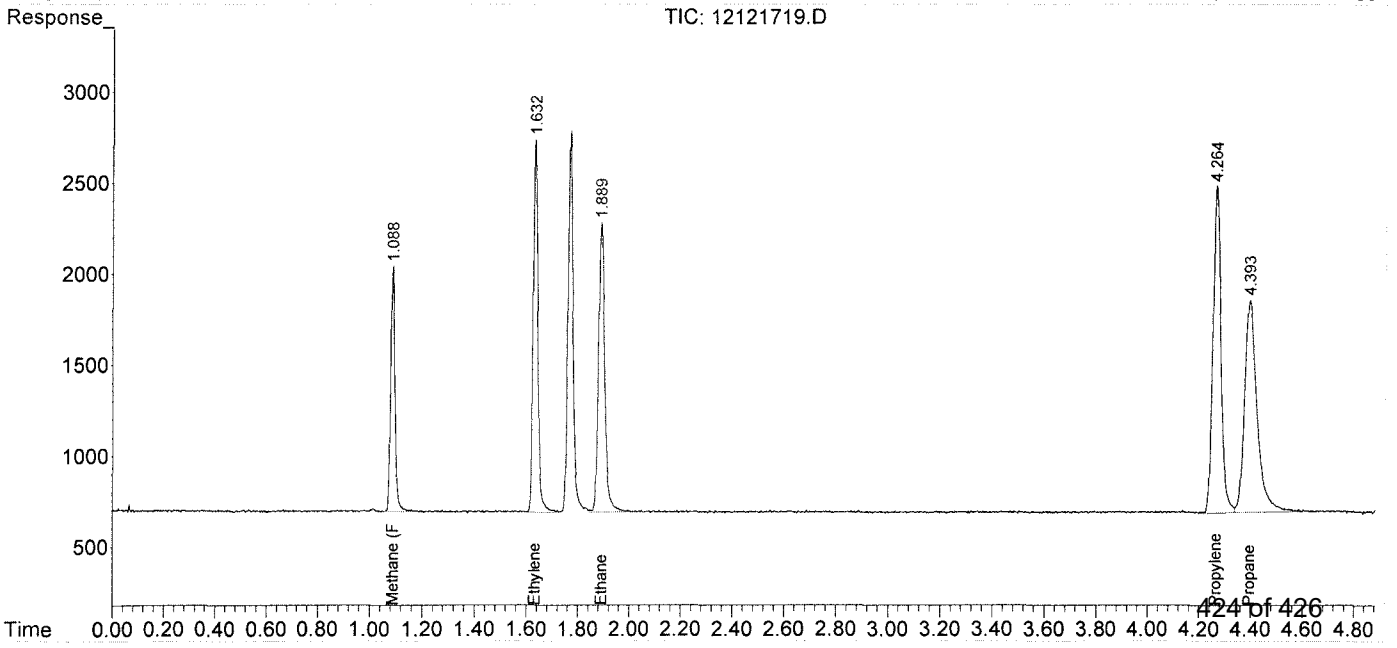
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_12\12\
Data File : 12121719.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Dec-2017, 17:34
Operator : MC
Sample : std s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Dec 13 09:48:25 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Injection Log

Directory: I:\GC10\DATA\RSK_FID\2017_09\12\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	12-Sep-17, 08:38:08	09121701.D	test		MC	RSKBOTH.M	
2	12-Sep-17, 10:52:40	09121702.D	0.151ppm 0.250ml s32-09121702		MC	RSKBOTH.M	Curve
3	12-Sep-17, 11:05:49	09121703.D	0.302ppm 0.5ml s32-09121702		MC	RSKBOTH.M	Curve
4	12-Sep-17, 11:45:34	09121704.D	1.51ppm 0.1ml s32-09051701		MC	RSKBOTH.M	Curve
5	12-Sep-17, 12:09:33	09121705.D	4.53ppm 0.3ml s32-09051701		MC	RSKBOTH.M	Curve
6	12-Sep-17, 12:30:23	09121706.D	10.57ppm 0.7ml s32-09051701		MC	RSKBOTH.M	Curve
7	12-Sep-17, 12:47:18	09121707.D	200ppm 0.1ml s32-09121701		MC	RSKBOTH.M	Curve
8	12-Sep-17, 13:00:22	09121708.D	600ppm 0.3ml s32-09121701		MC	RSKBOTH.M	Curve
9	12-Sep-17, 13:47:48	09121709.D	1000ppm 0.5ml s32-09121701		MC	RSKBOTH.M	Curve
10	12-Sep-17, 14:07:58	09121710.D	2000ppm 1ml s32-09121701		MC	RSKBOTH.M	Curve
11	12-Sep-17, 14:48:48	09121711.D	4000ppm 0.1ml s32-08231701		MC	RSKBOTH.M	Curve
12	12-Sep-17, 15:21:51	09121712.D	20000ppm 0.5ml s32-08231701		MC	RSKBOTH.M	Curve
13	12-Sep-17, 15:38:59	09121713.D	mb 0.5ml		MC	RSKBOTH.M	Pass
14	12-Sep-17, 15:55:35	09121714.D	mb 0.1ml		MC	RSKBOTH.M	Pass
15	12-Sep-17, 16:15:26	09121715.D	icv s30-05241604		MC	RSKBOTH.M	Pass

Injection Log

Directory: I:\GC10\DATA\RSK_FID\2017_12\12\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	12-Dec-17, 11:33:07	12121701.D	std s32-09051701		MC	RSKBOTH.M	Pass
2	12-Dec-17, 11:47:13	12121702.D	std s32-12071703		MC	RSKBOTH.M	Pass
3	12-Dec-17, 12:01:51	12121703.D	rb 0.1ml		MC	RSKBOTH.M	not used
4	12-Dec-17, 12:16:10	12121704.D	mcs 0.1ml		MC	RSKBOTH.M	not used
5	12-Dec-17, 12:50:20	12121705.D	mcs co2 0.1ml		MC	RSKBOTH.M	not used
6	12-Dec-17, 13:43:50	12121706.D	rb 0.1ml		MC	RSKBOTH.M	Pass
7	12-Dec-17, 14:01:28	12121707.D	mcs 0.1ml		MC	RSKBOTH.M	Pass
8	12-Dec-17, 14:14:16	12121708.D	mcsCO2 0.1ml		MC	RSKBOTH.M	Pass
9	12-Dec-17, 14:27:29	12121709.D	P1706026-001 0.1ml		MC	RSKBOTH.M	
10	12-Dec-17, 14:43:02	12121710.D	P1706026-002 0.1ml		MC	RSKBOTH.M	
11	12-Dec-17, 14:56:46	12121711.D	P1706026-003 0.1ml		MC	RSKBOTH.M	
12	12-Dec-17, 16:03:33	12121712.D	P1706026-003 ms 0.1ml		MC	RSKBOTH.M	
13	12-Dec-17, 16:16:42	12121713.D	P1706026-003 msd 0.1ml		MC	RSKBOTH.M	
14	12-Dec-17, 16:29:33	12121714.D	Fid lcs s30-05241604		MC	RSKBOTH.M	Pass
15	12-Dec-17, 16:46:19	12121715.D	Fid lcsd s30-05241604		MC	RSKBOTH.M	Pass
16	12-Dec-17, 16:59:17	12121716.D	lcsco2		MC	RSKBOTH.M	Pass
17	12-Dec-17, 17:12:12	12121717.D	lcsco2		MC	RSKBOTH.M	Pass
18	12-Dec-17, 17:23:54	12121718.D	lcsco2		MC	RSKBOTH.M	Pass
19	12-Dec-17, 17:34:01	12121719.D	std s32-09051701		MC	RSKBOTH.M	Pass
20	12-Dec-17, 17:40:08	12121720.D	std s32-12071703		MC	RSKBOTH.M	Pass
							426 of 426

10450 Stancliff Rd. Suite 210
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December 15, 2017

Jennifer Hoang
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS17111395**

Laboratory Results for: **LHAAP-67**

Dear Jennifer,

ALS Environmental received 4 sample(s) on Nov 29, 2017 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Sonia West

Generated By: Jumoke.Lawal
Sonia West
Project Manager

ALS Group USA, Corp Date: 15-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
Work Order: HS17111395

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS17111395-01	67WW08-112817	Water		28-Nov-2017 10:20	29-Nov-2017 09:00	☐
HS17111395-02	67WW08-112817-FD	Water		28-Nov-2017 10:20	29-Nov-2017 09:00	☐
HS17111395-03	67WW13-112817	Water		28-Nov-2017 11:40	29-Nov-2017 09:00	☐
HS17111395-04	Trip Blank	Water	ALS-110717-9	28-Nov-2017 00:01	29-Nov-2017 09:00	☐

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group USA, Corp Date: 15-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: LHAAP-67
Work Order: HS17111395

Work Order Comments

- The analysis for Dissolved Gases in Water by RSK175 was subcontracted to ALS Environmental in Simi Valley, CA. Final report attached.

GCMS Semivolatiles by Method SW8270SIM

Batch ID: 122811

Sample ID: 67WW08-112817 (HS17111395-01)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.
- The surrogate recoveries could not be determined due to dilution below the calibration range.

Sample ID: 67WW08-112817-FD (HS17111395-02)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.
- The surrogate recoveries could not be determined due to dilution below the calibration range.

Sample ID: 67WW13-112817 (HS17111395-03)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.
- The surrogate recoveries could not be determined due to dilution below the calibration range.

Sample ID: 67WW13-112817 (HS17111395-03MS)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.
- The MS recovery is unavailable due to sample matrix interference.
- The surrogate recoveries could not be determined due to dilution below the calibration range.

Sample ID: 67WW13-112817 (HS17111395-03MSD)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.
- The MSD recovery is unavailable due to sample matrix interference.
- The surrogate recoveries could not be determined due to dilution below the calibration range.

Sample ID: LCS-122811

- High %R for surrogate 2-Fluorobiphenyl, it is not associated with target compound.

Sample ID: MBLK-122811

- High %R for surrogate 2-Fluorobiphenyl, it is not associated with target compound.

GCMS Volatiles by Method SW8260

Batch ID: R306626

Sample ID: VLCSW-171205

- Acetone exceeded %recovery limits on LCS. Samples ND.

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ALS Group USA, Corp Date: 15-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: LHAAP-67
Work Order: HS17111395

GCMS Volatiles by Method SW8260

Batch ID: R306626

Sample ID: 67WW13-112817 (HS17111395-03MS)

- The recovery of the Matrix Spike (MS) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The recovery of the MS may be due to sample matrix interference.

Sample ID: 67WW13-112817 (HS17111395-03MSD)

- The recovery of the Matrix Spike Duplicate (MSD) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The failed recovery of the MSD may be due to sample matrix interference.
- The RPD between the MS and MSD was outside of the control limit.

WetChemistry by Method SW9060

Batch ID: R306753

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Batch ID: R306754

Sample ID: 67WW08-112817 (HS17111395-01)

- TIC is a calculation. QC available for TC & TOC.

Sample ID: 67WW08-112817-FD (HS17111395-02)

- TIC is a calculation. QC available for TC & TOC.

Sample ID: 67WW13-112817 (HS17111395-03)

- TIC is a calculation. QC available for TC & TOC.

WetChemistry by Method E376.1

Batch ID: R306735

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SW9056

Batch ID: R306291

Sample ID: 67WW13-112817 (HS17111395-03MS)

- The MS and/or MSD recovery was outside of the control; however, the result in the parent sample is greater than 4x the spike amount. Chloride & Sulfate

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ALS Group USA, Corp Date: 15-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 WorkOrder:HS17111395
Sample ID: 67WW08-112817 Lab ID:HS17111395-01
Collection Date: 28-Nov-2017 10:20 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 16:17
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 16:17
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 16:17
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 16:17
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 16:17
1,1-Dichloroethane	**15**		**0.20**	**0.50**	**1.0**	**ug/L**	1	05-Dec-2017 16:17
1,1-Dichloroethene	**340**		**1.0**	**2.5**	**5.0**	**ug/L**	5	05-Dec-2017 16:44
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 16:17
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 16:17
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 16:17
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 16:17
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 16:17
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	05-Dec-2017 16:17
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 16:17
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 16:17
1,2-Dichloroethane	**13**		**0.20**	**0.50**	**1.0**	**ug/L**	1	05-Dec-2017 16:17
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 16:17
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 16:17
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 16:17
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 16:17
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 16:17
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 16:17
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	05-Dec-2017 16:17
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 16:17
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	05-Dec-2017 16:17
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 16:17
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 16:17
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	05-Dec-2017 16:17
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	05-Dec-2017 16:17
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 16:17
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 16:17
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 16:17
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 16:17
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 16:17
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 16:17
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	05-Dec-2017 16:17
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 16:17
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 16:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group USA, Corp Date: 15-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 WorkOrder:HS17111395
Sample ID: 67WW08-112817 Lab ID:HS17111395-01
Collection Date: 28-Nov-2017 10:20 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 16:17
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 16:17
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 16:17
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 16:17
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	05-Dec-2017 16:17
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 16:17
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 16:17
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 16:17
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 16:17
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	05-Dec-2017 16:17
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 16:17
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	05-Dec-2017 16:17
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	05-Dec-2017 16:17
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 16:17
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 16:17
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 16:17
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 16:17
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 16:17
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 16:17
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 16:17
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 16:17
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 16:17
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 16:17
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 16:17
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 16:17
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 16:17
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 16:17
Surr: 1,2-Dichloroethane-d4	*98.1*			**0**	*70-126*	*%REC*	*1*	*05-Dec-2017 16:17*
Surr: 1,2-Dichloroethane-d4	*98.9*			**0**	*70-126*	*%REC*	*5*	*05-Dec-2017 16:44*
Surr: 4-Bromofluorobenzene	*99.3*			**0**	*81-113*	*%REC*	*5*	*05-Dec-2017 16:44*
Surr: 4-Bromofluorobenzene	*98.1*			**0**	*81-113*	*%REC*	*1*	*05-Dec-2017 16:17*
Surr: Dibromofluoromethane	*89.9*			**0**	*77-123*	*%REC*	*1*	*05-Dec-2017 16:17*
Surr: Dibromofluoromethane	*90.5*			**0**	*77-123*	*%REC*	*5*	*05-Dec-2017 16:44*
Surr: Toluene-d8	*105*			**0**	*82-127*	*%REC*	*5*	*05-Dec-2017 16:44*
Surr: Toluene-d8	*103*			**0**	*82-127*	*%REC*	*1*	*05-Dec-2017 16:17*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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ALS Group USA, Corp Date: 15-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 WorkOrder:HS17111395
Sample ID: 67WW08-112817 Lab ID:HS17111395-01
Collection Date: 28-Nov-2017 10:20 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 01-Dec-2017		Analyst: ACN
1,4-Dioxane	**22**		**1.0**	**1.0**	**1.0**	**ug/L**	100	07-Dec-2017 15:00
Surr: 2-Fluorobiphenyl	*0*	*S*		0	*40-140*	*%REC*	*100*	*07-Dec-2017 15:00*
Surr: 4-Terphenyl-d14	*0*	*S*		0	*40-140*	*%REC*	*100*	*07-Dec-2017 15:00*
Surr: Nitrobenzene-d5	*0*	*S*		0	*40-140*	*%REC*	*100*	*07-Dec-2017 15:00*
SULFIDE BY E376.1		**Method:E376.1**						Analyst: JHD
Sulfide	**1.48**		**1.00**	**1.00**	**1.00**	**mg/L**	1	05-Dec-2017 16:30
ANIONS BY SW9056A		**Method:SW9056**						Analyst: JBA
Chloride	**1,600**		**10.0**	**12.5**	**25.0**	**mg/L**	50	29-Nov-2017 18:18
Nitrogen, Nitrate (As N)	0.0500	U	0.0300	0.0500	0.100	mg/L	1	29-Nov-2017 17:56
Nitrogen, Nitrite (As N)	0.0500	U	0.0300	0.0500	0.100	mg/L	1	29-Nov-2017 17:56
Sulfate	**4,290**		**10.0**	**12.5**	**25.0**	**mg/L**	50	29-Nov-2017 18:18
TOTAL INORGANIC CARBON BY SW9060A		**Method:SW9060**						Analyst: KMU
Total Inorganic Carbon	**130**		**1.0**	**1.0**	**1.0**	**mg/L**	1	07-Dec-2017 10:19
TOTAL ORGANIC CARBON BY SW9060A		**Method:SW9060**						Analyst: KMU
Organic Carbon, Total	**3.99**		**0.500**	**0.500**	**1.00**	**mg/L**	1	06-Dec-2017 20:20
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	15-Dec-2017 15:11

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group USA, Corp Date: 15-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 WorkOrder:HS17111395
Sample ID: 67WW08-112817-FD Lab ID:HS17111395-02
Collection Date: 28-Nov-2017 10:20 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 17:09
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 17:09
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 17:09
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 17:09
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 17:09
1,1-Dichloroethane	**18**		**0.20**	**0.50**	**1.0**	**ug/L**	1	05-Dec-2017 17:09
1,1-Dichloroethene	**350**		**1.0**	**2.5**	**5.0**	**ug/L**	5	05-Dec-2017 17:36
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 17:09
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 17:09
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 17:09
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 17:09
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 17:09
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	05-Dec-2017 17:09
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 17:09
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 17:09
1,2-Dichloroethane	**13**		**0.20**	**0.50**	**1.0**	**ug/L**	1	05-Dec-2017 17:09
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 17:09
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 17:09
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 17:09
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 17:09
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 17:09
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 17:09
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	05-Dec-2017 17:09
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 17:09
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	05-Dec-2017 17:09
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 17:09
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 17:09
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	05-Dec-2017 17:09
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	05-Dec-2017 17:09
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 17:09
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 17:09
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 17:09
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 17:09
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 17:09
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 17:09
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	05-Dec-2017 17:09
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 17:09
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 17:09

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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ALS Group USA, Corp Date: 15-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 WorkOrder:HS17111395
Sample ID: 67WW08-112817-FD Lab ID:HS17111395-02
Collection Date: 28-Nov-2017 10:20 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 17:09
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 17:09
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 17:09
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 17:09
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	05-Dec-2017 17:09
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 17:09
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 17:09
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 17:09
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 17:09
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	05-Dec-2017 17:09
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 17:09
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	05-Dec-2017 17:09
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	05-Dec-2017 17:09
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 17:09
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 17:09
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 17:09
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 17:09
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 17:09
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 17:09
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 17:09
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 17:09
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 17:09
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 17:09
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 17:09
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 17:09
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 17:09
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 17:09
Surr: 1,2-Dichloroethane-d4	*99.6*			**0**	*70-126*	*%REC*	*1*	*05-Dec-2017 17:09*
Surr: 1,2-Dichloroethane-d4	*99.1*			**0**	*70-126*	*%REC*	*5*	*05-Dec-2017 17:36*
Surr: 4-Bromofluorobenzene	*98.7*			**0**	*81-113*	*%REC*	*5*	*05-Dec-2017 17:36*
Surr: 4-Bromofluorobenzene	*100*			**0**	*81-113*	*%REC*	*1*	*05-Dec-2017 17:09*
Surr: Dibromofluoromethane	*90.9*			**0**	*77-123*	*%REC*	*1*	*05-Dec-2017 17:09*
Surr: Dibromofluoromethane	*92.7*			**0**	*77-123*	*%REC*	*5*	*05-Dec-2017 17:36*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*5*	*05-Dec-2017 17:36*
Surr: Toluene-d8	*104*			**0**	*82-127*	*%REC*	*1*	*05-Dec-2017 17:09*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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ALS Group USA, Corp Date: 15-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 WorkOrder:HS17111395
Sample ID: 67WW08-112817-FD Lab ID:HS17111395-02
Collection Date: 28-Nov-2017 10:20 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 01-Dec-2017		Analyst: ACN
1,4-Dioxane	**29**		**1.0**	**1.0**	**1.0**	**ug/L**	100	07-Dec-2017 15:21
Surr: 2-Fluorobiphenyl	*0*	*S*		0	*40-140*	*%REC*	*100*	*07-Dec-2017 15:21*
Surr: 4-Terphenyl-d14	*0*	*S*		0	*40-140*	*%REC*	*100*	*07-Dec-2017 15:21*
Surr: Nitrobenzene-d5	*0*	*S*		0	*40-140*	*%REC*	*100*	*07-Dec-2017 15:21*
SULFIDE BY E376.1		**Method:E376.1**						Analyst: JHD
Sulfide	**1.48**		**1.00**	**1.00**	**1.00**	**mg/L**	1	05-Dec-2017 16:30
ANIONS BY SW9056A		**Method:SW9056**						Analyst: JBA
Chloride	**1,590**		**10.0**	**12.5**	**25.0**	**mg/L**	50	29-Nov-2017 19:01
Nitrogen, Nitrate (As N)	0.0500	U	0.0300	0.0500	0.100	mg/L	1	29-Nov-2017 18:40
Nitrogen, Nitrite (As N)	0.0500	U	0.0300	0.0500	0.100	mg/L	1	29-Nov-2017 18:40
Sulfate	**440**		**10.0**	**12.5**	**25.0**	**mg/L**	50	29-Nov-2017 19:01
TOTAL INORGANIC CARBON BY SW9060A		**Method:SW9060**						Analyst: KMU
Total Inorganic Carbon	**140**		**1.0**	**1.0**	**1.0**	**mg/L**	1	07-Dec-2017 10:19
TOTAL ORGANIC CARBON BY SW9060A		**Method:SW9060**						Analyst: KMU
Organic Carbon, Total	**4.00**		**0.500**	**0.500**	**1.00**	**mg/L**	1	06-Dec-2017 20:38
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	15-Dec-2017 15:11

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group USA, Corp Date: 15-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 WorkOrder:HS17111395
Sample ID: 67WW13-112817 Lab ID:HS17111395-03
Collection Date: 28-Nov-2017 11:40 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 14:09
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 14:09
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 14:09
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 14:09
1,1,2-Trichloroethane	**5.1**		**0.30**	**0.50**	**1.0**	**ug/L**	1	05-Dec-2017 14:09
1,1-Dichloroethane	**19**		**0.20**	**0.50**	**1.0**	**ug/L**	1	05-Dec-2017 14:09
1,1-Dichloroethene	**320**		**1.0**	**2.5**	**5.0**	**ug/L**	5	05-Dec-2017 14:36
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 14:09
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 14:09
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 14:09
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 14:09
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 14:09
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	05-Dec-2017 14:09
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 14:09
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 14:09
1,2-Dichloroethane	**32**		**0.20**	**0.50**	**1.0**	**ug/L**	1	05-Dec-2017 14:09
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 14:09
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 14:09
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 14:09
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 14:09
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 14:09
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 14:09
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	05-Dec-2017 14:09
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 14:09
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	05-Dec-2017 14:09
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 14:09
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 14:09
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	05-Dec-2017 14:09
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	05-Dec-2017 14:09
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 14:09
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 14:09
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 14:09
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 14:09
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 14:09
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 14:09
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	05-Dec-2017 14:09
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 14:09
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 14:09

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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ALS Group USA, Corp Date: 15-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 WorkOrder:HS17111395
Sample ID: 67WW13-112817 Lab ID:HS17111395-03
Collection Date: 28-Nov-2017 11:40 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 14:09
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 14:09
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 14:09
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 14:09
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	05-Dec-2017 14:09
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 14:09
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 14:09
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 14:09
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 14:09
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	05-Dec-2017 14:09
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 14:09
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	05-Dec-2017 14:09
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	05-Dec-2017 14:09
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 14:09
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 14:09
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 14:09
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 14:09
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 14:09
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 14:09
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 14:09
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 14:09
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 14:09
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 14:09
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 14:09
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 14:09
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 14:09
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 14:09
Surr: 1,2-Dichloroethane-d4	*93.8*			**0**	*70-126*	*%REC*	*1*	*05-Dec-2017 14:09*
Surr: 1,2-Dichloroethane-d4	*97.9*			**0**	*70-126*	*%REC*	*5*	*05-Dec-2017 14:36*
Surr: 4-Bromofluorobenzene	*99.3*			**0**	*81-113*	*%REC*	*5*	*05-Dec-2017 14:36*
Surr: 4-Bromofluorobenzene	*101*			**0**	*81-113*	*%REC*	*1*	*05-Dec-2017 14:09*
Surr: Dibromofluoromethane	*101*			**0**	*77-123*	*%REC*	*1*	*05-Dec-2017 14:09*
Surr: Dibromofluoromethane	*92.5*			**0**	*77-123*	*%REC*	*5*	*05-Dec-2017 14:36*
Surr: Toluene-d8	*104*			**0**	*82-127*	*%REC*	*5*	*05-Dec-2017 14:36*
Surr: Toluene-d8	*104*			**0**	*82-127*	*%REC*	*1*	*05-Dec-2017 14:09*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group USA, Corp Date: 15-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
Sample ID: 67WW13-112817
Collection Date: 28-Nov-2017 11:40

ANALYTICAL REPORT
WorkOrder:HS17111395
Lab ID:HS17111395-03
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 01-Dec-2017		Analyst: ACN
1,4-Dioxane	**36**		**1.0**	**1.0**	**1.0**	**ug/L**	100	07-Dec-2017 15:41
Surr: 2-Fluorobiphenyl	*0*	*S*		0	*40-140*	*%REC*	*100*	*07-Dec-2017 15:41*
Surr: 4-Terphenyl-d14	*0*	*S*		0	*40-140*	*%REC*	*100*	*07-Dec-2017 15:41*
Surr: Nitrobenzene-d5	*0*	*S*		0	*40-140*	*%REC*	*100*	*07-Dec-2017 15:41*
SULFIDE BY E376.1		**Method:E376.1**						Analyst: JHD
Sulfide	**1.28**		**1.00**	**1.00**	**1.00**	**mg/L**	1	05-Dec-2017 16:30
ANIONS BY SW9056A		**Method:SW9056**						Analyst: JBA
Chloride	**1,570**		**10.0**	**12.5**	**25.0**	**mg/L**	50	29-Nov-2017 22:17
Nitrogen, Nitrate (As N)	0.0500	U	0.0300	0.0500	0.100	mg/L	1	29-Nov-2017 21:11
Nitrogen, Nitrite (As N)	0.0500	U	0.0300	0.0500	0.100	mg/L	1	29-Nov-2017 21:11
Sulfate	**390**		**10.0**	**12.5**	**25.0**	**mg/L**	50	29-Nov-2017 22:17
TOTAL INORGANIC CARBON BY SW9060A		**Method:SW9060**						Analyst: KMU
Total Inorganic Carbon	**320**		**1.0**	**1.0**	**1.0**	**mg/L**	1	07-Dec-2017 10:19
TOTAL ORGANIC CARBON BY SW9060A		**Method:SW9060**						Analyst: KMU
Organic Carbon, Total	**3.40**		**0.500**	**0.500**	**1.00**	**mg/L**	1	06-Dec-2017 20:55
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUBCA
Subcontract Analysis	See Attached		0	0		NA	1	15-Dec-2017 15:11

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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ALS Group USA, Corp Date: 15-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 WorkOrder:HS17111395
Sample ID: Trip Blank Lab ID:HS17111395-04
Collection Date: 28-Nov-2017 00:01 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 13:45
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 13:45
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 13:45
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 13:45
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 13:45
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 13:45
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 13:45
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 13:45
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 13:45
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 13:45
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 13:45
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 13:45
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	05-Dec-2017 13:45
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 13:45
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 13:45
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 13:45
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 13:45
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 13:45
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 13:45
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 13:45
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 13:45
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 13:45
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	05-Dec-2017 13:45
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 13:45
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	05-Dec-2017 13:45
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 13:45
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 13:45
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	05-Dec-2017 13:45
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	05-Dec-2017 13:45
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 13:45
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 13:45
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 13:45
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 13:45
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 13:45
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 13:45
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	05-Dec-2017 13:45
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 13:45
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 13:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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ALS Group USA, Corp Date: 15-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 WorkOrder:HS17111395
Sample ID: Trip Blank Lab ID:HS17111395-04
Collection Date: 28-Nov-2017 00:01 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 13:45
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 13:45
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 13:45
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 13:45
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	05-Dec-2017 13:45
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 13:45
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 13:45
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 13:45
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 13:45
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	05-Dec-2017 13:45
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 13:45
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	05-Dec-2017 13:45
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	05-Dec-2017 13:45
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 13:45
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 13:45
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 13:45
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 13:45
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 13:45
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 13:45
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 13:45
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 13:45
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 13:45
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 13:45
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 13:45
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 13:45
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 13:45
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 13:45
Surr: 1,2-Dichloroethane-d4	*94.4*			**0**	*70-126*	*%REC*	*1*	*05-Dec-2017 13:45*
Surr: 4-Bromofluorobenzene	*98.3*			**0**	*81-113*	*%REC*	*1*	*05-Dec-2017 13:45*
Surr: Dibromofluoromethane	*90.2*			**0**	*77-123*	*%REC*	*1*	*05-Dec-2017 13:45*
Surr: Toluene-d8	*103*			**0**	*82-127*	*%REC*	*1*	*05-Dec-2017 13:45*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

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WEIGHT LOG

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111395

Batch ID: 122811 **Method:** SEMIVOLATILES SIM **Prep:** 3510_B_SIM

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS17111395-01	1	1000	1 (mL)	0.001
HS17111395-02	1	1000	1 (mL)	0.001
HS17111395-03	1	1000	1 (mL)	0.001

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ALS Group USA, Corp Date: 15-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111395

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 122811	**Test Name :** SEMIVOLATILES SIM			**Matrix:** Water		
HS17111395-01	67WW08-112817	28 Nov 2017 10:20		01 Dec 2017 11:32	07 Dec 2017 15:00	100
HS17111395-02	67WW08-112817-FD	28 Nov 2017 10:20		01 Dec 2017 11:32	07 Dec 2017 15:21	100
HS17111395-03	67WW13-112817	28 Nov 2017 11:40		01 Dec 2017 11:32	07 Dec 2017 15:41	100
Batch ID R306291	**Test Name :** ANIONS BY SW9056A			**Matrix:** Water		
HS17111395-01	67WW08-112817	28 Nov 2017 10:20			29 Nov 2017 18:18	50
HS17111395-01	67WW08-112817	28 Nov 2017 10:20			29 Nov 2017 17:56	1
HS17111395-02	67WW08-112817-FD	28 Nov 2017 10:20			29 Nov 2017 19:01	50
HS17111395-02	67WW08-112817-FD	28 Nov 2017 10:20			29 Nov 2017 18:40	1
HS17111395-03	67WW13-112817	28 Nov 2017 11:40			29 Nov 2017 22:17	50
HS17111395-03	67WW13-112817	28 Nov 2017 11:40			29 Nov 2017 21:11	1
Batch ID R306626	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS17111395-01	67WW08-112817	28 Nov 2017 10:20			05 Dec 2017 16:44	5
HS17111395-01	67WW08-112817	28 Nov 2017 10:20			05 Dec 2017 16:17	1
HS17111395-02	67WW08-112817-FD	28 Nov 2017 10:20			05 Dec 2017 17:36	5
HS17111395-02	67WW08-112817-FD	28 Nov 2017 10:20			05 Dec 2017 17:09	1
HS17111395-03	67WW13-112817	28 Nov 2017 11:40			05 Dec 2017 14:36	5
HS17111395-03	67WW13-112817	28 Nov 2017 11:40			05 Dec 2017 14:09	1
HS17111395-04	Trip Blank	28 Nov 2017 00:01			05 Dec 2017 13:45	1
Batch ID R306735	**Test Name :** SULFIDE BY E376.1			**Matrix:** Water		
HS17111395-01	67WW08-112817	28 Nov 2017 10:20			05 Dec 2017 16:30	1
HS17111395-02	67WW08-112817-FD	28 Nov 2017 10:20			05 Dec 2017 16:30	1
HS17111395-03	67WW13-112817	28 Nov 2017 11:40			05 Dec 2017 16:30	1
Batch ID R306753	**Test Name :** TOTAL ORGANIC CARBON BY SW9060A			**Matrix:** Water		
HS17111395-01	67WW08-112817	28 Nov 2017 10:20			06 Dec 2017 20:20	1
HS17111395-02	67WW08-112817-FD	28 Nov 2017 10:20			06 Dec 2017 20:38	1
HS17111395-03	67WW13-112817	28 Nov 2017 11:40			06 Dec 2017 20:55	1
Batch ID R306754	**Test Name :** TOTAL INORGANIC CARBON BY SW9060A			**Matrix:** Water		
HS17111395-01	67WW08-112817	28 Nov 2017 10:20			07 Dec 2017 10:19	1
HS17111395-02	67WW08-112817-FD	28 Nov 2017 10:20			07 Dec 2017 10:19	1
HS17111395-03	67WW13-112817	28 Nov 2017 11:40			07 Dec 2017 10:19	1
Batch ID R307345	**Test Name :** SUBCONTRACT ANALYSIS - RSK			**Matrix:** Water		
HS17111395-01	67WW08-112817	28 Nov 2017 10:20			15 Dec 2017 15:11	1
HS17111395-02	67WW08-112817-FD	28 Nov 2017 10:20			15 Dec 2017 15:11	1
HS17111395-03	67WW13-112817	28 Nov 2017 11:40			15 Dec 2017 15:11	1

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ALS Group USA, Corp Date: 15-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111395

QC BATCH REPORT

Batch ID: 122811 **Instrument: SV-5** **Method: SW8270SIM**

MBLK Sample ID: **MBLK-122811** Units: **ug/L** Analysis Date: **05-Dec-2017 18:27**
Client ID: Run ID: **SV-5_306756** SeqNo: **4340996** PrepDate: **01-Dec-2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.010	0.010								U
Surr: 2-Fluorobiphenyl	*0.1156*	*0*	*0.08*	*0*	*145*	*40 - 140*				S
Surr: 4-Terphenyl-d14	*0.09665*	*0*	*0.08*	*0*	*121*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.06716*	*0*	*0.08*	*0*	*84.0*	*40 - 140*				

LCS Sample ID: **LCS-122811** Units: **ug/L** Analysis Date: **05-Dec-2017 18:47**
Client ID: Run ID: **SV-5_306756** SeqNo: **4340997** PrepDate: **01-Dec-2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.08265	0.010	0.08	0	103	40 - 140				
Surr: 2-Fluorobiphenyl	*0.1238*	*0*	*0.08*	*0*	*155*	*40 - 140*				S
Surr: 4-Terphenyl-d14	*0.09844*	*0*	*0.08*	*0*	*123*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.07006*	*0*	*0.08*	*0*	*87.6*	*40 - 140*				

MS Sample ID: **HS17111395-03MS** Units: **ug/L** Analysis Date: **07-Dec-2017 16:02**
Client ID: **67WW13-112817** Run ID: **SV-5_306756** SeqNo: **4341066** PrepDate: **01-Dec-2017** DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	33.52	1.0	0.08	35.66	-2670	40 - 140				SO
Surr: 2-Fluorobiphenyl	*0*	*0*	*0.08*	*0*	*0*	*40 - 140*				S
Surr: 4-Terphenyl-d14	*0*	*0*	*0.08*	*0*	*0*	*40 - 140*				S
Surr: Nitrobenzene-d5	*0*	*0*	*0.08*	*0*	*0*	*40 - 140*				S

MSD Sample ID: **HS17111395-03MSD** Units: **ug/L** Analysis Date: **07-Dec-2017 16:22**
Client ID: **67WW13-112817** Run ID: **SV-5_306756** SeqNo: **4341067** PrepDate: **01-Dec-2017** DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	34.58	1.0	0.08	35.66	-1350	40 - 140	33.52	3.1	20	SO
Surr: 2-Fluorobiphenyl	*0*	*0*	*0.08*	*0*	*0*	*40 - 140*	*0*	*0*	*20*	S
Surr: 4-Terphenyl-d14	*0*	*0*	*0.08*	*0*	*0*	*40 - 140*	*0*	*0*	*20*	S
Surr: Nitrobenzene-d5	*0*	*0*	*0.08*	*0*	*0*	*40 - 140*	*0*	*0*	*20*	S

The following samples were analyzed in this batch: HS17111395-01 HS17111395-02 HS17111395-03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group USA, Corp Date: 15-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111395

QC BATCH REPORT

Batch ID: R306626 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-171205** Units: **ug/L** Analysis Date: **05-Dec-2017 11:18**
Client ID: Run ID: **VOA2_306626** SeqNo: **4337298** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group USA, Corp Date: 15-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111395

QC BATCH REPORT

Batch ID: R306626 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-171205** Units: **ug/L** Analysis Date: **05-Dec-2017 11:18**
Client ID: Run ID: **VOA2_306626** SeqNo: **4337298** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	0.50	1.0								U
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	0.50	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*47.29*	*1.0*	*50*	*0*	*94.6*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*49.54*	*1.0*	*50*	*0*	*99.1*	*82 - 115*				
Surr: Dibromofluoromethane	*45.4*	*1.0*	*50*	*0*	*90.8*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group USA, Corp Date: 15-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111395

QC BATCH REPORT

Batch ID: R306626 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-171205** Units: **ug/L** Analysis Date: **05-Dec-2017 11:18**
Client ID: Run ID: **VOA2_306626** SeqNo: **4337298** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*52.11*	*1.0*	*50*	*0*	*104*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group USA, Corp Date: 15-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111395

QC BATCH REPORT

Batch ID: R306626 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-171205** Units: **ug/L** Analysis Date: **05-Dec-2017 10:29**
Client ID: Run ID: **VOA2_306626** SeqNo: **4337297** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	47.21	1.0	50	0	94.4	77 - 118				
1,1,1-Trichloroethane	46.38	1.0	50	0	92.8	70 - 130				
1,1,2,2-Tetrachloroethane	45.74	1.0	50	0	91.5	70 - 120				
1,1,2-Trichlor-1,2,2-trifluoroethane	46.17	1.0	50	0	92.3	70 - 130				
1,1,2-Trichloroethane	45.15	1.0	50	0	90.3	77 - 113				
1,1-Dichloroethane	46.74	1.0	50	0	93.5	71 - 122				
1,1-Dichloroethene	47.92	1.0	50	0	95.8	70 - 130				
1,1-Dichloropropene	41.26	1.0	50	0	82.5	78 - 118				
1,2,3-Trichlorobenzene	51.71	1.0	50	0	103	70 - 130				
1,2,3-Trichloropropane	47.16	1.0	50	0	94.3	70 - 127				
1,2,4-Trichlorobenzene	50.66	1.0	50	0	101	77 - 126				
1,2,4-Trimethylbenzene	48.71	1.0	50	0	97.4	73 - 121				
1,2-Dibromo-3-chloropropane	55.49	1.0	50	0	111	70 - 130				
1,2-Dibromoethane	46.56	1.0	50	0	93.1	76 - 123				
1,2-Dichlorobenzene	44.01	1.0	50	0	88.0	77 - 113				
1,2-Dichloroethane	49.26	1.0	50	0	98.5	70 - 124				
1,2-Dichloropropane	46.54	1.0	50	0	93.1	72 - 119				
1,3,5-Trimethylbenzene	48.95	1.0	50	0	97.9	75 - 118				
1,3-Dichlorobenzene	42.62	1.0	50	0	85.2	78 - 118				
1,3-Dichloropropane	46.39	1.0	50	0	92.8	75 - 116				
1,4-Dichlorobenzene	41.83	1.0	50	0	83.7	79 - 113				
2,2-Dichloropropane	47.52	1.0	50	0	95.0	70 - 130				
2-Butanone	102.3	2.0	100	0	102	70 - 130				
2-Chlorotoluene	39.91	1.0	50	0	79.8	70 - 128				
2-Hexanone	102.6	2.0	100	0	103	70 - 130				
4-Chlorotoluene	50.68	1.0	50	0	101	74 - 126				
4-Isopropyltoluene	38.72	1.0	50	0	77.4	74 - 126				
4-Methyl-2-pentanone	96.66	2.0	100	0	96.7	70 - 130				
Acetone	146	2.0	100	0	146	70 - 130				S
Benzene	44.86	1.0	50	0	89.7	74 - 120				
Bromobenzene	43.63	1.0	50	0	87.3	78 - 113				
Bromochloromethane	52.61	1.0	50	0	105	76 - 124				
Bromodichloromethane	54.48	1.0	50	0	109	74 - 122				
Bromoform	54.46	1.0	50	0	109	73 - 128				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group USA, Corp Date: 15-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111395

QC BATCH REPORT

Batch ID: R306626 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-171205** Units: **ug/L** Analysis Date: **05-Dec-2017 10:29**
Client ID: Run ID: **VOA2_306626** SeqNo: **4337297** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	40.71	1.0	50	0	81.4	70 - 130				
Carbon disulfide	114.2	2.0	100	0	114	70 - 130				
Carbon tetrachloride	43.27	1.0	50	0	86.5	71 - 125				
Chlorobenzene	44.92	1.0	50	0	89.8	76 - 113				
Chloroethane	45.71	1.0	50	0	91.4	70 - 130				
Chloroform	45.27	1.0	50	0	90.5	71 - 121				
Chloromethane	41.14	1.0	50	0	82.3	70 - 129				
cis-1,2-Dichloroethene	47	1.0	50	0	94.0	75 - 122				
cis-1,3-Dichloropropene	52.44	1.0	50	0	105	73 - 127				
Dibromochloromethane	49.77	1.0	50	0	99.5	77 - 122				
Dibromomethane	52.76	1.0	50	0	106	78 - 121				
Dichlorodifluoromethane	43.26	1.0	50	0	86.5	70 - 130				
Ethylbenzene	42.73	1.0	50	0	85.5	77 - 117				
Hexachlorobutadiene	44.45	1.0	50	0	88.9	70 - 130				
Isopropylbenzene	43.33	1.0	50	0	86.7	73 - 127				
m,p-Xylene	81.4	2.0	100	0	81.4	77 - 122				
Methylene chloride	60.03	2.0	50	0	120	70 - 127				
Naphthalene	59.19	1.0	50	0	118	70 - 130				
n-Butylbenzene	39.93	1.0	50	0	79.9	72 - 130				
n-Propylbenzene	46.55	1.0	50	0	93.1	73 - 124				
o-Xylene	43.16	1.0	50	0	86.3	75 - 119				
sec-Butylbenzene	45.02	1.0	50	0	90.0	73 - 128				
Styrene	44.43	1.0	50	0	88.9	72 - 126				
tert-Butylbenzene	46.07	1.0	50	0	92.1	73 - 124				
Tetrachloroethene	41.28	1.0	50	0	82.6	76 - 119				
Toluene	41.67	1.0	50	0	83.3	77 - 118				
trans-1,2-Dichloroethene	55.25	1.0	50	0	111	72 - 127				
trans-1,3-Dichloropropene	54.58	1.0	50	0	109	77 - 119				
Trichloroethene	47.35	1.0	50	0	94.7	77 - 121				
Trichlorofluoromethane	45.06	1.0	50	0	90.1	70 - 130				
Vinyl chloride	44.37	1.0	50	0	88.7	70 - 130				
Surr: 1,2-Dichloroethane-d4	*48.24*	*1.0*	*50*	*0*	*96.5*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*50.52*	*1.0*	*50*	*0*	*101*	*82 - 115*				
Surr: Dibromofluoromethane	*42.6*	*1.0*	*50*	*0*	*85.2*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group USA, Corp Date: 15-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111395

QC BATCH REPORT

Batch ID: R306626 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-171205** Units: **ug/L** Analysis Date: **05-Dec-2017 10:29**
Client ID: Run ID: **VOA2_306626** SeqNo: **4337297** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*49.96*	*1.0*	*50*	*0*	*99.9*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group USA, Corp Date: 15-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111395

QC BATCH REPORT

Batch ID: R306626 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS17111395-03MS** Units: **ug/L** Analysis Date: **05-Dec-2017 15:01**
Client ID: **67WW13-112817** Run ID: **VOA2_306626** SeqNo: **4337307** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	47.9	1.0	50	0	95.8	70 - 120				
1,1,1-Trichloroethane	50.96	1.0	50	0	102	70 - 130				
1,1,2,2-Tetrachloroethane	42.48	1.0	50	0	85.0	70 - 123				
1,1,2-Trichlor-1,2,2-trifluoroethane	53.98	1.0	50	0	108	70 - 130				
1,1,2-Trichloroethane	48.11	1.0	50	5.088	86.0	70 - 117				
1,1-Dichloroethane	78.64	1.0	50	19.35	119	70 - 127				
1,1-Dichloroethene	322.9	1.0	50	326.1	-6.36	70 - 130				SEO
1,1-Dichloropropene	46.77	1.0	50	0	93.5	70 - 129				
1,2,3-Trichlorobenzene	48.54	1.0	50	0	97.1	70 - 130				
1,2,3-Trichloropropane	43.51	1.0	50	0	87.0	70 - 130				
1,2,4-Trichlorobenzene	48.69	1.0	50	0	97.4	70 - 125				
1,2,4-Trimethylbenzene	50.57	1.0	50	0	101	70 - 125				
1,2-Dibromo-3-chloropropane	50.27	1.0	50	0	101	70 - 130				
1,2-Dibromoethane	43.63	1.0	50	0	87.3	70 - 124				
1,2-Dichlorobenzene	42.66	1.0	50	0	85.3	70 - 115				
1,2-Dichloroethane	73.34	1.0	50	31.85	83.0	70 - 127				
1,2-Dichloropropane	45.71	1.0	50	0	91.4	70 - 122				
1,3,5-Trimethylbenzene	51.82	1.0	50	0	104	70 - 126				
1,3-Dichlorobenzene	42.76	1.0	50	0	85.5	70 - 119				
1,3-Dichloropropane	45.36	1.0	50	0	90.7	70 - 121				
1,4-Dichlorobenzene	41.25	1.0	50	0	82.5	70 - 114				
2,2-Dichloropropane	54.82	1.0	50	0	110	70 - 130				
2-Butanone	101	2.0	100	0	101	70 - 130				
2-Chlorotoluene	41.94	1.0	50	0	83.9	70 - 130				
2-Hexanone	96.39	2.0	100	0	96.4	70 - 130				
4-Chlorotoluene	50.16	1.0	50	0	100	70 - 130				
4-Isopropyltoluene	42.3	1.0	50	0	84.6	70 - 130				
4-Methyl-2-pentanone	91.9	2.0	100	0	91.9	70 - 130				
Acetone	116	2.0	100	0	116	70 - 130				
Benzene	45.31	1.0	50	0	90.6	70 - 127				
Bromobenzene	43.64	1.0	50	0	87.3	70 - 115				
Bromochloromethane	52.6	1.0	50	0	105	70 - 127				
Bromodichloromethane	50.86	1.0	50	0	102	70 - 124				
Bromoform	50.36	1.0	50	0	101	70 - 129				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group USA, Corp Date: 15-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111395

QC BATCH REPORT

Batch ID: R306626 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS17111395-03MS** Units: **ug/L** Analysis Date: **05-Dec-2017 15:01**
Client ID: **67WW13-112817** Run ID: **VOA2_306626** SeqNo: **4337307** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	32.23	1.0	50	0	64.5	70 - 130				S
Carbon disulfide	116.2	2.0	100	0	116	70 - 130				
Carbon tetrachloride	49.85	1.0	50	0	99.7	70 - 130				
Chlorobenzene	44.78	1.0	50	0	89.6	70 - 114				
Chloroethane	47.3	1.0	50	0	94.6	70 - 130				
Chloroform	45.49	1.0	50	0	91.0	70 - 125				
Chloromethane	36.52	1.0	50	0	73.0	70 - 130				
cis-1,2-Dichloroethene	52.96	1.0	50	0	106	70 - 128				
cis-1,3-Dichloropropene	50.31	1.0	50	0	101	70 - 125				
Dibromochloromethane	48.53	1.0	50	0	97.1	70 - 124				
Dibromomethane	47.93	1.0	50	0	95.9	70 - 124				
Dichlorodifluoromethane	45.3	1.0	50	0	90.6	70 - 130				
Ethylbenzene	45.64	1.0	50	0	91.3	70 - 124				
Hexachlorobutadiene	49.4	1.0	50	0	98.8	70 - 130				
Isopropylbenzene	48.32	1.0	50	0	96.6	70 - 130				
m,p-Xylene	87.22	2.0	100	0	87.2	70 - 130				
Methylene chloride	60.06	2.0	50	0	120	70 - 128				
Naphthalene	53.24	1.0	50	0	106	70 - 130				
n-Butylbenzene	43.69	1.0	50	0	87.4	70 - 130				
n-Propylbenzene	51.2	1.0	50	0	102	70 - 130				
o-Xylene	44.45	1.0	50	0	88.9	70 - 124				
sec-Butylbenzene	50.85	1.0	50	0	102	70 - 130				
Styrene	44.3	1.0	50	0	88.6	70 - 130				
tert-Butylbenzene	51.45	1.0	50	0	103	70 - 130				
Tetrachloroethene	47.74	1.0	50	0	95.5	70 - 130				
Toluene	44.05	1.0	50	0	88.1	70 - 123				
trans-1,2-Dichloroethene	66.15	1.0	50	0	132	70 - 130				S
trans-1,3-Dichloropropene	50.18	1.0	50	0	100	70 - 121				
Trichloroethene	50.19	1.0	50	0	100	70 - 129				
Trichlorofluoromethane	53.26	1.0	50	0	107	70 - 130				
Vinyl chloride	49.49	1.0	50	0	99.0	70 - 130				
Surr: 1,2-Dichloroethane-d4	*48.78*	*1.0*	*50*	*0*	*97.6*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*51*	*1.0*	*50*	*0*	*102*	*81 - 113*				
Surr: Dibromofluoromethane	*42.96*	*1.0*	*50*	*0*	*85.9*	*77 - 123*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group USA, Corp Date: 15-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111395

QC BATCH REPORT

Batch ID: R306626 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS17111395-03MS** Units: **ug/L** Analysis Date: **05-Dec-2017 15:01**
Client ID: **67WW13-112817** Run ID: **VOA2_306626** SeqNo: **4337307** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*50.54*	*1.0*	*50*	*0*	*101*	*82 - 127*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group USA, Corp Date: 15-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111395

QC BATCH REPORT

Batch ID: R306626 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS17111395-03MSD** Units: **ug/L** Analysis Date: **05-Dec-2017 15:25**
Client ID: **67WW13-112817** Run ID: **VOA2_306626** SeqNo: **4337308** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	47.9	1.0	50	0	95.8	70 - 120	47.9	0.00138	20	
1,1,1-Trichloroethane	51.29	1.0	50	0	103	70 - 130	50.96	0.657	20	
1,1,2,2-Tetrachloroethane	43.57	1.0	50	0	87.1	70 - 123	42.48	2.54	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	51.71	1.0	50	0	103	70 - 130	53.98	4.28	20	
1,1,2-Trichloroethane	53.52	1.0	50	5.088	96.9	70 - 117	48.11	10.6	20	
1,1-Dichloroethane	63.42	1.0	50	19.35	88.1	70 - 127	78.64	21.4	20	R
1,1-Dichloroethene	308.6	1.0	50	326.1	-35.1	70 - 130	322.9	4.55	20	SEO
1,1-Dichloropropene	45.5	1.0	50	0	91.0	70 - 129	46.77	2.76	20	
1,2,3-Trichlorobenzene	49.96	1.0	50	0	99.9	70 - 130	48.54	2.89	20	
1,2,3-Trichloropropane	44.7	1.0	50	0	89.4	70 - 130	43.51	2.71	20	
1,2,4-Trichlorobenzene	50.35	1.0	50	0	101	70 - 125	48.69	3.34	20	
1,2,4-Trimethylbenzene	50.17	1.0	50	0	100	70 - 125	50.57	0.793	20	
1,2-Dibromo-3-chloropropane	52.67	1.0	50	0	105	70 - 130	50.27	4.66	20	
1,2-Dibromoethane	44.78	1.0	50	0	89.6	70 - 124	43.63	2.61	20	
1,2-Dichlorobenzene	42.84	1.0	50	0	85.7	70 - 115	42.66	0.424	20	
1,2-Dichloroethane	80.73	1.0	50	31.85	97.7	70 - 127	73.34	9.59	20	
1,2-Dichloropropane	44.68	1.0	50	0	89.4	70 - 122	45.71	2.27	20	
1,3,5-Trimethylbenzene	51.86	1.0	50	0	104	70 - 126	51.82	0.0728	20	
1,3-Dichlorobenzene	42.82	1.0	50	0	85.6	70 - 119	42.76	0.148	20	
1,3-Dichloropropane	48.25	1.0	50	0	96.5	70 - 121	45.36	6.16	20	
1,4-Dichlorobenzene	41.29	1.0	50	0	82.6	70 - 114	41.25	0.0919	20	
2,2-Dichloropropane	50.57	1.0	50	0	101	70 - 130	54.82	8.07	20	
2-Butanone	96.44	2.0	100	0	96.4	70 - 130	101	4.58	20	
2-Chlorotoluene	41.8	1.0	50	0	83.6	70 - 130	41.94	0.332	20	
2-Hexanone	99.84	2.0	100	0	99.8	70 - 130	96.39	3.51	20	
4-Chlorotoluene	50.28	1.0	50	0	101	70 - 130	50.16	0.225	20	
4-Isopropyltoluene	42.25	1.0	50	0	84.5	70 - 130	42.3	0.118	20	
4-Methyl-2-pentanone	97.64	2.0	100	0	97.6	70 - 130	91.9	6.06	20	
Acetone	121.4	2.0	100	0	121	70 - 130	116	4.57	20	
Benzene	47.17	1.0	50	0	94.3	70 - 127	45.31	4.02	20	
Bromobenzene	43.15	1.0	50	0	86.3	70 - 115	43.64	1.13	20	
Bromochloromethane	50.33	1.0	50	0	101	70 - 127	52.6	4.41	20	
Bromodichloromethane	51.41	1.0	50	0	103	70 - 124	50.86	1.09	20	
Bromoform	54.07	1.0	50	0	108	70 - 129	50.36	7.12	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group USA, Corp Date: 15-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111395

QC BATCH REPORT

Batch ID: R306626 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS17111395-03MSD** Units: **ug/L** Analysis Date: **05-Dec-2017 15:25**
Client ID: **67WW13-112817** Run ID: **VOA2_306626** SeqNo: **4337308** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	35.03	1.0	50	0	70.1	70 - 130	32.23	8.32	20	
Carbon disulfide	114.2	2.0	100	0	114	70 - 130	116.2	1.75	20	
Carbon tetrachloride	50.57	1.0	50	0	101	70 - 130	49.85	1.44	20	
Chlorobenzene	43.97	1.0	50	0	87.9	70 - 114	44.78	1.83	20	
Chloroethane	47.16	1.0	50	0	94.3	70 - 130	47.3	0.294	20	
Chloroform	46.62	1.0	50	0	93.2	70 - 125	45.49	2.45	20	
Chloromethane	38.81	1.0	50	0	77.6	70 - 130	36.52	6.09	20	
cis-1,2-Dichloroethene	47.5	1.0	50	0	95.0	70 - 128	52.96	10.9	20	
cis-1,3-Dichloropropene	51.26	1.0	50	0	103	70 - 125	50.31	1.86	20	
Dibromochloromethane	48.89	1.0	50	0	97.8	70 - 124	48.53	0.749	20	
Dibromomethane	49.24	1.0	50	0	98.5	70 - 124	47.93	2.7	20	
Dichlorodifluoromethane	45.9	1.0	50	0	91.8	70 - 130	45.3	1.31	20	
Ethylbenzene	45.49	1.0	50	0	91.0	70 - 124	45.64	0.317	20	
Hexachlorobutadiene	51.79	1.0	50	0	104	70 - 130	49.4	4.73	20	
Isopropylbenzene	47.89	1.0	50	0	95.8	70 - 130	48.32	0.894	20	
m,p-Xylene	90.99	2.0	100	0	91.0	70 - 130	87.22	4.23	20	
Methylene chloride	43.74	2.0	50	0	87.5	70 - 128	60.06	31.4	20	R
Naphthalene	56.34	1.0	50	0	113	70 - 130	53.24	5.65	20	
n-Butylbenzene	43.73	1.0	50	0	87.5	70 - 130	43.69	0.0967	20	
n-Propylbenzene	50.66	1.0	50	0	101	70 - 130	51.2	1.06	20	
o-Xylene	45.31	1.0	50	0	90.6	70 - 124	44.45	1.91	20	
sec-Butylbenzene	51.09	1.0	50	0	102	70 - 130	50.85	0.486	20	
Styrene	45.57	1.0	50	0	91.1	70 - 130	44.3	2.82	20	
tert-Butylbenzene	51.63	1.0	50	0	103	70 - 130	51.45	0.347	20	
Tetrachloroethene	50.95	1.0	50	0	102	70 - 130	47.74	6.5	20	
Toluene	44.3	1.0	50	0	88.6	70 - 123	44.05	0.56	20	
trans-1,2-Dichloroethene	47.21	1.0	50	0	94.4	70 - 130	66.15	33.4	20	R
trans-1,3-Dichloropropene	52.21	1.0	50	0	104	70 - 121	50.18	3.98	20	
Trichloroethene	49.39	1.0	50	0	98.8	70 - 129	50.19	1.6	20	
Trichlorofluoromethane	52.79	1.0	50	0	106	70 - 130	53.26	0.886	20	
Vinyl chloride	50.25	1.0	50	0	101	70 - 130	49.49	1.52	20	
Surr: 1,2-Dichloroethane-d4	*49.97*	*1.0*	*50*	*0*	*99.9*	*70 - 126*	*48.78*	*2.4*	*20*	
Surr: 4-Bromofluorobenzene	*50.41*	*1.0*	*50*	*0*	*101*	*81 - 113*	*51*	*1.17*	*20*	
Surr: Dibromofluoromethane	*44.23*	*1.0*	*50*	*0*	*88.5*	*77 - 123*	*42.96*	*2.9*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group USA, Corp Date: 15-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111395

QC BATCH REPORT

Batch ID: R306626 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS17111395-03MSD** Units: **ug/L** Analysis Date: **05-Dec-2017 15:25**
Client ID: **67WW13-112817** Run ID: **VOA2_306626** SeqNo: **4337308** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*51.48*	*1.0*	*50*	*0*	*103*	*82 - 127*	*50.54*	*1.84*	*20*	

The following samples were analyzed in this batch: HS17111395-01 HS17111395-02 HS17111395-03 HS17111395-04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group USA, Corp Date: 15-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111395

QC BATCH REPORT

Batch ID: R306291 **Instrument: ICS3K2** **Method: SW9056**

MBLK Sample ID: **WBLKW2-112917** Units: **mg/L** Analysis Date: **29-Nov-2017 20:06**
Client ID: Run ID: **ICS3K2_306291** SeqNo: **4329414** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	0.250	0.500								U
Nitrogen, Nitrate (As N)	0.0500	0.100								U
Nitrogen, Nitrite (As N)	0.0500	0.100								U
Sulfate	0.250	0.500								U

LCS Sample ID: **WLCSW2-112917** Units: **mg/L** Analysis Date: **29-Nov-2017 17:13**
Client ID: Run ID: **ICS3K2_306291** SeqNo: **4329406** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.12	0.500	20	0	101	80 - 120				
Nitrogen, Nitrate (As N)	4.059	0.100	4	0	101	80 - 120				
Nitrogen, Nitrite (As N)	4.377	0.100	4	0	109	80 - 120				
Sulfate	20.4	0.500	20	0	102	80 - 120				

LCSD Sample ID: **WLCSDW2-112917** Units: **mg/L** Analysis Date: **29-Nov-2017 17:34**
Client ID: Run ID: **ICS3K2_306291** SeqNo: **4329407** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	20.18	0.500	20	0	101	80 - 120	20.12	0.283	20	
Nitrogen, Nitrate (As N)	4.065	0.100	4	0	102	80 - 120	4.059	0.148	20	
Nitrogen, Nitrite (As N)	4.395	0.100	4	0	110	80 - 120	4.377	0.41	20	
Sulfate	20.56	0.500	20	0	103	80 - 120	20.4	0.766	20	

MS Sample ID: **HS17111395-03MS** Units: **mg/L** Analysis Date: **29-Nov-2017 21:33**
Client ID: **67WW13-112817** Run ID: **ICS3K2_306291** SeqNo: **4329418** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	1627	0.500	10	1646	-194	80 - 120				SEO
Nitrogen, Nitrate (As N)	2.234	0.100	2	0	112	80 - 120				
Nitrogen, Nitrite (As N)	2.022	0.100	2	0	101	80 - 120				
Sulfate	391.8	0.500	10	386.6	51.7	80 - 120				SEO

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group USA, Corp Date: 15-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111395

QC BATCH REPORT

Batch ID: R306291 **Instrument: ICS3K2** **Method: SW9056**

MSD Sample ID: **HS17111395-03MSD** Units: **mg/L** Analysis Date: **29-Nov-2017 21:55**
Client ID: **67WW13-112817** Run ID: **ICS3K2_306291** SeqNo: **4329419** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	1633	0.500	10	1646	-138	80 - 120	1627	0.338	20	SEO
Nitrogen, Nitrate (As N)	2.243	0.100	2	0	112	80 - 120	2.234	0.402	20	
Nitrogen, Nitrite (As N)	2.082	0.100	2	0	104	80 - 120	2.022	2.92	20	
Sulfate	393.3	0.500	10	386.6	67.1	80 - 120	391.8	0.393	20	SEO

The following samples were analyzed in this batch: HS17111395-01 HS17111395-02 HS17111395-03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group USA, Corp Date: 15-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111395

QC BATCH REPORT

Batch ID: R306735 **Instrument: WetChem_HS** **Method: E376.1**

MBLK Sample ID: **MBLK-R306735** Units: **mg/L** Analysis Date: **05-Dec-2017 16:30**
Client ID: Run ID: **WetChem_HS_306735** SeqNo: **4340608** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	1.00	1.00								U

LCS Sample ID: **LCS-R306735** Units: **mg/L** Analysis Date: **05-Dec-2017 16:30**
Client ID: Run ID: **WetChem_HS_306735** SeqNo: **4340607** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	23.28	1.00	25	0	93.1	80 - 120				

LCSD Sample ID: **LCSD-R306735** Units: **mg/L** Analysis Date: **05-Dec-2017 16:30**
Client ID: Run ID: **WetChem_HS_306735** SeqNo: **4340606** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	23.08	1.00	25	0	92.3	80 - 120	23.28	0.863	20	

MS Sample ID: **HS17111395-03MS** Units: **mg/L** Analysis Date: **05-Dec-2017 16:30**
Client ID: **67WW13-112817** Run ID: **WetChem_HS_306735** SeqNo: **4340610** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	24.08	1.00	25	1.28	91.2	80 - 120				

MSD Sample ID: **HS17111395-03MSD** Units: **mg/L** Analysis Date: **05-Dec-2017 16:30**
Client ID: **67WW13-112817** Run ID: **WetChem_HS_306735** SeqNo: **4340609** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	24.48	1.00	25	1.28	92.8	80 - 120	24.08	1.65	20	

The following samples were analyzed in this batch: HS17111395-01 HS17111395-02 HS17111395-03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group USA, Corp Date: 15-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111395

QC BATCH REPORT

Batch ID: R306753 **Instrument: TOC_02** **Method: SW9060**

MBLK Sample ID: **WBLKW1-120617** Units: **mg/L** Analysis Date: **06-Dec-2017 19:48**
Client ID: Run ID: **TOC_02_306753** SeqNo: **4341029** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	0.5461	1.00								J

LCS Sample ID: **WLCSW1-120617** Units: **mg/L** Analysis Date: **06-Dec-2017 20:05**
Client ID: Run ID: **TOC_02_306753** SeqNo: **4341030** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	10.77	1.00	10	0	108	80 - 120				

MS Sample ID: **HS17111395-03MS** Units: **mg/L** Analysis Date: **06-Dec-2017 21:12**
Client ID: **67WW13-112817** Run ID: **TOC_02_306753** SeqNo: **4341034** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	13.37	1.00	10	3.4	99.7	80 - 120				

MSD Sample ID: **HS17111395-03MSD** Units: **mg/L** Analysis Date: **06-Dec-2017 21:30**
Client ID: **67WW13-112817** Run ID: **TOC_02_306753** SeqNo: **4341035** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	12.8	1.00	10	3.4	94.0	80 - 120	13.37	4.36	20	

The following samples were analyzed in this batch: HS17111395-01 HS17111395-02 HS17111395-03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group USA, Corp Date: 15-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: **HS17111395**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

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CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	17-027-0	27-Mar-2018
California	2919 2016-2018	31-Jul-2018
Illinois	004112	09-May-2018
Kentucky	123043	30-Apr-2018
Louisiana	03087 2017-2017	30-Jun-2018
North Carolina	624-2017	31-Dec-2017
North Dakota	R193 2017-2017	30-Apr-2018
Oklahoma	2017-088	31-Aug-2018
Texas	T104704231-17-19	30-Apr-2018

RIGHT SOLUTIONS | RIGHT PARTNER

ALS Group USA, Corp Date: 15-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
Work Order: HS17111395

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS17111395-01	67WW08-112817	Login	11/29/2017 3:45:20 PM	SDW	WET068
HS17111395-01	67WW08-112817	Login	11/29/2017 3:45:20 PM	SDW	EXT023
HS17111395-01	67WW08-112817	Login	11/29/2017 3:45:20 PM	SDW	WET068
HS17111395-01	67WW08-112817	Login	11/29/2017 3:45:20 PM	SDW	WET068
HS17111395-01	67WW08-112817	Login	11/29/2017 3:45:20 PM	SDW	VOA040
HS17111395-01	67WW08-112817	Login	11/29/2017 3:45:20 PM	SDW	WET068
HS17111395-01	67WW08-112817	Login	11/29/2017 3:45:20 PM	SDW	Sub
HS17111395-01	67WW08-112817	Login	11/29/2017 3:45:20 PM	SDW	WET068
HS17111395-02	67WW08-112817-FD	Login	11/29/2017 3:57:16 PM	SDW	WET068
HS17111395-02	67WW08-112817-FD	Login	11/29/2017 3:57:16 PM	SDW	EXT023
HS17111395-02	67WW08-112817-FD	Login	11/29/2017 3:57:16 PM	SDW	WET068
HS17111395-02	67WW08-112817-FD	Login	11/29/2017 3:57:16 PM	SDW	WET068
HS17111395-02	67WW08-112817-FD	Login	11/29/2017 3:57:16 PM	SDW	VOA040
HS17111395-02	67WW08-112817-FD	Login	11/29/2017 3:57:16 PM	SDW	WET068
HS17111395-02	67WW08-112817-FD	Login	11/29/2017 3:57:16 PM	SDW	Sub
HS17111395-02	67WW08-112817-FD	Login	11/29/2017 3:57:16 PM	SDW	WET068
HS17111395-03	67WW13-112817	Login	11/29/2017 3:57:16 PM	SDW	WET068
HS17111395-03	67WW13-112817	Login	11/29/2017 3:57:16 PM	SDW	EXT023
HS17111395-03	67WW13-112817	Login	11/29/2017 3:57:16 PM	SDW	WET068
HS17111395-03	67WW13-112817	Login	11/29/2017 3:57:16 PM	SDW	WET068
HS17111395-03	67WW13-112817	Login	11/29/2017 3:57:16 PM	SDW	VOA040
HS17111395-03	67WW13-112817	Login	11/29/2017 3:57:16 PM	SDW	WET068
HS17111395-03	67WW13-112817	Login	11/29/2017 3:57:16 PM	SDW	Sub
HS17111395-03	67WW13-112817	Login	11/29/2017 3:57:16 PM	SDW	WET068
HS17111395-04	Trip Blank	Login	11/29/2017 4:38:17 PM	SDW	VOA040

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ALS Group USA, Corp Date: 15-Dec-17

Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS17111395
Date/Time Received: **29-Nov-2017 09:00**
Received by: **JRM**

Checklist completed by: *Jared R. Makan* eSignature 29-Nov-2017 Date
Reviewed by: *Sonia West* eSignature 5-Dec-2017 Date

Matrices: **Watre**
Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.4c/1.7c UC/C	IR11	
Cooler(s)/Kit(s):	Red		
Date/Time sample(s) sent to storage:	11/29/2017 16:00		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes: All vials for VOC, TIC, TOC & RSK not received for 67WW13-112817-MSD sample. Vials from background & MS sample used for MS/MSD.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

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ALS Group USA, Corp Date: 15-Dec-17

Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS17111395
Date/Time Received: **29-Nov-2017 09:00**
Received by: **JRM**

Checklist completed by: *Jared R. Makan* eSignature 4-Dec-2017 Date
Reviewed by: *Sonia West* eSignature 5-Dec-2017 Date

Matrices: **Water**
Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.9c/2.6c UC/C	IR30	
Cooler(s)/Kit(s):	5962		
Date/Time sample(s) sent to storage:	12/01/2017 12:35		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes: Missing MSD vials for sample 67WW13-112817 received 1 DEC 2017.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

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APTIM

COC ID: 67-NOV2017-GW-ALSHT- | TURNAROUND TIME: normal | RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name	Longhorn AAP			Lab Name	ALS Laboratories			Email Invoice To	FedInvoices@CBIFederalServices.com		
Project Number	501032			Lab Contact	Sonia West						
	LHAAP-67			Email	Sonia.West@alsglobal.com			Email Report To	Sharon.Pennington@CBIFederalServices.com		
Address	1203-B East Grand Avenue			Address	10450 Stancliff Rd., Suite 210			Mail Reports To	Sharon Pennington		
	PMB 202							Address	2410 Cherahala Blvd.		
City	Marshall	State	TX	City	Houston	State	TX	City	Knoxville	State	TN
Postal Code	75670	Country	USA	Postal Code	77099	Country	USA	Postal Code	37932	Country	USA
Phone Number	713.243 7264			Phone Number	281.575.2132 or 281.530.5656						
Project Manager	Praveen Srivastav							Shipping Company			

SAMPLE DETAILS / ANALYSIS REQUESTED

Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	ANALYSIS	VOCs in Water by 8260B	Dissolved Gases in Water by RSK175	Anions in Water by E300.0	TOC in Water by E415.1	TIC in Water by E415.1	Sulfide in Water by E376.1	1,4-Dioxane in Water by 8270DSIM
67WW08-112817	LHAAP-67	24.00	24.17		WG	11/28/17	1020	11		X	X	X	X	X	X	X
67WW08-112817-FD	LHAAP-67	24.00	24.17		WG	11/28/17	1020	11		X	X	X	X	X	X	X
67WW13-112817	LHAAP-67	21.98	22.17		WG	11/28/17	1140	11		X	X	X	X	X	X	X
67WW13-112817-MS	LHAAP-67	21.98	22.17		WG	11/28/17	1140	11		X	X	X	X	X	X	X
67WW13-112817-MSD	LHAAP-67	21.98	22.17		WG	11/28/17	1140	11		X	X	X	X	X	X	X
TRIP BLANK						11/28/17		2		X						

HS17111395

Aptim Environmental & Infrastucture, Inc.

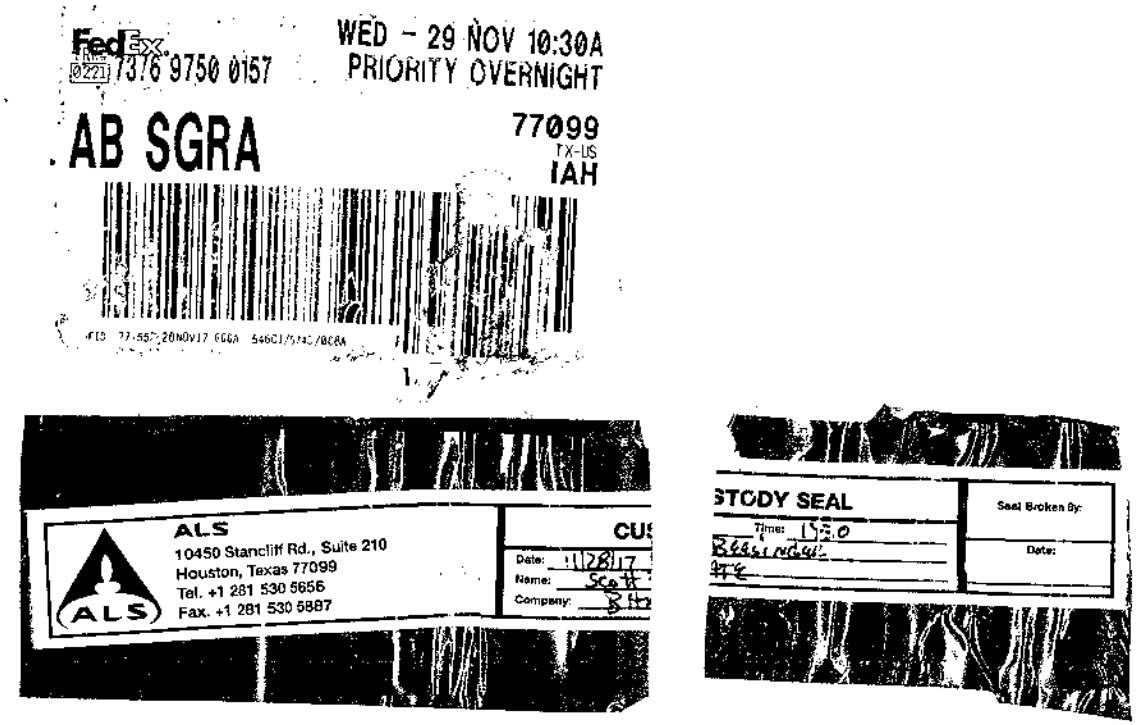
LHAAP-67

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Dissolved Gases should include Carbon dioxide, Ethane, Ethene, and Methane. Anions should include chloride, nitrate, nitrite, and sulfate.		11/28/17 1430		11/29/17 09:00

Cooler - Rest Temp 1.9 IR#1 of 0.3

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00911400



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00911401

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LABORATORY REPORT

December 12, 2017

Sonia West
ALS Group USA, Corp.
10450 Stancliff Road Suite 210
Houston, TX 77099-4338

Dear Sonia:

Enclosed are the results of the samples submitted to our laboratory on December 1, 2017. For your reference, these analyses have been assigned our service request number P1706026.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Kelly Horiuchi at 5:47 pm, Dec 13, 2017

Kelly Horiuchi
Laboratory Director

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Client: ALS Group USA, Corp. Service Request No: P1706026

CASE NARRATIVE

The samples were received intact under chain of custody on December 1, 2017 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Carbon Dioxide Analysis

The samples were analyzed for carbon dioxide using a gas chromatograph equipped with a thermal conductivity detector (TCD). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least four hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gas (carbon dioxide) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175 as described in laboratory SOP VOA-DISGAS. This analyte is included on the laboratory's NELAP and DoD-ELAP scope of accreditation.

The Matrix Spike (MS) and Duplicate Matrix Spike (DMS) recoveries are not within the acceptance limits because the analyte concentration in the sample was significantly higher than the added spike concentration.

Methane, Ethene and Ethane Analysis

The samples were also analyzed for methane, ethene, and ethane using a gas chromatograph equipped with a flame ionization detector (FID). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least two hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (methane, ethene and ethane) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175. This method is included on the laboratory's NELAP and DoD-ELAP scope of accreditation. Any analytes flagged with an X are not included on the laboratory's NELAP or DoD-ELAP accreditation.

Manual integrations were performed on the following sample and analyte. Refer to the raw data for additional information.

Sample Identification	Analyte
P1706026-003	Methane

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

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ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/labcert.htm	2016036
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1177034
New Jersey DEP (NELAP)	http://www.nj.gov/dep/oqa/	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-004
Pennsylvania DEP	http://www.depweb.state.pa.us/labs	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704413-17-8
Utah DOH (NELAP)	http://health.utah.gov/lab/environmental-lab-certification/	CA016272017-8
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

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ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: ALS Group USA, Corp. Service Request: P1706026

Date Received: 12/1/2017
Time Received: 14:31

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	RSK 175 - CO2	RSK 175 - Gases
67WW08-112817	P1706026-001	Water	11/28/2017	10:20	X	X
67WW08-112817-FD	P1706026-002	Water	11/28/2017	10:20	X	X
67WW13-112817	P1706026-003	Water	11/28/2017	11:40	X	X

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www.alsglobal.com

#1706026

Subcontract Chain of Custody

COC ID: 8127

SUBCONTRACT TO:

ALS Environmental
2655 Park Center Drive, Suite A
Simi Valley, CA 93065

Phone: +1 805 526 7161

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	Sonia West
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	Sonia.West@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS17111395
TSR:	Houston House Acct

	LAB SAMPLE ID / ANALYSIS REQUESTED	CLIENT SAMPLE ID	MATRIX	COLLECT DATE / DUE DATE
1.	**HS17111395-01**	**67WW08-112817**	**Water**	**28 Nov 2017 10:20**
	SUB_RSK			13 Dec 2017
2.	**HS17111395-02**	**67WW08-112817-FD**	**Water**	**28 Nov 2017 10:20**
	SUB_RSK			13 Dec 2017
3.	**HS17111395-03**	**67WW13-112817**	**Water**	**28 Nov 2017 11:40**
	SUB_RSK			13 Dec 2017

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

Please run HS17111395-03 as MS/MSD

QC Level: DOD IV (DoD Data Package)

Relinquished By: J. Mahoney Date/Time: 11/30/17 18:00

Received By: Henry Reyes Date/Time: 12/1/17 0940

Cooler ID(s): Temperature(s): TEMP BLANK 3° WET ICE (HP)

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ALS Environmental
Sample Acceptance Check Form

Client: ALS Group USA, Corp. Work order: P1706026

Project:

Sample(s) received on: 12/1/17 Date opened: 12/1/17 by: E.PEREZ

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 3° C **Wet Ice**			
8	Were **custody seals** on outside of cooler/Box/Container?	☒	☐	☐
	Location of seal(s)? Cooler Sealing Lid Sealing Lid?	☒	☐	☐
	Were signature and date included?	☒	☐	☐
	Were seals intact?	☒	☐	☐
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☒	☐	☐
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☒	☐
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1706026-001.01	40mL VOA NP		7		A	MC 12/12/2017
P1706026-001.02	40mL VOA NP				A	
P1706026-002.01	40mL VOA NP		7		A	MC 12/12/2017
P1706026-002.02	40mL VOA NP				A	
P1706026-003.01	40mL VOA NP		7		A	MC 12/12/2017
P1706026-003.02	40mL VOA NP		7		A	MC 12/12/2017
P1706026-003.03	40mL VOA NP		7		A	MC 12/12/2017
P1706026-003.04	40mL VOA NP				A	

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

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ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Group USA, Corp.**

ALS Project ID: P1706026

Carbon Dioxide

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Mike Conejo
Matrix: Water
Test Notes:

Date(s) Collected: 11/28/17
Date Received: 12/1/17
Date Analyzed: 12/12/17

Client Sample ID	ALS Sample ID	Injection Volume ml(s)	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
67WW08-112817	P1706026-001	0.10	**290,000**	1,000	760	370	
67WW08-112817-FD	P1706026-002	0.10	**240,000**	1,000	760	370	
67WW13-112817	P1706026-003	0.10	**470,000**	1,000	760	370	
Method Control Sample	P171212-MB	0.10	760	1,000	760	370	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Group USA, Corp.**
Client Sample ID: **Duplicate Lab Control Sample**

ALS Project ID: P1706026
ALS Sample ID: P171212-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Mike Conejo
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 12/12/17
Volume(s) Analyzed: NA ml(s)

CAS #	Compound	Spike Amount LCS / DLCS ug/L	Result[1] LCS ug/L	Result[1] DLCS ug/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	22,900	19,800	19,700	**86**	**86**	80-122	0	15	

[1] = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

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ALS ENVIRONMENTAL

MATRIX SPIKE / DUPLICATE MATRIX SPIKE SUMMARY

Client: **ALS Group USA, Corp.**
Client Sample ID: **67WW13-112817**

ALS Project ID: P1706026
ALS Sample ID: P1706026-003MS
P1706026-003DMS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Mike Conejo
Matrix: Water
Test Notes:

Date Collected: 11/28/17
Date Received: 12/1/17
Date Analyzed: 12/12/17
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount MS / DMS ug/L	Sample Amount ug/L	Result MS ug/L	Result DMS ug/L	% Recovery MS	% Recovery DMS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	22,900	467,000	387,000	392,000	**0**	**0**	80-122	0	30	**N**

N = The matrix spike sample recovery is not within control limits. See case narrative.

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ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Group USA, Corp.**
Client Sample ID: **67WW08-112817**

ALS Project ID: P1706026
ALS Sample ID: P1706026-001

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Mike Conejo
Matrix: Water
Test Notes:

Date Collected: 11/28/17
Date Received: 12/1/17
Date Analyzed: 12/12/17
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**2.0**	1.3	0.63	0.30	
74-85-1	Ethene	0.22	1.0	0.22	0.071	**U**
74-84-0	Ethane	0.23	0.60	0.23	0.076	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Group USA, Corp.**
Client Sample ID: **67WW08-112817-FD**

ALS Project ID: P1706026
ALS Sample ID: P1706026-002

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Mike Conejo
Matrix: Water
Test Notes:

Date Collected: 11/28/17
Date Received: 12/1/17
Date Analyzed: 12/12/17
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**1.6**	1.3	0.63	0.30	
74-85-1	Ethene	0.22	1.0	0.22	0.071	**U**
74-84-0	Ethane	0.23	0.60	0.23	0.076	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Group USA, Corp.**
Client Sample ID: **67WW13-112817**

ALS Project ID: P1706026
ALS Sample ID: P1706026-003

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Mike Conejo
Matrix: Water
Test Notes:

Date Collected: 11/28/17
Date Received: 12/1/17
Date Analyzed: 12/12/17
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**0.32**	1.3	0.63	0.30	**J**
74-85-1	Ethene	0.22	1.0	0.22	0.071	**U**
74-84-0	Ethane	0.23	0.60	0.23	0.076	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

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ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Group USA, Corp.**
Client Sample ID: **Method Control Sample**

ALS Project ID: P1706026
ALS Sample ID: P171212-MB

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Mike Conejo
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 12/12/17
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	0.63	1.3	0.63	0.30	**U**
74-85-1	Ethene	0.22	1.0	0.22	0.071	**U**
74-84-0	Ethane	0.23	0.60	0.23	0.076	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Group USA, Corp.**
Client Sample ID: **Duplicate Lab Control Sample**

ALS Project ID: P1706026
ALS Sample ID: P171212-LCS
P171212-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Mike Conejo
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 12/12/17
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount LCS / DLCS µg/L	Result$_1$ LCS µg/L	Result$_1$ DLCS µg/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-82-8	Methane	2.50	2.65	2.62	**106**	**105**	73-125	0.9	12	
74-85-1	Ethene	4.37	4.60	4.84	**105**	**111**	72-133	6	7	
74-84-0	Ethane	4.69	4.52	4.65	**96**	**99**	74-131	3	6	

$_1$ = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

RIGHT SOLUTIONS | RIGHT PARTNER

ALS ENVIRONMENTAL

MATRIX SPIKE / DUPLICATE MATRIX SPIKE SUMMARY

Client: **ALS Group USA, Corp.**
Client Sample ID: **67WW13-112817**

ALS Project ID: P1706026
ALS Sample ID: P1706026-003MS
P1706026-003DMS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Mike Conejo
Matrix: Water
Test Notes:

Date Collected: 11/28/17
Date Received: 12/1/17
Date Analyzed: 12/12/17
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount MS / DMS µg/L	Sample Amount µg/L	Result MS µg/L	Result DMS µg/L	% Recovery MS	% Recovery DMS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-82-8	Methane	6,700	0.320	5,750	5,620	**86**	**84**	73-125	2	30	

RIGHT SOLUTIONS | RIGHT PARTNER

ADR Data Validation Checklist
Methane, Ethane, Ethene by RSK175

Project Name:	LHAAP-67	SDG/Report No.:	HS17111395 (P1706026)
Project No.:	501032	Lab ID:	Empirical Labs
No. of Samples:	2 Originals & 1 FD	Matrix:	GW
1st ADR / 2nds	SP		

Automated Data Review (ADR) was performed for all areas. Review of these areas was performed manually and the results of the validation findings are identified in this report. It should also be noted that the ADR produces "Outlier Reports" for areas where anomalies are noted. If all QC criterions are met, no "Outlier Reports" are generated.

ADR Generated Reports (Copies Attached):

EDD Nonconformance Report
Field QC and Associated Sample Report*
Outlier Reports
Sample Qualification Report with Reason Codes

SHAWVIEW Generated Reports (Copies Attached):

QC Checkprint (QCVALDNT) Report

* Note: If field QC samples (i.e. TB, ER, FB, etc.) are reported in another SDG, the SDG, blanks, detected contaminants, and associated samples are identified in the comment/discussion section provided below

All areas evaluated by **DoD_5.0** and/or SW846 methods and the identification as to whether qualification is necessary are identified below:

Area Evaluated	ADR Outlier Reports	Qualification Necessary (ADR and Manual Validation)	
		YES	NO
1. Hold Time/Preservation.			X
2. BFB Tune.			X
3. ICAL (RRF and/or %RSD)			X
4. CCAL (RRF and/or %D)			X
5. Blanks (Method and/or Field QC)			X
6. LCS			X
7. MS/MSD			X
8. Field Duplicate		X	
10. Form1 vs Database/ADR			X

The following section is intended to specify areas evaluated and to provide an explanation (as applicable) for those areas where changes in ADR qualifiers were identified during the manual review and to provide an explanation (as applicable) for the need of additional qualifiers identified during the manual review.

Comments/Discussion:

Associated samples (3): 67WW08-112817, 67WW08-112817-FD, and 67WW13-112817
1. Hold Time/Preservation (QAPP - Worksheet#19/SW846/ASTM methods).
No Qualification Necessary
Rec'd <6ºC; collected: 11/28/2017; analyze: 11/20/2017

ADR Data Validation Checklist
Methane, Ethane, Ethene by RSK175

2. BFB Tune (instr. performance criteria)
No Qualification Necessary
3. ICAL (EPA RSKSOP-175; 20%RSD or R>0.995)
No Qualification Necessary
4. CCAL (EPA RSKSOP-175; 15%D)
No Qualification Necessary
5. Blanks "UB" (EPA Region 3&4: Method and/or Field QC)
No Qualification Necessary
P171212-MB – Results were nondetect.
6. LCS (QAPP – Worksheet#12/#28)
No Qualification Necessary
P171212-LCS/LCSD – Criteria were met.
7. MS/MSD (QAPP – Worksheet#12/#28)
No Qualification Necessary
67WW13-112817-MS/MSD – Criteria met.
8. Field Duplicate (QAPP – Worksheet#35 - WATERS 20% / SOILS 50%)
(non-detect & result <RL no qualifiers / non-detect & result >RL "J/UJ" qualifiers)
No Qualification Necessary
67WW08-112817/67WW08-112817-FD
Methane – 2.0 ug/L / 1.6 ug/L; RPD = 22.22%; Qualify Methane estimated, J-17. All other met criteria.
9. Form 1 vs Database/ADR
Check laboratory's Form1 against Database; one sample per SDG per fraction; list sample number:
10. Multiple Results
No Qualification Necessary

ADR Data Validation Checklist
Semivolatile Organics by SW846 8270D

Project Name:	Longhorn AAP (LHAAP-12)	SDG/Report No.:	HS17111395
Project No.:	501032	Lab ID:	Empirical Labs
No. of Samples:	2 Originals & 1 FD	Matrix:	GW
1ST ADR / 2ND BY	SP		

Automated Data Review (ADR) was performed for all areas evaluate except Internal Standards. 2nd Review of these areas and retention times was performed manually and the results of the validation findings are identified in this report. It should also be noted that the ADR produces "Outlier Reports" for areas where anomalies are noted. If all QC criterions are met, no "Outlier Reports" are generated.

ADR Generated Reports:

EDD Nonconformance Report
Field QC and Associated Sample Report*
Outlier Reports
Sample Qualification Report with Reason Codes

SHAWVIEW Generated Reports:

QC Checkprint (QCVALDNT) Report

* Note: If field QC samples (i.e. ER, FB, etc.) are reported in another SDG, the SDG, blanks, detected contaminants, and associated samples are identified in the comment/discussion section provided below

All areas evaluated by **DoD_5.0** and/or SW846-8270 methods and the identification as to whether qualification is necessary is identified below:

Area Evaluated	ADR Outlier Reports	Qualification Necessary (ADR and Manual Validation)	
		YES	NO
1. Hold Time/Preservation.			X
2. DFTPP Tune			X
3. ICAL (RRF and/or 15%RSD)			X
4. CCAL opening (RRF and/or 20%D)			X
5. CCAL closing (%D<±50%)			X
6. Blanks (Method and/or Field QC)			X
7. LCS			X
8. Surrogates			X
9. MS/MSD			X
10. Field Duplicate		X	
11. Internal Standards			X
12. Form1 vs Database/ADR			X

The following section is intended to specify areas evaluated and to provide an explanation (as applicable) for those areas where changes in ADR qualifiers were identified during the manual review and to provide an explanation (as applicable) for the need of additional qualifiers identified during the manual review.

Comments/Discussion:

ADR Data Validation Checklist
Semivolatile Organics by SW846 8270D

Associated samples (3): 67WW08-112817, 67WW08-112817-FD, and 67WW13-112817
1. Hold Time/Preservation (QAPP - Worksheet#19/SW846/ASTM methods & EPA/600/R-05/124) .
No Qualifications Necessary
Rec'd <6ºC; collected 11/28/2017; prepped 12/01/2017; analyzed 12/07/2017
2. DFTPP Tune (instr. performance criteria).
No Qualifications Necessary
3. ICAL (DoD_5.0≤15%RSD or R^2>0.99 and/ SW846 8270 RRF's: J/UJ < recommended criteria)
No Qualifications Necessary
4. ICV (20%D only) / CCAL opening (DoD_5.0/SW846 8270 %D≤20% and SW846 8270 RRF's; J/UJ < recommended criteria)
No Qualifications Necessary
5. Closing CCV (DoD_5.0: %D<±50%) (if applicable by lab)
No Qualification Necessary
6. Blanks "UB" 5X/10X (EPA Region 3&4: Method and/or Field QC)
No Qualifications Necessary
MB MBLK-122811 – Result was nondetect.
7. LCS (QAPP – Worksheet#12/#28)
No Qualification Necessary
LCS LCS-122811 – Criteria was met.
8. Surrogates (QAPP – Worksheet#12/#28);; (note: for water analysis, surrogate phenol-d6 is not listed in 5.0 and listed as advisory in 4.2)
No Qualifications Necessary
Criteria were met.
9. MS/MSD (QAPP – Worksheet#12/#28; parent sample only)
No Qualifications Necessary
67WW13-112817-MS/MSD – %Rs: > 4X spike value; therefore, no qualification.
10. Field Duplicate (QAPP – Worksheet#35 - WATERS ≤20% / SOILS ≤50%)
(non-detect & result <RL or both <RL no qualifiers / non-detect & result >RL "J/UJ" qualifiers)
Qualifications Necessary
67WW08-112817/67WW08-112817-FD – 22 ug/L / 29 ug/L; RPD = 27.45; Qualify estimated, J-17

ADR Data Validation Checklist
Semivolatile Organics by SW846 8270D

11.Internal Standards (DoD/QAPP – Worksheet#12/#28; -50% to +100% and RT ±0.5sec)
No Qualifications Necessary
12. Form 1 vs Database/ADR
Check laboratory's Form1 against Database; one sample per SDG per fraction; list sample number:
13. Multiple Results
No Qualifications Necessary

ADR Data Validation Checklist
Volatile Organics by SW846 8260C

Project Name:	LHAAP-67	SDG/Report No.:	HS17111395
Project No.:		Lab ID:	ALS-Houston
No. of Samples:	2 Originals & 1 FD	Matrix:	GW
1ST ADR / 2nd by	SP		

Automated Data Review (ADR) was performed for all areas evaluate except internal standards. 2ND Review of these areas was performed manually and the results of the validation findings are identified in this report. It should also be noted that the ADR produces "Outlier Reports" for areas where anomalies are noted. If all QC criterions are met, no "Outlier Reports" are generated.

ADR Generated Reports

EDD Nonconformance Report
Field QC and Associated Sample Report*
Outlier Reports
Sample Qualification Report with Reason Codes

EQUiS Generated Reports (Copies Attached):

QC Checkprint (QCVALDNT) Report

* Note: If field QC samples (i.e. TB, ER, FB, etc.) are reported in another SDG, the SDG, blanks, detected contaminants, and associated samples are identified in the comment/discussion section provided below

All areas evaluated by **DoD_5.0** and/or SW846 8260 methods and the identification as to whether qualification is necessary are identified below:

Area Evaluated	ADR Outlier Reports	Qualification Necessary (ADR and Manual Validation)	
		YES	NO
1. Hold Time/Preservation.			X
2. BFB Tune.			X
3. ICAL (RRF and/or %RSD)			X
4. CCAL opening (RRF and/or 20% D)			X
5. CCAL closing (%D<±50%)			X
6. Blanks (Method and/or Field QC)			X
7. LCS			X
8. Surrogates			X
9. MS/MSD		X	
10. Field Duplicate			X
11. Internal Standards			X
12. Form1 vs Database/ADR			X

The following section is intended to specify areas evaluated and to provide an explanation (as applicable) for those areas where changes in ADR qualifiers were identified during the manual review and to provide an explanation (as applicable) for the need of additional qualifiers identified during the manual review.

Comments/Discussion:

Associated samples (3): 67WW08-112817, 67WW08-112817-FD, and 67WW13-112817

ADR Data Validation Checklist
Volatile Organics by SW846 8260C

1. Hold Time/Preservation (QAPP - Worksheet#19/SW846/ASTM methods).
No Qualification Necessary
Rec'd <6ºC; collected 11/28/2017; analyzed 12/5/2017
2. BFB Tune (instr. performance criteria)
No Qualification Necessary
3. ICAL (DoD: RSD≤15% or linear R^2≥0.99 and Avg RRF's; 2-butanone & acetone >0.05; J/UJ < recommended criteria)
No Qualification Necessary
4. ICV (20%D only) /CCAL opening (DoD: %D≤20% and/or SW846 8260 Table 4 Avg RRF's: J/UJ < recommended criteria)
No Qualification Necessary
5. Closing CCV (DoD_5.0: %D<±50%) (if applicable by lab)
No Qualification Necessary
6. Blanks "UB" 5X/10X (EPA Region 3&4: Method and/or Field QC)
No Qualification Necessary
TB 67TB02-112817 – Results are nondetect.
VBLKW-171205 – Results are nondetect.
7. LCS (QAPP – Worksheet#12/#28)
No Qualification Necessary
VLCSW-171205 – Acetone (146%); Sample results were nondetect; Therefore, due to high bias, no qualification required.
8. Surrogates (QAPP - Worksheet#12/#28)
No Qualification Necessary – All recoveries were within acceptance criteria.
9. MS/MSD (DoD/QAPP – Worksheet#12/#28; parent sample only)
Qualification Necessary
67WW13-112817MS/MSD – %Rs: 1,1-Dichloroethene (-6.36%/-35.1%), Bromomethane (64.5%/ok), trans-1,2-Dichloroethene (132%/ok); RPDs: 1,1-Dichloroethane (21.4), Methylene chloride (31.4), trans-1,2-Dichloroethene (33.4%); Parent concentration of 1,1-dichloroethene is 4x greater than the spike concentration and therefore, no qualification is required; Qualify bromomethane estimated, UJ-08A & 1,1-dichloroethene, methylene chloride, and trans-1,2-dichloroethene estimated, J/UJ-08B, for sample 67WW13-112817.

ADR Data Validation Checklist
Volatile Organics by SW846 8260C

10. Field Duplicate (QAPP – Worksheet#12 - WATERS ≤20% / SOILS ≤50%)

(non-detect & result <RL or both <RL no qualifiers / non-detect & result >RL "J/UJ" qualifiers)

No Qualification Necessary – Criteria were met.

67WW08-112817/67WW08-112817-FD

VOCs	Method	Units	67WW08-112817	LQ	67WW08-112817-FD	LQ	%RPD
1,1-Dichloroethane	8260B	ug/kg	15		18		18.18
1,1-Dichloroethene	8260B	ug/kg	340		350		2.90
1,2-Dichloroethane	8260B	ug/kg	13		13		0.00

11.Internal Standards (DoD/QAPP – Worksheet#12/#28; -50% to +100% and RT ±0.5sec)

No Qualification Necessary

12. Form 1 vs Database/ADR

Check laboratory's Form1 against Database; one sample per SDG per fraction; list sample number:

13. Multiple Results

No Qualification Necessary

ADR Data Validation Checklist
WetChem

Project Name:	LHAAP-67	SDG/Report No.:	HS17111395
Project No.:	501032	Lab ID:	Empirical Labs
No. of Samples:	2 Originals & 1 FD	Analysis:	Anions, TOC, TIC, Sulfide
1st ADR / 2nd by	SP		

Automated Data Review (ADR) was performed for all areas except where professional judgment is applicable. Review of these areas was performed manually by **DoD_5.0** and **SW846 methods** and the results of the validation findings are identified in this report. It should also be noted that the ADR produces "Outlier Reports" for areas where anomalies are noted. If all QC criterions are met, no "Outlier Reports" are generated.

ADR Generated Reports (Copies Attached):

EDD Nonconformance Report
Field QC and Associated Sample Report*
Outlier Reports
Sample Qualification Report with Reason Codes

Generated Reports (Copies Attached):

QC Checkprint (QCVALDNT) Report

* Note: If field QC samples (i.e. TB, ER, FB, etc.) are reported in another SDG, the SDG, blanks, detected contaminants, and associated samples are identified in the comment/discussion section provided below

All areas evaluated by **DoD_5.0** and **SW846** methods and the identification as to whether qualification is necessary are identified below:

Area Evaluated	ADR Outlier Reports	Qualification Necessary (ADR and Manual Validation)	
		YES	NO
1. Hold Time/Preservation.			X
2. ICAL			X
3. CCAL			X
4. Limit of Detection Verification (LODV)			X
5. Blanks (Method, Calibration and/or Field QC)			X
6. LCS			X
7. Duplicate Analysis			X
8. MS/MSD			X
9. Field Duplicate		X	
10. Form1 vs Database/ADR			X

The following section is intended to specify areas evaluated and to provide an explanation (as applicable) for those areas where changes in ADR qualifiers were identified during the manual review and to provide an explanation (as applicable) for the need of additional qualifiers identified during the manual review.

Comments/Discussion:

Associated samples (3): 67WW08-112817, 67WW08-112817-FD, and 67WW13-112817

ADR Data Validation Checklist
WetChem

1. Hold Time/Preservation. (QAPP - Worksheet#19/SW846/ASTM methods)
No Qualification Necessary
Rec'd <6ºC; collected 11/28/2017; analyzed: anions – 11/8/2017
Professional judgment – no qualification for hold time.
2. ICAL (QAPP - Worksheet#19/SW846/ASTM methods: RSD≤20%/r≥0.995)
No Qualification Necessary
3. ICV/CCAL (QAPP - Worksheet#19/SW846/ASTM methods: ±15%D)
No Qualification Necessary
4. Limit of Detection Verification (LODV) (QAAP/DoD_4.2; ±30%D)
No Qualification Necessary
5. Blanks "UB" (EPA Region 3&4: Method and/or Field QC)
No Qualification Necessary
All MBs – Results were nondetect.
MB WMBLKW1-120617 – TOC; 0.5461 U ug/L (5X=2.7305); All results greater than 5X concentration.
6. LCS (QAPP - Worksheet#19/#28)
No Qualification Necessary
All LCS – Criteria were met.
7. Duplicate Analysis (QAPP - Worksheet#19/SW846/ASTM methods DoD-4.2<15%)
No Qualification Necessary
8. MS/MSD (QAPP - Worksheet#19/#28; DoD_4.2= ±20%MS/MSD / 15%RPD)
No Qualification Necessary
67WW13-112817-MS/MSD – Criteria were met where parent sample concentrations did not exceed 4X the spike concentrations.
9. Field Duplicate (QAPP – worksheet#35: 20% waters / 50% soils)
(non-detect & result <RL no qualifiers / non-detect & result >RL "J/UJ" qualifiers)
Qualification Necessary
67WW08-112817/67WW08-112817-FD – Qualify sulfate estimated, J-17.

ADR Data Validation Checklist
WetChem

VOCs	Method	Units	67WW08-112817	LQ	67WW08-112817-FD	LQ	%RPD
Sulfide	E376.1	mg/L	1.48		1.48		0.00
Chloride	E300.0	mg/L	1600		1590		0.63
Nitrate	E300.0	mg/L	0	U	0	U	#DIV/0!
Nitrite	E300.0	mg/L	0	U	0	U	#DIV/0!
Sulfate	E300.0	mg/L	4290		440		162.79
TIC	9060	mg/L	130		140		7.41
TOC	9060	mg/L	3.99		4		0.25

10. Form 1 vs Database/ADR

Check laboratory's Form1 against Database; minimum one sample per SDG per fraction; list sample number:

11. Multiple Results

No Qualification Necessary

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WorkOrder: HS17111408

LHAAP-67

Aptim Environmental & Infrastucture, Inc.

Jennifer Hoang
2500 City West Blvd., Suite 1700
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06-Feb-2018

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December 07, 2017

Jennifer Hoang
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS17111408**

Laboratory Results for: **LHAAP-67**

Dear Jennifer,

ALS Environmental received 8 sample(s) on Nov 29, 2017 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Sonia West

Generated By: Jumoke.Lawal
Sonia West
Project Manager

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
Work Order: HS17111408

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS17111408-01	67WW14-112717	Groundwater		27-Nov-2017 08:30	29-Nov-2017 09:00	☐
HS17111408-02	67WW15-112717	Groundwater		27-Nov-2017 09:50	29-Nov-2017 09:00	☐
HS17111408-03	67WW09-112717	Groundwater		27-Nov-2017 10:40	29-Nov-2017 09:00	☐
HS17111408-04	67WW11-112717	Groundwater		27-Nov-2017 11:35	29-Nov-2017 09:00	☐
HS17111408-05	67WW05-112817	Groundwater		28-Nov-2017 07:55	29-Nov-2017 09:00	☐
HS17111408-06	67WW02-112817	Groundwater		28-Nov-2017 08:25	29-Nov-2017 09:00	☐
HS17111408-07	67WW01-112817	Groundwater		28-Nov-2017 08:45	29-Nov-2017 09:00	☐
HS17111408-08	Trip Blank	Water	ALS 110717-41	28-Nov-2017 00:01	29-Nov-2017 09:00	☐

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: LHAAP-67
Work Order: HS17111408

GCMS Semivolatiles by Method SW8270SIM

Batch ID: 122811

Sample ID: 67WW01-112817 (HS17111408-07)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.
- The surrogate recoveries could not be determined due to dilution below the calibration range.

Sample ID: 67WW02-112817 (HS17111408-06)

- High %R for surrogated 2-Fluorobiphenyl, it is not associated with target compound.
- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: 67WW05-112817 (HS17111408-05)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: 67WW09-112717 (HS17111408-03)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: 67WW11-112717 (HS17111408-04)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.
- The surrogate recoveries could not be determined due to dilution below the calibration range.

Sample ID: 67WW14-112717 (HS17111408-01)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.
- The surrogate recoveries could not be determined due to dilution below the calibration range.

Sample ID: 67WW15-112717 (HS17111408-02)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.
- The surrogate recoveries could not be determined due to dilution below the calibration range.

Sample ID: HS17111395-03MS

- MS and MSD are for an unrelated sample

Sample ID: LCS-122811

- High %R for surrogate 2-Fluorobiphenyl, it is not associated with target compound.

Sample ID: MBLK-122811

- High %R for surrogate 2-Fluorobiphenyl, it is not associated with target compound.

GCMS Volatiles by Method SW8260

Batch ID: R306484

Sample ID: HS17120056-01MSD

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
Work Order: HS17111408

CASE NARRATIVE

GCMS Volatiles by Method SW8260

Batch ID: R306484

- MSD is for an unrelated sample

Batch ID: R306626

Sample ID: VLCSW-171205

- Acetone exceeded %recovery limits on LCS. Samples ND.

Sample ID: HS17111395-03MS

- MS and MSD are for an unrelated sample.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
Sample ID: 67WW14-112717
Collection Date: 27-Nov-2017 08:30

ANALYTICAL REPORT
WorkOrder:HS17111408
Lab ID:HS17111408-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:52
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 05:52
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 05:52
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:52
1,1-Dichloroethene	**5.6**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Dec-2017 05:52
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 05:52
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 05:52
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 05:52
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	03-Dec-2017 05:52
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:52
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 05:52
1,2-Dichloroethane	**3.1**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Dec-2017 05:52
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 05:52
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 05:52
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 05:52
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:52
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	03-Dec-2017 05:52
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	03-Dec-2017 05:52
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 05:52
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	03-Dec-2017 05:52
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	03-Dec-2017 05:52
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	03-Dec-2017 05:52
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
Sample ID: 67WW14-112717
Collection Date: 27-Nov-2017 08:30

ANALYTICAL REPORT
WorkOrder:HS17111408
Lab ID:HS17111408-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:52
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:52
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	03-Dec-2017 05:52
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	03-Dec-2017 05:52
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 05:52
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:52
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:52
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Surr: 1,2-Dichloroethane-d4	*95.4*			**0**	*70-126*	*%REC*	*1*	*03-Dec-2017 05:52*
Surr: 4-Bromofluorobenzene	*99.0*			**0**	*81-113*	*%REC*	*1*	*03-Dec-2017 05:52*
Surr: Dibromofluoromethane	*90.0*			**0**	*77-123*	*%REC*	*1*	*03-Dec-2017 05:52*
Surr: Toluene-d8	*103*			**0**	*82-127*	*%REC*	*1*	*03-Dec-2017 05:52*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 01-Dec-2017		Analyst: ACN
1,4-Dioxane	**17**		**1.0**	**1.0**	**1.0**	**ug/L**	100	07-Dec-2017 13:39
Surr: 2-Fluorobiphenyl	*0*	*S*		0	*40-140*	*%REC*	*100*	*07-Dec-2017 13:39*
Surr: 4-Terphenyl-d14	*0*	*S*		0	*40-140*	*%REC*	*100*	*07-Dec-2017 13:39*
Surr: Nitrobenzene-d5	*0*	*S*		0	*40-140*	*%REC*	*100*	*07-Dec-2017 13:39*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
Sample ID: 67WW15-112717
Collection Date: 27-Nov-2017 09:50

ANALYTICAL REPORT
WorkOrder:HS17111408
Lab ID:HS17111408-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:00
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 18:00
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 18:00
1,1,2-Trichloroethane	**5.6**		**0.30**	**0.50**	**1.0**	**ug/L**	1	05-Dec-2017 18:00
1,1-Dichloroethane	**11**		**0.20**	**0.50**	**1.0**	**ug/L**	1	05-Dec-2017 18:00
1,1-Dichloroethene	**510**		**1.0**	**2.5**	**5.0**	**ug/L**	5	05-Dec-2017 18:28
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 18:00
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 18:00
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 18:00
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	05-Dec-2017 18:00
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:00
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 18:00
1,2-Dichloroethane	**27**		**0.20**	**0.50**	**1.0**	**ug/L**	1	05-Dec-2017 18:00
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 18:00
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 18:00
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 18:00
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:00
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	05-Dec-2017 18:00
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	05-Dec-2017 18:00
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 18:00
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	05-Dec-2017 18:00
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	05-Dec-2017 18:00
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	05-Dec-2017 18:00
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
Sample ID: 67WW15-112717
Collection Date: 27-Nov-2017 09:50

ANALYTICAL REPORT
WorkOrder:HS17111408
Lab ID:HS17111408-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:00
cis-1,2-Dichloroethene	**1.5**		**0.20**	**0.50**	**1.0**	**ug/L**	1	05-Dec-2017 18:00
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	05-Dec-2017 18:00
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	05-Dec-2017 18:00
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 18:00
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:00
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:00
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Surr: 1,2-Dichloroethane-d4	*97.0*			**0**	*70-126*	*%REC*	*1*	*05-Dec-2017 18:00*
Surr: 1,2-Dichloroethane-d4	*97.0*			**0**	*70-126*	*%REC*	*5*	*05-Dec-2017 18:28*
Surr: 4-Bromofluorobenzene	*99.5*			**0**	*81-113*	*%REC*	*5*	*05-Dec-2017 18:28*
Surr: 4-Bromofluorobenzene	*98.4*			**0**	*81-113*	*%REC*	*1*	*05-Dec-2017 18:00*
Surr: Dibromofluoromethane	*90.8*			**0**	*77-123*	*%REC*	*1*	*05-Dec-2017 18:00*
Surr: Dibromofluoromethane	*91.8*			**0**	*77-123*	*%REC*	*5*	*05-Dec-2017 18:28*
Surr: Toluene-d8	*105*			**0**	*82-127*	*%REC*	*5*	*05-Dec-2017 18:28*
Surr: Toluene-d8	*104*			**0**	*82-127*	*%REC*	*1*	*05-Dec-2017 18:00*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
Sample ID: 67WW15-112717
Collection Date: 27-Nov-2017 09:50

ANALYTICAL REPORT
WorkOrder:HS17111408
Lab ID:HS17111408-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES SIM	**Method:SW8270SIM**					Prep:SW3510 / 01-Dec-2017		Analyst: ACN
1,4-Dioxane	**12**		**1.0**	**1.0**	**1.0**	**ug/L**	100	07-Dec-2017 13:59
Surr: 2-Fluorobiphenyl	*0*	*S*		0	*40-140*	*%REC*	*100*	*07-Dec-2017 13:59*
Surr: 4-Terphenyl-d14	*0*	*S*		0	*40-140*	*%REC*	*100*	*07-Dec-2017 13:59*
Surr: Nitrobenzene-d5	*0*	*S*		0	*40-140*	*%REC*	*100*	*07-Dec-2017 13:59*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
Sample ID: 67WW09-112717
Collection Date: 27-Nov-2017 10:40

ANALYTICAL REPORT
WorkOrder:HS17111408
Lab ID:HS17111408-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 06:17
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:17
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	03-Dec-2017 06:17
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	03-Dec-2017 06:17
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 06:17
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	03-Dec-2017 06:17
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	03-Dec-2017 06:17
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	03-Dec-2017 06:17
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
Sample ID: 67WW09-112717
Collection Date: 27-Nov-2017 10:40

ANALYTICAL REPORT
WorkOrder:HS17111408
Lab ID:HS17111408-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:17
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:17
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	03-Dec-2017 06:17
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	03-Dec-2017 06:17
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 06:17
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:17
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:17
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Surr: 1,2-Dichloroethane-d4	*97.3*			**0**	*70-126*	*%REC*	*1*	*03-Dec-2017 06:17*
Surr: 4-Bromofluorobenzene	*100*			**0**	*81-113*	*%REC*	*1*	*03-Dec-2017 06:17*
Surr: Dibromofluoromethane	*91.3*			**0**	*77-123*	*%REC*	*1*	*03-Dec-2017 06:17*
Surr: Toluene-d8	*103*			**0**	*82-127*	*%REC*	*1*	*03-Dec-2017 06:17*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 01-Dec-2017		Analyst: ACN
1,4-Dioxane	**1.2**		**0.10**	**0.10**	**0.10**	**ug/L**	10	05-Dec-2017 20:50
Surr: 2-Fluorobiphenyl	*106*			**0**	*40-140*	*%REC*	*10*	*05-Dec-2017 20:50*
Surr: 4-Terphenyl-d14	*73.4*			**0**	*40-140*	*%REC*	*10*	*05-Dec-2017 20:50*
Surr: Nitrobenzene-d5	*71.3*			**0**	*40-140*	*%REC*	*10*	*05-Dec-2017 20:50*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
Sample ID: 67WW11-112717
Collection Date: 27-Nov-2017 11:35

ANALYTICAL REPORT
WorkOrder:HS17111408
Lab ID:HS17111408-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:41
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 06:41
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 06:41
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
1,1-Dichloroethane	**3.6**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Dec-2017 06:41
1,1-Dichloroethene	**5.2**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Dec-2017 06:41
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 06:41
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 06:41
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 06:41
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	03-Dec-2017 06:41
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:41
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 06:41
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:41
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 06:41
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 06:41
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 06:41
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:41
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	03-Dec-2017 06:41
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	03-Dec-2017 06:41
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 06:41
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	03-Dec-2017 06:41
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	03-Dec-2017 06:41
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	03-Dec-2017 06:41
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
Sample ID: 67WW11-112717
Collection Date: 27-Nov-2017 11:35

ANALYTICAL REPORT
WorkOrder:HS17111408
Lab ID:HS17111408-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:41
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:41
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	03-Dec-2017 06:41
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	03-Dec-2017 06:41
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 06:41
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:41
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:41
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Surr: 1,2-Dichloroethane-d4	*97.9*			**0**	*70-126*	*%REC*	*1*	*03-Dec-2017 06:41*
Surr: 4-Bromofluorobenzene	*100*			**0**	*81-113*	*%REC*	*1*	*03-Dec-2017 06:41*
Surr: Dibromofluoromethane	*93.0*			**0**	*77-123*	*%REC*	*1*	*03-Dec-2017 06:41*
Surr: Toluene-d8	*103*			**0**	*82-127*	*%REC*	*1*	*03-Dec-2017 06:41*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 01-Dec-2017		Analyst: ACN
1,4-Dioxane	**18**		**1.0**	**1.0**	**1.0**	**ug/L**	100	07-Dec-2017 14:19
Surr: 2-Fluorobiphenyl	*0*	*S*		0	*40-140*	*%REC*	*100*	*07-Dec-2017 14:19*
Surr: 4-Terphenyl-d14	*0*	*S*		0	*40-140*	*%REC*	*100*	*07-Dec-2017 14:19*
Surr: Nitrobenzene-d5	*0*	*S*		0	*40-140*	*%REC*	*100*	*07-Dec-2017 14:19*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
Sample ID: 67WW05-112817
Collection Date: 28-Nov-2017 07:55

ANALYTICAL REPORT
WorkOrder:HS17111408
Lab ID:HS17111408-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 07:06
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:06
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	03-Dec-2017 07:06
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	03-Dec-2017 07:06
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 07:06
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	03-Dec-2017 07:06
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	03-Dec-2017 07:06
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	03-Dec-2017 07:06
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
Sample ID: 67WW05-112817
Collection Date: 28-Nov-2017 07:55

ANALYTICAL REPORT
WorkOrder:HS17111408
Lab ID:HS17111408-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:06
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:06
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	03-Dec-2017 07:06
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	03-Dec-2017 07:06
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 07:06
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:06
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:06
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Surr: 1,2-Dichloroethane-d4	*96.4*			**0**	*70-126*	*%REC*	*1*	*03-Dec-2017 07:06*
Surr: 4-Bromofluorobenzene	*97.9*			**0**	*81-113*	*%REC*	*1*	*03-Dec-2017 07:06*
Surr: Dibromofluoromethane	*89.4*			**0**	*77-123*	*%REC*	*1*	*03-Dec-2017 07:06*
Surr: Toluene-d8	*103*			**0**	*82-127*	*%REC*	*1*	*03-Dec-2017 07:06*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 01-Dec-2017		Analyst: ACN
1,4-Dioxane	**0.53**		**0.10**	**0.10**	**0.10**	**ug/L**	10	05-Dec-2017 21:32
Surr: 2-Fluorobiphenyl	*111*			**0**	*40-140*	*%REC*	*10*	*05-Dec-2017 21:32*
Surr: 4-Terphenyl-d14	*95.6*			**0**	*40-140*	*%REC*	*10*	*05-Dec-2017 21:32*
Surr: Nitrobenzene-d5	*65.9*			**0**	*40-140*	*%REC*	*10*	*05-Dec-2017 21:32*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
Sample ID: 67WW02-112817
Collection Date: 28-Nov-2017 08:25

ANALYTICAL REPORT
WorkOrder:HS17111408
Lab ID:HS17111408-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 07:30
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:30
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	03-Dec-2017 07:30
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	03-Dec-2017 07:30
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 07:30
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	03-Dec-2017 07:30
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	03-Dec-2017 07:30
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	03-Dec-2017 07:30
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
Sample ID: 67WW02-112817
Collection Date: 28-Nov-2017 08:25

ANALYTICAL REPORT
WorkOrder:HS17111408
Lab ID:HS17111408-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:30
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:30
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	03-Dec-2017 07:30
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	03-Dec-2017 07:30
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 07:30
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:30
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:30
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Surr: 1,2-Dichloroethane-d4	*94.5*			**0**	*70-126*	*%REC*	*1*	*03-Dec-2017 07:30*
Surr: 4-Bromofluorobenzene	*99.0*			**0**	*81-113*	*%REC*	*1*	*03-Dec-2017 07:30*
Surr: Dibromofluoromethane	*89.8*			**0**	*77-123*	*%REC*	*1*	*03-Dec-2017 07:30*
Surr: Toluene-d8	*104*			**0**	*82-127*	*%REC*	*1*	*03-Dec-2017 07:30*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 01-Dec-2017		Analyst: ACN
1,4-Dioxane	**0.26**		**0.10**	**0.10**	**0.10**	**ug/L**	10	05-Dec-2017 21:52
Surr: 2-Fluorobiphenyl	*143*	*S*		**0**	*40-140*	*%REC*	*10*	*05-Dec-2017 21:52*
Surr: 4-Terphenyl-d14	*76.6*			**0**	*40-140*	*%REC*	*10*	*05-Dec-2017 21:52*
Surr: Nitrobenzene-d5	*66.9*			**0**	*40-140*	*%REC*	*10*	*05-Dec-2017 21:52*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
Sample ID: 67WW01-112817
Collection Date: 28-Nov-2017 08:45

ANALYTICAL REPORT
WorkOrder:HS17111408
Lab ID:HS17111408-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:52
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 18:52
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 18:52
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
1,1-Dichloroethane	**22**		**0.20**	**0.50**	**1.0**	**ug/L**	1	05-Dec-2017 18:52
1,1-Dichloroethene	**250**		**1.0**	**2.5**	**5.0**	**ug/L**	5	05-Dec-2017 19:19
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 18:52
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 18:52
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 18:52
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	05-Dec-2017 18:52
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:52
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 18:52
1,2-Dichloroethane	**28**		**0.20**	**0.50**	**1.0**	**ug/L**	1	05-Dec-2017 18:52
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 18:52
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 18:52
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 18:52
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:52
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	05-Dec-2017 18:52
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	05-Dec-2017 18:52
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 18:52
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	05-Dec-2017 18:52
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	05-Dec-2017 18:52
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	05-Dec-2017 18:52
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
Sample ID: 67WW01-112817
Collection Date: 28-Nov-2017 08:45

ANALYTICAL REPORT
WorkOrder:HS17111408
Lab ID:HS17111408-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:52
cis-1,2-Dichloroethene	**1.3**		**0.20**	**0.50**	**1.0**	**ug/L**	1	05-Dec-2017 18:52
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	05-Dec-2017 18:52
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	05-Dec-2017 18:52
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 18:52
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:52
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:52
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Trichloroethene	**2.1**		**0.20**	**0.50**	**1.0**	**ug/L**	1	05-Dec-2017 18:52
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Surr: 1,2-Dichloroethane-d4	*96.0*			**0**	*70-126*	*%REC*	*1*	*05-Dec-2017 18:52*
Surr: 1,2-Dichloroethane-d4	*94.5*			**0**	*70-126*	*%REC*	*5*	*05-Dec-2017 19:19*
Surr: 4-Bromofluorobenzene	*98.4*			**0**	*81-113*	*%REC*	*5*	*05-Dec-2017 19:19*
Surr: 4-Bromofluorobenzene	*100*			**0**	*81-113*	*%REC*	*1*	*05-Dec-2017 18:52*
Surr: Dibromofluoromethane	*87.7*			**0**	*77-123*	*%REC*	*5*	*05-Dec-2017 19:19*
Surr: Dibromofluoromethane	*90.1*			**0**	*77-123*	*%REC*	*1*	*05-Dec-2017 18:52*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*05-Dec-2017 18:52*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*5*	*05-Dec-2017 19:19*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
Sample ID: 67WW01-112817
Collection Date: 28-Nov-2017 08:45

ANALYTICAL REPORT
WorkOrder:HS17111408
Lab ID:HS17111408-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES SIM	**Method:SW8270SIM**					Prep:SW3510 / 01-Dec-2017		Analyst: ACN
1,4-Dioxane	**17**		**1.0**	**1.0**	**1.0**	**ug/L**	100	07-Dec-2017 14:40
Surr: 2-Fluorobiphenyl	*0*	*S*		0	*40-140*	*%REC*	*100*	*07-Dec-2017 14:40*
Surr: 4-Terphenyl-d14	*0*	*S*		0	*40-140*	*%REC*	*100*	*07-Dec-2017 14:40*
Surr: Nitrobenzene-d5	*0*	*S*		0	*40-140*	*%REC*	*100*	*07-Dec-2017 14:40*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
Sample ID: Trip Blank
Collection Date: 28-Nov-2017 00:01

ANALYTICAL REPORT
WorkOrder:HS17111408
Lab ID:HS17111408-08
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 05:27
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:27
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	03-Dec-2017 05:27
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	03-Dec-2017 05:27
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 05:27
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	03-Dec-2017 05:27
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	03-Dec-2017 05:27
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	03-Dec-2017 05:27
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
Sample ID: Trip Blank
Collection Date: 28-Nov-2017 00:01

ANALYTICAL REPORT
WorkOrder:HS17111408
Lab ID:HS17111408-08
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:27
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:27
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	03-Dec-2017 05:27
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	03-Dec-2017 05:27
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 05:27
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:27
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:27
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Surr: 1,2-Dichloroethane-d4	*96.7*			**0**	*70-126*	*%REC*	*1*	*03-Dec-2017 05:27*
Surr: 4-Bromofluorobenzene	*100*			**0**	*81-113*	*%REC*	*1*	*03-Dec-2017 05:27*
Surr: Dibromofluoromethane	*92.0*			**0**	*77-123*	*%REC*	*1*	*03-Dec-2017 05:27*
Surr: Toluene-d8	*103*			**0**	*82-127*	*%REC*	*1*	*03-Dec-2017 05:27*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp

Date: 07-Dec-17

WEIGHT LOG

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

Batch ID: 122811 **Method:** SEMIVOLATILES SIM **Prep:** 3510_B_SIM

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS17111408-01	1	1000	1 (mL)	0.001
HS17111408-02	1	1000	1 (mL)	0.001
HS17111408-03	1	1000	1 (mL)	0.001
HS17111408-04	1	1000	1 (mL)	0.001
HS17111408-05	1	1000	1 (mL)	0.001
HS17111408-06	1	1000	1 (mL)	0.001
HS17111408-07	1	1000	1 (mL)	0.001

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 122811	**Test Name :** SEMIVOLATILES SIM			**Matrix:** Groundwater		
HS17111408-01	67WW14-112717	27 Nov 2017 08:30		01 Dec 2017 11:32	07 Dec 2017 13:39	100
HS17111408-02	67WW15-112717	27 Nov 2017 09:50		01 Dec 2017 11:32	07 Dec 2017 13:59	100
HS17111408-03	67WW09-112717	27 Nov 2017 10:40		01 Dec 2017 11:32	05 Dec 2017 20:50	10
HS17111408-04	67WW11-112717	27 Nov 2017 11:35		01 Dec 2017 11:32	07 Dec 2017 14:19	100
HS17111408-05	67WW05-112817	28 Nov 2017 07:55		01 Dec 2017 11:32	05 Dec 2017 21:32	10
HS17111408-06	67WW02-112817	28 Nov 2017 08:25		01 Dec 2017 11:32	05 Dec 2017 21:52	10
HS17111408-07	67WW01-112817	28 Nov 2017 08:45		01 Dec 2017 11:32	07 Dec 2017 14:40	100
Batch ID R306484	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS17111408-08	Trip Blank	28 Nov 2017 00:01			03 Dec 2017 05:27	1
Batch ID R306484	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Groundwater		
HS17111408-01	67WW14-112717	27 Nov 2017 08:30			03 Dec 2017 05:52	1
HS17111408-03	67WW09-112717	27 Nov 2017 10:40			03 Dec 2017 06:17	1
HS17111408-04	67WW11-112717	27 Nov 2017 11:35			03 Dec 2017 06:41	1
HS17111408-05	67WW05-112817	28 Nov 2017 07:55			03 Dec 2017 07:06	1
HS17111408-06	67WW02-112817	28 Nov 2017 08:25			03 Dec 2017 07:30	1
Batch ID R306626	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Groundwater		
HS17111408-02	67WW15-112717	27 Nov 2017 09:50			05 Dec 2017 18:28	5
HS17111408-02	67WW15-112717	27 Nov 2017 09:50			05 Dec 2017 18:00	1
HS17111408-07	67WW01-112817	28 Nov 2017 08:45			05 Dec 2017 19:19	5
HS17111408-07	67WW01-112817	28 Nov 2017 08:45			05 Dec 2017 18:52	1

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: 122811 **Instrument: SV-5** **Method: SW8270SIM**

MBLK Sample ID: **MBLK-122811** Units: **ug/L** Analysis Date: **05-Dec-2017 18:27**
Client ID: Run ID: **SV-5_306756** SeqNo: **4340996** PrepDate: **01-Dec-2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.010	0.010								U
Surr: 2-Fluorobiphenyl	*0.1156*	*0*	*0.08*	*0*	*145*	*40 - 140*				S
Surr: 4-Terphenyl-d14	*0.09665*	*0*	*0.08*	*0*	*121*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.06716*	*0*	*0.08*	*0*	*84.0*	*40 - 140*				

LCS Sample ID: **LCS-122811** Units: **ug/L** Analysis Date: **05-Dec-2017 18:47**
Client ID: Run ID: **SV-5_306756** SeqNo: **4340997** PrepDate: **01-Dec-2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.08265	0.010	0.08	0	103	40 - 140				
Surr: 2-Fluorobiphenyl	*0.1238*	*0*	*0.08*	*0*	*155*	*40 - 140*				S
Surr: 4-Terphenyl-d14	*0.09844*	*0*	*0.08*	*0*	*123*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.07006*	*0*	*0.08*	*0*	*87.6*	*40 - 140*				

MS Sample ID: **HS17111395-03MS** Units: **ug/L** Analysis Date: **07-Dec-2017 16:02**
Client ID: Run ID: **SV-5_306756** SeqNo: **4341066** PrepDate: **01-Dec-2017** DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	33.52	1.0	0.08	35.66	-2670	40 - 140				SO
Surr: 2-Fluorobiphenyl	*0*	*0*	*0.08*	*0*	*0*	*40 - 140*				S
Surr: 4-Terphenyl-d14	*0*	*0*	*0.08*	*0*	*0*	*40 - 140*				S
Surr: Nitrobenzene-d5	*0*	*0*	*0.08*	*0*	*0*	*40 - 140*				S

MSD Sample ID: **HS17111395-03MSD** Units: **ug/L** Analysis Date: **07-Dec-2017 16:22**
Client ID: Run ID: **SV-5_306756** SeqNo: **4341067** PrepDate: **01-Dec-2017** DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	34.58	1.0	0.08	35.66	-1350	40 - 140	33.52	3.1	20	SO
Surr: 2-Fluorobiphenyl	*0*	*0*	*0.08*	*0*	*0*	*40 - 140*	*0*	*0*	*20*	S
Surr: 4-Terphenyl-d14	*0*	*0*	*0.08*	*0*	*0*	*40 - 140*	*0*	*0*	*20*	S
Surr: Nitrobenzene-d5	*0*	*0*	*0.08*	*0*	*0*	*40 - 140*	*0*	*0*	*20*	S

The following samples were analyzed in this batch: HS17111408-01, HS17111408-02, HS17111408-03, HS17111408-04, HS17111408-05, HS17111408-06, HS17111408-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306484 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-171202** Units: **ug/L** Analysis Date: **02-Dec-2017 23:44**
Client ID: Run ID: **VOA2_306484** SeqNo: **4333913** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306484 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-171202** Units: **ug/L** Analysis Date: **02-Dec-2017 23:44**
Client ID: Run ID: **VOA2_306484** SeqNo: **4333913** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	0.50	1.0								U
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	0.50	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*45.81*	*1.0*	*50*	*0*	*91.6*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*49.7*	*1.0*	*50*	*0*	*99.4*	*82 - 115*				
Surr: Dibromofluoromethane	*44.47*	*1.0*	*50*	*0*	*88.9*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306484 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-171202** Units: **ug/L** Analysis Date: **02-Dec-2017 23:44**
Client ID: Run ID: **VOA2_306484** SeqNo: **4333913** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*51.47*	*1.0*	*50*	*0*	*103*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306484 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-171202** Units: **ug/L** Analysis Date: **02-Dec-2017 22:31**
Client ID: Run ID: **VOA2_306484** SeqNo: **4333910** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	50.79	1.0	50	0	102	77 - 118				
1,1,1-Trichloroethane	53.16	1.0	50	0	106	70 - 130				
1,1,2,2-Tetrachloroethane	46.46	1.0	50	0	92.9	70 - 120				
1,1,2-Trichlor-1,2,2-trifluoroethane	53.67	1.0	50	0	107	70 - 130				
1,1,2-Trichloroethane	47.54	1.0	50	0	95.1	77 - 113				
1,1-Dichloroethane	50.17	1.0	50	0	100	71 - 122				
1,1-Dichloroethene	51.65	1.0	50	0	103	70 - 130				
1,1-Dichloropropene	46.88	1.0	50	0	93.8	78 - 118				
1,2,3-Trichlorobenzene	55.24	1.0	50	0	110	70 - 130				
1,2,3-Trichloropropane	47.41	1.0	50	0	94.8	70 - 127				
1,2,4-Trichlorobenzene	56.27	1.0	50	0	113	77 - 126				
1,2,4-Trimethylbenzene	55.17	1.0	50	0	110	73 - 121				
1,2-Dibromo-3-chloropropane	55.67	1.0	50	0	111	70 - 130				
1,2-Dibromoethane	46.84	1.0	50	0	93.7	76 - 123				
1,2-Dichlorobenzene	47.81	1.0	50	0	95.6	77 - 113				
1,2-Dichloroethane	49.69	1.0	50	0	99.4	70 - 124				
1,2-Dichloropropane	48.69	1.0	50	0	97.4	72 - 119				
1,3,5-Trimethylbenzene	55.72	1.0	50	0	111	75 - 118				
1,3-Dichlorobenzene	47.65	1.0	50	0	95.3	78 - 118				
1,3-Dichloropropane	48.15	1.0	50	0	96.3	75 - 116				
1,4-Dichlorobenzene	46.82	1.0	50	0	93.6	79 - 113				
2,2-Dichloropropane	51.02	1.0	50	0	102	70 - 130				
2-Butanone	102.9	2.0	100	0	103	70 - 130				
2-Chlorotoluene	45.34	1.0	50	0	90.7	70 - 128				
2-Hexanone	104.1	2.0	100	0	104	70 - 130				
4-Chlorotoluene	54.54	1.0	50	0	109	74 - 126				
4-Isopropyltoluene	46.18	1.0	50	0	92.4	74 - 126				
4-Methyl-2-pentanone	96.48	2.0	100	0	96.5	70 - 130				
Acetone	119.3	2.0	100	0	119	70 - 130				
Benzene	48.85	1.0	50	0	97.7	74 - 120				
Bromobenzene	47.23	1.0	50	0	94.5	78 - 113				
Bromochloromethane	54.65	1.0	50	0	109	76 - 124				
Bromodichloromethane	54.33	1.0	50	0	109	74 - 122				
Bromoform	54.53	1.0	50	0	109	73 - 128				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306484 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-171202** Units: **ug/L** Analysis Date: **02-Dec-2017 22:31**
Client ID: Run ID: **VOA2_306484** SeqNo: **4333910** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	49.91	1.0	50	0	99.8	70 - 130				
Carbon disulfide	96.75	2.0	100	0	96.8	70 - 130				
Carbon tetrachloride	49.92	1.0	50	0	99.8	71 - 125				
Chlorobenzene	48.37	1.0	50	0	96.7	76 - 113				
Chloroethane	52.84	1.0	50	0	106	70 - 130				
Chloroform	48.23	1.0	50	0	96.5	71 - 121				
Chloromethane	58.52	1.0	50	0	117	70 - 129				
cis-1,2-Dichloroethene	50.29	1.0	50	0	101	75 - 122				
cis-1,3-Dichloropropene	54.22	1.0	50	0	108	73 - 127				
Dibromochloromethane	52.72	1.0	50	0	105	77 - 122				
Dibromomethane	53.03	1.0	50	0	106	78 - 121				
Dichlorodifluoromethane	59.53	1.0	50	0	119	70 - 130				
Ethylbenzene	49.04	1.0	50	0	98.1	77 - 117				
Hexachlorobutadiene	57.36	1.0	50	0	115	70 - 130				
Isopropylbenzene	51.78	1.0	50	0	104	73 - 127				
m,p-Xylene	93.82	2.0	100	0	93.8	77 - 122				
Methylene chloride	47.45	2.0	50	0	94.9	70 - 127				
Naphthalene	59.78	1.0	50	0	120	70 - 130				
n-Butylbenzene	48.47	1.0	50	0	96.9	72 - 130				
n-Propylbenzene	55.29	1.0	50	0	111	73 - 124				
o-Xylene	48.36	1.0	50	0	96.7	75 - 119				
sec-Butylbenzene	55.67	1.0	50	0	111	73 - 128				
Styrene	49.09	1.0	50	0	98.2	72 - 126				
tert-Butylbenzene	56.28	1.0	50	0	113	73 - 124				
Tetrachloroethene	49.4	1.0	50	0	98.8	76 - 119				
Toluene	46.62	1.0	50	0	93.2	77 - 118				
trans-1,2-Dichloroethene	51.8	1.0	50	0	104	72 - 127				
trans-1,3-Dichloropropene	56.22	1.0	50	0	112	77 - 119				
Trichloroethene	52.17	1.0	50	0	104	77 - 121				
Trichlorofluoromethane	53.88	1.0	50	0	108	70 - 130				
Vinyl chloride	62.45	1.0	50	0	125	70 - 130				
Surr: 1,2-Dichloroethane-d4	*48.36*	*1.0*	*50*	*0*	*96.7*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*51.18*	*1.0*	*50*	*0*	*102*	*82 - 115*				
Surr: Dibromofluoromethane	*43.39*	*1.0*	*50*	*0*	*86.8*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306484 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-171202** Units: **ug/L** Analysis Date: **02-Dec-2017 22:31**
Client ID: Run ID: **VOA2_306484** SeqNo: **4333910** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*50.63*	*1.0*	*50*	*0*	*101*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306484 **Instrument: VOA2** **Method: SW8260**

LCSD Sample ID: **VLCSDW-171202** Units: **ug/L** Analysis Date: **02-Dec-2017 22:55**
Client ID: Run ID: **VOA2_306484** SeqNo: **4333911** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	48.29	1.0	50	0	96.6	77 - 118	50.79	5.05	20	
1,1,1-Trichloroethane	50.28	1.0	50	0	101	70 - 130	53.16	5.58	20	
1,1,2,2-Tetrachloroethane	45.76	1.0	50	0	91.5	70 - 120	46.46	1.52	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	53.26	1.0	50	0	107	70 - 130	53.67	0.752	20	
1,1,2-Trichloroethane	46.58	1.0	50	0	93.2	77 - 113	47.54	2.05	20	
1,1-Dichloroethane	48.06	1.0	50	0	96.1	71 - 122	50.17	4.28	20	
1,1-Dichloroethene	48.7	1.0	50	0	97.4	70 - 130	51.65	5.89	20	
1,1-Dichloropropene	44.68	1.0	50	0	89.4	78 - 118	46.88	4.8	20	
1,2,3-Trichlorobenzene	53.59	1.0	50	0	107	70 - 130	55.24	3.04	20	
1,2,3-Trichloropropane	46.59	1.0	50	0	93.2	70 - 127	47.41	1.74	20	
1,2,4-Trichlorobenzene	54.48	1.0	50	0	109	77 - 126	56.27	3.22	20	
1,2,4-Trimethylbenzene	51.38	1.0	50	0	103	73 - 121	55.17	7.11	20	
1,2-Dibromo-3-chloropropane	52.83	1.0	50	0	106	70 - 130	55.67	5.24	20	
1,2-Dibromoethane	46.59	1.0	50	0	93.2	76 - 123	46.84	0.526	20	
1,2-Dichlorobenzene	45.47	1.0	50	0	90.9	77 - 113	47.81	5	20	
1,2-Dichloroethane	48.3	1.0	50	0	96.6	70 - 124	49.69	2.85	20	
1,2-Dichloropropane	47.69	1.0	50	0	95.4	72 - 119	48.69	2.09	20	
1,3,5-Trimethylbenzene	52.06	1.0	50	0	104	75 - 118	55.72	6.79	20	
1,3-Dichlorobenzene	44.39	1.0	50	0	88.8	78 - 118	47.65	7.09	20	
1,3-Dichloropropane	47.01	1.0	50	0	94.0	75 - 116	48.15	2.4	20	
1,4-Dichlorobenzene	43.6	1.0	50	0	87.2	79 - 113	46.82	7.11	20	
2,2-Dichloropropane	48.15	1.0	50	0	96.3	70 - 130	51.02	5.79	20	
2-Butanone	102.1	2.0	100	0	102	70 - 130	102.9	0.75	20	
2-Chlorotoluene	42.79	1.0	50	0	85.6	70 - 128	45.34	5.79	20	
2-Hexanone	102.3	2.0	100	0	102	70 - 130	104.1	1.7	20	
4-Chlorotoluene	51.44	1.0	50	0	103	74 - 126	54.54	5.86	20	
4-Isopropyltoluene	42.97	1.0	50	0	85.9	74 - 126	46.18	7.21	20	
4-Methyl-2-pentanone	95.73	2.0	100	0	95.7	70 - 130	96.48	0.777	20	
Acetone	118.5	2.0	100	0	118	70 - 130	119.3	0.742	20	
Benzene	47.22	1.0	50	0	94.4	74 - 120	48.85	3.39	20	
Bromobenzene	44.66	1.0	50	0	89.3	78 - 113	47.23	5.59	20	
Bromochloromethane	54.31	1.0	50	0	109	76 - 124	54.65	0.633	20	
Bromodichloromethane	52.95	1.0	50	0	106	74 - 122	54.33	2.57	20	
Bromoform	60.81	1.0	50	0	122	73 - 128	54.53	10.9	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306484 **Instrument: VOA2** **Method: SW8260**

LCSD Sample ID: **VLCSDW-171202** Units: **ug/L** Analysis Date: **02-Dec-2017 22:55**
Client ID: Run ID: **VOA2_306484** SeqNo: **4333911** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	49.83	1.0	50	0	99.7	70 - 130	49.91	0.175	20	
Carbon disulfide	93.85	2.0	100	0	93.9	70 - 130	96.75	3.04	20	
Carbon tetrachloride	46.72	1.0	50	0	93.4	71 - 125	49.92	6.64	20	
Chlorobenzene	45.56	1.0	50	0	91.1	76 - 113	48.37	5.99	20	
Chloroethane	49.49	1.0	50	0	99.0	70 - 130	52.84	6.55	20	
Chloroform	46.81	1.0	50	0	93.6	71 - 121	48.23	2.99	20	
Chloromethane	57.57	1.0	50	0	115	70 - 129	58.52	1.63	20	
cis-1,2-Dichloroethene	49.32	1.0	50	0	98.6	75 - 122	50.29	1.94	20	
cis-1,3-Dichloropropene	53	1.0	50	0	106	73 - 127	54.22	2.27	20	
Dibromochloromethane	51	1.0	50	0	102	77 - 122	52.72	3.31	20	
Dibromomethane	53.3	1.0	50	0	107	78 - 121	53.03	0.513	20	
Dichlorodifluoromethane	56.24	1.0	50	0	112	70 - 130	59.53	5.68	20	
Ethylbenzene	45.84	1.0	50	0	91.7	77 - 117	49.04	6.74	20	
Hexachlorobutadiene	55.09	1.0	50	0	110	70 - 130	57.36	4.03	20	
Isopropylbenzene	53.55	1.0	50	0	107	73 - 127	51.78	3.36	20	
m,p-Xylene	88.61	2.0	100	0	88.6	77 - 122	93.82	5.71	20	
Methylene chloride	47.17	2.0	50	0	94.3	70 - 127	47.45	0.589	20	
Naphthalene	57.86	1.0	50	0	116	70 - 130	59.78	3.26	20	
n-Butylbenzene	45.22	1.0	50	0	90.4	72 - 130	48.47	6.93	20	
n-Propylbenzene	51.45	1.0	50	0	103	73 - 124	55.29	7.19	20	
o-Xylene	45.5	1.0	50	0	91.0	75 - 119	48.36	6.08	20	
sec-Butylbenzene	52.04	1.0	50	0	104	73 - 128	55.67	6.74	20	
Styrene	46.93	1.0	50	0	93.9	72 - 126	49.09	4.5	20	
tert-Butylbenzene	51.8	1.0	50	0	104	73 - 124	56.28	8.3	20	
Tetrachloroethene	46.03	1.0	50	0	92.1	76 - 119	49.4	7.06	20	
Toluene	43.94	1.0	50	0	87.9	77 - 118	46.62	5.93	20	
trans-1,2-Dichloroethene	50.43	1.0	50	0	101	72 - 127	51.8	2.68	20	
trans-1,3-Dichloropropene	54.79	1.0	50	0	110	77 - 119	56.22	2.57	20	
Trichloroethene	48.93	1.0	50	0	97.9	77 - 121	52.17	6.41	20	
Trichlorofluoromethane	49.63	1.0	50	0	99.3	70 - 130	53.88	8.2	20	
Vinyl chloride	57.77	1.0	50	0	116	70 - 130	62.45	7.78	20	
Surr: 1,2-Dichloroethane-d4	*48.22*	*1.0*	*50*	*0*	*96.4*	*70 - 130*	*48.36*	*0.285*	*20*	
Surr: 4-Bromofluorobenzene	*54.47*	*1.0*	*50*	*0*	*109*	*82 - 115*	*51.18*	*6.24*	*20*	
Surr: Dibromofluoromethane	*43.61*	*1.0*	*50*	*0*	*87.2*	*73 - 126*	*43.39*	*0.508*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306484 **Instrument: VOA2** **Method: SW8260**

LCSD Sample ID: **VLCSDW-171202** Units: **ug/L** Analysis Date: **02-Dec-2017 22:55**
Client ID: Run ID: **VOA2_306484** SeqNo: **4333911** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*50.34*	*1.0*	*50*	*0*	*101*	*81 - 120*	*50.63*	*0.57*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306484 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS17120056-01MS** Units: **ug/L** Analysis Date: **03-Dec-2017 08:22**
Client ID: Run ID: **VOA2_306484** SeqNo: **4333934** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	48.57	1.0	50	0	97.1	70 - 120				
1,1,1-Trichloroethane	53.96	1.0	50	0	108	70 - 130				
1,1,2,2-Tetrachloroethane	41.23	1.0	50	0	82.5	70 - 123				
1,1,2-Trichlor-1,2,2-trifluoroethane	47.32	1.0	50	0	94.6	70 - 130				
1,1,2-Trichloroethane	45.34	1.0	50	0	90.7	70 - 117				
1,1-Dichloroethane	47.95	1.0	50	0	95.9	70 - 127				
1,1-Dichloroethene	44.71	1.0	50	0	89.4	70 - 130				
1,1-Dichloropropene	47.42	1.0	50	0	94.8	70 - 129				
1,2,3-Trichlorobenzene	50.05	1.0	50	0	100	70 - 130				
1,2,3-Trichloropropane	44.33	1.0	50	0	88.7	70 - 130				
1,2,4-Trichlorobenzene	51.1	1.0	50	0	102	70 - 125				
1,2,4-Trimethylbenzene	52.52	1.0	50	0	105	70 - 125				
1,2-Dibromo-3-chloropropane	52.29	1.0	50	0	105	70 - 130				
1,2-Dibromoethane	45.26	1.0	50	0	90.5	70 - 124				
1,2-Dichlorobenzene	44.33	1.0	50	0	88.7	70 - 115				
1,2-Dichloroethane	46.64	1.0	50	0	93.3	70 - 127				
1,2-Dichloropropane	46.56	1.0	50	0	93.1	70 - 122				
1,3,5-Trimethylbenzene	53.65	1.0	50	0	107	70 - 126				
1,3-Dichlorobenzene	44.08	1.0	50	0	88.2	70 - 119				
1,3-Dichloropropane	44.82	1.0	50	0	89.6	70 - 121				
1,4-Dichlorobenzene	42.82	1.0	50	0	85.6	70 - 114				
2,2-Dichloropropane	43.69	1.0	50	0	87.4	70 - 130				
2-Butanone	96.17	2.0	100	0	96.2	70 - 130				
2-Chlorotoluene	43.77	1.0	50	0	87.5	70 - 130				
2-Hexanone	96.71	2.0	100	0	96.7	70 - 130				
4-Chlorotoluene	51.76	1.0	50	0	104	70 - 130				
4-Isopropyltoluene	43.89	1.0	50	0	87.8	70 - 130				
4-Methyl-2-pentanone	92.86	2.0	100	0	92.9	70 - 130				
Acetone	105.6	2.0	100	0	106	70 - 130				
Benzene	47.07	1.0	50	0	94.1	70 - 127				
Bromobenzene	44.82	1.0	50	0	89.6	70 - 115				
Bromochloromethane	52.33	1.0	50	0	105	70 - 127				
Bromodichloromethane	51.9	1.0	50	0	104	70 - 124				
Bromoform	52.55	1.0	50	0	105	70 - 129				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306484 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS17120056-01MS** Units: **ug/L** Analysis Date: **03-Dec-2017 08:22**
Client ID: Run ID: **VOA2_306484** SeqNo: **4333934** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	39.12	1.0	50	0	78.2	70 - 130				
Carbon disulfide	95.61	2.0	100	0	95.6	70 - 130				
Carbon tetrachloride	50.83	1.0	50	0	102	70 - 130				
Chlorobenzene	46.33	1.0	50	0	92.7	70 - 114				
Chloroethane	48	1.0	50	0	96.0	70 - 130				
Chloroform	47.02	1.0	50	0	94.0	70 - 125				
Chloromethane	45.9	1.0	50	0	91.8	70 - 130				
cis-1,2-Dichloroethene	49.01	1.0	50	0	98.0	70 - 128				
cis-1,3-Dichloropropene	50.56	1.0	50	0	101	70 - 125				
Dibromochloromethane	49.68	1.0	50	0	99.4	70 - 124				
Dibromomethane	49.76	1.0	50	0	99.5	70 - 124				
Dichlorodifluoromethane	56.78	1.0	50	0	114	70 - 130				
Ethylbenzene	47.39	1.0	50	0	94.8	70 - 124				
Hexachlorobutadiene	52.62	1.0	50	0	105	70 - 130				
Isopropylbenzene	50.92	1.0	50	0	102	70 - 130				
m,p-Xylene	91.35	2.0	100	0	91.3	70 - 130				
Methylene chloride	45.22	2.0	50	0	90.4	70 - 128				
Naphthalene	56.38	1.0	50	0	113	70 - 130				
n-Butylbenzene	45.8	1.0	50	0	91.6	70 - 130				
n-Propylbenzene	52.89	1.0	50	0	106	70 - 130				
o-Xylene	46.42	1.0	50	0	92.8	70 - 124				
sec-Butylbenzene	54.24	1.0	50	0	108	70 - 130				
Styrene	46.36	1.0	50	0	92.7	70 - 130				
tert-Butylbenzene	54.03	1.0	50	0	108	70 - 130				
Tetrachloroethene	49.5	1.0	50	0	99.0	70 - 130				
Toluene	45.25	1.0	50	0	90.5	70 - 123				
trans-1,2-Dichloroethene	50.24	1.0	50	0	100	70 - 130				
trans-1,3-Dichloropropene	51.14	1.0	50	0	102	70 - 121				
Trichloroethene	52.69	1.0	50	0	105	70 - 129				
Trichlorofluoromethane	50.79	1.0	50	0	102	70 - 130				
Vinyl chloride	53.32	1.0	50	0	107	70 - 130				
Surr: 1,2-Dichloroethane-d4	*48.6*	*1.0*	*50*	*0*	*97.2*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*50.6*	*1.0*	*50*	*0*	*101*	*81 - 113*				
Surr: Dibromofluoromethane	*44.27*	*1.0*	*50*	*0*	*88.5*	*77 - 123*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306484 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS17120056-01MS** Units: **ug/L** Analysis Date: **03-Dec-2017 08:22**
Client ID: Run ID: **VOA2_306484** SeqNo: **4333934** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*50.38*	*1.0*	*50*	*0*	*101*	*82 - 127*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306484 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS17120056-01MSD** Units: **ug/L** Analysis Date: **03-Dec-2017 08:47**
Client ID: Run ID: **VOA2_306484** SeqNo: **4333935** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	48.2	1.0	50	0	96.4	70 - 120	48.57	0.764	20	
1,1,1-Trichloroethane	51.78	1.0	50	0	104	70 - 130	53.96	4.14	20	
1,1,2,2-Tetrachloroethane	41.69	1.0	50	0	83.4	70 - 123	41.23	1.11	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	59.29	1.0	50	0	119	70 - 130	47.32	22.4	20	R
1,1,2-Trichloroethane	44.46	1.0	50	0	88.9	70 - 117	45.34	1.94	20	
1,1-Dichloroethane	46.72	1.0	50	0	93.4	70 - 127	47.95	2.59	20	
1,1-Dichloroethene	55.28	1.0	50	0	111	70 - 130	44.71	21.1	20	R
1,1-Dichloropropene	46.01	1.0	50	0	92.0	70 - 129	47.42	3.01	20	
1,2,3-Trichlorobenzene	50.27	1.0	50	0	101	70 - 130	50.05	0.429	20	
1,2,3-Trichloropropane	44.1	1.0	50	0	88.2	70 - 130	44.33	0.525	20	
1,2,4-Trichlorobenzene	50.52	1.0	50	0	101	70 - 125	51.1	1.13	20	
1,2,4-Trimethylbenzene	51.02	1.0	50	0	102	70 - 125	52.52	2.9	20	
1,2-Dibromo-3-chloropropane	50.3	1.0	50	0	101	70 - 130	52.29	3.88	20	
1,2-Dibromoethane	44.87	1.0	50	0	89.7	70 - 124	45.26	0.862	20	
1,2-Dichlorobenzene	43.69	1.0	50	0	87.4	70 - 115	44.33	1.45	20	
1,2-Dichloroethane	47.99	1.0	50	0	96.0	70 - 127	46.64	2.83	20	
1,2-Dichloropropane	45.55	1.0	50	0	91.1	70 - 122	46.56	2.2	20	
1,3,5-Trimethylbenzene	52.33	1.0	50	0	105	70 - 126	53.65	2.5	20	
1,3-Dichlorobenzene	42.8	1.0	50	0	85.6	70 - 119	44.08	2.96	20	
1,3-Dichloropropane	45.14	1.0	50	0	90.3	70 - 121	44.82	0.698	20	
1,4-Dichlorobenzene	41.74	1.0	50	0	83.5	70 - 114	42.82	2.53	20	
2,2-Dichloropropane	42.39	1.0	50	0	84.8	70 - 130	43.69	3.03	20	
2-Butanone	97.42	2.0	100	0	97.4	70 - 130	96.17	1.29	20	
2-Chlorotoluene	42.06	1.0	50	0	84.1	70 - 130	43.77	3.98	20	
2-Hexanone	96.97	2.0	100	0	97.0	70 - 130	96.71	0.265	20	
4-Chlorotoluene	50.29	1.0	50	0	101	70 - 130	51.76	2.88	20	
4-Isopropyltoluene	42.9	1.0	50	0	85.8	70 - 130	43.89	2.29	20	
4-Methyl-2-pentanone	92.92	2.0	100	0	92.9	70 - 130	92.86	0.0647	20	
Acetone	134.2	2.0	100	0	134	70 - 130	105.6	23.9	20	SR
Benzene	45.83	1.0	50	0	91.7	70 - 127	47.07	2.66	20	
Bromobenzene	43.31	1.0	50	0	86.6	70 - 115	44.82	3.42	20	
Bromochloromethane	50.84	1.0	50	0	102	70 - 127	52.33	2.89	20	
Bromodichloromethane	50.92	1.0	50	0	102	70 - 124	51.9	1.91	20	
Bromoform	51.62	1.0	50	0	103	70 - 129	52.55	1.78	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306484 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS17120056-01MSD** Units: **ug/L** Analysis Date: **03-Dec-2017 08:47**
Client ID: Run ID: **VOA2_306484** SeqNo: **4333935** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	41.07	1.0	50	0	82.1	70 - 130	39.12	4.85	20	
Carbon disulfide	108.6	2.0	100	0	109	70 - 130	95.61	12.7	20	
Carbon tetrachloride	49.78	1.0	50	0	99.6	70 - 130	50.83	2.1	20	
Chlorobenzene	44.9	1.0	50	0	89.8	70 - 114	46.33	3.13	20	
Chloroethane	48.9	1.0	50	0	97.8	70 - 130	48	1.88	20	
Chloroform	45.61	1.0	50	0	91.2	70 - 125	47.02	3.04	20	
Chloromethane	47.47	1.0	50	0	94.9	70 - 130	45.9	3.37	20	
cis-1,2-Dichloroethene	47.11	1.0	50	0	94.2	70 - 128	49.01	3.95	20	
cis-1,3-Dichloropropene	49.41	1.0	50	0	98.8	70 - 125	50.56	2.29	20	
Dibromochloromethane	49.58	1.0	50	0	99.2	70 - 124	49.68	0.212	20	
Dibromomethane	49.65	1.0	50	0	99.3	70 - 124	49.76	0.233	20	
Dichlorodifluoromethane	53.89	1.0	50	0	108	70 - 130	56.78	5.22	20	
Ethylbenzene	45.67	1.0	50	0	91.3	70 - 124	47.39	3.68	20	
Hexachlorobutadiene	52.2	1.0	50	0	104	70 - 130	52.62	0.805	20	
Isopropylbenzene	49.22	1.0	50	0	98.4	70 - 130	50.92	3.39	20	
m,p-Xylene	88.67	2.0	100	0	88.7	70 - 130	91.35	2.97	20	
Methylene chloride	44.24	2.0	50	0	88.5	70 - 128	45.22	2.19	20	
Naphthalene	56.33	1.0	50	0	113	70 - 130	56.38	0.0754	20	
n-Butylbenzene	44.16	1.0	50	0	88.3	70 - 130	45.8	3.66	20	
n-Propylbenzene	51.25	1.0	50	0	103	70 - 130	52.89	3.15	20	
o-Xylene	45.4	1.0	50	0	90.8	70 - 124	46.42	2.24	20	
sec-Butylbenzene	52.86	1.0	50	0	106	70 - 130	54.24	2.58	20	
Styrene	45.07	1.0	50	0	90.1	70 - 130	46.36	2.82	20	
tert-Butylbenzene	53.17	1.0	50	0	106	70 - 130	54.03	1.61	20	
Tetrachloroethene	48	1.0	50	0	96.0	70 - 130	49.5	3.07	20	
Toluene	44	1.0	50	0	88.0	70 - 123	45.25	2.8	20	
trans-1,2-Dichloroethene	48.77	1.0	50	0	97.5	70 - 130	50.24	2.96	20	
trans-1,3-Dichloropropene	50.21	1.0	50	0	100	70 - 121	51.14	1.83	20	
Trichloroethene	51.58	1.0	50	0	103	70 - 129	52.69	2.12	20	
Trichlorofluoromethane	51.4	1.0	50	0	103	70 - 130	50.79	1.18	20	
Vinyl chloride	53.77	1.0	50	0	108	70 - 130	53.32	0.837	20	
Surr: 1,2-Dichloroethane-d4	*48.69*	*1.0*	*50*	*0*	*97.4*	*70 - 126*	*48.6*	*0.194*	*20*	
Surr: 4-Bromofluorobenzene	*50.56*	*1.0*	*50*	*0*	*101*	*81 - 113*	*50.6*	*0.0868*	*20*	
Surr: Dibromofluoromethane	*43.48*	*1.0*	*50*	*0*	*87.0*	*77 - 123*	*44.27*	*1.81*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306484 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS17120056-01MSD** Units: **ug/L** Analysis Date: **03-Dec-2017 08:47**
Client ID: Run ID: **VOA2_306484** SeqNo: **4333935** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*50.57*	*1.0*	*50*	*0*	*101*	*82 - 127*	*50.38*	*0.388*	*20*	

The following samples were analyzed in this batch: HS17111408-01 HS17111408-03 HS17111408-04 HS17111408-05 HS17111408-06 HS17111408-08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306626 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-171205** Units: **ug/L** Analysis Date: **05-Dec-2017 11:18**
Client ID: Run ID: **VOA2_306626** SeqNo: **4337298** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306626 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-171205** Units: **ug/L** Analysis Date: **05-Dec-2017 11:18**
Client ID: Run ID: **VOA2_306626** SeqNo: **4337298** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	0.50	1.0								U
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	0.50	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*47.29*	*1.0*	*50*	*0*	*94.6*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*49.54*	*1.0*	*50*	*0*	*99.1*	*82 - 115*				
Surr: Dibromofluoromethane	*45.4*	*1.0*	*50*	*0*	*90.8*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306626 **Instrument:** VOA2 **Method:** SW8260

MBLK Sample ID: **VBLKW-171205** Units: **ug/L** Analysis Date: **05-Dec-2017 11:18**
Client ID: Run ID: **VOA2_306626** SeqNo: **4337298** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*52.11*	*1.0*	*50*	*0*	*104*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306626 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-171205** Units: **ug/L** Analysis Date: **05-Dec-2017 10:29**
Client ID: Run ID: **VOA2_306626** SeqNo: **4337297** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	47.21	1.0	50	0	94.4	77 - 118				
1,1,1-Trichloroethane	46.38	1.0	50	0	92.8	70 - 130				
1,1,2,2-Tetrachloroethane	45.74	1.0	50	0	91.5	70 - 120				
1,1,2-Trichlor-1,2,2-trifluoroethane	46.17	1.0	50	0	92.3	70 - 130				
1,1,2-Trichloroethane	45.15	1.0	50	0	90.3	77 - 113				
1,1-Dichloroethane	46.74	1.0	50	0	93.5	71 - 122				
1,1-Dichloroethene	47.92	1.0	50	0	95.8	70 - 130				
1,1-Dichloropropene	41.26	1.0	50	0	82.5	78 - 118				
1,2,3-Trichlorobenzene	51.71	1.0	50	0	103	70 - 130				
1,2,3-Trichloropropane	47.16	1.0	50	0	94.3	70 - 127				
1,2,4-Trichlorobenzene	50.66	1.0	50	0	101	77 - 126				
1,2,4-Trimethylbenzene	48.71	1.0	50	0	97.4	73 - 121				
1,2-Dibromo-3-chloropropane	55.49	1.0	50	0	111	70 - 130				
1,2-Dibromoethane	46.56	1.0	50	0	93.1	76 - 123				
1,2-Dichlorobenzene	44.01	1.0	50	0	88.0	77 - 113				
1,2-Dichloroethane	49.26	1.0	50	0	98.5	70 - 124				
1,2-Dichloropropane	46.54	1.0	50	0	93.1	72 - 119				
1,3,5-Trimethylbenzene	48.95	1.0	50	0	97.9	75 - 118				
1,3-Dichlorobenzene	42.62	1.0	50	0	85.2	78 - 118				
1,3-Dichloropropane	46.39	1.0	50	0	92.8	75 - 116				
1,4-Dichlorobenzene	41.83	1.0	50	0	83.7	79 - 113				
2,2-Dichloropropane	47.52	1.0	50	0	95.0	70 - 130				
2-Butanone	102.3	2.0	100	0	102	70 - 130				
2-Chlorotoluene	39.91	1.0	50	0	79.8	70 - 128				
2-Hexanone	102.6	2.0	100	0	103	70 - 130				
4-Chlorotoluene	50.68	1.0	50	0	101	74 - 126				
4-Isopropyltoluene	38.72	1.0	50	0	77.4	74 - 126				
4-Methyl-2-pentanone	96.66	2.0	100	0	96.7	70 - 130				
Acetone	146	2.0	100	0	146	70 - 130				S
Benzene	44.86	1.0	50	0	89.7	74 - 120				
Bromobenzene	43.63	1.0	50	0	87.3	78 - 113				
Bromochloromethane	52.61	1.0	50	0	105	76 - 124				
Bromodichloromethane	54.48	1.0	50	0	109	74 - 122				
Bromoform	54.46	1.0	50	0	109	73 - 128				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306626 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-171205** Units: **ug/L** Analysis Date: **05-Dec-2017 10:29**
Client ID: Run ID: **VOA2_306626** SeqNo: **4337297** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	40.71	1.0	50	0	81.4	70 - 130				
Carbon disulfide	114.2	2.0	100	0	114	70 - 130				
Carbon tetrachloride	43.27	1.0	50	0	86.5	71 - 125				
Chlorobenzene	44.92	1.0	50	0	89.8	76 - 113				
Chloroethane	45.71	1.0	50	0	91.4	70 - 130				
Chloroform	45.27	1.0	50	0	90.5	71 - 121				
Chloromethane	41.14	1.0	50	0	82.3	70 - 129				
cis-1,2-Dichloroethene	47	1.0	50	0	94.0	75 - 122				
cis-1,3-Dichloropropene	52.44	1.0	50	0	105	73 - 127				
Dibromochloromethane	49.77	1.0	50	0	99.5	77 - 122				
Dibromomethane	52.76	1.0	50	0	106	78 - 121				
Dichlorodifluoromethane	43.26	1.0	50	0	86.5	70 - 130				
Ethylbenzene	42.73	1.0	50	0	85.5	77 - 117				
Hexachlorobutadiene	44.45	1.0	50	0	88.9	70 - 130				
Isopropylbenzene	43.33	1.0	50	0	86.7	73 - 127				
m,p-Xylene	81.4	2.0	100	0	81.4	77 - 122				
Methylene chloride	60.03	2.0	50	0	120	70 - 127				
Naphthalene	59.19	1.0	50	0	118	70 - 130				
n-Butylbenzene	39.93	1.0	50	0	79.9	72 - 130				
n-Propylbenzene	46.55	1.0	50	0	93.1	73 - 124				
o-Xylene	43.16	1.0	50	0	86.3	75 - 119				
sec-Butylbenzene	45.02	1.0	50	0	90.0	73 - 128				
Styrene	44.43	1.0	50	0	88.9	72 - 126				
tert-Butylbenzene	46.07	1.0	50	0	92.1	73 - 124				
Tetrachloroethene	41.28	1.0	50	0	82.6	76 - 119				
Toluene	41.67	1.0	50	0	83.3	77 - 118				
trans-1,2-Dichloroethene	55.25	1.0	50	0	111	72 - 127				
trans-1,3-Dichloropropene	54.58	1.0	50	0	109	77 - 119				
Trichloroethene	47.35	1.0	50	0	94.7	77 - 121				
Trichlorofluoromethane	45.06	1.0	50	0	90.1	70 - 130				
Vinyl chloride	44.37	1.0	50	0	88.7	70 - 130				
Surr: 1,2-Dichloroethane-d4	*48.24*	*1.0*	*50*	*0*	*96.5*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*50.52*	*1.0*	*50*	*0*	*101*	*82 - 115*				
Surr: Dibromofluoromethane	*42.6*	*1.0*	*50*	*0*	*85.2*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306626 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-171205** Units: **ug/L** Analysis Date: **05-Dec-2017 10:29**
Client ID: Run ID: **VOA2_306626** SeqNo: **4337297** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*49.96*	*1.0*	*50*	*0*	*99.9*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306626 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS17111395-03MS** Units: **ug/L** Analysis Date: **05-Dec-2017 15:01**
Client ID: Run ID: **VOA2_306626** SeqNo: **4337307** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	47.9	1.0	50	0	95.8	70 - 120				
1,1,1-Trichloroethane	50.96	1.0	50	0	102	70 - 130				
1,1,2,2-Tetrachloroethane	42.48	1.0	50	0	85.0	70 - 123				
1,1,2-Trichlor-1,2,2-trifluoroethane	53.98	1.0	50	0	108	70 - 130				
1,1,2-Trichloroethane	48.11	1.0	50	5.088	86.0	70 - 117				
1,1-Dichloroethane	78.64	1.0	50	19.35	119	70 - 127				
1,1-Dichloroethene	322.9	1.0	50	326.1	-6.36	70 - 130				SEO
1,1-Dichloropropene	46.77	1.0	50	0	93.5	70 - 129				
1,2,3-Trichlorobenzene	48.54	1.0	50	0	97.1	70 - 130				
1,2,3-Trichloropropane	43.51	1.0	50	0	87.0	70 - 130				
1,2,4-Trichlorobenzene	48.69	1.0	50	0	97.4	70 - 125				
1,2,4-Trimethylbenzene	50.57	1.0	50	0	101	70 - 125				
1,2-Dibromo-3-chloropropane	50.27	1.0	50	0	101	70 - 130				
1,2-Dibromoethane	43.63	1.0	50	0	87.3	70 - 124				
1,2-Dichlorobenzene	42.66	1.0	50	0	85.3	70 - 115				
1,2-Dichloroethane	73.34	1.0	50	31.85	83.0	70 - 127				
1,2-Dichloropropane	45.71	1.0	50	0	91.4	70 - 122				
1,3,5-Trimethylbenzene	51.82	1.0	50	0	104	70 - 126				
1,3-Dichlorobenzene	42.76	1.0	50	0	85.5	70 - 119				
1,3-Dichloropropane	45.36	1.0	50	0	90.7	70 - 121				
1,4-Dichlorobenzene	41.25	1.0	50	0	82.5	70 - 114				
2,2-Dichloropropane	54.82	1.0	50	0	110	70 - 130				
2-Butanone	101	2.0	100	0	101	70 - 130				
2-Chlorotoluene	41.94	1.0	50	0	83.9	70 - 130				
2-Hexanone	96.39	2.0	100	0	96.4	70 - 130				
4-Chlorotoluene	50.16	1.0	50	0	100	70 - 130				
4-Isopropyltoluene	42.3	1.0	50	0	84.6	70 - 130				
4-Methyl-2-pentanone	91.9	2.0	100	0	91.9	70 - 130				
Acetone	116	2.0	100	0	116	70 - 130				
Benzene	45.31	1.0	50	0	90.6	70 - 127				
Bromobenzene	43.64	1.0	50	0	87.3	70 - 115				
Bromochloromethane	52.6	1.0	50	0	105	70 - 127				
Bromodichloromethane	50.86	1.0	50	0	102	70 - 124				
Bromoform	50.36	1.0	50	0	101	70 - 129				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306626 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS17111395-03MS** Units: **ug/L** Analysis Date: **05-Dec-2017 15:01**
Client ID: Run ID: **VOA2_306626** SeqNo: **4337307** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	32.23	1.0	50	0	64.5	70 - 130				S
Carbon disulfide	116.2	2.0	100	0	116	70 - 130				
Carbon tetrachloride	49.85	1.0	50	0	99.7	70 - 130				
Chlorobenzene	44.78	1.0	50	0	89.6	70 - 114				
Chloroethane	47.3	1.0	50	0	94.6	70 - 130				
Chloroform	45.49	1.0	50	0	91.0	70 - 125				
Chloromethane	36.52	1.0	50	0	73.0	70 - 130				
cis-1,2-Dichloroethene	52.96	1.0	50	0	106	70 - 128				
cis-1,3-Dichloropropene	50.31	1.0	50	0	101	70 - 125				
Dibromochloromethane	48.53	1.0	50	0	97.1	70 - 124				
Dibromomethane	47.93	1.0	50	0	95.9	70 - 124				
Dichlorodifluoromethane	45.3	1.0	50	0	90.6	70 - 130				
Ethylbenzene	45.64	1.0	50	0	91.3	70 - 124				
Hexachlorobutadiene	49.4	1.0	50	0	98.8	70 - 130				
Isopropylbenzene	48.32	1.0	50	0	96.6	70 - 130				
m,p-Xylene	87.22	2.0	100	0	87.2	70 - 130				
Methylene chloride	60.06	2.0	50	0	120	70 - 128				
Naphthalene	53.24	1.0	50	0	106	70 - 130				
n-Butylbenzene	43.69	1.0	50	0	87.4	70 - 130				
n-Propylbenzene	51.2	1.0	50	0	102	70 - 130				
o-Xylene	44.45	1.0	50	0	88.9	70 - 124				
sec-Butylbenzene	50.85	1.0	50	0	102	70 - 130				
Styrene	44.3	1.0	50	0	88.6	70 - 130				
tert-Butylbenzene	51.45	1.0	50	0	103	70 - 130				
Tetrachloroethene	47.74	1.0	50	0	95.5	70 - 130				
Toluene	44.05	1.0	50	0	88.1	70 - 123				
trans-1,2-Dichloroethene	66.15	1.0	50	0	132	70 - 130				S
trans-1,3-Dichloropropene	50.18	1.0	50	0	100	70 - 121				
Trichloroethene	50.19	1.0	50	0	100	70 - 129				
Trichlorofluoromethane	53.26	1.0	50	0	107	70 - 130				
Vinyl chloride	49.49	1.0	50	0	99.0	70 - 130				
Surr: 1,2-Dichloroethane-d4	*48.78*	*1.0*	*50*	*0*	*97.6*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*51*	*1.0*	*50*	*0*	*102*	*81 - 113*				
Surr: Dibromofluoromethane	*42.96*	*1.0*	*50*	*0*	*85.9*	*77 - 123*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306626 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS17111395-03MS** Units: **ug/L** Analysis Date: **05-Dec-2017 15:01**
Client ID: Run ID: **VOA2_306626** SeqNo: **4337307** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*50.54*	*1.0*	*50*	*0*	*101*	*82 - 127*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306626 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS17111395-03MSD** Units: **ug/L** Analysis Date: **05-Dec-2017 15:25**
Client ID: Run ID: **VOA2_306626** SeqNo: **4337308** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	47.9	1.0	50	0	95.8	70 - 120	47.9	0.00138	20	
1,1,1-Trichloroethane	51.29	1.0	50	0	103	70 - 130	50.96	0.657	20	
1,1,2,2-Tetrachloroethane	43.57	1.0	50	0	87.1	70 - 123	42.48	2.54	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	51.71	1.0	50	0	103	70 - 130	53.98	4.28	20	
1,1,2-Trichloroethane	53.52	1.0	50	5.088	96.9	70 - 117	48.11	10.6	20	
1,1-Dichloroethane	63.42	1.0	50	19.35	88.1	70 - 127	78.64	21.4	20	R
1,1-Dichloroethene	308.6	1.0	50	326.1	-35.1	70 - 130	322.9	4.55	20	SEO
1,1-Dichloropropene	45.5	1.0	50	0	91.0	70 - 129	46.77	2.76	20	
1,2,3-Trichlorobenzene	49.96	1.0	50	0	99.9	70 - 130	48.54	2.89	20	
1,2,3-Trichloropropane	44.7	1.0	50	0	89.4	70 - 130	43.51	2.71	20	
1,2,4-Trichlorobenzene	50.35	1.0	50	0	101	70 - 125	48.69	3.34	20	
1,2,4-Trimethylbenzene	50.17	1.0	50	0	100	70 - 125	50.57	0.793	20	
1,2-Dibromo-3-chloropropane	52.67	1.0	50	0	105	70 - 130	50.27	4.66	20	
1,2-Dibromoethane	44.78	1.0	50	0	89.6	70 - 124	43.63	2.61	20	
1,2-Dichlorobenzene	42.84	1.0	50	0	85.7	70 - 115	42.66	0.424	20	
1,2-Dichloroethane	80.73	1.0	50	31.85	97.7	70 - 127	73.34	9.59	20	
1,2-Dichloropropane	44.68	1.0	50	0	89.4	70 - 122	45.71	2.27	20	
1,3,5-Trimethylbenzene	51.86	1.0	50	0	104	70 - 126	51.82	0.0728	20	
1,3-Dichlorobenzene	42.82	1.0	50	0	85.6	70 - 119	42.76	0.148	20	
1,3-Dichloropropane	48.25	1.0	50	0	96.5	70 - 121	45.36	6.16	20	
1,4-Dichlorobenzene	41.29	1.0	50	0	82.6	70 - 114	41.25	0.0919	20	
2,2-Dichloropropane	50.57	1.0	50	0	101	70 - 130	54.82	8.07	20	
2-Butanone	96.44	2.0	100	0	96.4	70 - 130	101	4.58	20	
2-Chlorotoluene	41.8	1.0	50	0	83.6	70 - 130	41.94	0.332	20	
2-Hexanone	99.84	2.0	100	0	99.8	70 - 130	96.39	3.51	20	
4-Chlorotoluene	50.28	1.0	50	0	101	70 - 130	50.16	0.225	20	
4-Isopropyltoluene	42.25	1.0	50	0	84.5	70 - 130	42.3	0.118	20	
4-Methyl-2-pentanone	97.64	2.0	100	0	97.6	70 - 130	91.9	6.06	20	
Acetone	121.4	2.0	100	0	121	70 - 130	116	4.57	20	
Benzene	47.17	1.0	50	0	94.3	70 - 127	45.31	4.02	20	
Bromobenzene	43.15	1.0	50	0	86.3	70 - 115	43.64	1.13	20	
Bromochloromethane	50.33	1.0	50	0	101	70 - 127	52.6	4.41	20	
Bromodichloromethane	51.41	1.0	50	0	103	70 - 124	50.86	1.09	20	
Bromoform	54.07	1.0	50	0	108	70 - 129	50.36	7.12	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306626 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS17111395-03MSD** Units: **ug/L** Analysis Date: **05-Dec-2017 15:25**
Client ID: Run ID: **VOA2_306626** SeqNo: **4337308** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	35.03	1.0	50	0	70.1	70 - 130	32.23	8.32	20	
Carbon disulfide	114.2	2.0	100	0	114	70 - 130	116.2	1.75	20	
Carbon tetrachloride	50.57	1.0	50	0	101	70 - 130	49.85	1.44	20	
Chlorobenzene	43.97	1.0	50	0	87.9	70 - 114	44.78	1.83	20	
Chloroethane	47.16	1.0	50	0	94.3	70 - 130	47.3	0.294	20	
Chloroform	46.62	1.0	50	0	93.2	70 - 125	45.49	2.45	20	
Chloromethane	38.81	1.0	50	0	77.6	70 - 130	36.52	6.09	20	
cis-1,2-Dichloroethene	47.5	1.0	50	0	95.0	70 - 128	52.96	10.9	20	
cis-1,3-Dichloropropene	51.26	1.0	50	0	103	70 - 125	50.31	1.86	20	
Dibromochloromethane	48.89	1.0	50	0	97.8	70 - 124	48.53	0.749	20	
Dibromomethane	49.24	1.0	50	0	98.5	70 - 124	47.93	2.7	20	
Dichlorodifluoromethane	45.9	1.0	50	0	91.8	70 - 130	45.3	1.31	20	
Ethylbenzene	45.49	1.0	50	0	91.0	70 - 124	45.64	0.317	20	
Hexachlorobutadiene	51.79	1.0	50	0	104	70 - 130	49.4	4.73	20	
Isopropylbenzene	47.89	1.0	50	0	95.8	70 - 130	48.32	0.894	20	
m,p-Xylene	90.99	2.0	100	0	91.0	70 - 130	87.22	4.23	20	
Methylene chloride	43.74	2.0	50	0	87.5	70 - 128	60.06	31.4	20	R
Naphthalene	56.34	1.0	50	0	113	70 - 130	53.24	5.65	20	
n-Butylbenzene	43.73	1.0	50	0	87.5	70 - 130	43.69	0.0967	20	
n-Propylbenzene	50.66	1.0	50	0	101	70 - 130	51.2	1.06	20	
o-Xylene	45.31	1.0	50	0	90.6	70 - 124	44.45	1.91	20	
sec-Butylbenzene	51.09	1.0	50	0	102	70 - 130	50.85	0.486	20	
Styrene	45.57	1.0	50	0	91.1	70 - 130	44.3	2.82	20	
tert-Butylbenzene	51.63	1.0	50	0	103	70 - 130	51.45	0.347	20	
Tetrachloroethene	50.95	1.0	50	0	102	70 - 130	47.74	6.5	20	
Toluene	44.3	1.0	50	0	88.6	70 - 123	44.05	0.56	20	
trans-1,2-Dichloroethene	47.21	1.0	50	0	94.4	70 - 130	66.15	33.4	20	R
trans-1,3-Dichloropropene	52.21	1.0	50	0	104	70 - 121	50.18	3.98	20	
Trichloroethene	49.39	1.0	50	0	98.8	70 - 129	50.19	1.6	20	
Trichlorofluoromethane	52.79	1.0	50	0	106	70 - 130	53.26	0.886	20	
Vinyl chloride	50.25	1.0	50	0	101	70 - 130	49.49	1.52	20	
Surr: 1,2-Dichloroethane-d4	*49.97*	*1.0*	*50*	*0*	*99.9*	*70 - 126*	*48.78*	*2.4*	*20*	
Surr: 4-Bromofluorobenzene	*50.41*	*1.0*	*50*	*0*	*101*	*81 - 113*	*51*	*1.17*	*20*	
Surr: Dibromofluoromethane	*44.23*	*1.0*	*50*	*0*	*88.5*	*77 - 123*	*42.96*	*2.9*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306626 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS17111395-03MSD** Units: **ug/L** Analysis Date: **05-Dec-2017 15:25**
Client ID: Run ID: **VOA2_306626** SeqNo: **4337308** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*51.48*	*1.0*	*50*	*0*	*103*	*82 - 127*	*50.54*	*1.84*	*20*	

The following samples were analyzed in this batch: HS17111408-02 HS17111408-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: **HS17111408**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	17-027-0	27-Mar-2018
California	2919 2016-2018	31-Jul-2018
Illinois	004112	09-May-2018
Kentucky	123043	30-Apr-2018
Louisiana	03087 2017-2017	30-Jun-2018
North Carolina	624-2017	31-Dec-2017
North Dakota	R193 2017-2017	30-Apr-2018
Oklahoma	2017-088	31-Aug-2018
Texas	T104704231-17-19	30-Apr-2018

ALS Group USA, Corp Date: 07-Dec-17

Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS17111408
Date/Time Received: **29-Nov-2017 09:00**
Received by: **JRM**

Checklist completed by: *Jared R. Makan* eSignature 29-Nov-2017 Date
Reviewed by: *Sonia West* eSignature 5-Dec-2017 Date

Matrices: **Water**
Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.1c/2.4c UC/C	IR11	
Cooler(s)/Kit(s):	Blue		
Date/Time sample(s) sent to storage:	11/29/017 18:10		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

APTIM

COC ID: 67-NOV2017-GW-ALSHT- | TURNAROUND TIME: normal | RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name	Longhorn AAP			Lab Name	ALS Laboratories			Email Invoice To	FedInvoices@CBIFederalServices.com		
Project Number	501032			Lab Contact	Sonia West						
	LHAAP-67			Email	Sonia.West@alsglobal.com			Email Report To	Sharon.Pennington@CBIFederalServices.com		
Address	1203-B East Grand Avenue			Address	10450 Stancliff Rd., Suite 210			Mail Reports To	Sharon Pennington		
	PMB 202							Address	2410 Cherahala Blvd.		
City	Marshall	State	TX	City	Houston	State	TX	City	Knoxville	State	TN
Postal Code	75670	Country	USA	Postal Code	77099	Country	USA	Postal Code	37932	Country	USA
Phone Number	713.243.7264			Phone Number	281.575.2132 or 281.530.5656						
Project Manager	Praveen Srivastav							Shipping Company			

SAMPLE DETAILS / ANALYSIS REQUESTED

Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	ANALYSIS	VOCs in Water by 8260B	Dissolved Gases in Water by RSK175	Anions in Water by E300.0	TOC in Water by E415.1	TIC in Water by E415.1	Sulfide in Water by E376.1	1,4-Dioxane in Water by 8270DSIM			
67WW14-112717	LHAAP-67	20.51	20.75		WG	11/27/17	0830	4		X						X			
67WW15-112717	LHAAP-67	23.85	24.09		WG	11/27/17	0950	4		X						X			
67WW09-112717	LHAAP-67	22.06	22.29		WG	11/27/17	1040	4		X						X			
67WW11-112717	LHAAP-67	23.53	23.77		WG	11/27/17	1135	4		X						X			
67WW05-112817	LHAAP-67	25.60	25.60		WG	11/28/17	0755	4		X						X			
67WW02-112817	LHAAP-67	23.95	23.97		WG	11/28/17	0825	4		X						X			
67WW01-112817	LHAAP-67	25.95	25.99		WG	11/28/17	0845	4		X						X			
Trip Blank						11/28/17		2		X									

HS17111408

Aptim Environmental & Infrastucture, Inc.

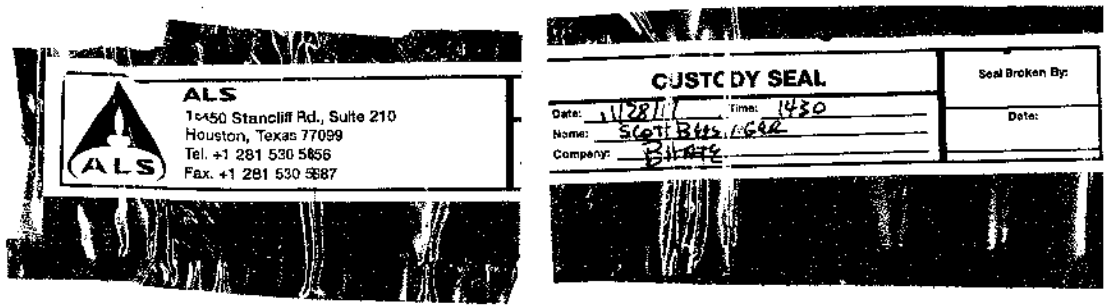
LHAAP-67

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Dissolved Gases should include Carbon dioxide, Ethane, Ethene, and Methane. Anions should include chloride, nitrate, nitrite, and sulfate.	Scott Blessinger / Battle	11/28/17 1430	RS	11/29/17 09:30

Cooler – Blue Temp 2.1 IR11 CF 0.2

00911484


FedEx
0221 7376 9749 9929
WED - 29 NOV 10:30A
PRIORITY OVERNIGHT
AB SGRA
77099
TX-US
IAH


ALS
1450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5856
Fax. +1 281 530 5887
CUSTODY SEAL
Date: 11/28/
Time: 1430
Name: Scott Bliss/GSR
Company: Bliss
Seal Broken By:
Date:

00911485

Volatile Organics Raw Data

Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
ALS WO# HS17111408

FORM 2
WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17111408

	CLIENT SAMPLE NO.	SMC1 #	SMC2 (TOL) #	SMC3 #	OTHER (DCE) #	TOT OUT
01	VLCSW-171202	102	101	87	97	0
02	VLCSDW-171202	109	101	87	96	0
03	VBLKW-171202	99	103	89	92	0
04	HS17111408-08	100	103	92	97	0
05	HS17111408-01	99	103	90	95	0
06	HS17111408-03	100	103	91	97	0
07	HS17111408-04	100	103	93	98	0
08	HS17111408-05	98	103	89	96	0
09	HS17111408-06	99	104	90	94	0
10	HS17120056-01	101	101	88	97	0
11	HS17120056-01	101	101	87	97	0
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		QC LIMITS
SMC1	= 4-Bromofluorobenzene	(70-130)
SMC2 (TOL)	= Toluene-d8	(70-130)
SMC3	= Dibromofluoromethane	(70-130)
OTHER(DCE)	= 1,2-Dichloroethane-d4	(70-130)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

FORM 2
WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17111408

	CLIENT SAMPLE NO.	SMC1 #	SMC2 (TOL) #	SMC3 #	OTHER (DCE) #	TOT OUT
01	VLCSW-171205	101	100	85	96	0
02	VBLKW-171205	99	104	91	94	0
03	HS17111395-03	102	101	86	98	0
04	HS17111395-03	101	103	88	100	0
05	HS17111408-02	98	104	91	97	0
06	HS17111408-02	100	105	92	97	0
07	HS17111408-07	100	106	90	96	0
08	HS17111408-07	98	106	88	94	0
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		QC LIMITS
SMC1	= 4-Bromofluorobenzene	(70-130)
SMC2 (TOL)	= Toluene-d8	(70-130)
SMC3	= Dibromofluoromethane	(70-130)
OTHER(DCE)	= 1,2-Dichloroethane-d4	(70-130)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

FORM 3
WATER VOLATILE METHOD SPIKE RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17111408

Matrix Spike - Sample No.: VSTD-ICV

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT ()	% REC #	QC. LIMITS REC.
1,1,1-Trichloroethane	50.00	45.95	92	80-120
1,1,1,2-Tetrachloroetha	50.00	49.11	98	80-120
1,1,2,2-Tetrachloroetha	50.00	45.11	90	80-120
1,1,2-Trichloroethane	50.00	43.60	87	80-120
1,1-Dichloropropene	50.00	40.07	80	80-120
1,1-Dichloroethane	50.00	46.53	93	80-120
1,1-Dichloroethene	50.00	42.20	84	80-120
1,2,3-Trichloropropane	50.00	45.85	92	80-120
1,2,4-Trimethylbenzene	50.00	50.22	100	80-120
1,2,3-Trichlorobenzene	50.00	50.57	101	80-120
1,2,4-Trichlorobenzene	50.00	50.47	101	80-120
1,2-Dibromo-3-Chloropro	50.00	50.98	102	80-120
1,2-Dichloroethane	50.00	46.72	93	80-120
1,2-Dichloropropane	50.00	45.25	90	80-120
1,2-Dibromoethane	50.00	42.41	85	80-120
1,2-Dichlorobenzene	50.00	44.10	88	80-120
1,3,5-Trimethylbenzene	50.00	49.31	99	80-120
1,3-Dichloropropane	50.00	44.28	88	80-120
1,3-Dichlorobenzene	50.00	43.08	86	80-120
1,4-Dichlorobenzene	50.00	42.35	85	80-120
2,2-Dichloropropane	50.00	46.35	93	80-120
2-Butanone	100.00	98.16	98	80-120
2-Hexanone	100.00	94.25	94	80-120
2-Chlorotoluene	50.00	42.55	85	80-120
4-Chlorotoluene	50.00	49.75	100	80-120
p-Isopropyltoluene	50.00	40.00	80	80-120
Acetone	100.00	105.16	105	80-120
Benzene	50.00	43.86	88	80-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

_____

FORM 3
WATER VOLATILE METHOD SPIKE RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17111408

Matrix Spike - Sample No.: VSTD-ICV

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT ()	% REC #	QC. LIMITS REC.
Bromodichloromethane	50.00	49.39	99	80-120
Bromobenzene	50.00	44.18	88	80-120
Bromochloromethane	50.00	53.06	106	80-120
Bromomethane	50.00	49.29	98	80-120
Carbon Disulfide	100.00	86.54	86	80-120
Bromoform	50.00	53.18	106	80-120
Chloroethane	50.00	48.46	97	80-120
Carbon Tetrachloride	50.00	41.09	82	80-120
Chloromethane	50.00	55.10	110	80-120
Chloroform	50.00	45.69	91	80-120
Chlorobenzene	50.00	45.26	90	80-120
cis-1,2-Dichloroethene	50.00	47.89	96	80-120
cis-1,3-Dichloropropene	50.00	50.58	101	80-120
Dichlorodifluoromethane	50.00	47.49	95	80-120
Dibromochloromethane	50.00	47.89	96	80-120
Dibromomethane	50.00	48.85	98	80-120
Ethylbenzene	50.00	46.09	92	80-120
Hexachlorobutadiene	50.00	48.50	97	80-120
m,p-Xylenes	100.00	81.82	82	80-120
o-Xylene	50.00	41.77	84	80-120
Isopropylbenzene	50.00	41.58	83	80-120
Methylene Chloride	50.00	45.72	91	80-120
n-Propylbenzene	50.00	47.71	95	80-120
n-Butylbenzene	50.00	41.95	84	80-120
Naphthalene	50.00	54.91	110	80-120
Styrene	50.00	43.27	86	80-120
sec-Butylbenzene	50.00	47.33	95	80-120
tert-Butylbenzene	50.00	47.71	95	80-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

_____

FORM III VOA

FORM 3
WATER VOLATILE METHOD SPIKE RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17111408

Matrix Spike - Sample No.: VSTD-ICV

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT ()	% REC #	QC. LIMITS REC.
trans-1,2-Dichloroethen	50.00	48.43	97	80-120
Toluene	50.00	40.57	81	80-120
trans-1,3-Dichloroprope	50.00	50.10	100	80-120
Tetrachloroethene	50.00	40.70	81	80-120
Trichlorofluoromethane	50.00	47.20	94	80-120
Trichloroethene	50.00	44.48	89	80-120
Vinyl Chloride	50.00	55.19	110	80-120
Freon TF	50.00	40.54	81	80-120
4-Methyl-2-Pentanone	100.00	89.35	89	80-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

_____

FORM III VOA

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17111408

Lab File ID: D120201 BFB Injection Date: 12/02/17

Instrument ID: VOA2 BFB Injection Time: 0953

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	18.4
75	30.0 - 60.0% of mass 95	43.9
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	0.7 (0.8)1
174	Greater than 50.0% of mass 95	88.6
175	5.0 - 9.0% of mass 174	6.3 (7.1)1
176	95.0 - 101.0% of mass 174	84.7 (95.6)1
177	5.0 - 9.0% of mass 176	6.7 (7.9)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD00.5	VSTD00.5	D120202	12/02/17	1018
02	VSTD001	VSTD001	D120203	12/02/17	1042
03	VSTD002	VSTD002	D120204	12/02/17	1106
04	VSTD005	VSTD005	D120205	12/02/17	1131
05	VSTD010	VSTD010	D120206	12/02/17	1155
06	VSTD020	VSTD020	D120207	12/02/17	1219
07	VSTD050	VSTD050	D120208	12/02/17	1244
08	VSTD100	VSTD100	D120209	12/02/17	1308
09	VSTD200	VSTD200	D120210	12/02/17	1332
10	VSTD-ICV	VSTD-ICV	D120212	12/02/17	1421
11					
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FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17111408

Instrument ID: VOA2 Calibration Date(s): 12/02/17 12/02/17

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1018 1332

LAB FILE ID: RF0.5: D120202 RF1: D120203 RF2: D120204
RF5: D120205 RF10: D120206 RF20: D120207

COMPOUND	RF0.5	RF1	RF2	RF5	RF10	RF20
1,1,1-Trichloroethane	0.782	0.704	0.739	0.735	0.789	0.771
1,1,1,2-Tetrachloroethane	0.408	0.414	0.371	0.361	0.411	0.386
1,1,2,2-Tetrachloroethane	1.207	1.067	1.055	1.001	1.062	0.939
1,1,2-Trichloroethane	0.363	0.289	0.270	0.286	0.333	0.273
1,1-Dichloropropene	2954	4305	9416	15983	33728	61656
1,1-Dichloroethane	1.032	1.014	0.910	1.016	1.046	0.967
1,1-Dichloroethene	0.529	0.444	0.407	0.491	0.530	0.480
1,2,3-Trichloropropane	1.194	1.139	1.105	1.004	1.135	1.012
1,2,4-Trimethylbenzene	5680	9594	19532	42815	89960	171277
1,2,3-Trichlorobenzene	0.559	0.698	0.753	0.755	0.897	0.807
1,2,4-Trichlorobenzene	0.775	0.770	0.810	0.891	1.030	0.978
1,2-Dibromo-3-Chloropropane	139	361	841	1939	4853	9234
1,2-Dichloroethane	0.538	0.483	0.477	0.455	0.510	0.464
1,2-Dichloropropane	0.410	0.444	0.365	0.347	0.395	0.373
1,2-Dibromoethane	0.466	0.374	0.362	0.350	0.360	0.332
1,2-Dichlorobenzene	2.113	1.651	1.735	1.638	1.698	1.630
1,3,5-Trimethylbenzene	5170	9046	18401	43015	89656	173995
1,3-Dichloropropane	0.646	0.607	0.577	0.563	0.616	0.543
1,3-Dichlorobenzene	2.067	1.878	1.767	1.675	1.845	1.685
1,4-Dichlorobenzene	2.028	1.809	1.746	1.584	1.762	1.590
2,2-Dichloropropane	0.740	0.682	0.636	0.682	0.807	0.736
2-Butanone	0.275	0.252	0.192	0.204	0.220	0.208
2-Hexanone	0.261	0.250	0.239	0.239	0.254	0.233
2-Chlorotoluene	3.143	2.766	2.830	2.598	2.734	2.446
4-Chlorotoluene	5053	8809	18244	40733	84596	162892
p-Isopropyltoluene	3.580	2.751	3.072	2.849	3.022	2.832
Acetone	3198	3976	5385	8530	17731	30163
Benzene	1.443	1.321	1.234	1.123	1.288	1.229
Bromodichloromethane	0.413	0.419	0.419	0.382	0.464	0.444
Bromobenzene	1.216	1.048	1.079	1.014	1.070	0.995
Bromochloromethane	0.201	0.204	0.234	0.272	0.274	0.267
Bromomethane	1733	3575	6157	12514	24891	45961
Carbon Disulfide	1.164	0.800	0.860	0.908	1.042	0.886
Bromoform	0.260	0.244	0.243	0.248	0.285	0.280
Chloroethane	2385	3477	6678	13201	24915	48945
Carbon Tetrachloride	5043	4445	8585	17467	35037	63681
Chloromethane	3868	6636	12476	30205	61364	113999
Chloroform	0.996	1.002	0.989	0.866	0.923	0.888
Chlorobenzene	1.196	1.069	1.030	0.974	1.025	0.947
cis-1,2-Dichloroethene	0.582	0.583	0.485	0.519	0.586	0.540
cis-1,3-Dichloropropene	0.540	0.446	0.490	0.440	0.542	0.524
Dichlorodifluoromethane	0.475	0.423	0.402	0.466	0.544	0.521
Dibromochloromethane	0.435	0.372	0.374	0.383	0.432	0.408
Dibromomethane	0.183	0.212	0.184	0.178	0.206	0.198

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1711140

Instrument ID: VOA2 Calibration Date(s): 12/02/17 12/02/17

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1018 1332

LAB FILE ID: RF0.5: D120202 RF1: D120203 RF2: D120204
RF5: D120205 RF10: D120206 RF20: D120207

COMPOUND	RF0.5	RF1	RF2	RF5	RF10	RF20
Ethylbenzene	0.573	0.528	0.544	0.505	0.555	0.497
Hexachlorobutadiene	961	1063	2817	6657	13235	28697
m,p-Xylenes	0.767	0.682	0.658	0.632	0.672	0.616
o-Xylene	0.778	0.690	0.664	0.652	0.705	0.641
Isopropylbenzene	6499	10686	25343	52377	112745	215740
Methylene Chloride	0.598	0.542	0.465	0.507	0.523	0.482
n-Propylbenzene	6638	11530	24532	55879	116424	225099
n-Butylbenzene	2.408	1.762	2.272	2.129	2.316	2.216
Naphthalene	1044	3027	7991	26337	67775	132373
Styrene	1.270	1.142	1.060	1.071	1.128	1.052
sec-Butylbenzene	5811	9365	21030	47554	101826	198179
tert-Butylbenzene	4266	7196	16119	34766	76128	146542
trans-1,2-Dichloroethene	0.440	0.406	0.401	0.444	0.485	0.450
Toluene	1.922	1.693	1.615	1.525	1.621	1.493
trans-1,3-Dichloropropene	0.370	0.419	0.395	0.385	0.532	0.454
Tetrachloroethene	0.321	0.339	0.338	0.320	0.354	0.328
Trichlorofluoromethane	0.740	0.595	0.672	0.748	0.813	0.839
Trichloroethene	0.413	0.360	0.352	0.314	0.371	0.342
Vinyl Chloride	2461	3763	7543	17987	39831	76312
Freon TF	0.402	0.344	0.404	0.466	0.496	0.462
4-Methyl-2-Pentanone	0.470	0.474	0.399	0.392	0.397	0.364
4-Bromofluorobenzene		0.590	0.499	0.474	0.497	0.453
Toluene-d8		1.507	1.373	1.292	1.372	1.210
Dibromofluoromethane	0.599	0.462	0.561	0.494	0.508	0.446
1,2-Dichloroethane-d4	0.759	0.604	0.549	0.554	0.616	0.566

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1711140

Instrument ID: VOA2 Calibration Date(s): 12/02/17 12/02/17

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1018 1332

LAB FILE ID: RF50: D120208 RF100: D120209 RF200: D120210

COMPOUND	RF50	RF100	RF200
1,1,1-Trichloroethane	0.637	0.601	0.664
1,1,1,2-Tetrachloroethane	0.365	0.372	0.332
1,1,2,2-Tetrachloroethane	0.935	0.823	0.843
1,1,2-Trichloroethane	0.271	0.263	0.235
1,1-Dichloropropene	139865	338565	651586
1,1-Dichloroethane	0.861	0.819	1.004
1,1-Dichloroethene	0.408	0.350	0.436
1,2,3-Trichloropropane	0.994	0.914	0.918
1,2,4-Trimethylbenzene	379867	756966	1613252
1,2,3-Trichlorobenzene	0.790	0.750	0.715
1,2,4-Trichlorobenzene	0.919	0.883	0.837
1,2-Dibromo-3-Chloropropane	24398	50559	100759
1,2-Dichloroethane	0.434	0.453	0.458
1,2-Dichloropropane	0.336	0.309	0.306
1,2-Dibromoethane	0.321	0.339	0.344
1,2-Dichlorobenzene	1.506	1.338	1.309
1,3,5-Trimethylbenzene	370899	751645	1554608
1,3-Dichloropropane	0.523	0.533	0.500
1,3-Dichlorobenzene	1.557	1.421	1.460
1,4-Dichlorobenzene	1.483	1.593	1.413
2,2-Dichloropropane	0.621	0.578	0.638
2-Butanone	0.199	0.182	0.214
2-Hexanone	0.234	0.245	0.234
2-Chlorotoluene	2.403	2.069	2.143
4-Chlorotoluene	363295	735701	1535880
p-Isopropyltoluene	2.340	2.494	2.253
Acetone	81222	145831	353245
Benzene	1.126	1.268	1.224
Bromodichloromethane	0.426	0.401	0.394
Bromobenzene	0.932	0.855	0.883
Bromochloromethane	0.240	0.212	0.248
Bromomethane	102347	189031	294913
Carbon Disulfide	0.887	0.731	0.996
Bromoform	0.282	0.329	0.270
Chloroethane	104074	204381	357211
Carbon Tetrachloride	144188	351661	676893
Chloromethane	256514	476675	979134
Chloroform	0.761	0.669	0.751
Chlorobenzene	0.881	0.897	0.773
cis-1,2-Dichloroethene	0.468	0.410	0.469
cis-1,3-Dichloropropene	0.501	0.496	0.463
Dichlorodifluoromethane	0.431	0.392	0.417
Dibromochloromethane	0.408	0.420	0.439
Dibromomethane	0.187	0.177	0.174

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1711140

Instrument ID: VOA2 Calibration Date(s): 12/02/17 12/02/17

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1018 1332

LAB FILE ID: RF50: D120208 RF100: D120209 RF200: D120210

COMPOUND	RF50	RF100	RF200
Ethylbenzene	0.442	0.466	0.415
Hexachlorobutadiene	53304	124014	240075
m,p-Xylenes	0.544	0.684	0.514
o-Xylene	0.586	0.693	0.524
Isopropylbenzene	460822	933730	1757586
Methylene Chloride	0.435	0.394	0.532
n-Propylbenzene	547102	1002145	2016642
n-Butylbenzene	1.766	1.730	1.748
Naphthalene	319306	619282	1192359
Styrene	0.962	1.136	0.854
sec-Butylbenzene	400095	855674	1765667
tert-Butylbenzene	305835	634473	1328519
trans-1,2-Dichloroethene	0.386	0.366	0.490
Toluene	1.334	1.417	1.280
trans-1,3-Dichloropropene	0.447	0.434	0.429
Tetrachloroethene	0.277	0.296	0.267
Trichlorofluoromethane	0.622	0.594	0.635
Trichloroethene	0.321	0.316	0.303
Vinyl Chloride	176982	338527	673091
Freon TF	0.350	0.339	0.420
4-Methyl-2-Pentanone	0.360	0.366	0.329
4-Bromofluorobenzene	0.422	0.430	0.434
Toluene-d8	1.086	1.094	0.961
Dibromofluoromethane	0.391		
1,2-Dichloroethane-d4	0.496	0.522	0.521

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1711140

Instrument ID: VOA2 Calibration Date(s): 12/02/17 12/02/17

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1018 1332

COMPOUND	CURVE	COEFFICENTS A0	COEFFICENTS A1	COEFFICENTS A2	%RSD OR R^2	MAX %RSD OR R^2
1,1,1-Trichloroethane	AVRG		0.71370609		9.372	15.000
1,1,1,2-Tetrachloroethane	AVRG		0.38013432		7.148	15.000
1,1,2,2-Tetrachloroethane	AVRG		0.99258528		12.222	15.000
1,1,2-Trichloroethane	AVRG		0.28705532		13.475	15.000
1,1-Dichloropropene	LINR	-4.26e-003	2.44307664		0.9987249	0.9900000
1,1-Dichloroethane	AVRG		0.96326118		8.419	15.000
1,1-Dichloroethene	AVRG		0.45263056		13.273	15.000
1,2,3-Trichloropropane	AVRG		1.04606070		9.660	15.000
1,2,4-Trimethylbenzene	LINR	-3.01e-002	0.41633885		0.9989979	0.9900000
1,2,3-Trichlorobenzene	AVRG		0.74733987		12.222	15.000
1,2,4-Trichlorobenzene	AVRG		0.87705944		10.167	15.000
1,2-Dibromo-3-Chloropropane	LINR	-1.31e-002	6.54660953		0.9994380	0.9900000
1,2-Dichloroethane	AVRG		0.47456733		6.777	15.000
1,2-Dichloropropane	AVRG		0.36515734		12.659	15.000
1,2-Dibromoethane	AVRG		0.36081745		11.836	15.000
1,2-Dichlorobenzene	AVRG		1.62431749		14.642	15.000
1,3,5-Trimethylbenzene	LINR	-3.96e-002	0.43065742		0.9991791	0.9900000
1,3-Dichloropropane	AVRG		0.56767088		8.446	15.000
1,3-Dichlorobenzene	AVRG		1.70625475		12.228	15.000
1,4-Dichlorobenzene	AVRG		1.66768867		11.278	15.000
2,2-Dichloropropane	AVRG		0.68019872		10.467	15.000
2-Butanone	AVRG		0.21637126		13.652	15.000
2-Hexanone	AVRG		0.24348857		4.111	15.000
2-Chlorotoluene	AVRG		2.57035383		13.331	15.000
4-Chlorotoluene	LINR	-3.15e-002	0.43591168		0.9993643	0.9900000
p-Isopropyltoluene	AVRG		2.79924729		14.634	15.000
Acetone	2ORDR	-0.1455905	8.44205784	-1.5882645	0.9965348	0.9900000
Benzene	AVRG		1.25075054		7.848	15.000
Bromodichloromethane	AVRG		0.41797745		6.014	15.000
Bromobenzene	AVRG		1.01032395		10.988	15.000
Bromochloromethane	AVRG		0.23921082		11.976	15.000
Bromomethane	2ORDR	-7.29e-003	1.87129409	1.79194043	0.9999652	0.9900000
Carbon Disulfide	AVRG		0.91937133		14.200	15.000
Bromoform	AVRG		0.27127004		10.037	15.000
Chloroethane	2ORDR	-3.48e-002	2.38094923	0.59380876	0.9993539	0.9900000
Carbon Tetrachloride	LINR	-4.72e-003	2.35285442		0.9986200	0.9900000
Chloromethane	LINR	-4.85e-002	1.15522743		0.9970973	0.9900000
Chloroform	AVRG		0.87169863		13.862	15.000
Chlorobenzene	AVRG		0.97698426		12.513	15.000
cis-1,2-Dichloroethene	AVRG		0.51598951		12.029	15.000
cis-1,3-Dichloropropene	AVRG		0.49358172		7.680	15.000
Dichlorodifluoromethane	AVRG		0.45231016		11.792	15.000
Dibromochloromethane	AVRG		0.40777402		6.361	15.000
Dibromomethane	AVRG		0.18886291		7.170	15.000

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1711140

Instrument ID: VOA2 Calibration Date(s): 12/02/17 12/02/17

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1018 1332

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2	MAX %RSD OR R^2
Ethylbenzene	AVRG		0.50270704		10.608	15.000
Hexachlorobutadiene	LINR	-3.92e-002	2.76022389		0.9985221	0.9900000
m,p-Xylenes	AVRG		0.64113043		11.930	15.000
o-Xylene	AVRG		0.65910920		11.041	15.000
Isopropylbenzene	2ORDR	4.227e-003	0.59512930	4.232e-002	0.9988568	0.9900000
Methylene Chloride	AVRG		0.49775295		12.290	15.000
n-Propylbenzene	LINR	-5.52e-002	0.32948130		0.9973091	0.9900000
n-Butylbenzene	AVRG		2.03867224		13.855	15.000
Naphthalene	LINR	-4.34e-002	0.55061373		0.9969423	0.9900000
Styrene	AVRG		1.07518496		10.979	15.000
sec-Butylbenzene	LINR	-3.36e-002	0.37918234		0.9993070	0.9900000
tert-Butylbenzene	LINR	-3.21e-002	0.50473610		0.9992184	0.9900000
trans-1,2-Dichloroethene	AVRG		0.42990708		10.030	15.000
Toluene	AVRG		1.54453465		12.741	15.000
trans-1,3-Dichloropropene	AVRG		0.42933602		11.159	15.000
Tetrachloroethene	AVRG		0.31558657		9.331	15.000
Trichlorofluoromethane	AVRG		0.69527017		13.382	15.000
Trichloroethene	AVRG		0.34364320		10.144	15.000
Vinyl Chloride	LINR	-4.27e-002	1.66895402		0.9981776	0.9900000
Freon TF	AVRG		0.40942301		14.052	15.000
4-Methyl-2-Pentanone	AVRG		0.39453623		12.417	15.000
4-Bromofluorobenzene	AVRG		0.47495283		11.602	15.000
Toluene-d8	AVRG		1.23672099		14.745	15.000
Dibromofluoromethane	AVRG		0.49427766		14.240	15.000
1,2-Dichloroethane-d4	AVRG		0.57642099		13.679	15.000

FORM VI VOA

MSVOA02 -Logbook

Batch: 29843
Date: 12-02-2017
Method: 8260
Comments:

Analyst: Anjana Poluri
Reviewer:
Laboratory: Houston

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
1	BFB	TUNE	12-02-2017 09:53 am	1.00	50 mL	50 mL	D120201.D	Liquid	Y	NA
2	*Auto find/purged* VSTD00.5	ICAL1	12-02-2017 10:18 am	1.00	50 mL	50 mL	D120202.D	Liquid	Y	NA
3	*0.5 uL cal std/250 mL DI* VSTD001	ICAL2	12-02-2017 10:42 am	1.00	50 mL	50 mL	D120203.D	Liquid	Y	NA
4	*1 uL cal std/250 mL DI* VSTD002	ICAL3	12-02-2017 11:06 am	1.00	50 mL	50 mL	D120204.D	Liquid	Y	NA
5	*2 uL cal std/250 mL DI* VSTD005	ICAL4	12-02-2017 11:31 am	1.00	50 mL	50 mL	D120205.D	Liquid	Y	NA
6	*5 uL cal std/250 mL DI* VSTD010	ICAL5	12-02-2017 11:55 am	1.00	50 mL	50 mL	D120206.D	Liquid	Y	NA
7	*2 uL cal std/50 mL DI* VSTD020	ICAL6	12-02-2017 12:19 pm	1.00	50 mL	50 mL	D120207.D	Liquid	Y	NA
8	*4 uL cal std/50 mL DI* VSTD050	ICAL7	12-02-2017 12:44 pm	1.00	50 mL	50 mL	D120208.D	Liquid	Y	NA
9	*10 uL cal std/50 mL DI* VSTD100	ICAL8	12-02-2017 01:08 pm	1.00	50 mL	50 mL	D120209.D	Liquid	Y	NA
10	*20 uL cal std/50 mL DI* VSTD200	ICAL9	12-02-2017 01:32 pm	1.00	50 mL	50 mL	D120210.D	Liquid	Y	NA
11	*40 uL cal std/50 mL DI* BLK	SAMP	12-02-2017 01:57 pm	1.00	50 mL	50 mL	D120211.D	Liquid	Y	NA
12	*Cleanup blk* VSTD050	CCV	12-02-2017 02:21 pm	1.00	50 mL	50 mL	D120212.D	Liquid	Y	NA
13	*10 uL cal std/50 mL DI* VSTD050	CCV	12-02-2017 02:45 pm	1.00	50 mL	50 mL	D120213.D	Liquid	Y	NA
14	*10 uL cal std/50 mL DI* VLCSW-171202	LCS	12-02-2017 03:10 pm	1.00	50 mL	50 mL	D120214.D	Liquid	Y	NA
15	*10 uL cal std/50 mL DI* BLK	SAMP	12-02-2017 03:34 pm	1.00	50 mL	50 mL	D120215.D	Liquid	Y	NA
16	*Cleanup blk* VBLKW171202	MBLK	12-02-2017 03:59 pm	1.00	50 mL	50 mL	D120216.D	Liquid	Y	NA
17	HS17120047-01	SAMP	12-02-2017 04:23 pm	1.00	50 mL	50 mL	D120217.D	Liquid	Y	<2
18	HS17120054-01	SAMP	12-02-2017 04:47 pm	1.00	50 mL	50 mL	D120218.D	Liquid	Y	<2
19	HS17120054-02	SAMP	12-02-2017 05:12 pm	1.00	50 mL	50 mL	D120219.D	Liquid	Y	<2
20	HS17120054-03	SAMP	12-02-2017 05:37 pm	1.00	50 mL	50 mL	D120220.D	Liquid	Y	<2
21	HS17120054-04	SAMP	12-02-2017 06:01 pm	1.00	50 mL	50 mL	D120221.D	Liquid	Y	<2
22	HS17120054-05	SAMP	12-02-2017 06:25 pm	1.00	50 mL	50 mL	D120222.D	Liquid	Y	<2
23	HS17120054-06	SAMP	12-02-2017 06:50 pm	1.00	50 mL	50 mL	D120223.D	Liquid	Y	<2
24	HS17120054-07	SAMP	12-02-2017 07:14 pm	1.00	50 mL	50 mL	D120224.D	Liquid	Y	<2
25	HS17120054-08	SAMP	12-02-2017 07:39 pm	1.00	50 mL	50 mL	D120225.D	Liquid	Y	<2
26	HS17120054-09	SAMP	12-02-2017 08:03 pm	1.00	50 mL	50 mL	D120226.D	Liquid	Y	<2
27	HS17120054-09MS	MS	12-02-2017 08:28 pm	1.00	50 mL	50 mL	D120227.D	Liquid	Y	<2
28	*8 uL cal std/40 mL sample* HS17120054-09MSD	MSD	12-02-2017 08:52 pm	1.00	50 mL	50 mL	D120228.D	Liquid	Y	<2
29	*8 uL cal std/40 mL sample* CCV_END	CCV_END	12-02-2017 09:17 pm	1.00	50 mL	50 mL	D120229.D	Liquid	Y	NA
30	*10 uL cal std/50 mL DI* BFB	TUNE	12-02-2017 09:41 pm	1.00	50 mL	50 mL	E120201.D	Liquid	Y	NA
31	*Auto find/purged* CCV	CCV	12-02-2017 10:06 pm	1.00	50 mL	50 mL	E120202.D	Liquid	Y	NA

MSVOA02 -Logbook

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
32	VLCSW-171202	LCS	12-02-2017 10:31 pm	1.00	50 mL	50 mL	E120203.D	Liquid	Y	NA
	10 uL cal std/50 mL DI									
33	VLCSDW-171202	LCSD	12-02-2017 10:55 pm	1.00	50 mL	50 mL	E120204.D	Liquid	Y	NA
	10 uL cal std/50 mL DI									
34	BLK	SAMP	12-02-2017 11:19 pm	1.00	50 mL	50 mL	E120205.D	Liquid	Y	NA
	Cleanup blk									
35	VBLKW-171202	MBLK	12-02-2017 11:44 pm	1.00	50 mL	50 mL	E120206.D	Liquid	Y	NA
36	HS17120054-10	SAMP	12-03-2017 12:08 am	1.00	50 mL	50 mL	E120207.D	Liquid	Y	<2
37	HS17120054-11	SAMP	12-03-2017 12:33 am	1.00	50 mL	50 mL	E120208.D	Liquid	Y	<2
38	HS17120056-01	SAMP	12-03-2017 12:57 am	1.00	50 mL	50 mL	E120209.D	Liquid	Y	<2
39	HS17120056-02	SAMP	12-03-2017 01:22 am	1.00	50 mL	50 mL	E120210.D	Liquid	Y	<2
40	HS17120056-03	SAMP	12-03-2017 01:47 am	1.00	50 mL	50 mL	E120211.D	Liquid	Y	<2
41	HS17120056-04	SAMP	12-03-2017 02:11 am	1.00	50 mL	50 mL	E120212.D	Liquid	Y	<2
42	HS17120056-05	SAMP	12-03-2017 02:36 am	1.00	50 mL	50 mL	E120213.D	Liquid	Y	<2
43	HS17120056-06	SAMP	12-03-2017 03:00 am	1.00	50 mL	50 mL	E120214.D	Liquid	Y	<2
44	HS17120056-07	SAMP	12-03-2017 03:25 am	1.00	50 mL	50 mL	E120215.D	Liquid	Y	<2
45	HS17120056-08	SAMP	12-03-2017 03:49 am	1.00	50 mL	50 mL	E120216.D	Liquid	Y	<2
46	HS17120056-09	SAMP	12-03-2017 04:14 am	1.00	50 mL	50 mL	E120217.D	Liquid	Y	<2
47	HS17120056-10	SAMP	12-03-2017 04:38 am	1.00	50 mL	50 mL	E120218.D	Liquid	Y	<2
48	HS17120056-11	SAMP	12-03-2017 05:03 am	1.00	50 mL	50 mL	E120219.D	Liquid	Y	<2
49	HS17111408-08	SAMP	12-03-2017 05:27 am	1.00	50 mL	50 mL	E120220.D	Liquid	Y	<2
50	HS17111408-01	SAMP	12-03-2017 05:52 am	1.00	50 mL	50 mL	E120221.D	Liquid	Y	<2
51	HS17111408-03	SAMP	12-03-2017 06:17 am	1.00	50 mL	50 mL	E120222.D	Liquid	Y	<2
52	HS17111408-04	SAMP	12-03-2017 06:41 am	1.00	50 mL	50 mL	E120223.D	Liquid	Y	<2
53	HS17111408-05	SAMP	12-03-2017 07:06 am	1.00	50 mL	50 mL	E120224.D	Liquid	Y	<2
54	HS17111408-06	SAMP	12-03-2017 07:30 am	1.00	50 mL	50 mL	E120225.D	Liquid	Y	<2
55	HS17111381-14	SAMP	12-03-2017 07:58 am	5.00	10 mL	50 mL	E120226.D	Liquid	Y	<2
56	HS17120056-01MS	MS	12-03-2017 08:22 am	1.00	50 mL	50 mL	E120227.D	Liquid	Y	<2
	8 uL cal std/40 mL sample									
57	HS17120056-01MSD	MSD	12-03-2017 08:47 am	1.00	50 mL	50 mL	E120228.D	Liquid	Y	<2
	8 uL cal std/40 mL sample									
58	CCV_END	CCV_END	12-03-2017 09:11 am	1.00	50 mL	50 mL	E120229.D	Liquid	Y	NA
	10 uL cal std/50 mL DI									

Chemical	Value
SURR ID	29814-95-03
IS ID	29814-95-04
ICV STD ID	29814-95-02
LCS/MS ID	29814-95-01
CAL STD ID	29814-95-01
BFB ID	29814-95-03
pH Paper	634-37-03

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120201.D

Date : 02-DEC-2017 09:53

Client ID: BFB

Instrument: VOA2.i

Sample Info: BFB;BFB;3;;BFB

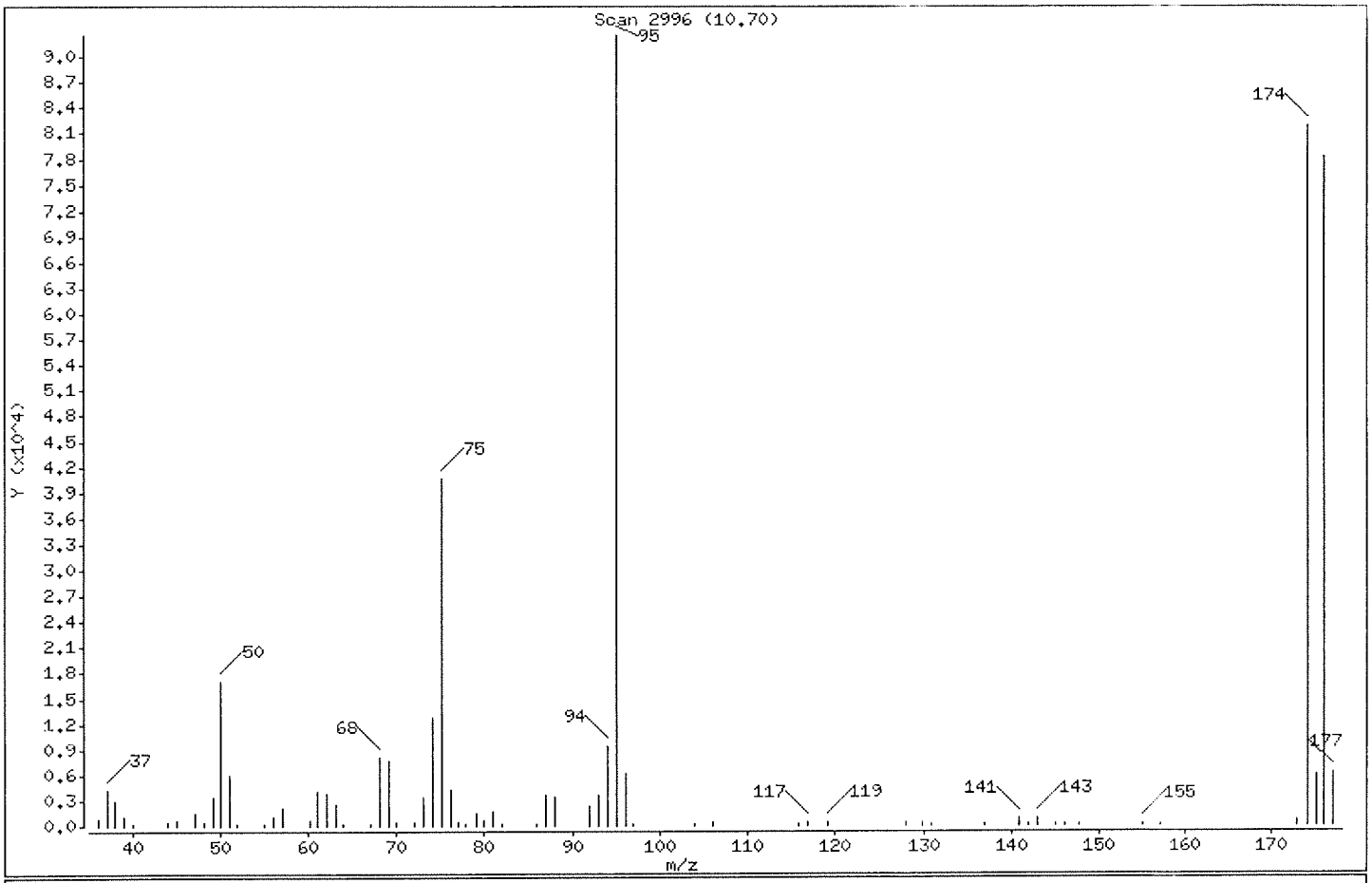
Volume Injected (uL): 2.0

Operator: AP

Column phase: DB624

Column diameter: 0.18

1 bfb



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	18.37
75	30.00 - 60.00% of mass 95	43.95
96	5.00 - 9.00% of mass 95	6.76
173	Less than 2.00% of mass 174	0.68 (0.76)
174	Greater than 50.00% of mass 95	88.61
175	5.00 - 9.00% of mass 174	6.32 (7.14)
176	95.00 - 101.00% of mass 174	84.71 (95.59)
177	5.00 - 9.00% of mass 176	6.69 (7.89)

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120201.D Page 3

Date : 02-DEC-2017 09:53

Client ID: BFB Instrument: VOA2.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0 Operator: AP

Column phase: DB624 Column diameter: 0.18

Data File: D120201.D
Spectrum: Scan 2996 (10.70)
Location of Maximum: 95.10
Number of points: 67

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.10	792	61.10	4012	81.00	1656	129.90	397
37.10	4345	62.10	3856	82.00	312	130.90	169
38.10	2954	63.10	2610	85.90	174	137.00	156
39.00	1137	64.00	192	87.00	3535	140.90	835
40.00	199	67.10	191	88.00	3309	141.90	156
44.10	447	68.10	8075	92.00	2386	142.90	852
45.10	646	69.10	7691	93.00	3592	145.00	154
47.10	1490	70.00	519	94.10	9323	146.00	250
48.10	530	72.10	351	95.10	92584	147.80	179
49.10	3362	73.00	3439	96.10	6258	154.90	269
50.10	17008	74.10	12746	97.00	248	157.10	207
51.10	5945	75.10	40688	103.90	314	172.80	625
52.00	162	76.10	4236	106.00	436	174.00	82040
55.00	263	77.00	365	115.80	189	175.00	5855
56.00	1042	77.80	200	116.90	527	176.00	78424
57.00	2069	79.00	1419	119.00	441	177.00	6191
60.10	718	80.00	586	128.00	339		

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120201.D Page 1

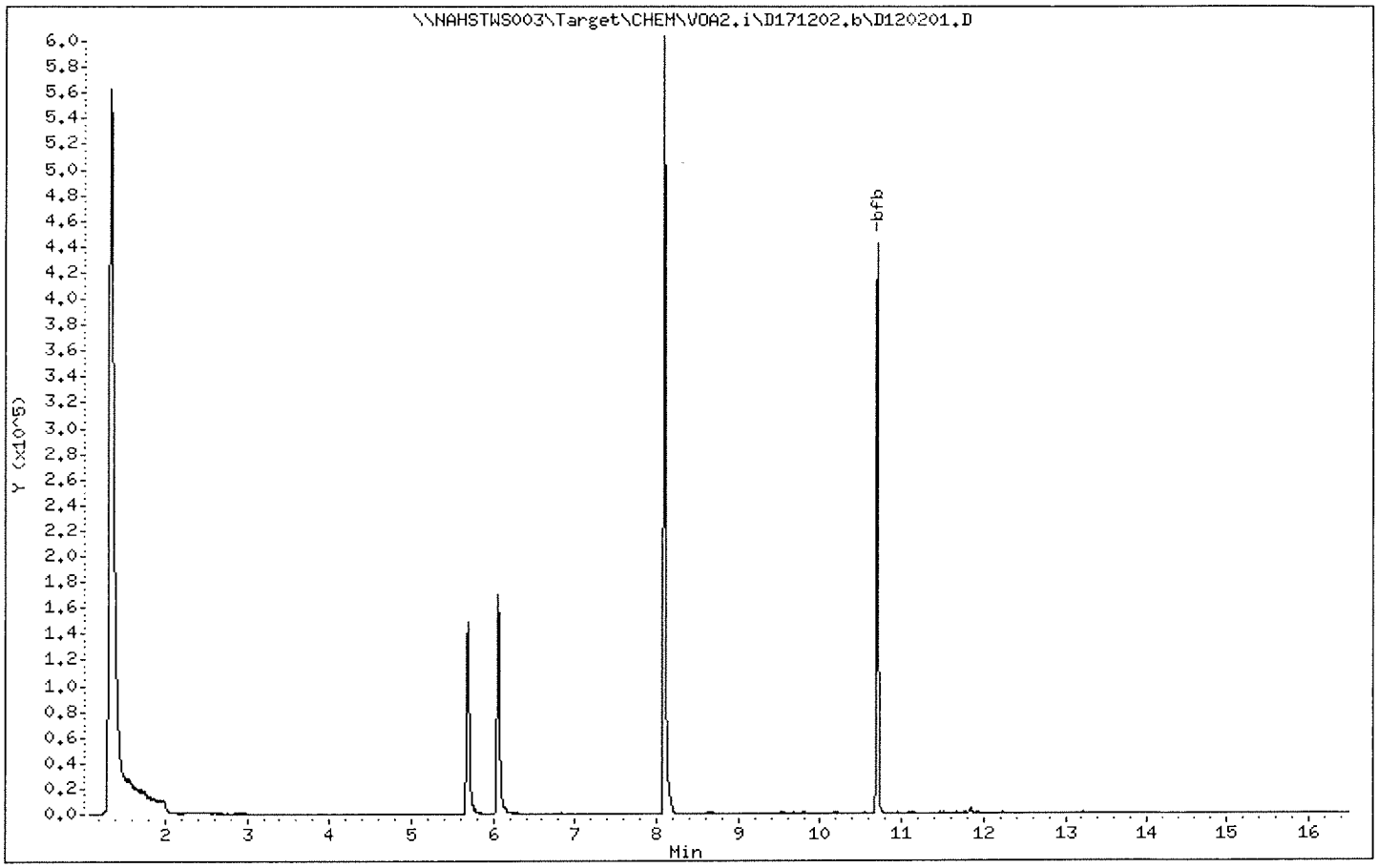
Date : 02-DEC-2017 09:53

Client ID: BFB Instrument: VOA2.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0 Operator: AP

Column phase: DB624 Column diameter: 0.18



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120202.D
Report Date: 01-Feb-2018 15:20

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120202.D
Lab Smp Id: VSTD00.5 Client Smp ID: VSTD00.5
Inj Date : 02-DEC-2017 10:18
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD00.5;VSTD00.5;1;1;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\CHEM\VOA2.i\D171202.b\8260LL.m
Meth Date : 01-Feb-2018 15:20 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 13:32 Cal File: D120210.D
Als bottle: 2 Calibration Sample, Level: 1
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
31 1,1,1-Trichloroethane	97	5.654	5.654	(0.978)	2003	0.50000	0.54 (aM)
60 1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.012)	1359	0.50000	0.53 (aM)
68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.918)	1705	0.50000	0.60 (aM)
53 1,1,2-Trichloroethane	83	8.593	8.593	(0.902)	1210	0.50000	0.63 (aM)
32 1,1-Dichloropropene	75	5.853	5.853	(0.891)	2954	0.50000	0.74 (aM)
22 1,1-Dichloroethane	63	4.297	4.297	(0.743)	2642	0.50000	0.53 (aM)
11 1,1-Dichloroethene	96	2.763	2.763	(0.478)	1354	0.50000	0.58 (aM)
71 1,2,3-Trichloropropane	75	10.907	10.907	(0.921)	1687	0.50000	0.57 (aM)
79 1,2,4-Trimethylbenzene	105	11.504	11.504	(0.972)	5680	0.50000	(a)
93 1,2,3-Trichlorobenzene	182	14.302	14.302	(1.208)	790	0.50000	0.37 (aM)
90 1,2,4-Trichlorobenzene	180	13.821	13.821	(1.168)	1095	0.50000	0.44 (aM)
89 1,2-Dibromo-3-Chloropropane	75	13.015	13.015	(1.099)	139	0.50000	(aM)
33 1,2-Dichloroethane	62	6.148	6.148	(0.936)	2028	0.50000	0.56 (aM)
42 1,2-Dichloropropane	63	7.060	7.060	(1.074)	1547	0.50000	0.56 (aM)
57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	1553	0.50000	0.64 (aM)
88 1,2-Dichlorobenzene	146	12.229	12.229	(1.033)	2984	0.50000	0.65 (Ta)
75 1,3,5-Trimethylbenzene	105	11.135	11.135	(0.941)	5170	0.50000	(a)
54 1,3-Dichloropropane	76	8.757	8.757	(0.919)	2152	0.50000	0.56 (aM)
83 1,3-Dichlorobenzene	146	11.773	11.773	(0.995)	2920	0.50000	0.60 (aM)
84 1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	2865	0.50000	0.60 (aM)
26 2,2-Dichloropropane	77	5.048	5.048	(0.873)	1896	0.50000	0.54 (aM)

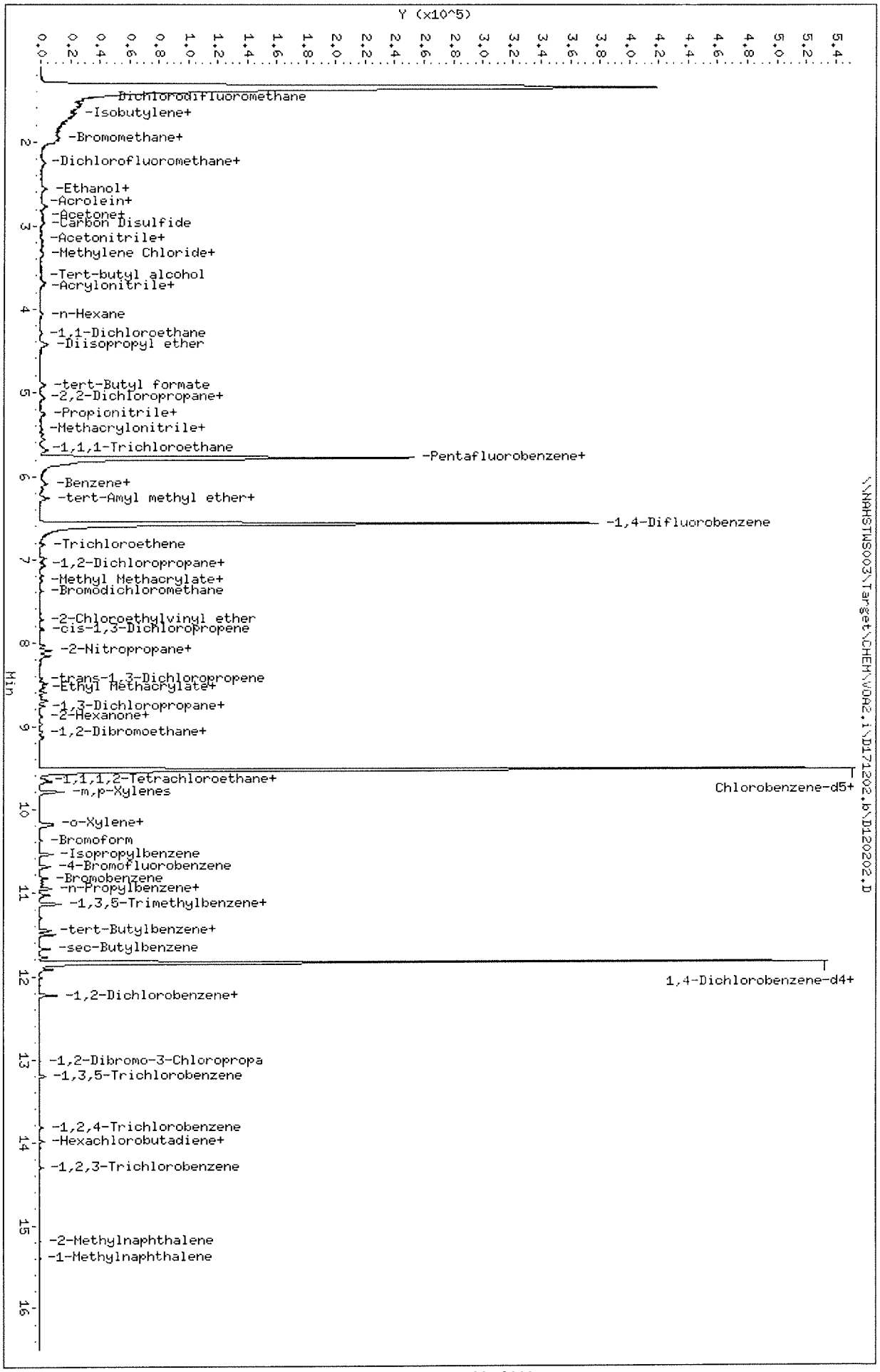
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120202.D
Report Date: 01-Feb-2018 15:20

			QUANT SIG					AMOUNTS	
		Compounds	MASS	RT	EXP RT	REL RT	RESPONSE	CAL-AMT (ug/l)	ON-COL (ug/l)
	24	2-Butanone	43	5.173	5.173	(0.895)	1408	1.00000	1.27 (aM)
	52	2-Hexanone	43	8.879	8.879	(0.932)	1741	1.00000	1.07 (aM)
	76	2-Chlorotoluene	91	11.029	11.029	(0.932)	4439	0.50000	0.61 (aM)
	77	4-Chlorotoluene	91	11.141	11.141	(0.941)	5053	0.50000	(aM)
	45	4-Methyl-2-Pentanone	43	8.035	8.035	(0.843)	3130	1.00000	1.19 (aM)
	10	Acetone	43	2.869	2.869	(0.496)	3198	1.00000	(aM)
	37	Benzene	78	6.094	6.094	(0.927)	5443	0.50000	0.57 (TaM)
	39	Bromodichloromethane	83	7.374	7.374	(1.122)	1557	0.50000	0.49 (aM)
	74	Bromobenzene	156	10.836	10.836	(0.915)	1717	0.50000	0.60 (aM)
	29	Bromochloromethane	128	5.372	5.372	(0.929)	516	0.50000	0.42 (aM)
	6	Bromomethane	94	1.961	1.961	(0.339)	1733	0.50000	0.27 (aM)
	19	Carbon Disulfide	76	2.971	2.971	(0.514)	5964	1.00000	1.26 (aM)
	66	Bromoform	173	10.378	10.378	(1.089)	865	0.50000	0.47 (aM)
	7	Chloroethane	64	2.034	2.034	(0.352)	2385	0.50000	(aM)
	34	Carbon Tetrachloride	117	5.814	5.814	(0.885)	5043	0.50000	1.33 (aM)
	3	Chloromethane	50	1.601	1.601	(0.277)	3868	0.50000	(aM)
	28	Chloroform	83	5.497	5.497	(0.951)	2550	0.50000	0.57 (aM)
	59	Chlorobenzene	112	9.556	9.556	(1.003)	3984	0.50000	0.61 (aM)
	27	cis-1,2-Dichloroethene	96	5.083	5.083	(0.880)	1491	0.50000	0.56 (aM)
	46	cis-1,3-Dichloropropene	75	7.846	7.846	(1.194)	2036	0.50000	0.54 (aM)
	2	Dichlorodifluoromethane	85	1.457	1.457	(0.252)	1216	0.50000	0.52 (aM)
	55	Dibromochloromethane	129	8.975	8.975	(0.942)	1448	0.50000	0.53 (aM)
	44	Dibromomethane	93	7.198	7.198	(1.095)	691	0.50000	0.48 (aM)
	61	Ethylbenzene	106	9.675	9.675	(1.015)	1908	0.50000	0.56 (aM)
	91	Hexachlorobutadiene	225	13.994	13.994	(1.182)	961	0.50000	(aM)
	62	m,p-Xylenes	106	9.790	9.790	(1.028)	5108	1.00000	1.19 (Ta)
	63	o-Xylene	106	10.175	10.175	(1.068)	2591	0.50000	0.58 (Ta)
	67	Isopropylbenzene	105	10.551	10.551	(1.107)	6499	0.50000	0.79 (aM)
	17	Methylene Chloride	84	3.337	3.337	(0.577)	1532	0.50000	0.40 (aM)
	73	n-Propylbenzene	91	10.952	10.952	(0.925)	6638	0.50000	(Ta)
	87	n-Butylbenzene	91	12.229	12.229	(1.033)	3401	0.50000	0.59 (aM)
	92	Naphthalene	128	14.068	14.068	(1.188)	1044	0.50000	(aM)
	64	Styrene	104	10.201	10.201	(1.071)	4233	0.50000	0.59 (aM)
	81	sec-Butylbenzene	105	11.668	11.668	(0.986)	5811	0.50000	(aM)
	78	tert-Butylbenzene	119	11.453	11.453	(0.967)	4266	0.50000	(Ta)
	20	trans-1,2-Dichloroethene	96	3.671	3.671	(0.635)	1127	0.50000	0.51 (aM)
	50	Toluene	91	8.160	8.160	(0.857)	6405	0.50000	0.62 (aM)
	51	trans-1,3-Dichloropropene	75	8.423	8.423	(1.282)	1394	0.50000	0.43 (aM)
	56	Tetrachloroethene	164	8.693	8.693	(0.912)	1069	0.50000	0.50 (aM)
	8	Trichlorofluoromethane	101	2.259	2.259	(0.391)	1895	0.50000	0.53 (aM)
	38	Trichloroethene	130	6.825	6.825	(1.039)	1559	0.50000	0.60 (aM)
	5	Vinyl Chloride	62	1.694	1.694	(0.293)	2461	0.50000	(aM)
$	35	1,2-Dichloroethane-d4	65	6.058	6.058	(1.048)	1945	0.50000	0.65 (aM)
*	36	1,4-Difluorobenzene	114	6.572	6.572	(1.000)	377094	50.0000	
*	70	1,4-Dichlorobenzene-d4	152	11.838	11.838	(1.000)	141237	50.0000	
*	1	Pentafluorobenzene	168	5.779	5.779	(1.000)	256093	50.0000	
*	47	Chlorobenzene-d5	117	9.527	9.527	(1.000)	333152	50.0000	
$	30	Dibromofluoromethane	113	5.689	5.689	(0.984)	1535	0.50000	0.60 (aM)
$	48	Toluene-d8	98	8.093	8.093	(0.849)	6426	0.50000	0.77 (aM)
$	69	4-Bromofluorobenzene	95	10.695	10.695	(1.123)	2839	0.50000	0.89 (a)
	82	p-Isopropyltoluene	119	11.818	11.818	(0.998)	5057	0.50000	0.63 (aM)
	138	Freon TF	101	2.766	2.766	(0.479)	1029	0.50000	0.49 (aM)

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120202.D
Report Date: 01-Feb-2018 15:20

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2,i\D171202,b\D120202.D
Date : 02-DEC-2017 10:18
Client ID: VSTD00,5
Sample Info: VSTD00,5;VSTD00,5;1;1;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2,i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120203.D
Report Date: 01-Feb-2018 15:20

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120203.D
Lab Smp Id: VSTD001 Client Smp ID: VSTD001
Inj Date : 02-DEC-2017 10:42
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD001;VSTD001;1;2;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\CHEM\VOA2.i\D171202.b\8260LL.m
Meth Date : 01-Feb-2018 15:20 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 10:18 Cal File: D120202.D
Als bottle: 3 Calibration Sample, Level: 2
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
31 1,1,1-Trichloroethane	97	5.657	5.657	(0.979)	3581	1.00000	0.98 (a)
60 1,1,1,2-Tetrachloroethane	131	9.646	9.646	(1.013)	2729	1.00000	1.08 (a)
68 1,1,2,2-Tetrachloroethane	83	10.869	10.869	(0.918)	3108	1.00000	1.07 (aM)
53 1,1,2-Trichloroethane	83	8.597	8.597	(0.903)	1909	1.00000	1.00 (aM)
32 1,1-Dichloropropene	75	5.850	5.850	(0.890)	4305	1.00000	1.19 (aM)
22 1,1-Dichloroethane	63	4.278	4.278	(0.741)	5155	1.00000	1.05 (aM)
11 1,1-Dichloroethene	96	2.747	2.747	(0.476)	2256	1.00000	0.98 (aM)
71 1,2,3-Trichloropropane	75	10.904	10.904	(0.921)	3317	1.00000	1.08 (Ta)
79 1,2,4-Trimethylbenzene	105	11.498	11.498	(0.971)	9594	1.00000	(a)
93 1,2,3-Trichlorobenzene	182	14.305	14.305	(1.208)	2034	1.00000	0.93 (aM)
90 1,2,4-Trichlorobenzene	180	13.821	13.821	(1.168)	2244	1.00000	0.87 (aM)
89 1,2-Dibromo-3-Chloropropane	75	13.015	13.015	(1.099)	361	1.00000	0.15 (aM)
33 1,2-Dichloroethane	62	6.152	6.152	(0.936)	3613	1.00000	1.01 (Ta)
42 1,2-Dichloropropane	63	7.069	7.069	(1.076)	3325	1.00000	1.21 (aM)
57 1,2-Dibromoethane	107	9.075	9.075	(0.953)	2466	1.00000	1.03 (aM)
88 1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	4811	1.00000	1.01 (a)
75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.940)	9046	1.00000	(a)
54 1,3-Dichloropropane	76	8.751	8.751	(0.919)	4004	1.00000	1.06 (aM)
83 1,3-Dichlorobenzene	146	11.764	11.764	(0.994)	5472	1.00000	1.10 (a)
84 1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	5271	1.00000	1.08 (a)
26 2,2-Dichloropropane	77	5.048	5.048	(0.874)	3467	1.00000	1.00 (aM)

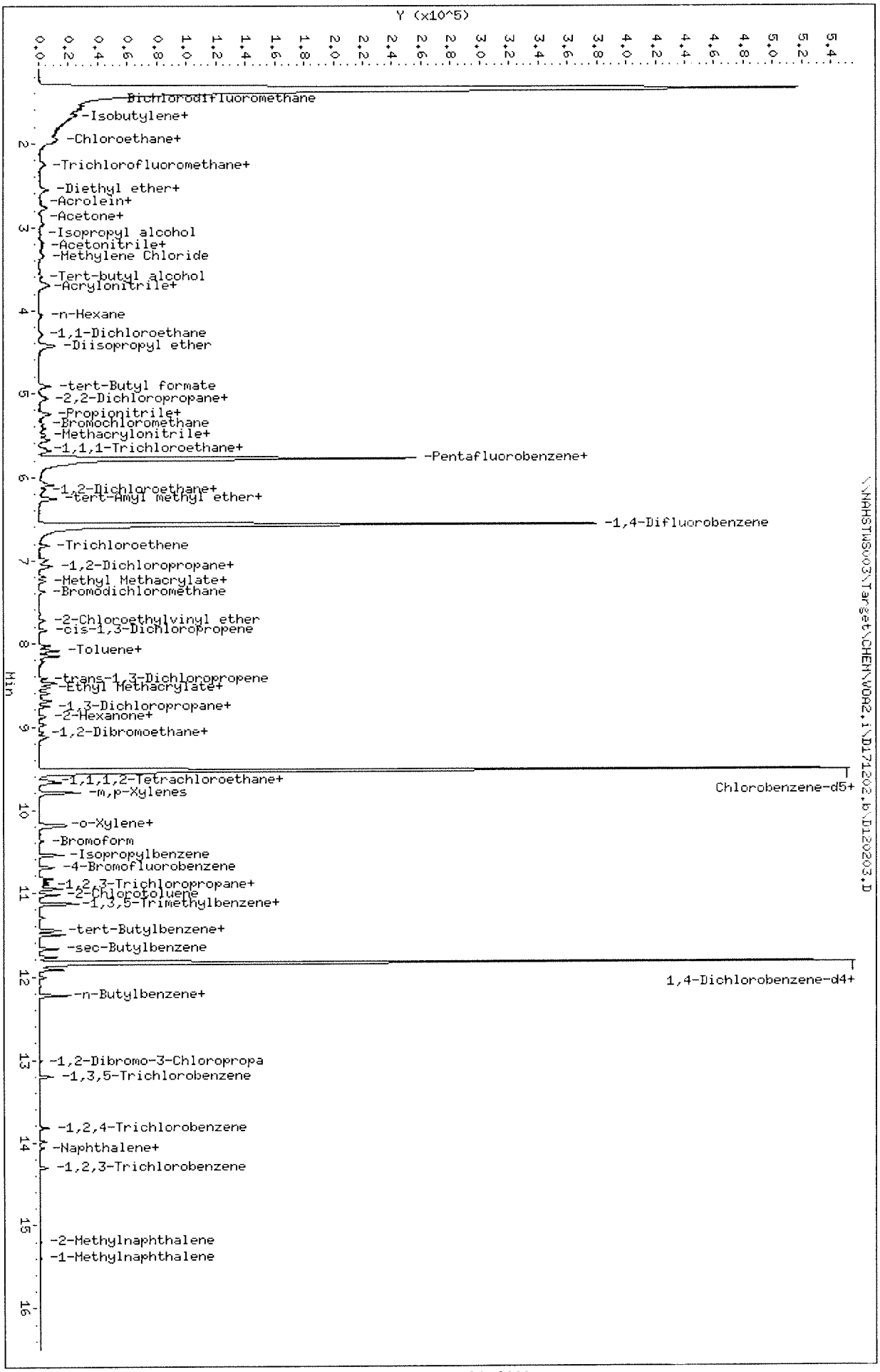
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120203.D
Report Date: 01-Feb-2018 15:20

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
24	2-Butanone	43	5.163	5.163	(0.894)	2564	2.00000	2.33 (aM)
52	2-Hexanone	43	8.876	8.876	(0.932)	3306	2.00000	2.05 (aM)
76	2-Chlorotoluene	91	11.026	11.026	(0.931)	8059	1.00000	1.07 (Ta)
77	4-Chlorotoluene	91	11.138	11.138	(0.941)	8809	1.00000	(a)
45	4-Methyl-2-Pentanone	43	8.035	8.035	(0.844)	6250	2.00000	2.40 (aM)
10	Acetone	43	2.866	2.866	(0.496)	3976	2.00000	(aM)
37	Benzene	78	6.087	6.087	(0.926)	9883	1.00000	1.15 (aM)
39	Bromodichloromethane	83	7.374	7.374	(1.122)	3134	1.00000	1.00 (aM)
74	Bromobenzene	156	10.837	10.837	(0.915)	3054	1.00000	1.03 (a)
29	Bromochloromethane	128	5.369	5.369	(0.929)	1036	1.00000	0.85 (aM)
6	Bromomethane	94	1.951	1.951	(0.338)	3575	1.00000	0.96 (TaM)
19	Carbon Disulfide	76	2.956	2.956	(0.512)	8133	2.00000	1.74 (aM)
66	Bromoform	173	10.375	10.375	(1.089)	1610	1.00000	0.89 (aM)
7	Chloroethane	64	2.051	2.051	(0.355)	3477	1.00000	(aM)
34	Carbon Tetrachloride	117	5.837	5.837	(0.888)	4445	1.00000	1.16 (TaM)
3	Chloromethane	50	1.598	1.598	(0.277)	6636	1.00000	(aM)
28	Chloroform	83	5.491	5.491	(0.951)	5093	1.00000	1.14 (aM)
59	Chlorobenzene	112	9.553	9.553	(1.003)	7053	1.00000	1.09 (Ta)
27	cis-1,2-Dichloroethene	96	5.070	5.070	(0.878)	2962	1.00000	1.12 (aM)
46	cis-1,3-Dichloropropene	75	7.839	7.839	(1.193)	3337	1.00000	0.90 (aM)
2	Dichlorodifluoromethane	85	1.454	1.454	(0.252)	2151	1.00000	0.93 (aM)
55	Dibromochloromethane	129	8.972	8.972	(0.942)	2456	1.00000	0.91 (aM)
44	Dibromomethane	93	7.198	7.198	(1.095)	1587	1.00000	1.12 (aM)
61	Ethylbenzene	106	9.675	9.675	(1.016)	3482	1.00000	1.05 (aMH)
91	Hexachlorobutadiene	225	13.991	13.991	(1.182)	1063	1.00000	(aM)
62	m,p-Xylenes	106	9.791	9.791	(1.028)	8999	2.00000	2.12 (a)
63	o-Xylene	106	10.176	10.176	(1.068)	4550	1.00000	1.04 (a)
67	Isopropylbenzene	105	10.551	10.551	(1.108)	10686	1.00000	1.17 (a)
17	Methylene Chloride	84	3.341	3.341	(0.578)	2757	1.00000	1.08 (aM)
73	n-Propylbenzene	91	10.955	10.955	(0.925)	11530	1.00000	(Ta)
87	n-Butylbenzene	91	12.220	12.220	(1.032)	5133	1.00000	0.86 (Ta)
92	Naphthalene	128	14.068	14.068	(1.188)	3027	1.00000	(a)
64	Styrene	104	10.201	10.201	(1.071)	7533	1.00000	1.06 (a)
81	sec-Butylbenzene	105	11.668	11.668	(0.986)	9365	1.00000	(aM)
78	tert-Butylbenzene	119	11.453	11.453	(0.967)	7196	1.00000	(aM)
20	trans-1,2-Dichloroethene	96	3.668	3.668	(0.635)	2064	1.00000	0.94 (aM)
50	Toluene	91	8.157	8.157	(0.856)	11168	1.00000	1.09 (Ta)
51	trans-1,3-Dichloropropene	75	8.424	8.424	(1.282)	3133	1.00000	0.97 (aM)
56	Tetrachloroethene	164	8.693	8.693	(0.913)	2236	1.00000	1.07 (aM)
8	Trichlorofluoromethane	101	2.266	2.266	(0.392)	3024	1.00000	0.85 (TaM)
38	Trichloroethene	130	6.825	6.825	(1.039)	2690	1.00000	1.04 (aM)
5	Vinyl Chloride	62	1.682	1.682	(0.291)	3763	1.00000	(TaM)
$ 35	1,2-Dichloroethane-d4	65	6.059	6.059	(1.049)	3070	1.00000	1.04 (aM)
* 36	1,4-Difluorobenzene	114	6.572	6.572	(1.000)	373936	50.0000	
* 70	1,4-Dichlorobenzene-d4	152	11.838	11.838	(1.000)	145657	50.0000	
* 1	Pentafluorobenzene	168	5.776	5.776	(1.000)	254164	50.0000	
* 47	Chlorobenzene-d5	117	9.524	9.524	(1.000)	329829	50.0000	
$ 30	Dibromofluoromethane	113	5.686	5.686	(0.984)	2347	1.00000	0.93 (aM)
$ 48	Toluene-d8	98	8.093	8.093	(0.850)	9941	1.00000	1.21 (aM)
$ 69	4-Bromofluorobenzene	95	10.699	10.699	(1.123)	3894	1.00000	1.24 (a)
82	p-Isopropyltoluene	119	11.819	11.819	(0.998)	8013	1.00000	0.98 (aM)
138	Freon TF	101	2.769	2.769	(0.479)	1750	1.00000	0.84 (aM)

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120203.D
Report Date: 01-Feb-2018 15:20

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120203.D
Date : 02-DEC-2017 10:42
Client ID: VSTD001
Sample Info: VSTD001;VSTD001;1;2;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120204.D
Report Date: 01-Feb-2018 15:20

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120204.D
Lab Smp Id: VSTD002 Client Smp ID: VSTD002
Inj Date : 02-DEC-2017 11:06
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD002;VSTD002;1;3;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\CHEM\VOA2.i\D171202.b\8260LL.m
Meth Date : 01-Feb-2018 15:20 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 10:42 Cal File: D120203.D
Als bottle: 4 Calibration Sample, Level: 3
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-CO (ug/l)
31 1,1,1-Trichloroethane	97	5.654	5.654	(0.978)	8427	2.00000	2.07 (a)
60 1,1,1,2-Tetrachloroethane	131	9.646	9.646	(1.013)	5023	2.00000	1.95 (a)
68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.919)	6180	2.00000	2.12 (aM)
53 1,1,2-Trichloroethane	83	8.593	8.593	(0.902)	3646	2.00000	1.87 (a)
32 1,1-Dichloropropene	75	5.856	5.856	(0.891)	9416	2.00000	2.81 (aM)
22 1,1-Dichloroethane	63	4.290	4.290	(0.742)	10376	2.00000	1.88 (aM)
11 1,1-Dichloroethene	96	2.756	2.756	(0.477)	4642	2.00000	1.79 (aM)
71 1,2,3-Trichloropropane	75	10.904	10.904	(0.921)	6474	2.00000	2.11 (a)
79 1,2,4-Trimethylbenzene	105	11.504	11.504	(0.972)	19532	2.00000	1.27 (a)
93 1,2,3-Trichlorobenzene	182	14.308	14.308	(1.209)	4412	2.00000	2.01 (aM)
90 1,2,4-Trichlorobenzene	180	13.821	13.821	(1.168)	4742	2.00000	1.84 (Ta)
89 1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	841	2.00000	1.22 (aM)
33 1,2-Dichloroethane	62	6.148	6.148	(0.936)	7241	2.00000	2.01 (a)
42 1,2-Dichloropropane	63	7.069	7.069	(1.076)	5538	2.00000	1.99 (aM)
57 1,2-Dibromoethane	107	9.068	9.068	(0.952)	4896	2.00000	2.00 (Ta)
88 1,2-Dichlorobenzene	146	12.229	12.229	(1.033)	10163	2.00000	2.13 (a)
75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	18401	2.00000	0.72 (a)
54 1,3-Dichloropropane	76	8.747	8.747	(0.918)	7803	2.00000	2.03 (aM)
83 1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	10348	2.00000	2.07 (a)
84 1,4-Dichlorobenzene	146	11.863	11.863	(1.002)	10225	2.00000	2.09 (a)
26 2,2-Dichloropropane	77	5.041	5.041	(0.872)	7256	2.00000	1.87 (aM)

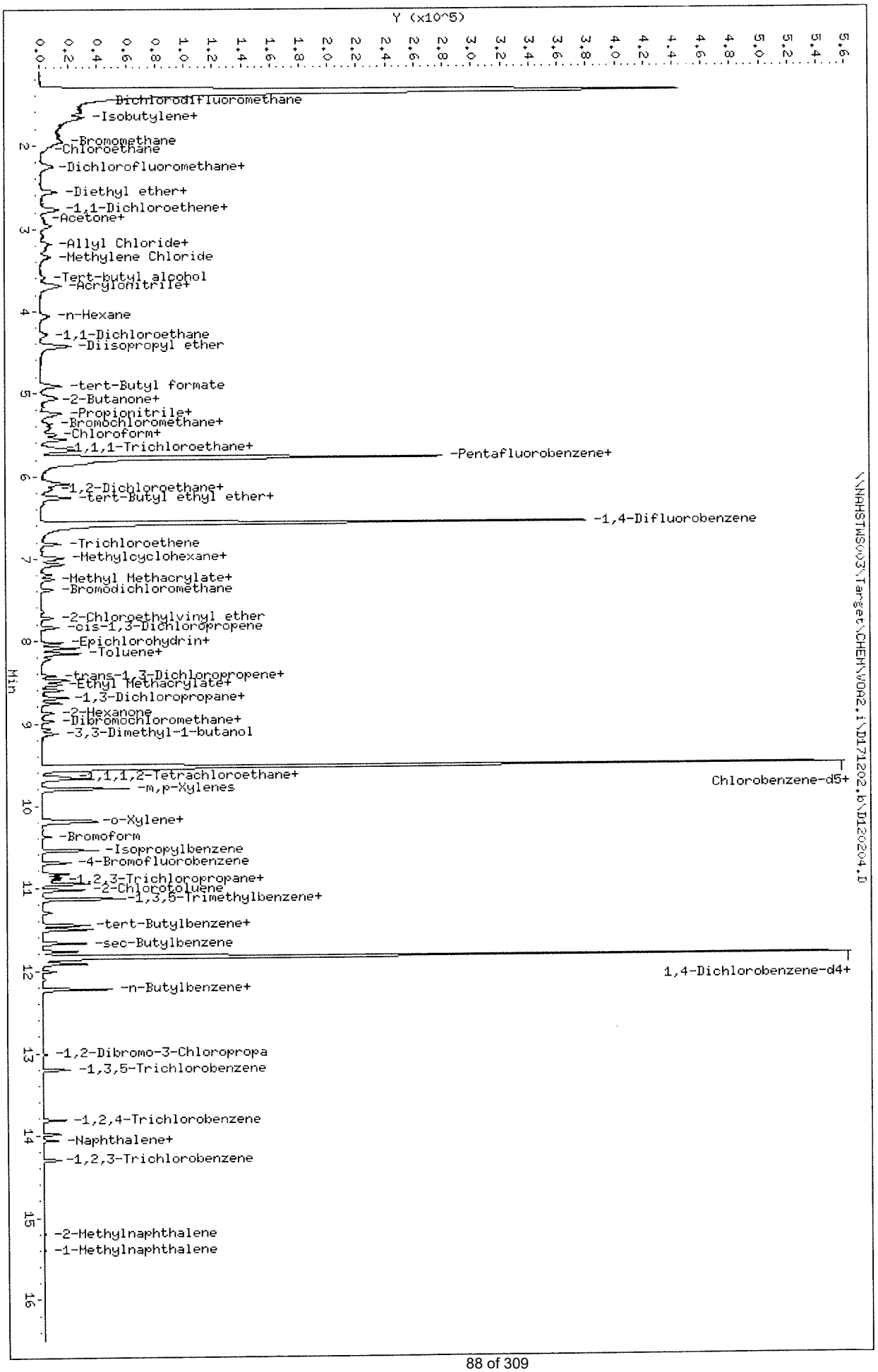
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120204.D
Report Date: 01-Feb-2018 15:20

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
24	2-Butanone	43	5.157	5.157	(0.892)	4385	4.00000	3.55(aM)
52	2-Hexanone	43	8.869	8.869	(0.931)	6473	4.00000	3.93(a)
76	2-Chlorotoluene	91	11.029	11.029	(0.932)	16577	2.00000	2.20(a)
77	4-Chlorotoluene	91	11.138	11.138	(0.941)	18244	2.00000	1.13(a)
45	4-Methyl-2-Pentanone	43	8.029	8.029	(0.843)	10790	4.00000	4.04(aM)
10	Acetone	43	2.869	2.869	(0.496)	5385	4.00000	0.66(aM)
37	Benzene	78	6.097	6.097	(0.928)	18734	2.00000	1.97(a)
39	Bromodichloromethane	83	7.377	7.377	(1.123)	6365	2.00000	2.00(Ta)
74	Bromobenzene	156	10.840	10.840	(0.916)	6321	2.00000	2.13(a)
29	Bromochloromethane	128	5.368	5.368	(0.929)	2670	2.00000	1.95(a)
6	Bromomethane	94	1.948	1.948	(0.337)	6157	2.00000	1.69(aM)
19	Carbon Disulfide	76	2.959	2.959	(0.512)	19625	4.00000	3.74(aM)
66	Bromoform	173	10.378	10.378	(1.090)	3288	2.00000	1.79(aM)
7	Chloroethane	64	2.057	2.057	(0.356)	6678	2.00000	1.06(aM)
34	Carbon Tetrachloride	117	5.837	5.837	(0.888)	8585	2.00000	2.42(TaH)
3	Chloromethane	50	1.598	1.598	(0.277)	12476	2.00000	0.10(aM)
28	Chloroform	83	5.494	5.494	(0.951)	11280	2.00000	2.26(aM)
59	Chlorobenzene	112	9.556	9.556	(1.003)	13924	2.00000	2.10(a)
27	cis-1,2-Dichloroethene	96	5.080	5.080	(0.879)	5537	2.00000	1.88(aM)
46	cis-1,3-Dichloropropene	75	7.843	7.843	(1.193)	7440	2.00000	1.98(aM)
2	Dichlorodifluoromethane	85	1.463	1.463	(0.253)	4587	2.00000	1.77(aM)
55	Dibromochloromethane	129	8.972	8.972	(0.942)	5058	2.00000	1.83(Ta)
44	Dibromomethane	93	7.191	7.191	(1.094)	2793	2.00000	1.94(a)
61	Ethylbenzene	106	9.668	9.668	(1.015)	7349	2.00000	2.16(aMH)
91	Hexachlorobutadiene	225	13.991	13.991	(1.182)	2817	2.00000	0.69(aM)
62	m,p-Xylenes	106	9.787	9.787	(1.028)	17786	4.00000	4.10(a)
63	o-Xylene	106	10.179	10.179	(1.069)	8974	2.00000	2.01(a)
67	Isopropylbenzene	105	10.544	10.544	(1.107)	25343	2.00000	2.45(a)
17	Methylene Chloride	84	3.347	3.347	(0.579)	5306	2.00000	1.86(aM)
73	n-Propylbenzene	91	10.955	10.955	(0.926)	24532	2.00000	(a)
87	n-Butylbenzene	91	12.226	12.226	(1.033)	13308	2.00000	2.22(a)
92	Naphthalene	128	14.065	14.065	(1.188)	7991	2.00000	(a)
64	Styrene	104	10.201	10.201	(1.071)	14339	2.00000	1.97(a)
81	sec-Butylbenzene	105	11.671	11.671	(0.986)	21030	2.00000	1.04(a)
78	tert-Butylbenzene	119	11.453	11.453	(0.968)	16119	2.00000	1.17(a)
20	trans-1,2-Dichloroethene	96	3.677	3.677	(0.636)	4577	2.00000	1.86(aM)
50	Toluene	91	8.154	8.154	(0.856)	21839	2.00000	2.09(aM)
51	trans-1,3-Dichloropropene	75	8.423	8.423	(1.282)	5994	2.00000	1.83(aM)
56	Tetrachloroethene	164	8.693	8.693	(0.913)	4566	2.00000	2.14(aM)
8	Trichlorofluoromethane	101	2.262	2.262	(0.391)	7667	2.00000	1.93(aM)
38	Trichloroethene	130	6.822	6.822	(1.038)	5343	2.00000	2.04(a)
5	Vinyl Chloride	62	1.688	1.688	(0.292)	7543	2.00000	0.07(aM)
$ 35	1,2-Dichloroethane-d4	65	6.062	6.062	(1.049)	6259	2.00000	1.90(aM)
* 36	1,4-Difluorobenzene	114	6.572	6.572	(1.000)	379462	50.0000	
* 70	1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	146409	50.0000	
* 1	Pentafluorobenzene	168	5.779	5.779	(1.000)	285166	50.0000	
* 47	Chlorobenzene-d5	117	9.524	9.524	(1.000)	338024	50.0000	
$ 30	Dibromofluoromethane	113	5.689	5.689	(0.984)	6395	2.00000	2.26(aM)
$ 48	Toluene-d8	98	8.093	8.093	(0.850)	18560	2.00000	2.21(aM)
$ 69	4-Bromofluorobenzene	95	10.695	10.695	(1.123)	6746	2.00000	2.10(a)
82	p-Isopropyltoluene	119	11.818	11.818	(0.999)	17991	2.00000	2.19(a)
138	Freon TF	101	2.782	2.782	(0.481)	4615	2.00000	1.97(aM)

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120204.D
Report Date: 01-Feb-2018 15:20

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.


Y (x10^5)
Min
Dichlorodifluoromethane
-Isobutylene+
-Bromomethane
-Chloroethane
-Dichlorofluoromethane+
-Diethyl ether+
-1,1-Dichloroethene+
-Acetone+
-Allyl Chloride+
-Methylene Chloride
-Tert-butyl alcohol
-Acrylonitrile+
-n-Hexane
-1,1-Dichloroethane
-Diisopropyl ether
-tert-Butyl formate
-2-Butanone+
-Propionitrile+
-Bromochloromethane+
-Chloroform+
-1,1,1-Trichloroethane+
-Pentafluorobenzene+
-1,2-Dichloroethane+
-tert-Butyl ethyl ether+
-1,4-Difluorobenzene
-Trichloroethene
-Methylcyclohexane+
-Methyl Methacrylate+
-Bromodichloromethane
-2-Chloroethylvinyl ether
-cis-1,3-Dichloropropene
-Epichlorohydrin+
-Toluene+
-trans-1,3-Dichloropropene+
-Ethyl Methacrylate+
-1,3-Dichloropropane+
-2-Hexanone
-Dibromochloromethane+
-3,3-Dimethyl-1-butanol
Chlorobenzene-d5+
-1,1,1,2-Tetrachloroethane+
-m,p-Xylenes
-o-Xylene+
-Bromoform
-Isopropylbenzene
-4-Bromofluorobenzene
-1,2,3-Trichloropropane+
-2-Chlorotoluene
-1,3,5-Trimethylbenzene+
-tert-Butylbenzene+
-sec-Butylbenzene
1,4-Dichlorobenzene-d4+
-n-Butylbenzene+
-1,2-Dibromo-3-Chloropropa
-1,3,5-Trichlorobenzene
-1,2,4-Trichlorobenzene
-Naphthalene+
-1,2,3-Trichlorobenzene
-2-Methylnaphthalene
-1-Methylnaphthalene
\\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120204.D
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120204.D
Date : 02-DEC-2017 11:06
Client ID: VSTD002
Sample Info: VSTD002;VSTD002;1;3;
Purge Volume: 5.0
Column phase: DB624
Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120205.D
Report Date: 01-Feb-2018 15:20

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120205.D
Lab Smp Id: VSTD005 Client Smp ID: VSTD005
Inj Date : 02-DEC-2017 11:31
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD005;VSTD005;1;4;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\CHEM\VOA2.i\D171202.b\8260LL.m
Meth Date : 01-Feb-2018 15:20 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 11:06 Cal File: D120204.D
Als bottle: 5 Calibration Sample, Level: 4
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
31 1,1,1-Trichloroethane	97	5.657	5.657	(0.979)	17704	5.00000	5.14 (M)
60 1,1,1,2-Tetrachloroethane	131	9.646	9.646	(1.012)	11672	5.00000	4.75 (a)
68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.919)	14113	5.00000	5.04 (M)
53 1,1,2-Trichloroethane	83	8.597	8.597	(0.902)	9253	5.00000	4.98 (a)
32 1,1-Dichloropropene	75	5.863	5.863	(0.892)	15983	5.00000	4.75 (aM)
22 1,1-Dichloroethane	63	4.284	4.284	(0.741)	24471	5.00000	5.27 (M)
11 1,1-Dichloroethene	96	2.763	2.763	(0.478)	11834	5.00000	5.42 (M)
71 1,2,3-Trichloropropane	75	10.904	10.904	(0.921)	14147	5.00000	4.79 (a)
79 1,2,4-Trimethylbenzene	105	11.497	11.497	(0.972)	42815	5.00000	4.81 (a)
93 1,2,3-Trichlorobenzene	182	14.305	14.305	(1.209)	10645	5.00000	5.05
90 1,2,4-Trichlorobenzene	180	13.821	13.821	(1.168)	12561	5.00000	5.07
89 1,2-Dibromo-3-Chloropropane	75	13.012	13.012	(1.100)	1939	5.00000	3.84 (aM)
33 1,2-Dichloroethane	62	6.148	6.148	(0.936)	17871	5.00000	4.78 (aM)
42 1,2-Dichloropropane	63	7.069	7.069	(1.076)	13638	5.00000	4.75 (aM)
57 1,2-Dibromoethane	107	9.068	9.068	(0.952)	11298	5.00000	4.84 (Ta)
88 1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	23094	5.00000	5.04
75 1,3,5-Trimethylbenzene	105	11.135	11.135	(0.941)	43015	5.00000	4.89 (a)
54 1,3-Dichloropropane	76	8.754	8.754	(0.919)	18197	5.00000	4.96 (a)
83 1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	23612	5.00000	4.90 (a)
84 1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	22326	5.00000	4.74 (a)
26 2,2-Dichloropropane	77	5.044	5.044	(0.873)	16428	5.00000	5.01 (M)

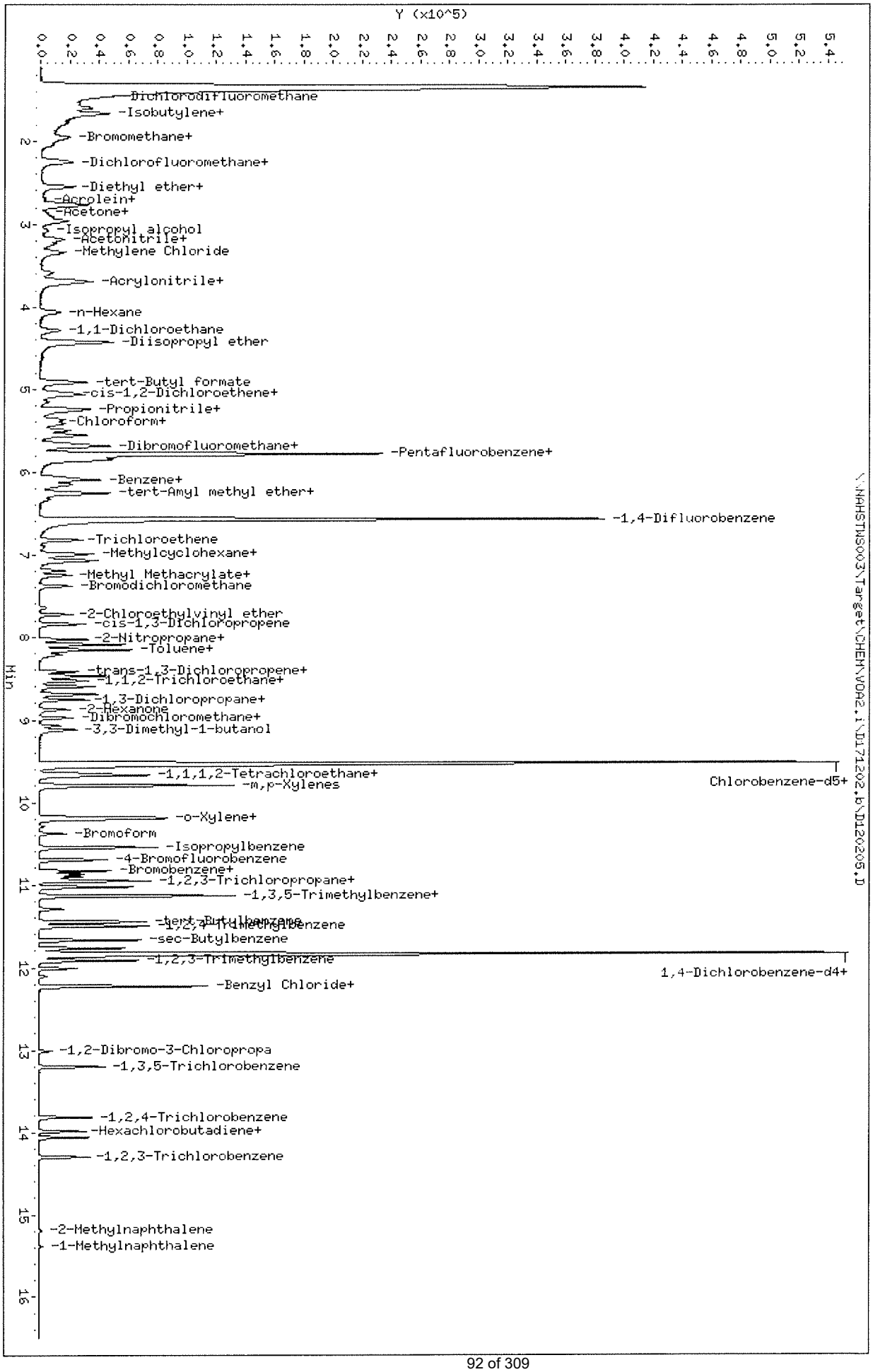
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Report Date: 01-Feb-2018 15:20

			QUANT SIG					AMOUNTS	
								CAL-AMT	ON-COL
		Compounds	MASS	RT	EXP RT	REL RT	RESPONSE	(ug/l)	(ug/l)
	24	2-Butanone	43	5.150	5.150	(0.891)	9830	10.0000	9.43(M)
	52	2-Hexanone	43	8.869	8.869	(0.931)	15432	10.0000	9.80
	76	2-Chlorotoluene	91	11.026	11.026	(0.932)	36630	5.00000	5.05
	77	4-Chlorotoluene	91	11.138	11.138	(0.941)	40733	5.00000	4.72(a)
	45	4-Methyl-2-Pentanone	43	8.025	8.025	(0.842)	25316	10.0000	9.92
	10	Acetone	43	2.859	2.859	(0.495)	8530	10.0000	7.56
	37	Benzene	78	6.094	6.094	(0.927)	44144	5.00000	4.48(a)
	39	Bromodichloromethane	83	7.380	7.380	(1.123)	15006	5.00000	4.56(Ta)
	74	Bromobenzene	156	10.833	10.833	(0.915)	14294	5.00000	5.01
	29	Bromochloromethane	128	5.365	5.365	(0.928)	6551	5.00000	5.68(M)
	6	Bromomethane	94	1.951	1.951	(0.338)	12514	5.00000	4.73(aM)
	19	Carbon Disulfide	76	2.959	2.959	(0.512)	43717	10.0000	9.87(M)
	66	Bromoform	173	10.374	10.374	(1.089)	8011	5.00000	4.56(Ta)
	7	Chloroethane	64	2.044	2.044	(0.354)	13201	5.00000	4.87(aM)
	34	Carbon Tetrachloride	117	5.834	5.834	(0.888)	17467	5.00000	4.99(aMH)
	3	Chloromethane	50	1.601	1.601	(0.277)	30205	5.00000	4.61(TaM)
	28	Chloroform	83	5.500	5.500	(0.952)	20863	5.00000	4.96(a)
	59	Chlorobenzene	112	9.556	9.556	(1.003)	31487	5.00000	4.98(a)
	27	cis-1,2-Dichloroethene	96	5.070	5.070	(0.877)	12512	5.00000	5.03
	46	cis-1,3-Dichloropropene	75	7.839	7.839	(1.193)	17306	5.00000	4.45(a)
	2	Dichlorodifluoromethane	85	1.454	1.454	(0.252)	11220	5.00000	5.14(M)
	55	Dibromochloromethane	129	8.972	8.972	(0.942)	12389	5.00000	4.70(Ta)
	44	Dibromomethane	93	7.194	7.194	(1.095)	6993	5.00000	4.70(a)
	61	Ethylbenzene	106	9.672	9.672	(1.015)	16330	5.00000	5.02(H)
	91	Hexachlorobutadiene	225	13.991	13.991	(1.182)	6657	5.00000	4.55(a)
	62	m,p-Xylenes	106	9.790	9.790	(1.028)	40868	10.0000	9.86
	63	o-Xylene	106	10.175	10.175	(1.068)	21082	5.00000	4.94(a)
	67	Isopropylbenzene	105	10.548	10.548	(1.107)	52377	5.00000	5.09
	17	Methylene Chloride	84	3.337	3.337	(0.577)	12218	5.00000	5.09(M)
	73	n-Propylbenzene	91	10.955	10.955	(0.926)	55879	5.00000	3.76(a)
	87	n-Butylbenzene	91	12.223	12.223	(1.033)	30017	5.00000	5.22
	92	Naphthalene	128	14.061	14.061	(1.188)	26337	5.00000	2.97(a)
	64	Styrene	104	10.198	10.198	(1.070)	34604	5.00000	4.98(a)
	81	sec-Butylbenzene	105	11.668	11.668	(0.986)	47554	5.00000	4.71(a)
	78	tert-Butylbenzene	119	11.449	11.449	(0.967)	34766	5.00000	4.61(a)
	20	trans-1,2-Dichloroethene	96	3.671	3.671	(0.635)	10700	5.00000	5.16(M)
	50	Toluene	91	8.157	8.157	(0.856)	49289	5.00000	4.93(a)
	51	trans-1,3-Dichloropropene	75	8.417	8.417	(1.281)	15125	5.00000	4.48(a)
	56	Tetrachloroethene	164	8.686	8.686	(0.912)	10335	5.00000	5.06
	8	Trichlorofluoromethane	101	2.259	2.259	(0.391)	18006	5.00000	5.37(TM)
	38	Trichloroethene	130	6.816	6.816	(1.037)	12361	5.00000	4.57(aM)
	5	Vinyl Chloride	62	1.681	1.681	(0.291)	17987	5.00000	4.09(aM)
$	35	1,2-Dichloroethane-d4	65	6.062	6.062	(1.049)	13346	5.00000	4.80(aM)
*	36	1,4-Difluorobenzene	114	6.572	6.572	(1.000)	393098	50.0000	
*	70	1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	140975	50.0000	
*	1	Pentafluorobenzene	168	5.779	5.779	(1.000)	240856	50.0000	
*	47	Chlorobenzene-d5	117	9.527	9.527	(1.000)	323114	50.0000	
$	30	Dibromofluoromethane	113	5.693	5.693	(0.985)	11890	5.00000	4.99(aM)
$	48	Toluene-d8	98	8.093	8.093	(0.849)	41738	5.00000	5.22(M)
$	69	4-Bromofluorobenzene	95	10.695	10.695	(1.123)	15307	5.00000	4.98(a)
	82	p-Isopropyltoluene	119	11.818	11.818	(0.999)	40160	5.00000	5.08
	138	Freon TF	101	2.772	2.772	(0.480)	11229	5.00000	5.69

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120205.D
Report Date: 01-Feb-2018 15:20

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.


Y (x10^5)
Min
Dichlorodifluoromethane
-Isobutylene+
-Bromomethane+
-Dichlorofluoromethane+
-Diethyl ether+
-Acrolein+
-Acetone+
-Isopropyl alcohol
-Acetonitrile+
-Methylene Chloride
-Acrylonitrile+
-n-Hexane
-1,1-Dichloroethane
-Diisopropyl ether
-tert-Butyl formate
-cis-1,2-Dichloroethene+
-Propionitrile+
-Chloroform+
-Dibromofluoromethane+
-Pentafluorobenzene+
-Benzene+
-tert-Amyl methyl ether+
-1,4-Difluorobenzene
-Trichloroethene
-Methylcyclohexane+
-Methyl Methacrylate+
-Bromodichloromethane
-2-Chloroethylvinyl ether
-cis-1,3-Dichloropropene
-2-Nitropropane+
-Toluene+
-trans-1,3-Dichloropropene+
-1,1,2-Trichloroethane+
-1,3-Dichloropropane+
-2-Hexanone
-Dibromochloromethane+
-3,3-Dimethyl-1-butanol
-1,1,1,2-Tetrachloroethane+
-m,p-Xylenes
Chlorobenzene-d5+
-o-Xylene+
-Bromoform
-Isopropylbenzene
-4-Bromofluorobenzene
-Bromobenzene+
-1,2,3-Trichloropropane+
-1,3,5-Trimethylbenzene+
-tert-Butylbenzene
-1,2,4-Trimethylbenzene
-sec-Butylbenzene
-1,2,3-Trimethylbenzene
1,4-Dichlorobenzene-d4+
-Benzyl Chloride+
-1,2-Dibromo-3-Chloropropa
-1,3,5-Trichlorobenzene
-1,2,4-Trichlorobenzene
-Hexachlorobutadiene+
-1,2,3-Trichlorobenzene
-2-Methylnaphthalene
-1-Methylnaphthalene
\\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120205.D
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120205.D
Date : 02-DEC-2017 11:31
Client ID: VSTD005
Sample Info: VSTD005;VSTD005;1;4;
Purge Volume: 5.0
Column phase: DB624
Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120206.D
Report Date: 01-Feb-2018 15:20

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120206.D
Lab Smp Id: VSTD010 Client Smp ID: VSTD010
Inj Date : 02-DEC-2017 11:55
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD010;VSTD010;1;5;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\CHEM\VOA2.i\D171202.b\8260LL.m
Meth Date : 01-Feb-2018 15:20 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 11:31 Cal File: D120205.D
Als bottle: 6 Calibration Sample, Level: 5
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
31 1,1,1-Trichloroethane	97	5.657	5.657	(0.979)	36978	10.0000	11.05
60 1,1,1,2-Tetrachloroethane	131	9.646	9.646	(1.012)	26368	10.0000	10.82
68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.918)	29834	10.0000	10.70
53 1,1,2-Trichloroethane	83	8.593	8.593	(0.902)	21354	10.0000	11.60
32 1,1-Dichloropropene	75	5.856	5.856	(0.891)	33728	10.0000	11.32(M)
22 1,1-Dichloroethane	63	4.277	4.277	(0.740)	49027	10.0000	10.86(M)
11 1,1-Dichloroethene	96	2.756	2.756	(0.477)	24829	10.0000	11.70
71 1,2,3-Trichloropropane	75	10.904	10.904	(0.921)	31874	10.0000	10.85
79 1,2,4-Trimethylbenzene	105	11.501	11.501	(0.972)	89960	10.0000	11.83
93 1,2,3-Trichlorobenzene	182	14.299	14.299	(1.208)	25190	10.0000	12.00
90 1,2,4-Trichlorobenzene	180	13.818	13.818	(1.167)	28935	10.0000	11.74
89 1,2-Dibromo-3-Chloropropane	75	13.012	13.012	(1.099)	4853	10.0000	10.66
33 1,2-Dichloroethane	62	6.145	6.145	(0.935)	36425	10.0000	10.74(M)
42 1,2-Dichloropropane	63	7.063	7.063	(1.075)	28238	10.0000	10.82(M)
57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	23074	10.0000	9.97
88 1,2-Dichlorobenzene	146	12.226	12.226	(1.033)	47675	10.0000	10.45
75 1,3,5-Trimethylbenzene	105	11.135	11.135	(0.941)	89656	10.0000	11.77
54 1,3-Dichloropropane	76	8.751	8.751	(0.918)	39472	10.0000	10.84
83 1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	51797	10.0000	10.81
84 1,4-Dichlorobenzene	146	11.860	11.860	(1.002)	49482	10.0000	10.56
26 2,2-Dichloropropane	77	5.044	5.044	(0.873)	37834	10.0000	11.86

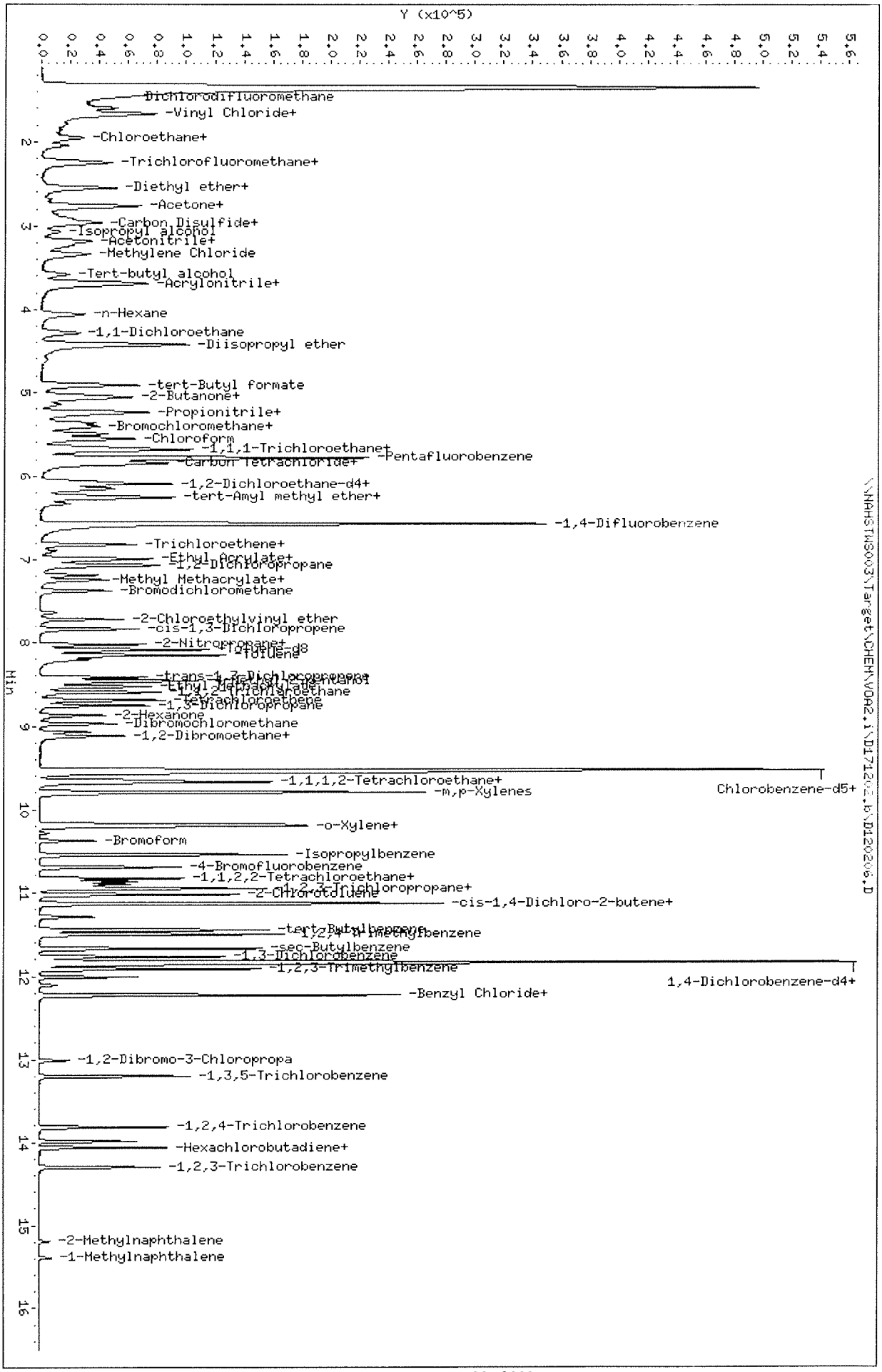
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120206.D
Report Date: 01-Feb-2018 15:20

			QUANT SIG					AMOUNTS	
		Compounds	MASS	RT	EXP RT	REL RT	RESPONSE	CAL-AMT (ug/l)	ON-COL (ug/l)
	24	2-Butanone	43	5.147	5.147	(0.891)	20635	20.0000	20.34
	52	2-Hexanone	43	8.866	8.866	(0.931)	32634	20.0000	20.91
	76	2-Chlorotoluene	91	11.029	11.029	(0.932)	76769	10.0000	10.63
	77	4-Chlorotoluene	91	11.141	11.141	(0.941)	84596	10.0000	11.55
	45	4-Methyl-2-Pentanone	43	8.025	8.025	(0.842)	50931	20.0000	20.14
	10	Acetone	43	2.859	2.859	(0.495)	17731	20.0000	24.20
	37	Benzene	78	6.094	6.094	(0.927)	91944	10.0000	10.29
	39	Bromodichloromethane	83	7.377	7.377	(1.123)	33119	10.0000	11.09
	74	Bromobenzene	156	10.833	10.833	(0.915)	30056	10.0000	10.59
	29	Bromochloromethane	128	5.372	5.372	(0.929)	12859	10.0000	11.47
	6	Bromomethane	94	1.951	1.951	(0.338)	24891	10.0000	10.58(TM)
	19	Carbon Disulfide	76	2.959	2.959	(0.512)	97670	20.0000	22.66
	66	Bromoform	173	10.378	10.378	(1.089)	18276	10.0000	10.51(T)
	7	Chloroethane	64	2.044	2.044	(0.354)	24915	10.0000	11.25(M)
	34	Carbon Tetrachloride	117	5.831	5.831	(0.887)	35037	10.0000	11.30
	3	Chloromethane	50	1.601	1.601	(0.277)	61364	10.0000	12.70(TM)
	28	Chloroform	83	5.500	5.500	(0.952)	43259	10.0000	10.58
	59	Chlorobenzene	112	9.556	9.556	(1.003)	65710	10.0000	10.49
	27	cis-1,2-Dichloroethene	96	5.070	5.070	(0.877)	27447	10.0000	11.35(M)
	46	cis-1,3-Dichloropropene	75	7.843	7.843	(1.193)	38725	10.0000	10.98
	2	Dichlorodifluoromethane	85	1.457	1.457	(0.252)	25515	10.0000	12.03(M)
	55	Dibromochloromethane	129	8.969	8.969	(0.941)	27660	10.0000	10.58
	44	Dibromomethane	93	7.191	7.191	(1.094)	14704	10.0000	10.91
	61	Ethylbenzene	106	9.668	9.668	(1.015)	35578	10.0000	11.04
	91	Hexachlorobutadiene	225	13.988	13.988	(1.182)	13235	10.0000	11.05
	62	m,p-Xylenes	106	9.790	9.790	(1.028)	86193	20.0000	20.37
	63	o-Xylene	106	10.179	10.179	(1.068)	45189	10.0000	10.69
	67	Isopropylbenzene	105	10.548	10.548	(1.107)	112745	10.0000	10.94
	17	Methylene Chloride	84	3.334	3.334	(0.577)	24529	10.0000	10.51
	73	n-Propylbenzene	91	10.955	10.955	(0.925)	116424	10.0000	10.90
	87	n-Butylbenzene	91	12.223	12.223	(1.033)	65044	10.0000	11.36
	92	Naphthalene	128	14.065	14.065	(1.188)	67775	10.0000	11.11
	64	Styrene	104	10.198	10.198	(1.070)	72268	10.0000	10.48
	81	sec-Butylbenzene	105	11.668	11.668	(0.986)	101825	10.0000	12.07
	78	tert-Butylbenzene	119	11.453	11.453	(0.967)	76128	10.0000	12.07
	20	trans-1,2-Dichloroethene	96	3.671	3.671	(0.635)	22749	10.0000	11.39(M)
	50	Toluene	91	8.160	8.160	(0.857)	103921	10.0000	10.49
	51	trans-1,3-Dichloropropene	75	8.417	8.417	(1.281)	37999	10.0000	12.39
	56	Tetrachloroethene	164	8.686	8.686	(0.912)	22721	10.0000	11.23
	8	Trichlorofluoromethane	101	2.259	2.259	(0.391)	38118	10.0000	11.69
	38	Trichloroethene	130	6.816	6.816	(1.037)	26520	10.0000	10.80
	5	Vinyl Chloride	62	1.688	1.688	(0.292)	39831	10.0000	12.04
$	35	1,2-Dichloroethane-d4	65	6.058	6.058	(1.048)	28889	10.0000	10.69
*	36	1,4-Difluorobenzene	114	6.572	6.572	(1.000)	357033	50.0000	
*	70	1,4-Dichlorobenzene-d4	152	11.838	11.838	(1.000)	140394	50.0000	
*	1	Pentafluorobenzene	168	5.779	5.779	(1.000)	234326	50.0000	
*	47	Chlorobenzene-d5	117	9.527	9.527	(1.000)	320456	50.0000	
$	30	Dibromofluoromethane	113	5.689	5.689	(0.984)	23800	10.0000	10.27(M)
$	48	Toluene-d8	98	8.093	8.093	(0.849)	87904	10.0000	11.79
$	69	4-Bromofluorobenzene	95	10.695	10.695	(1.123)	31836	10.0000	10.45
	82	p-Isopropyltoluene	119	11.818	11.818	(0.998)	84856	10.0000	10.79
	138	Freon TF	101	2.769	2.769	(0.479)	23269	10.0000	12.12

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120206.D
Report Date: 01-Feb-2018 15:20

QC Flag Legend

T - Target compound detected outside RT window.
M - Compound response manually integrated.


Y (x10^5)
Min
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120206.D
Date : 02-DEC-2017 11:55
Client ID: VSTD010
Sample Info: VSTD010;VSTD010;1;5;
Purge Volume: 5.0
Column phase: DB624
Instrument: VOA2.i
Operator: AP
Column diameter: 0.18
\\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120206.D
Dichlorodifluoromethane
-Vinyl Chloride+
-Chloroethane+
-Trichlorofluoromethane+
-Diethyl ether+
-Acetone+
-Carbon Disulfide+
-Isopropyl alcohol
-Acetonitrile+
-Methylene Chloride
-Tert-butyl alcohol
-Acrylonitrile+
-n-Hexane
-1,1-Dichloroethane
-Diisopropyl ether
-tert-Butyl formate
-2-Butanone+
-Propionitrile+
-Bromochloromethane+
-Chloroform
-1,1,1-Trichloroethane+
-Carbon Tetrachloride+
-Pentafluorobenzene
-1,2-Dichloroethane-d4+
-tert-Amyl methyl ether+
-1,4-Difluorobenzene
-Trichloroethene+
-Ethyl Acrylate+
-1,2-Dichloropropane
-Methyl Methacrylate+
-Bromodichloromethane
-2-Chloroethylvinyl ether
-cis-1,3-Dichloropropene
-2-Nitropropane+
-Toluene-d8
-Toluene
-trans-1,3-Dichloropropene
-Ethyl Methacrylate
-1,1,2-Trichloroethane
-Tetrachloroethene
-1,3-Dichloropropane
-2-Hexanone
-Dibromochloromethane
-1,2-Dibromoethane+
-1,1,1,2-Tetrachloroethane+
-m,p-Xylenes
Chlorobenzene-d5+
-o-Xylene+
-Bromoform
-Isopropylbenzene
-4-Bromofluorobenzene
-1,1,2,2-Tetrachloroethane+
-1,2,3-Trichloropropane+
-2-Chlorotoluene
-cis-1,4-Dichloro-2-butene+
-tert-Butylbenzene
-1,2,4-Trimethylbenzene
-sec-Butylbenzene
-1,3-Dichlorobenzene
-1,2,3-Trimethylbenzene
1,4-Dichlorobenzene-d4+
-Benzyl Chloride+
-1,2-Dibromo-3-Chloropropa
-1,3,5-Trichlorobenzene
-1,2,4-Trichlorobenzene
-Hexachlorobutadiene+
-1,2,3-Trichlorobenzene
-2-Methylnaphthalene
-1-Methylnaphthalene

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120207.D
Report Date: 01-Feb-2018 15:20

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120207.D
Lab Smp Id: VSTD020 Client Smp ID: VSTD020
Inj Date : 02-DEC-2017 12:19
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD020;VSTD020;1;6;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\CHEM\VOA2.i\D171202.b\8260LL.m
Meth Date : 01-Feb-2018 15:20 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 11:55 Cal File: D120206.D
Als bottle: 7 Calibration Sample, Level: 6
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
31 1,1,1-Trichloroethane	97	5.657	5.657	(0.978)	74410	20.0000	21.61
60 1,1,1,2-Tetrachloroethane	131	9.646	9.646	(1.012)	51708	20.0000	20.29
68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.919)	55792	20.0000	18.92
53 1,1,2-Trichloroethane	83	8.593	8.593	(0.902)	36857	20.0000	18.99
32 1,1-Dichloropropene	75	5.856	5.856	(0.891)	61656	20.0000	20.17
22 1,1-Dichloroethane	63	4.277	4.277	(0.740)	93276	20.0000	20.07
11 1,1-Dichloroethene	96	2.756	2.756	(0.477)	46264	20.0000	21.18
71 1,2,3-Trichloropropane	75	10.901	10.901	(0.921)	60118	20.0000	19.34
79 1,2,4-Trimethylbenzene	105	11.497	11.497	(0.972)	171277	20.0000	22.50
93 1,2,3-Trichlorobenzene	182	14.299	14.299	(1.208)	47966	20.0000	21.60
90 1,2,4-Trichlorobenzene	180	13.818	13.818	(1.168)	58102	20.0000	22.30
89 1,2-Dibromo-3-Chloropropane	75	13.006	13.006	(1.099)	9234	20.0000	19.69
33 1,2-Dichloroethane	62	6.145	6.145	(0.935)	68557	20.0000	19.55
42 1,2-Dichloropropane	63	7.066	7.066	(1.075)	55104	20.0000	20.42(M)
57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	44472	20.0000	18.38
88 1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	96810	20.0000	20.86
75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	172[illegible]	20.0000	23.34
54 1,3-Dichloropropane	76	8.754	8.754	(0.919)	72809	20.0000	19.13
83 1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	100104	20.0000	19.75
84 1,4-Dichlorobenzene	146	11.860	11.860	(1.002)	94488	20.0000	19.07
26 2,2-Dichloropropane	77	5.041	5.041	(0.872)	71057	20.0000	21.65

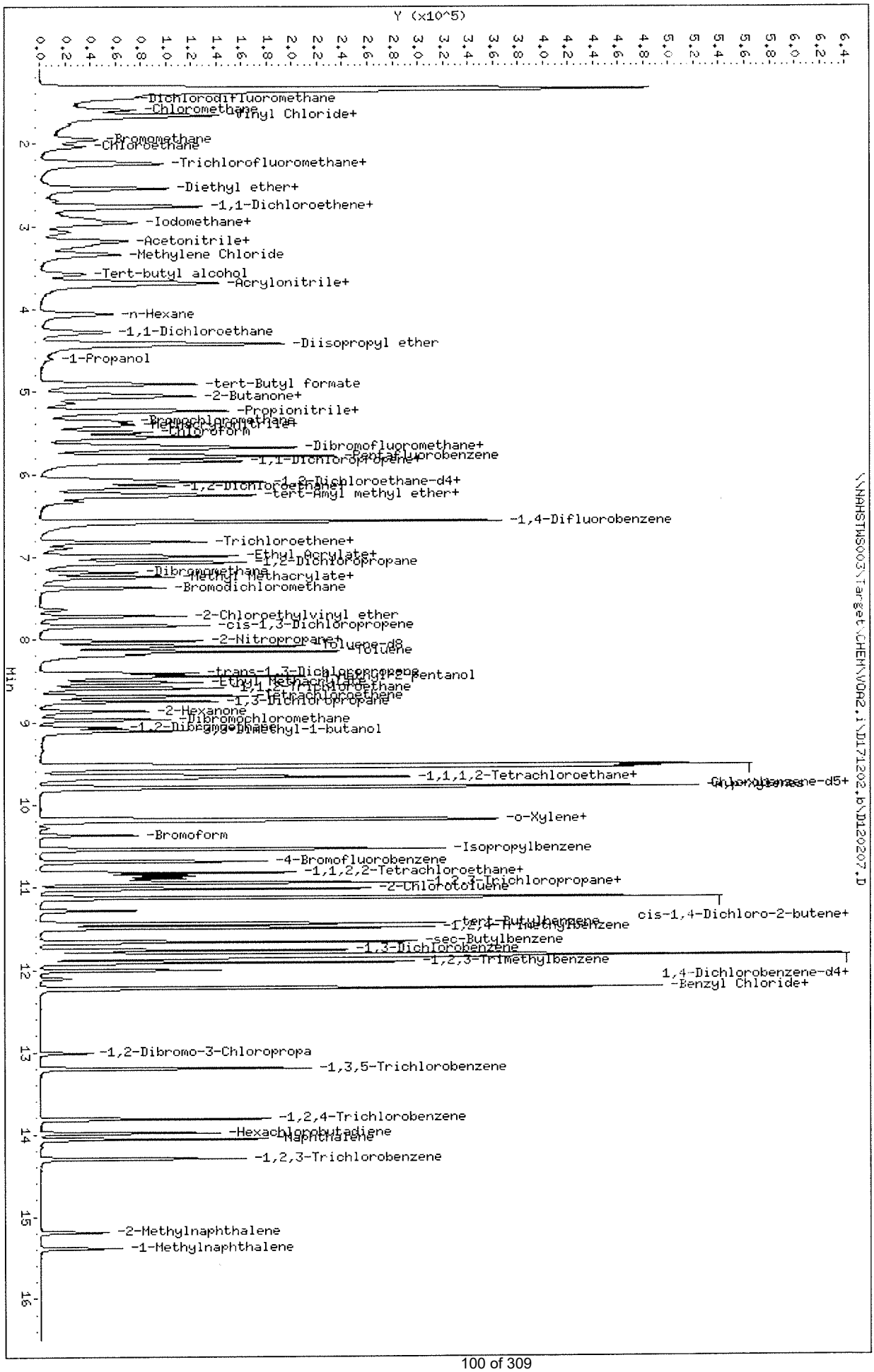
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120207.D
Report Date: 01-Feb-2018 15:20

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
	24 2-Butanone	43	5.150	5.150	(0.891)	40840	40.0000	38.55
	52 2-Hexanone	43	8.869	8.869	(0.931)	62507	40.0000	38.29
	76 2-Chlorotoluene	91	11.029	11.029	(0.932)	145312	20.0000	19.03
	77 4-Chlorotoluene	91	11.141	11.141	(0.941)	162892	20.0000	22.43
	45 4-Methyl-2-Pentanone	43	8.025	8.025	(0.842)	97529	40.0000	36.87
	10 Acetone	43	2.866	2.866	(0.496)	30163	40.0000	44.26 (M)
	37 Benzene	78	6.094	6.094	(0.927)	181563	20.0000	19.65
	39 Bromodichloromethane	83	7.380	7.380	(1.123)	65631	20.0000	21.25
	74 Bromobenzene	156	10.833	10.833	(0.915)	59107	20.0000	19.69
	29 Bromochloromethane	128	5.368	5.368	(0.928)	25729	20.0000	22.29
	6 Bromomethane	94	1.948	1.948	(0.337)	45961	20.0000	20.71 (T)
	19 Carbon Disulfide	76	2.962	2.962	(0.512)	170930	40.0000	38.54
	66 Bromoform	173	10.378	10.378	(1.089)	37509	20.0000	20.62
	7 Chloroethane	64	2.038	2.038	(0.352)	48946	20.0000	23.63 (M)
	34 Carbon Tetrachloride	117	5.837	5.837	(0.888)	63681	20.0000	20.84
	3 Chloromethane	50	1.598	1.598	(0.276)	113999	20.0000	24.87 (M)
	28 Chloroform	83	5.494	5.494	(0.950)	85692	20.0000	20.87
	59 Chlorobenzene	112	9.553	9.553	(1.003)	126954	20.0000	19.38
	27 cis-1,2-Dichloroethene	96	5.073	5.073	(0.877)	52143	20.0000	20.94
	46 cis-1,3-Dichloropropene	75	7.839	7.839	(1.193)	77381	20.0000	21.22
	2 Dichlorodifluoromethane	85	1.454	1.454	(0.251)	50312	20.0000	23.05
	55 Dibromochloromethane	129	8.972	8.972	(0.942)	54697	20.0000	20.00
	44 Dibromomethane	93	7.188	7.188	(1.094)	29314	20.0000	21.01
	61 Ethylbenzene	106	9.672	9.672	(1.015)	66617	20.0000	19.76
	91 Hexachlorobutadiene	225	13.991	13.991	(1.182)	28697	20.0000	24.70
	62 m,p-Xylenes	106	9.790	9.790	(1.028)	165290	40.0000	38.45
	63 o-Xylene	106	10.179	10.179	(1.068)	85916	20.0000	19.44
	67 Isopropylbenzene	105	10.544	10.544	(1.107)	215740	20.0000	20.24
	17 Methylene Chloride	84	3.340	3.340	(0.578)	46491	20.0000	19.36
	73 n-Propylbenzene	91	10.952	10.952	(0.925)	225099	20.0000	22.20
	87 n-Butylbenzene	91	12.223	12.223	(1.033)	131618	20.0000	21.73
	92 Naphthalene	128	14.061	14.061	(1.188)	132373	20.0000	22.36
	64 Styrene	104	10.198	10.198	(1.070)	141112	20.0000	19.57
	81 sec-Butylbenzene	105	11.668	11.668	(0.986)	198179	20.0000	23.62
	78 tert-Butylbenzene	119	11.449	11.449	(0.967)	146542	20.0000	23.29
	20 trans-1,2-Dichloroethene	96	3.671	3.671	(0.635)	43381	20.0000	20.91
	50 Toluene	91	8.157	8.157	(0.856)	200133	20.0000	19.32
	51 trans-1,3-Dichloropropene	75	8.417	8.417	(1.281)	67133	20.0000	21.16
	56 Tetrachloroethene	164	8.690	8.690	(0.912)	43957	20.0000	20.77
	8 Trichlorofluoromethane	101	2.259	2.259	(0.391)	80937	20.0000	24.13
	38 Trichloroethene	130	6.819	6.819	(1.038)	50457	20.0000	19.87
	5 Vinyl Chloride	62	1.685	1.685	(0.291)	76312	20.0000	24.26
$	35 1,2-Dichloroethane-d4	65	6.058	6.058	(1.048)	54600	20.0000	19.63
*	36 1,4-Difluorobenzene	114	6.572	6.572	(1.000)	369335	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	148510	50.0000	
*	1 Pentafluorobenzene	168	5.782	5.782	(1.000)	241203	50.0000	
*	47 Chlorobenzene-d5	117	9.527	9.527	(1.000)	335178	50.0000	
$	30 Dibromofluoromethane	113	5.683	5.683	(0.983)	43002	20.0000	18.03
$	48 Toluene-d8	98	8.093	8.093	(0.849)	162271	20.0000	19.57
$	69 4-Bromofluorobenzene	95	10.698	10.698	(1.123)	60738	20.0000	19.07
	82 p-Isopropyltoluene	119	11.818	11.818	(0.999)	168239	20.0000	20.23
	138 Freon TF	101	2.769	2.769	(0.479)	44551	20.0000	22.55

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120207.D
Report Date: 01-Feb-2018 15:20

QC Flag Legend

T - Target compound detected outside RT window.
M - Compound response manually integrated.


Y (x10^5)
Min
-Dichlorodifluoromethane
-Chloromethane
-Vinyl Chloride+
-Bromomethane
-Chloroethane
-Trichlorofluoromethane+
-Diethyl ether+
-1,1-Dichloroethene+
-Iodomethane+
-Acetonitrile+
-Methylene Chloride
-Tert-butyl alcohol
-Acrylonitrile+
-n-Hexane
-1,1-Dichloroethane
-Diisopropyl ether
-1-Propanol
-tert-Butyl formate
-2-Butanone+
-Propionitrile+
-Bromochloromethane
-Chloroform
-Dibromofluoromethane+
-1,1-Dichloropropene+
-1,2-Dichloroethane-d4+
-tert-Amyl methyl ether+
-1,4-Difluorobenzene
-Trichloroethene+
-Ethyl Acrylate+
-1,2-Dichloropropane
-Dibromomethane
-Methyl Methacrylate+
-Bromodichloromethane
-2-Chloroethylvinyl ether
-cis-1,3-Dichloropropene
-2-Nitropropane+
-Toluene-d8
-Toluene
-trans-1,3-Dichloropropene
-Ethyl Methacrylate
-1,1,2-Trichloroethane
-Tetrachloroethene
-1,3-Dichloropropane
-2-Hexanone
-Dibromochloromethane
-1,2-Dibromoethane
-4-Methyl-2-pentanol
-3,3-Dimethyl-1-butanol
-1,1,1,2-Tetrachloroethane+
-Chlorobenzene-d5+
-Ethylbenzene
-o-Xylene+
-Bromoform
-Isopropylbenzene
-4-Bromofluorobenzene
-1,1,2,2-Tetrachloroethane+
-1,2,3-Trichloropropane+
-2-Chlorotoluene
cis-1,4-Dichloro-2-butene+
-tert-Butylbenzene
-1,2,4-Trimethylbenzene
-sec-Butylbenzene
-1,3-Dichlorobenzene
-1,2,3-Trimethylbenzene
1,4-Dichlorobenzene-d4+
-Benzyl Chloride+
-1,2-Dibromo-3-Chloropropa
-1,3,5-Trichlorobenzene
-1,2,4-Trichlorobenzene
-Hexachlorobutadiene
-Naphthalene
-1,2,3-Trichlorobenzene
-2-Methylnaphthalene
-1-Methylnaphthalene
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120207.D
Date : 02-DEC-2017 12:19
Client ID: VSTD020
Sample Info: VSTD020;VSTD020;1;6;
Purge Volume: 5.0
Column phase: DB624
Instrument: VOA2.i
Operator: AP
Column diameter: 0.18
\\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120207.D

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120208.D
Report Date: 01-Feb-2018 15:20

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120208.D
Lab Smp Id: VSTD050 Client Smp ID: VSTD050
Inj Date : 02-DEC-2017 12:44
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD050;VSTD050;1;7;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\CHEM\VOA2.i\D171202.b\8260LL.m
Meth Date : 01-Feb-2018 15:20 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 12:19 Cal File: D120207.D
Als bottle: 8 Calibration Sample, Level: 7
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
31 1,1,1-Trichloroethane	97	5.654	5.654	(0.978)	167343	50.0000	44.60
60 1,1,1,2-Tetrachloroethane	131	9.646	9.646	(1.012)	122846	50.0000	48.04
68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.918)	138124	50.0000	47.09
53 1,1,2-Trichloroethane	83	8.593	8.593	(0.902)	91116	50.0000	47.19
32 1,1-Dichloropropene	75	5.853	5.853	(0.890)	139865	50.0000	44.59
22 1,1-Dichloroethane	63	4.284	4.284	(0.741)	226417	50.0000	44.71
11 1,1-Dichloroethene	96	2.753	2.753	(0.476)	107181	50.0000	45.04
71 1,2,3-Trichloropropane	75	10.904	10.904	(0.921)	146773	50.0000	47.48
79 1,2,4-Trimethylbenzene	105	11.501	11.501	(0.972)	379867	50.0000	52.02
93 1,2,3-Trichlorobenzene	182	14.302	14.302	(1.208)	116682	50.0000	52.84
90 1,2,4-Trichlorobenzene	180	13.818	13.818	(1.167)	135719	50.0000	52.37
89 1,2-Dibromo-3-Chloropropane	75	13.012	13.012	(1.099)	24398	50.0000	53.40
33 1,2-Dichloroethane	62	6.145	6.145	(0.935)	165336	50.0000	45.69
42 1,2-Dichloropropane	63	7.069	7.069	(1.075)	127922	50.0000	45.94
57 1,2-Dibromoethane	107	9.068	9.068	(0.952)	107909	50.0000	44.46
88 1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	222519	50.0000	46.36
75 1,3,5-Trimethylbenzene	105	11.135	11.135	(0.941)	370899	50.0000	52.08
54 1,3-Dichloropropane	76	8.754	8.754	(0.919)	175969	50.0000	46.08
83 1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	230033	50.0000	45.62
84 1,4-Dichlorobenzene	146	11.860	11.860	(1.002)	219130	50.0000	44.47
26 2,2-Dichloropropane	77	5.041	5.041	(0.872)	163209	50.0000	45.64

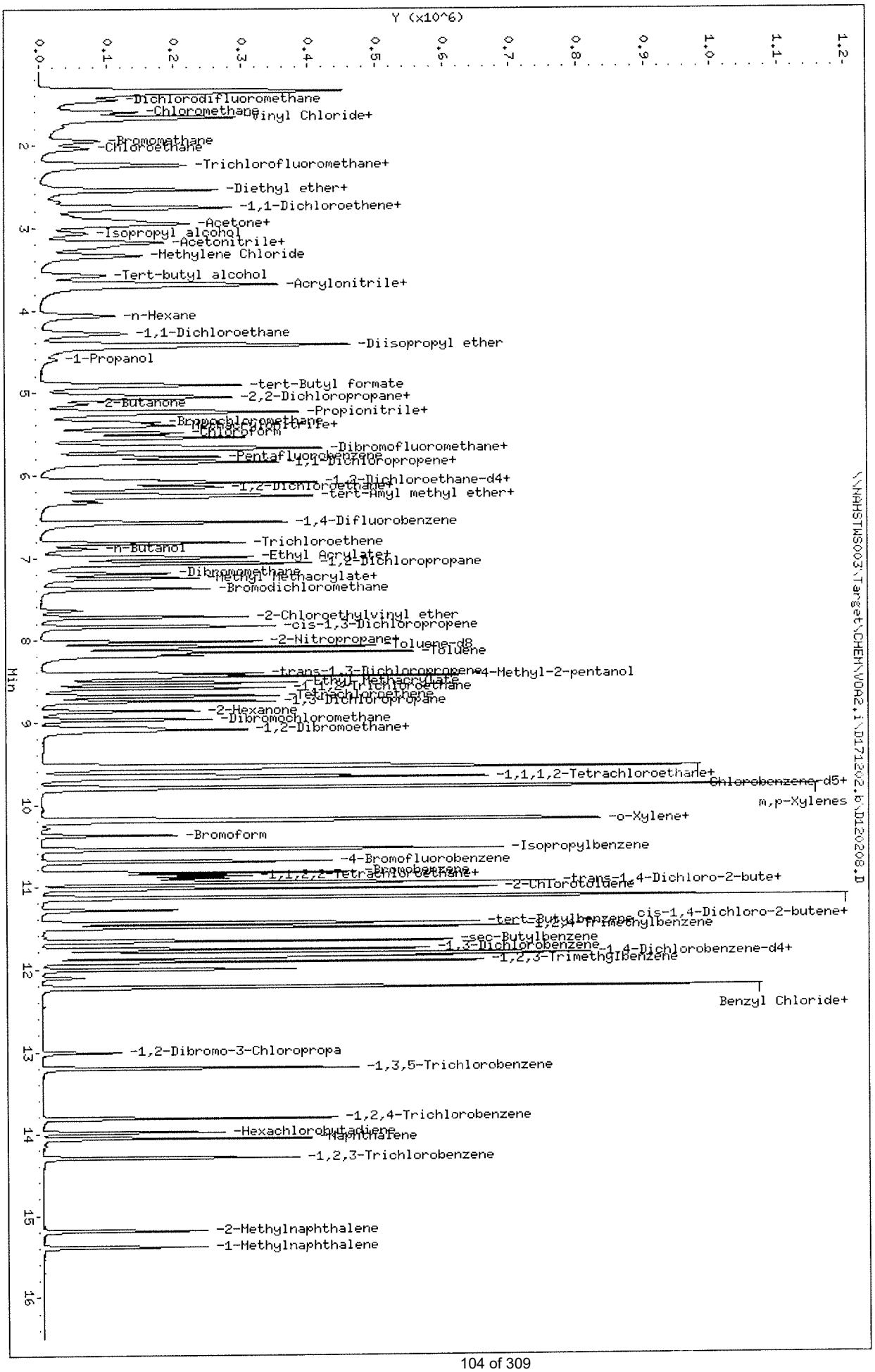
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120208.D
Report Date: 01-Feb-2018 15:20

			QUANT SIG					AMOUNTS	
								CAL-AMT	ON-COL
		Compounds	MASS	RT	EXP RT	REL RT	RESPONSE	(ug/l)	(ug/l)
	24	2-Butanone	43	5.141	5.141	(0.889)	104564	100.000	91.92
	52	2-Hexanone	43	8.866	8.866	(0.931)	157754	100.000	96.32
	76	2-Chlorotoluene	91	11.029	11.029	(0.932)	354966	50.0000	46.74
	77	4-Chlorotoluene	91	11.138	11.138	(0.941)	363295	50.0000	52.02
	45	4-Methyl-2-Pentanone	43	8.025	8.025	(0.842)	242083	100.000	91.30
	10	Acetone	43	2.856	2.856	(0.494)	81222	100.000	115.56
	37	Benzene	78	6.090	6.090	(0.926)	429298	50.0000	45.01
	39	Bromodichloromethane	83	7.377	7.377	(1.122)	162295	50.0000	50.92
	74	Bromobenzene	156	10.833	10.833	(0.915)	137638	50.0000	46.10
	29	Bromochloromethane	128	5.365	5.365	(0.928)	63125	50.0000	50.19
	6	Bromomethane	94	1.948	1.948	(0.337)	102347	50.0000	49.64
	19	Carbon Disulfide	76	2.952	2.952	(0.511)	466496	100.000	96.91
	66	Bromoform	173	10.374	10.374	(1.089)	94948	50.0000	52.03
	7	Chloroethane	64	2.041	2.041	(0.353)	104074	50.0000	50.04
	34	Carbon Tetrachloride	117	5.837	5.837	(0.888)	144188	50.0000	44.25
	3	Chloromethane	50	1.598	1.598	(0.276)	256514	50.0000	53.94(M)
	28	Chloroform	83	5.494	5.494	(0.950)	200096	50.0000	43.66
	59	Chlorobenzene	112	9.553	9.553	(1.003)	296223	50.0000	45.67
	27	cis-1,2-Dichloroethene	96	5.070	5.070	(0.877)	123053	50.0000	45.36
	46	cis-1,3-Dichloropropene	75	7.839	7.839	(1.192)	190864	50.0000	50.71
	2	Dichlorodifluoromethane	85	1.450	1.450	(0.251)	113217	50.0000	47.61
	55	Dibromochloromethane	129	8.969	8.969	(0.941)	137096	50.0000	49.98
	44	Dibromomethane	93	7.191	7.191	(1.094)	71154	50.0000	49.40
	61	Ethylbenzene	106	9.672	9.672	(1.015)	148719	50.0000	43.98
	91	Hexachlorobutadiene	225	13.988	13.988	(1.182)	53304	50.0000	47.83
	62	m,p-Xylenes	106	9.794	9.794	(1.028)	366027	100.000	84.88
	63	o-Xylene	106	10.179	10.179	(1.068)	196960	50.0000	44.42
	67	Isopropylbenzene	105	10.548	10.548	(1.107)	460822	50.0000	44.95
	17	Methylene Chloride	84	3.340	3.340	(0.578)	114462	50.0000	43.74
	73	n-Propylbenzene	91	10.955	10.955	(0.925)	547102	50.0000	58.24
	87	n-Butylbenzene	91	12.223	12.223	(1.033)	260940	50.0000	43.32
	92	Naphthalene	128	14.065	14.065	(1.188)	319306	50.0000	57.33
	64	Styrene	104	10.198	10.198	(1.070)	323360	50.0000	44.71
	81	sec-Butylbenzene	105	11.668	11.668	(0.986)	400095	50.0000	49.66
	78	tert-Butylbenzene	119	11.449	11.449	(0.967)	305835	50.0000	50.64
	20	trans-1,2-Dichloroethene	96	3.671	3.671	(0.635)	101491	50.0000	44.90
	50	Toluene	91	8.157	8.157	(0.856)	448451	50.0000	43.16
	51	trans-1,3-Dichloropropene	75	8.417	8.417	(1.280)	170327	50.0000	52.02
	56	Tetrachloroethene	164	8.690	8.690	(0.912)	93279	50.0000	43.94
	8	Trichlorofluoromethane	101	2.256	2.256	(0.390)	163453	50.0000	44.71
	38	Trichloroethene	130	6.819	6.819	(1.037)	122235	50.0000	46.64
	5	Vinyl Chloride	62	1.685	1.685	(0.291)	176982	50.0000	54.05
$	35	1,2-Dichloroethane-d4	65	6.058	6.058	(1.048)	130343	50.0000	43.01
*	36	1,4-Difluorobenzene	114	6.575	6.575	(1.000)	381052	50.0000	
*	70	1,4-Dichlorobenzene-d4	152	11.838	11.838	(1.000)	147430	50.0000	
*	1	Pentafluorobenzene	168	5.782	5.782	(1.000)	262856	50.0000	
*	47	Chlorobenzene-d5	117	9.527	9.527	(1.000)	336294	50.0000	
$	30	Dibromofluoromethane	113	5.686	5.686	(0.983)	102778	50.0000	39.55
$	48	Toluene-d8	98	8.093	8.093	(0.849)	365247	50.0000	43.91
$	69	4-Bromofluorobenzene	95	10.698	10.698	(1.123)	142007	50.0000	44.45
	82	p-Isopropyltoluene	119	11.818	11.818	(0.998)	345659	50.0000	41.79
	138	Freon TF	101	2.772	2.772	(0.480)	92030	50.0000	42.75

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120208.D
Report Date: 01-Feb-2018 15:20

QC Flag Legend

M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120208.D
Date : 02-DEC-2017 12:44
Client ID: VSTD050
Sample Info: VSTD050;VSTD050;1;7;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120209.D
Report Date: 01-Feb-2018 15:20

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120209.D
Lab Smp Id: VSTD100 Client Smp ID: VSTD100
Inj Date : 02-DEC-2017 13:08
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD100;VSTD100;1;8;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\CHEM\VOA2.i\D171202.b\8260LL.m
Meth Date : 01-Feb-2018 15:20 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 12:44 Cal File: D120208.D
Als bottle: 9 Calibration Sample, Level: 8
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
31 1,1,1-Trichloroethane	97	5.654	5.654	(0.977)	346146	100.000	84.26
60 1,1,1,2-Tetrachloroethane	131	9.646	9.646	(1.012)	240736	100.000	97.88
68 1,1,2,2-Tetrachloroethane	83	10.875	10.875	(0.919)	266725	100.000	82.91
53 1,1,2-Trichloroethane	83	8.597	8.597	(0.902)	170032	100.000	91.55
32 1,1-Dichloropropene	75	5.856	5.856	(0.891)	338565	100.000	103.71
22 1,1-Dichloroethane	63	4.277	4.277	(0.739)	471603	100.000	85.04
11 1,1-Dichloroethene	96	2.750	2.750	(0.475)	201708	100.000	77.43
71 1,2,3-Trichloropropane	75	10.907	10.907	(0.921)	296183	100.000	87.36
79 1,2,4-Trimethylbenzene	105	11.504	11.504	(0.972)	756966	100.000	95.73
93 1,2,3-Trichlorobenzene	182	14.302	14.302	(1.208)	243163	100.000	100.39
90 1,2,4-Trichlorobenzene	180	13.821	13.821	(1.168)	286157	100.000	100.67
89 1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	50559	100.000	101.47
33 1,2-Dichloroethane	62	6.145	6.145	(0.935)	360272	100.000	95.38
42 1,2-Dichloropropane	63	7.069	7.069	(1.076)	246317	100.000	84.75
57 1,2-Dibromoethane	107	9.068	9.068	(0.952)	219448	100.000	94.01
88 1,2-Dichlorobenzene	146	12.226	12.226	(1.033)	433803	100.000	82.40
75 1,3,5-Trimethylbenzene	105	11.135	11.135	(0.941)	751645	100.000	97.90
54 1,3-Dichloropropane	76	8.754	8.754	(0.919)	344933	100.000	93.92
83 1,3-Dichlorobenzene	146	11.770	11.770	(0.994)	460658	100.000	83.30
84 1,4-Dichlorobenzene	146	11.860	11.860	(1.002)	516207	100.000	95.51
26 2,2-Dichloropropane	77	5.041	5.041	(0.871)	332827	100.000	85.01

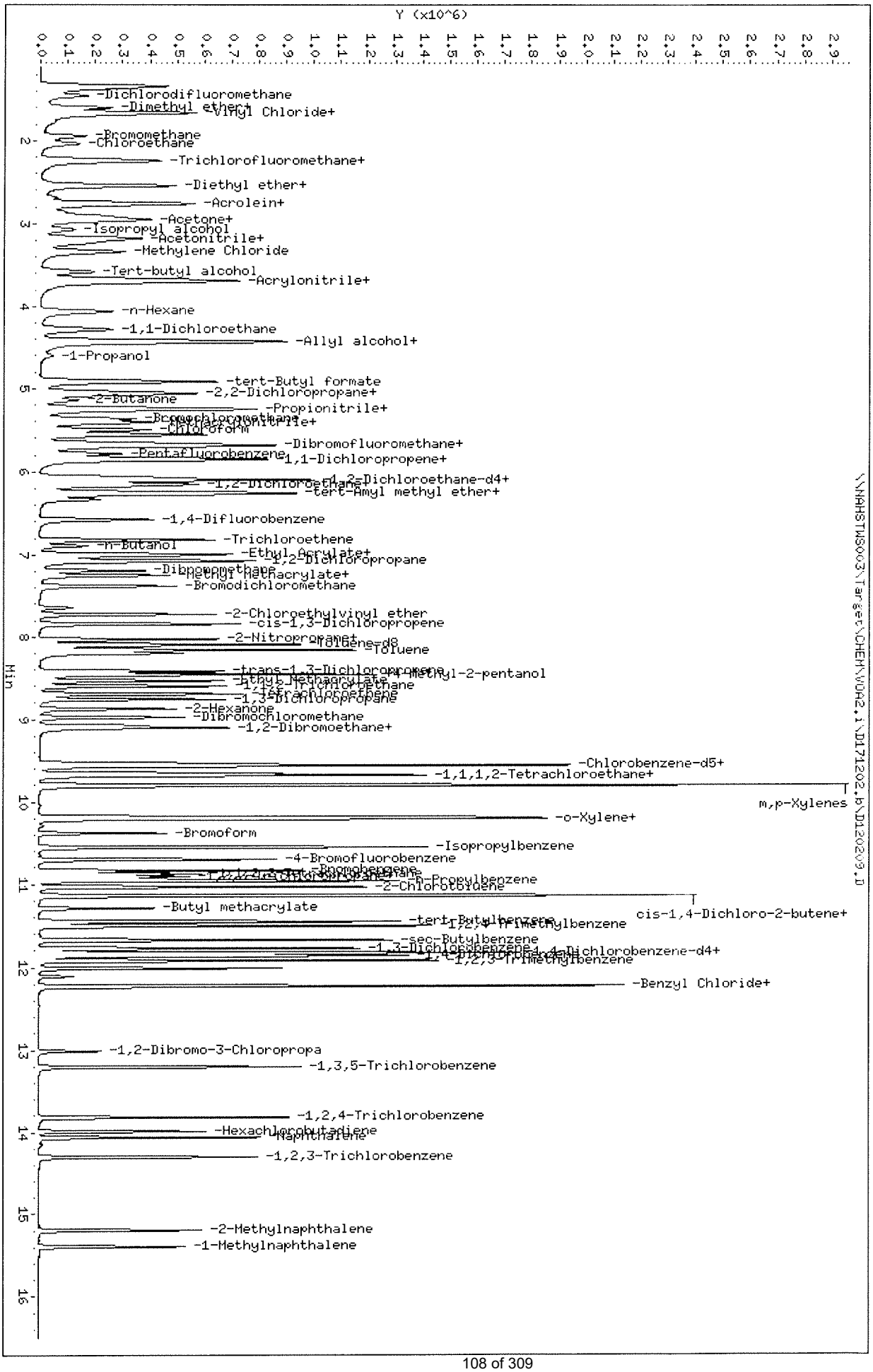
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Report Date: 01-Feb-2018 15:20

			QUANT SIG					AMOUNTS	
								CAL-AMT	ON-COL
		Compounds	MASS	RT	EXP RT	REL RT	RESPONSE	(ug/l)	(ug/l)
	24	2-Butanone	43	5.141	5.141	(0.889)	210032	200.000	168.66
	52	2-Hexanone	43	8.869	8.869	(0.931)	316646	200.000	201.01(A)
	76	2-Chlorotoluene	91	11.032	11.032	(0.932)	670473	100.000	80.48
	77	4-Chlorotoluene	91	11.141	11.141	(0.941)	735701	100.000	97.38
	45	4-Methyl-2-Pentanone	43	8.029	8.029	(0.843)	474202	200.000	185.78
	10	Acetone	43	2.856	2.856	(0.494)	145831	200.000	186.23
	37	Benzene	78	6.097	6.097	(0.928)	1008942	100.000	101.35
	39	Bromodichloromethane	83	7.377	7.377	(1.123)	319156	100.000	95.93
	74	Bromobenzene	156	10.833	10.833	(0.915)	277248	100.000	84.67
	29	Bromochloromethane	128	5.372	5.372	(0.928)	122231	100.000	88.78
	6	Bromomethane	94	1.941	1.941	(0.336)	189051	100.000	99.75
	19	Carbon Disulfide	76	2.949	2.949	(0.510)	841702	200.000	159.07
	66	Bromoform	173	10.378	10.378	(1.089)	212849	100.000	121.28
	7	Chloroethane	64	2.031	2.031	(0.351)	204381	100.000	97.78
	34	Carbon Tetrachloride	117	5.834	5.834	(0.888)	351661	100.000	103.72
	3	Chloromethane	50	1.598	1.598	(0.276)	476675	100.000	93.25(M)
	28	Chloroform	83	5.494	5.494	(0.950)	385200	100.000	76.78
	59	Chlorobenzene	112	9.556	9.556	(1.003)	580544	100.000	91.85
	27	cis-1,2-Dichloroethene	96	5.067	5.067	(0.876)	236291	100.000	79.56
	46	cis-1,3-Dichloropropene	75	7.843	7.843	(1.193)	394383	100.000	100.39
	2	Dichlorodifluoromethane	85	1.454	1.454	(0.251)	225343	100.000	86.56
	55	Dibromochloromethane	129	8.972	8.972	(0.942)	271565	100.000	102.94
	44	Dibromomethane	93	7.191	7.191	(1.094)	141151	100.000	93.90
	61	Ethylbenzene	106	9.675	9.675	(1.015)	301501	100.000	92.30
	91	Hexachlorobutadiene	225	13.988	13.988	(1.182)	124014	100.000	103.66
	62	m,p-Xylenes	106	9.794	9.794	(1.028)	885438	200.000	213.47(A)
	63	o-Xylene	106	10.179	10.179	(1.068)	448311	100.000	105.13
	67	Isopropylbenzene	105	10.548	10.548	(1.107)	933730	100.000	103.73
	17	Methylene Chloride	84	3.328	3.328	(0.575)	226823	100.000	79.17
	73	n-Propylbenzene	91	10.958	10.958	(0.926)	1002145	100.000	99.12
	87	n-Butylbenzene	91	12.223	12.223	(1.033)	560565	100.000	84.84
	92	Naphthalene	128	14.061	14.061	(1.188)	619282	100.000	103.04
	64	Styrene	104	10.201	10.201	(1.071)	735233	100.000	105.70
	81	sec-Butylbenzene	105	11.671	11.671	(0.986)	855674	100.000	98.43
	78	tert-Butylbenzene	119	11.453	11.453	(0.967)	634473	100.000	97.20
	20	trans-1,2-Dichloroethene	96	3.665	3.665	(0.633)	210945	100.000	85.09
	50	Toluene	91	8.163	8.163	(0.857)	916963	100.000	91.76
	51	trans-1,3-Dichloropropene	75	8.417	8.417	(1.281)	345046	100.000	100.97
	56	Tetrachloroethene	164	8.693	8.693	(0.912)	191478	100.000	93.78
	8	Trichlorofluoromethane	101	2.249	2.249	(0.389)	341679	100.000	85.38
	38	Trichloroethene	130	6.819	6.819	(1.038)	251694	100.000	92.02
	5	Vinyl Chloride	62	1.681	1.681	(0.291)	338527	100.000	96.03
$	35	1,2-Dichloroethane-d4	65	6.058	6.058	(1.047)	300743	100.000	90.65
*	36	1,4-Difluorobenzene	114	6.572	6.572	(1.000)	397952	50.0000	
*	70	1,4-Dichlorobenzene-d4	152	11.838	11.838	(1.000)	162040	50.0000	
*	1	Pentafluorobenzene	168	5.786	5.786	(1.000)	287766	50.0000	
*	47	Chlorobenzene-d5	117	9.527	9.527	(1.000)	323472	50.0000	
$	30	Dibromofluoromethane	113	5.683	5.683	(0.982)	190819	100.000	67.07
$	48	Toluene-d8	98	8.093	8.093	(0.849)	707549	100.000	88.43
$	69	4-Bromofluorobenzene	95	10.699	10.699	(1.123)	278494	100.000	90.63
	82	p-Isopropyltoluene	119	11.822	11.822	(0.999)	808199	100.000	89.08
	138	Freon TF	101	2.763	2.763	(0.478)	195093	100.000	82.79

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120209.D
Report Date: 01-Feb-2018 15:20

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.


Y (x10^6)
Min
-Dichlorodifluoromethane
-Dimethyl ether+
-Vinyl Chloride+
-Bromomethane
-Chloroethane
-Trichlorofluoromethane+
-Diethyl ether+
-Acrolein+
-Acetone+
-Isopropyl alcohol
-Acetonitrile+
-Methylene Chloride
-Tert-butyl alcohol
-Acrylonitrile+
-n-Hexane
-1,1-Dichloroethane
-Allyl alcohol+
-1-Propanol
-tert-Butyl formate
-2,2-Dichloropropane+
-2-Butanone
-Propionitrile+
-Bromochloromethane
-Methacrylonitrile+
-Chloroform
-Dibromofluoromethane+
-Pentafluorobenzene
-1,1-Dichloropropene+
-1,2-Dichloroethane-d4
-1,2-Dichloroethane
-tert-Amyl methyl ether+
-1,4-Difluorobenzene
-Trichloroethene
-n-Butanol
-Ethyl Acrylate+
-1,2-Dichloropropane
-Dibromomethane
-Methyl Methacrylate+
-Bromodichloromethane
-2-Chloroethylvinyl ether
-cis-1,3-Dichloropropene
-2-Nitropropane+
-Toluene-d8
-Toluene
-trans-1,3-Dichloropropene
-4-Methyl-2-pentanol
-Ethyl Methacrylate
-1,1,2-Trichloroethane
-Tetrachloroethene
-1,3-Dichloropropane
-2-Hexanone
-Dibromochloromethane
-1,2-Dibromoethane+
-Chlorobenzene-d5+
-1,1,1,2-Tetrachloroethane+
m,p-Xylenes
-o-Xylene+
-Bromoform
-Isopropylbenzene
-4-Bromofluorobenzene
-Bromobenzene
-1,2,3-Trichloropropane
-n-Propylbenzene
-2-Chlorotoluene
-Butyl methacrylate
cis-1,4-Dichloro-2-butene+
-tert-Butylbenzene
1,2,4-Trimethylbenzene
-sec-Butylbenzene
-1,3-Dichlorobenzene
1,4-Dichlorobenzene-d4+
-1,4-Dichlorobenzene
1,2,3-Trimethylbenzene
-Benzyl Chloride+
-1,2-Dibromo-3-Chloropropa
-1,3,5-Trichlorobenzene
-1,2,4-Trichlorobenzene
-Hexachlorobutadiene
-Naphthalene
-1,2,3-Trichlorobenzene
-2-Methylnaphthalene
-1-Methylnaphthalene
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Client ID: VSTD100
Sample Info: VSTD100;VSTD100;1;8;
Purge Volume: 5.0
Column phase: DB624
Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

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Report Date: 01-Feb-2018 15:20

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120210.D
Lab Smp Id: VSTD200 Client Smp ID: VSTD200
Inj Date : 02-DEC-2017 13:32
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD200;VSTD200;1;9;
Misc Info : HS15080001;WATER;0;1;
Comment :
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Meth Date : 01-Feb-2018 15:20 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 13:08 Cal File: D120209.D
Als bottle: 10 Calibration Sample, Level: 9
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
31 1,1,1-Trichloroethane	97	5.657	5.657	(0.978)	738070	200.000	186.23
60 1,1,1,2-Tetrachloroethane	131	9.649	9.649	(1.012)	472510	200.000	174.86
68 1,1,2,2-Tetrachloroethane	83	10.878	10.878	(0.919)	558945	200.000	169.88
53 1,1,2-Trichloroethane	83	8.600	8.600	(0.902)	334476	200.000	163.91
32 1,1-Dichloropropene	75	5.859	5.859	(0.891)	651[illegible]	200.000	199.17
22 1,1-Dichloroethane	63	4.277	4.277	(0.740)	1115467	200.000	208.54(A)
11 1,1-Dichloroethene	96	2.747	2.747	(0.475)	483681	200.000	192.44
71 1,2,3-Trichloropropane	75	10.907	10.907	(0.921)	608498	200.000	175.49(M)
79 1,2,4-Trimethylbenzene	105	11.507	11.507	(0.972)	1613252	200.000	201.12(A)
93 1,2,3-Trichlorobenzene	182	14.305	14.305	(1.208)	474213	200.000	191.42
90 1,2,4-Trichlorobenzene	180	13.821	13.821	(1.167)	554860	200.000	190.85
89 1,2-Dibromo-3-Chloropropane	75	13.012	13.012	(1.099)	100759	200.000	198.34
33 1,2-Dichloroethane	62	6.148	6.148	(0.935)	731386	200.000	193.03
42 1,2-Dichloropropane	63	7.072	7.072	(1.076)	489125	200.000	167.77
57 1,2-Dibromoethane	107	9.072	9.072	(0.952)	488777	200.000	190.56
88 1,2-Dichlorobenzene	146	12.229	12.229	(1.033)	867575	200.000	161.13
75 1,3,5-Trimethylbenzene	105	11.141	11.141	(0.941)	1554608	200.000	199.99
54 1,3-Dichloropropane	76	8.760	8.760	(0.919)	711492	200.000	176.31
83 1,3-Dichlorobenzene	146	11.773	11.773	(0.994)	968033	200.000	171.15
84 1,4-Dichlorobenzene	146	11.866	11.866	(1.002)	936512	200.000	169.41
26 2,2-Dichloropropane	77	5.044	5.044	(0.872)	708791	200.000	187.65

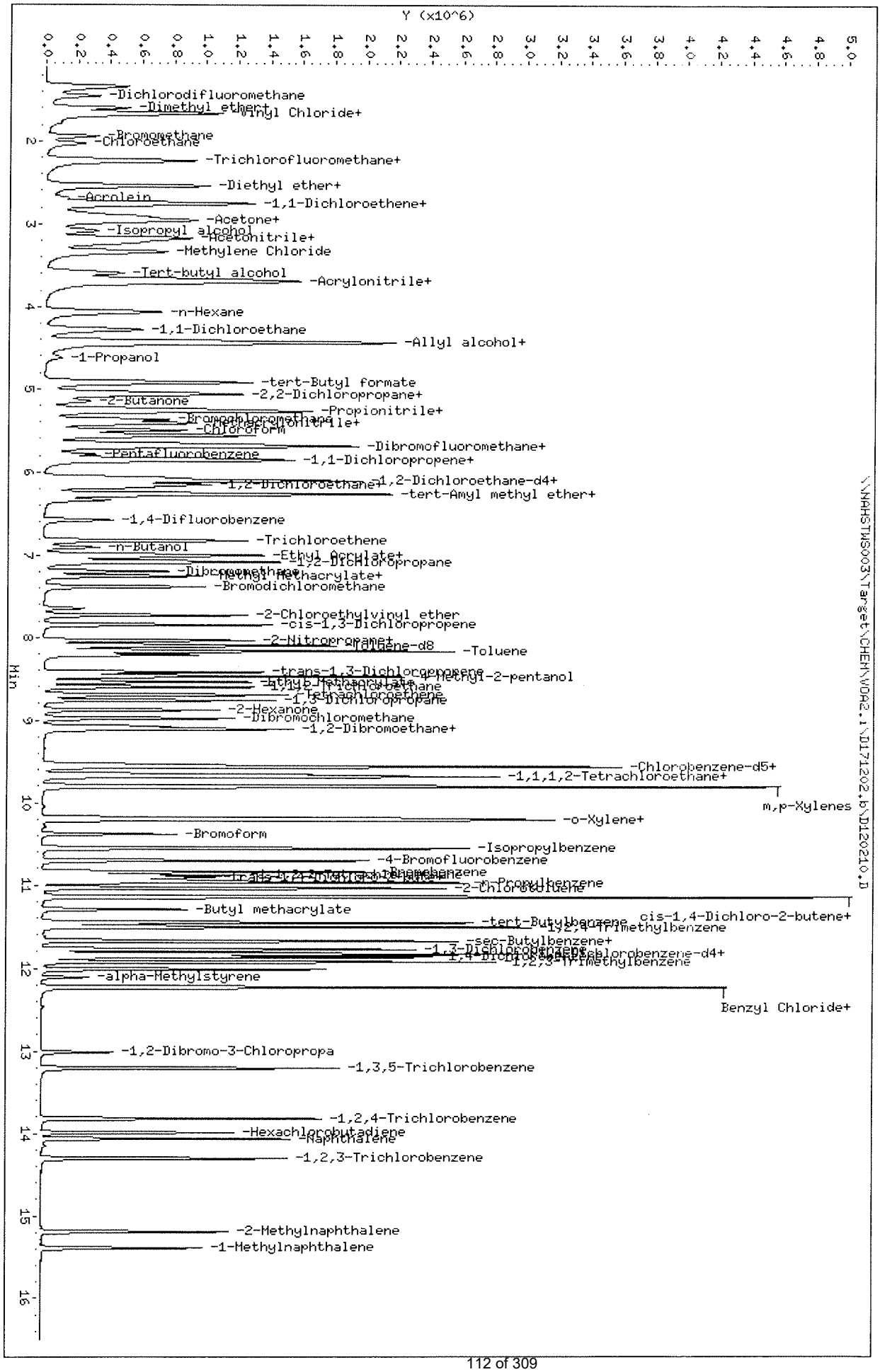
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Report Date: 01-Feb-2018 15:20

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
24	2-Butanone	43	5.150	5.150	(0.891)	475117	400.000	395.44(A)
52	2-Hexanone	43	8.873	8.873	(0.931)	666417	400.000	385.03(A)
76	2-Chlorotoluene	91	11.035	11.035	(0.932)	1420701	200.000	166.74
77	4-Chlorotoluene	91	11.148	11.148	(0.941)	1535880	200.000	200.40(A)
45	4-Methyl-2-Pentanone	43	8.035	8.035	(0.843)	934919	400.000	333.36
10	Acetone	43	2.862	2.862	(0.495)	353245	400.000	401.21(A)
37	Benzene	78	6.100	6.100	(0.928)	1954999	200.000	195.77
39	Bromodichloromethane	83	7.380	7.380	(1.122)	629154	200.000	188.53
74	Bromobenzene	156	10.836	10.836	(0.915)	585408	200.000	174.80
29	Bromochloromethane	128	5.368	5.368	(0.928)	275370	200.000	207.31(A)
6	Bromomethane	94	1.938	1.938	(0.335)	294913	200.000	200.11(AM)
19	Carbon Disulfide	76	2.955	2.955	(0.511)	2211623	400.000	433.21(A)
66	Bromoform	173	10.378	10.378	(1.089)	384345	200.000	199.31
7	Chloroethane	64	2.031	2.031	(0.351)	357211	200.000	200.57(AM)
34	Carbon Tetrachloride	117	5.837	5.837	(0.888)	676893	200.000	199.24
3	Chloromethane	50	1.595	1.595	(0.276)	979134	200.000	201.27(A)
28	Chloroform	83	5.497	5.497	(0.951)	833800	200.000	172.25
59	Chlorobenzene	112	9.559	9.559	(1.003)	1099160	200.000	158.27
27	cis-1,2-Dichloroethene	96	5.070	5.070	(0.877)	521185	200.000	181.90
46	cis-1,3-Dichloropropene	75	7.843	7.843	(1.193)	740036	200.000	187.79
2	Dichlorodifluoromethane	85	1.450	1.450	(0.251)	462750	200.000	184.24
55	Dibromochloromethane	129	8.975	8.975	(0.942)	623664	200.000	215.15(A)
44	Dibromomethane	93	7.194	7.194	(1.094)	277761	200.000	184.21
61	Ethylbenzene	106	9.678	9.678	(1.015)	589458	200.000	164.95
91	Hexachlorobutadiene	225	13.991	13.991	(1.182)	240075	200.000	197.95
62	m,p-Xylenes	106	9.800	9.800	(1.028)	1461350	400.000	320.65(A)
63	o-Xylene	106	10.185	10.185	(1.069)	744676	200.000	158.94
67	Isopropylbenzene	105	10.551	10.551	(1.107)	1757586	200.000	199.10
17	Methylene Chloride	84	3.337	3.337	(0.577)	590736	200.000	213.72(A)
73	n-Propylbenzene	91	10.965	10.965	(0.926)	2016642	200.000	197.69
87	n-Butylbenzene	91	12.226	12.226	(1.033)	1158976	200.000	171.50
92	Naphthalene	128	14.065	14.065	(1.188)	1192359	200.000	195.89
64	Styrene	104	10.204	10.204	(1.071)	1214906	200.000	158.95
81	sec-Butylbenzene	105	11.674	11.674	(0.986)	1765667	200.000	200.30(A)
78	tert-Butylbenzene	119	11.456	11.456	(0.967)	1328519	200.000	200.68(A)
20	trans-1,2-Dichloroethene	96	3.661	3.661	(0.633)	544806	200.000	228.21(A)
50	Toluene	91	8.163	8.163	(0.857)	1819122	200.000	165.68
51	trans-1,3-Dichloropropene	75	8.420	8.420	(1.281)	684878	200.000	199.80
56	Tetrachloroethene	164	8.693	8.693	(0.912)	379826	200.000	169.31
8	Trichlorofluoromethane	101	2.246	2.246	(0.389)	705306	200.000	182.68
38	Trichloroethene	130	6.822	6.822	(1.038)	484504	200.000	176.59
5	Vinyl Chloride	62	1.678	1.678	(0.290)	673091	200.000	200.16(A)
$ 35	1,2-Dichloroethane-d4	65	6.058	6.058	(1.048)	578356	200.000	180.69
* 36	1,4-Difluorobenzene	114	6.575	6.575	(1.000)	399189	50.0000	
* 70	1,4-Dichlorobenzene-d4	152	11.841	11.841	(1.000)	165737	50.0000	
* 1	Pentafluorobenzene	168	5.782	5.782	(1.000)	277642	50.0000	
* 47	Chlorobenzene-d5	117	9.530	9.530	(1.000)	355420	50.0000	
$ 30	Dibromofluoromethane	113	5.686	5.686	(0.983)	405181	200.000	147.62
$ 48	Toluene-d8	98	8.096	8.096	(0.850)	1365802	200.000	155.36
$ 69	4-Bromofluorobenzene	95	10.702	10.702	(1.123)	617222	200.000	182.81
82	p-Isopropyltoluene	119	11.828	11.828	(0.999)	1493948	200.000	161.00
138	Freon TF	101	2.756	2.756	(0.477)	467073	200.000	205.44(A)

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120210.D
Report Date: 01-Feb-2018 15:20

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.


Y (x10^6)
Min
-Dichlorodifluoromethane
-Dimethyl ether
-Vinyl Chloride+
-Bromomethane
-Chloroethane
-Trichlorofluoromethane+
-Diethyl ether+
-Acrolein
-1,1-Dichloroethene+
-Acetone+
-Isopropyl alcohol
-Acetonitrile+
-Methylene Chloride
-Tert-butyl alcohol
-Acrylonitrile+
-n-Hexane
-1,1-Dichloroethane
-Allyl alcohol+
-1-Propanol
-tert-Butyl formate
-2,2-Dichloropropane+
-2-Butanone
-Propionitrile+
-Bromochloromethane
-Methacrylonitrile+
-Chloroform
-Dibromofluoromethane+
-Pentafluorobenzene
-1,1-Dichloropropene+
-1,2-Dichloroethane
-1,2-Dichloroethane-d4+
-tert-Amyl methyl ether+
-1,4-Difluorobenzene
-Trichloroethene
-n-Butanol
-Ethyl Acrylate+
-1,2-Dichloropropane
-Dibromomethane
-Methyl Methacrylate+
-Bromodichloromethane
-2-Chloroethylvinyl ether
-cis-1,3-Dichloropropene
-2-Nitropropane+
-Toluene-d8
-Toluene
-trans-1,3-Dichloropropene
-4-Methyl-2-pentanol
-Ethyl Methacrylate
-1,1,2-Trichloroethane
-Tetrachloroethene
-1,3-Dichloropropane
-2-Hexanone
-Dibromochloromethane
-1,2-Dibromoethane+
-Chlorobenzene-d5+
-1,1,1,2-Tetrachloroethane+
m,p-Xylenes
-o-Xylene+
-Bromoform
-Isopropylbenzene
-4-Bromofluorobenzene
-Bromobenzene
-trans-1,4-Dichloro-2-butene
-n-Propylbenzene
-2-Chlorotoluene
-Butyl methacrylate
-tert-Butylbenzene
cis-1,4-Dichloro-2-butene+
-1,2,4-Trimethylbenzene
-sec-Butylbenzene+
-1,3-Dichlorobenzene
-4-Isopropyltoluene
-1,4-Dichlorobenzene
-1,4-Dichlorobenzene-d4+
-1,2,3-Trimethylbenzene
-alpha-Methylstyrene
Benzyl Chloride+
-1,2-Dibromo-3-Chloropropa
-1,3,5-Trichlorobenzene
-1,2,4-Trichlorobenzene
-Hexachlorobutadiene
-Naphthalene
-1,2,3-Trichlorobenzene
-2-Methylnaphthalene
-1-Methylnaphthalene
\\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120210.D
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120210.D
Date : 02-DEC-2017 13:32
Client ID: VSTD200
Sample Info: VSTD200;VSTD200;1;9;
Purge Volume: 5.0
Column phase: DB624
Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120212.D
Report Date: 01-Feb-2018 15:20

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120212.D
Lab Smp Id: VSTD-ICV Client Smp ID: VSTD-ICV
Inj Date : 02-DEC-2017 14:21
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD050;VSTD050;2;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\CHEM\VOA2.i\D171202.b\8260LL.m
Meth Date : 01-Feb-2018 15:20 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 13:32 Cal File: D120210.D
Als bottle: 12 QC Sample: METHSPIKE
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
31 1,1,1-Trichloroethane	97	5.651	5.657	(0.977)	161475	45.9543	45.95
60 1,1,1,2-Tetrachloroethane	131	9.646	9.649	(1.012)	130084	49.1159	49.11
68 1,1,2,2-Tetrachloroethane	83	10.872	10.878	(0.918)	135469	45.1168	45.11
53 1,1,2-Trichloroethane	83	8.593	8.600	(0.902)	87213	43.6065	43.60
32 1,1-Dichloropropene	75	5.856	5.859	(0.891)	127058	40.0783	40.07
22 1,1-Dichloroethane	63	4.281	4.277	(0.740)	220671	46.5309	46.53
11 1,1-Dichloroethene	96	2.753	2.747	(0.476)	94048	42.2032	42.20
71 1,2,3-Trichloropropane	75	10.901	10.907	(0.921)	145114	45.8584	45.85
79 1,2,4-Trimethylbenzene	105	11.501	11.507	(0.972)	375904	50.2294	50.22
93 1,2,3-Trichlorobenzene	182	14.299	14.305	(1.208)	114341	50.5766	50.57
90 1,2,4-Trichlorobenzene	180	13.817	13.821	(1.167)	133937	50.4746	50.47
89 1,2-Dibromo-3-Chloropropane	75	13.009	13.012	(1.099)	23863	50.9899	50.98
33 1,2-Dichloroethane	62	6.145	6.148	(0.935)	170840	46.7268	46.72
42 1,2-Dichloropropane	63	7.066	7.072	(1.075)	127314	45.2554	45.25
57 1,2-Dibromoethane	107	9.068	9.072	(0.952)	106627	42.4146	42.41
88 1,2-Dichlorobenzene	146	12.223	12.229	(1.033)	216736	44.1089	44.10
75 1,3,5-Trimethylbenzene	105	11.132	11.141	(0.940)	360276	49.3119	49.31
54 1,3-Dichloropropane	76	8.754	8.760	(0.919)	175154	44.2852	44.28
83 1,3-Dichlorobenzene	146	11.767	11.773	(0.994)	222407	43.0894	43.08
84 1,4-Dichlorobenzene	146	11.860	11.866	(1.002)	213657	42.3514	42.35
26 2,2-Dichloropropane	77	5.041	5.044	(0.872)	155248	46.3586	46.35

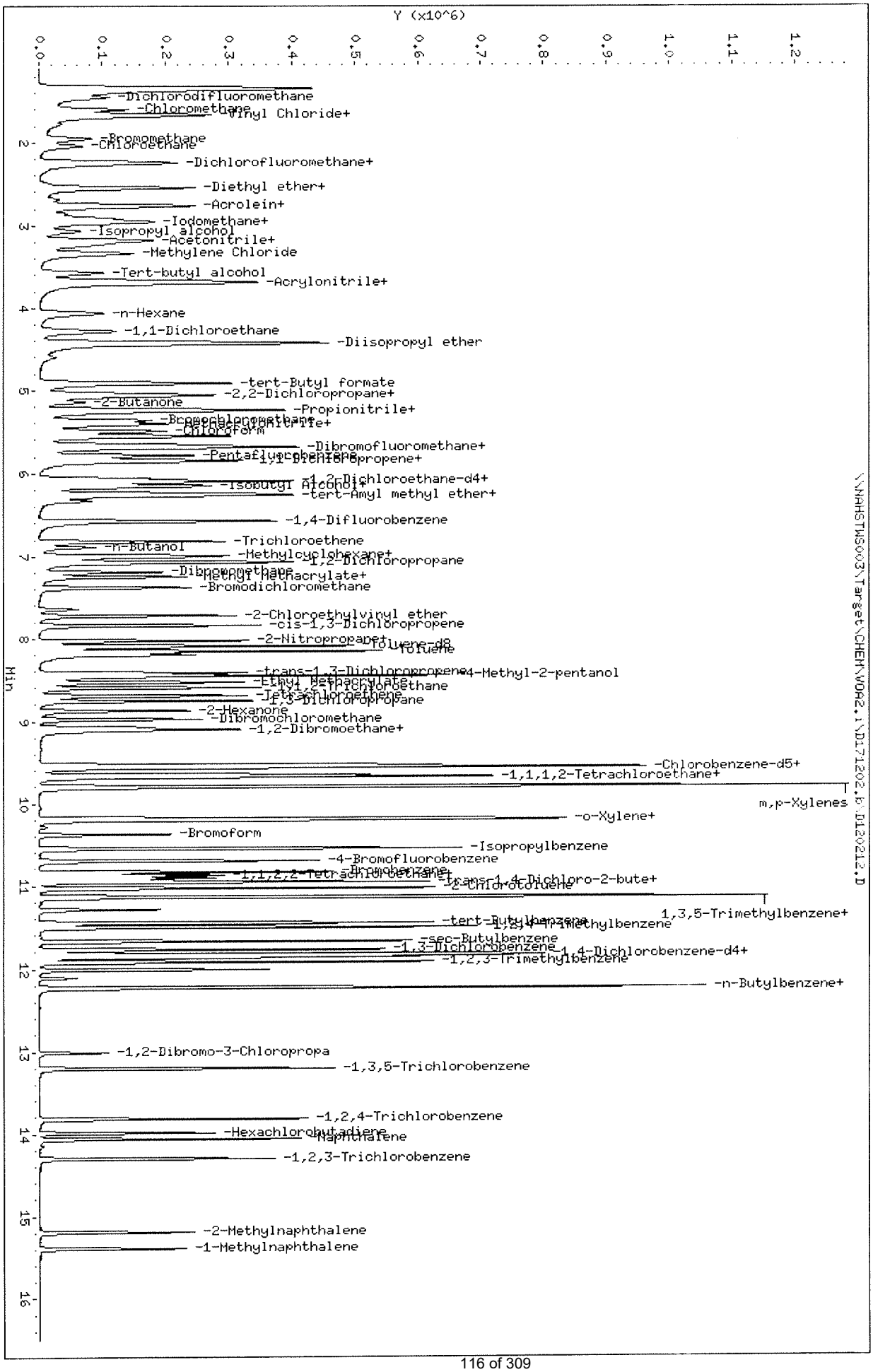
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120212.D
Report Date: 01-Feb-2018 15:20

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
	24 2-Butanone	43	5.144	5.150	(0.890)	104569	98.1620	98.16
	52 2-Hexanone	43	8.866	8.873	(0.931)	159905	94.2582	94.25
	76 2-Chlorotoluene	91	11.029	11.035	(0.932)	330884	42.5548	42.55
	77 4-Chlorotoluene	91	11.138	11.148	(0.941)	356248	49.7591	49.75
	45 4-Methyl-2-Pentanone	43	8.025	8.035	(0.842)	245626	89.3558	89.35
	10 Acetone	43	2.853	2.862	(0.493)	69239	105.162	105.16
	37 Benzene	78	6.094	6.100	(0.927)	422677	43.8644	43.86
	39 Bromodichloromethane	83	7.377	7.380	(1.123)	159073	49.3990	49.39
	74 Bromobenzene	156	10.833	10.836	(0.915)	135051	44.1879	44.18
	29 Bromochloromethane	128	5.365	5.368	(0.928)	62490	53.0603	53.06
	6 Bromomethane	94	1.951	1.938	(0.337)	95308	49.2912	49.29
	19 Carbon Disulfide	76	2.955	2.955	(0.511)	391739	86.5458	86.54
	66 Bromoform	173	10.374	10.378	(1.089)	100517	53.1830	53.18
	7 Chloroethane	64	2.047	2.031	(0.354)	94720	48.4621	48.46
	34 Carbon Tetrachloride	117	5.840	5.837	(0.889)	135345	41.0986	41.09(M)
	3 Chloromethane	50	1.598	1.595	(0.276)	245199	55.1091	55.10
	28 Chloroform	83	5.494	5.497	(0.950)	196128	45.6997	45.69
	59 Chlorobenzene	112	9.559	9.559	(1.003)	308121	45.2657	45.26
	27 cis-1,2-Dichloroethene	96	5.070	5.070	(0.877)	121661	47.8906	47.89
	46 cis-1,3-Dichloropropene	75	7.839	7.843	(1.193)	192345	50.5821	50.58
	2 Dichlorodifluoromethane	85	1.450	1.450	(0.251)	105756	47.4907	47.49
	55 Dibromochloromethane	129	8.969	8.975	(0.941)	136061	47.8905	47.89
	44 Dibromomethane	93	7.191	7.194	(1.094)	71085	48.8547	48.85
	61 Ethylbenzene	106	9.672	9.678	(1.015)	161459	46.0981	46.09
	91 Hexachlorobutadiene	225	13.991	13.991	(1.182)	55311	48.5096	48.50
	62 m,p-Xylenes	106	9.790	9.800	(1.028)	365489	81.8207	81.82
	63 o-Xylene	106	10.179	10.185	(1.068)	191838	41.7746	41.77
	67 Isopropylbenzene	105	10.548	10.551	(1.107)	444067	41.5808	41.58(M)
	17 Methylene Chloride	84	3.331	3.337	(0.576)	112047	45.7221	45.72
	73 n-Propylbenzene	91	10.955	10.965	(0.925)	463401	47.7117	47.71
	87 n-Butylbenzene	91	12.223	12.226	(1.033)	258762	41.9584	41.95
	92 Naphthalene	128	14.061	14.065	(1.188)	313637	54.9167	54.91
	64 Styrene	104	10.198	10.204	(1.070)	324143	43.2702	43.27
	81 sec-Butylbenzene	105	11.667	11.674	(0.986)	390993	47.3308	47.33
	78 tert-Butylbenzene	119	11.449	11.456	(0.967)	295574	47.7111	47.71
	20 trans-1,2-Dichloroethene	96	3.671	3.661	(0.635)	102516	48.4348	48.43
	50 Toluene	91	8.160	8.163	(0.857)	436606	40.5721	40.57
	51 trans-1,3-Dichloropropene	75	8.417	8.420	(1.281)	165729	50.1044	50.10
	56 Tetrachloroethene	164	8.690	8.693	(0.912)	89503	40.7056	40.70
	8 Trichlorofluoromethane	101	2.259	2.246	(0.391)	161588	47.2058	47.20
	38 Trichloroethene	130	6.816	6.822	(1.037)	117783	44.4887	44.48
	5 Vinyl Chloride	62	1.685	1.678	(0.291)	169133	55.1987	55.19
$	35 1,2-Dichloroethane-d4	65	6.058	6.058	(1.048)	131929	46.4880	46.48
*	36 1,4-Difluorobenzene	114	6.572	6.575	(1.000)	385208	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	11.838	11.841	(1.000)	151253	50.0000	
*	1 Pentafluorobenzene	168	5.782	5.782	(1.000)	246167	50.0000	
*	47 Chlorobenzene-d5	117	9.527	9.530	(1.000)	348365	50.0000	
$	30 Dibromofluoromethane	113	5.686	5.686	(0.983)	98655	40.5404	40.54
$	48 Toluene-d8	98	8.093	8.096	(0.849)	368152	42.7259	42.72
$	69 4-Bromofluorobenzene	95	10.695	10.702	(1.123)	142707	43.1251	43.12
	82 p-Isopropyltoluene	119	11.818	11.828	(0.998)	338780	40.0076	40.00
	138 Freon TF	101	2.766	2.756	(0.478)	81724	40.5432	40.54(M)

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120212.D
Report Date: 01-Feb-2018 15:20

QC Flag Legend

M - Compound response manually integrated.


Y (x10^6)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
1.1
1.2
Min
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3
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7
8
9
10
11
12
13
14
15
16
-Dichlorodifluoromethane
-Chloromethane
-Vinyl Chloride+
-Bromomethane
-Chloroethane
-Dichlorofluoromethane+
-Diethyl ether+
-Acrolein+
-Iodomethane+
-Isopropyl alcohol
-Acetonitrile+
-Methylene Chloride
-Tert-butyl alcohol
-Acrylonitrile+
-n-Hexane
-1,1-Dichloroethane
-Diisopropyl ether
-tert-Butyl formate
-2,2-Dichloropropane+
-2-Butanone
-Propionitrile+
-Bromochloromethane
-Chloroform
-Dibromofluoromethane+
-1,1-Dichloropropene+
-Isobutyl Alcohol+
-1,2-Dichloroethane-d4+
-tert-Amyl methyl ether+
-1,4-Difluorobenzene
-Trichloroethene
-n-Butanol
-Methylcyclohexane+
-1,2-Dichloropropane
-Dibromomethane
-Methyl Methacrylate+
-Bromodichloromethane
-2-Chloroethylvinyl ether
-cis-1,3-Dichloropropene
-2-Nitropropane+
-Toluene-d8
-Toluene
-trans-1,3-Dichloropropene
-4-Methyl-2-pentanol
-Ethyl Methacrylate
-1,1,2-Trichloroethane
-Tetrachloroethene
-1,3-Dichloropropane
-2-Hexanone
-Dibromochloromethane
-1,2-Dibromoethane+
-Chlorobenzene-d5+
-1,1,1,2-Tetrachloroethane+
m,p-Xylenes
-o-Xylene+
-Bromoform
-Isopropylbenzene
-4-Bromofluorobenzene
-Bromobenzene
-1,1,2,2-Tetrachloroethane+
-trans-1,4-Dichloro-2-bute+
-2-Chlorotoluene
1,3,5-Trimethylbenzene+
-tert-Butylbenzene
-1,2,4-Trimethylbenzene
-sec-Butylbenzene
-1,3-Dichlorobenzene
-1,4-Dichlorobenzene-d4+
-1,2,3-Trimethylbenzene
-n-Butylbenzene+
-1,2-Dibromo-3-Chloropropa
-1,3,5-Trichlorobenzene
-1,2,4-Trichlorobenzene
-Hexachlorobutadiene
-Naphthalene
-1,2,3-Trichlorobenzene
-2-Methylnaphthalene
-1-Methylnaphthalene
\\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120212.D
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120212.D
Date : 02-DEC-2017 14:21
Client ID: VSTD-ICV
Sample Info: VSTD050;VSTD050;2;;
Purge Volume: 5.0
Column phase: DB624
Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17111408

Lab File ID: E120201 BFB Injection Date: 12/02/17

Instrument ID: VOA2 BFB Injection Time: 2141

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	22.3
75	30.0 - 60.0% of mass 95	48.2
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	83.0
175	5.0 - 9.0% of mass 174	7.0 (8.4)1
176	95.0 - 101.0% of mass 174	83.2 (100.2)1
177	5.0 - 9.0% of mass 176	5.6 (6.7)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CCV	CCV	E120202	12/02/17	2206
02	VLCSW-171202	VLCSW-171202	E120203	12/02/17	2231
03	VLCSDW-17120	VLCSDW-171202	E120204	12/02/17	2255
04	VBLKW-171202	VBLKW-171202	E120206	12/02/17	2344
05	HS17111408-0	HS17111408-08	E120220	12/03/17	0527
06	HS17111408-0	HS17111408-01	E120221	12/03/17	0552
07	HS17111408-0	HS17111408-03	E120222	12/03/17	0617
08	HS17111408-0	HS17111408-04	E120223	12/03/17	0641
09	HS17111408-0	HS17111408-05	E120224	12/03/17	0706
10	HS17111408-0	HS17111408-06	E120225	12/03/17	0730
11	HS17120056-0	HS17120056-01M	E120227	12/03/17	0822
12	HS17120056-0	HS17120056-01M	E120228	12/03/17	0847
13	CCV_END	CCV_END	E120229	12/03/17	0911
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17111408

Instrument ID: VOA2 Calibration Date: 12/02/17 Time: 2206

Lab File ID: E120202 Init. Calib. Date(s): 12/02/17 12/02/17

Init. Calib. Times: 1018 1332

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
1,1,1-Trichloroethane	0.7140000	0.6678652	0.6678652	0.1	-6.46	20.00	AVRG
1,1,1,2-Tetrachloroethane	0.3800000	0.3655729	0.3655729	0.1	-3.80	20.00	AVRG
1,1,2,2-Tetrachloroethane	0.9920000	0.9189763	0.9189763	0.3	-7.36	20.00	AVRG
1,1,2-Trichloroethane	0.2870000	0.2701651	0.2701651	0.1	-5.86	20.00	AVRG
1,1-Dichloropropene	41.295748	50.000000	0.3398088	0.1	-17.41	20.00	LINR
1,1-Dichloroethane	0.9630000	0.8901935	0.8901935	0.2	-7.56	20.00	AVRG
1,1-Dichloroethene	0.4530000	0.4326887	0.4326887	0.1	-4.48	20.00	AVRG
1,2,3-Trichloropropane	1.0460000	0.9854904	0.9854904	0.1	-5.78	20.00	AVRG
1,2,4-Trimethylbenzene	49.841751	50.000000	2.4666464	0.1	-0.32	20.00	LINR
1,2,3-Trichlorobenzene	0.7470000	0.7619701	0.7619701	0.1	2.00	20.00	AVRG
1,2,4-Trichlorobenzene	0.8770000	0.8887226	0.8887226	0.2	1.34	20.00	AVRG
1,2-Dibromo-3-Chloropropane	55.275258	50.000000	0.1708607	0.05	10.55	20.00	LINR
1,2-Dichloroethane	0.4750000	0.4608706	0.4608706	0.1	-2.97	20.00	AVRG
1,2-Dichloropropane	0.3650000	0.3498758	0.3498758	0.1	-4.14	20.00	AVRG
1,2-Dibromoethane	0.3610000	0.3366559	0.3366559	0.1	-6.74	20.00	AVRG
1,2-Dichlorobenzene	1.6240000	1.4402408	1.4402408	0.4	-11.32	20.00	AVRG
1,3,5-Trimethylbenzene	50.146243	50.000000	2.4206900	0.1	0.29	20.00	LINR
1,3-Dichloropropane	0.5680000	0.5386787	0.5386787	0.1	-5.16	20.00	AVRG
1,3-Dichlorobenzene	1.7060000	1.4800596	1.4800596	0.6	-13.24	20.00	AVRG
1,4-Dichlorobenzene	1.6680000	1.4007393	1.4007393	0.4	-16.02	20.00	AVRG
2,2-Dichloropropane	0.6800000	0.6186604	0.6186604	0.1	-9.02	20.00	AVRG
2-Butanone	0.2160000	0.2289659	0.2289659	0.1	6.00	20.00	AVRG
2-Hexanone	0.2430000	0.2556012	0.2556012	0.1	5.18	20.00	AVRG
2-Chlorotoluene	2.5700000	2.1321316	2.1321316	0.1	-17.04	20.00	AVRG
4-Chlorotoluene	50.046247	50.000000	2.3684857	0.1	0.09	20.00	LINR
p-Isopropyltoluene	2.7990000	2.2815312	2.2815312	0.1	-18.49	20.00	AVRG
Acetone	118.99994	100.00000	0.1591094	0.1	19.00	20.00	2RDR
Benzene	1.2510000	1.1563213	1.1563213	0.5	-7.57	20.00	AVRG
Bromodichloromethane	0.4180000	0.4419970	0.4419970	0.2	5.74	20.00	AVRG
Bromobenzene	1.0100000	0.8971015	0.8971015	0.1	-11.18	20.00	AVRG
Bromochloromethane	0.2390000	0.2524570	0.2524570	0.1	5.63	20.00	AVRG
Bromomethane	49.164627	50.000000	0.3863909	0.1	-1.67	20.00	2RDR
Carbon Disulfide	0.9190000	0.7986808	0.7986808	0.1	-13.09	20.00	AVRG
Bromoform	0.2710000	0.2999289	0.2999289	0.1	10.67	20.00	AVRG
Chloroethane	49.916492	50.000000	0.3950072	0.1	-0.17	20.00	2RDR
Carbon Tetrachloride	43.671756	50.000000	0.3732286	0.1	-12.66	20.00	LINR
Chloromethane	54.052866	50.000000	0.9777816	0.1	8.10	20.00	LINR
Chloroform	0.8720000	0.7968830	0.7968830	0.2	-8.61	20.00	AVRG
Chlorobenzene	0.9770000	0.8928496	0.8928496	0.5	-8.61	20.00	AVRG
cis-1,2-Dichloroethene	0.5160000	0.4984463	0.4984463	0.1	-3.40	20.00	AVRG
cis-1,3-Dichloropropene	0.4940000	0.5262656	0.5262656	0.2	6.53	20.00	AVRG
Dichlorodifluoromethane	0.4520000	0.4599236	0.4599236	0.1	1.75	20.00	AVRG

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1711140

Instrument ID: VOA2 Calibration Date: 12/02/17 Time: 2206

Lab File ID: E120202 Init. Calib. Date(s): 12/02/17 12/02/17

Init. Calib. Times: 1018 1332

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Dibromochloromethane	0.4080000	0.4183677	0.4183677	0.1	2.54	20.00	AVRG
Dibromomethane	0.1890000	0.1991809	0.1991809	0.1	5.39	20.00	AVRG
Ethylbenzene	0.5030000	0.4462658	0.4462658	0.1	-11.28	20.00	AVRG
Hexachlorobutadiene	48.214576	50.000000	0.3635480	0.1	-3.57	20.00	LINR
m,p-Xylenes	0.6410000	0.5498275	0.5498275	0.1	-14.22	20.00	AVRG
o-Xylene	0.6590000	0.5888453	0.5888453	0.3	-10.64	20.00	AVRG
Isopropylbenzene	46.211624	50.000000	1.4054310	0.1	-7.58	20.00	2RDR
Methylene Chloride	0.4980000	0.4474284	0.4474284	0.1	-10.15	20.00	AVRG
n-Propylbenzene	48.486143	50.000000	3.1107602	0.1	-3.03	20.00	LINR
n-Butylbenzene	2.0380000	1.7189032	1.7189032	0.05	-15.66	20.00	AVRG
Naphthalene	57.779500	50.000000	2.1775776	0.2	15.56	20.00	LINR
Styrene	1.0750000	0.9960674	0.9960674	0.3	-7.34	20.00	AVRG
sec-Butylbenzene	48.619351	50.000000	2.6529892	0.1	-2.76	20.00	LINR
tert-Butylbenzene	48.618966	50.000000	1.9901453	0.1	-2.76	20.00	LINR
trans-1,2-Dichloroethene	0.4300000	0.4077290	0.4077290	0.1	-5.18	20.00	AVRG
Toluene	1.5440000	1.3413445	1.3413445	0.4	-13.12	20.00	AVRG
trans-1,3-Dichloropropene	0.4290000	0.4717846	0.4717846	0.1	9.97	20.00	AVRG
Tetrachloroethene	0.3160000	0.2754930	0.2754930	0.2	-12.82	20.00	AVRG
Trichlorofluoromethane	0.6950000	0.6651761	0.6651761	0.1	-4.29	20.00	AVRG
Trichloroethene	0.3440000	0.3272690	0.3272690	0.2	-4.86	20.00	AVRG
Vinyl Chloride	55.926163	50.000000	0.6957842	0.1	11.85	20.00	LINR
Freon TF	0.4090000	0.3928978	0.3928978	0.1	-3.94	20.00	AVRG
4-Methyl-2-Pentanone	0.3940000	0.3885066	0.3885066	0.1	-1.39	20.00	AVRG
4-Bromofluorobenzene	0.4750000	0.4847125	0.4847125	0.1	2.04	20.00	AVRG
Toluene-d8	1.2370000	1.2487045	1.2487045	0.1	0.95	20.00	AVRG
Dibromofluoromethane	0.4940000	0.4244211	0.4244211	0.1	-14.08	20.00	AVRG
1,2-Dichloroethane-d4	0.5760000	0.5529638	0.5529638	0.1	-4.00	20.00	AVRG

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17111408

Instrument ID: VOA2 Calibration Date: 12/03/17 Time: 0911

Lab File ID: E120229 Init. Calib. Date(s): 12/02/17 12/02/17

Init. Calib. Times: 1018 1332

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE	
1,1,1-Trichloroethane	0.7140000	0.7610359	0.7610359	0.1	6.59	20.00	AVRG	
1,1,1,2-Tetrachloroethane	0.3800000	0.3714611	0.3714611	0.1	-2.25	20.00	AVRG	
1,1,2,2-Tetrachloroethane	0.9920000	0.8305360	0.8305360	0.3	-16.28	20.00	AVRG	
1,1,2-Trichloroethane	0.2870000	0.2548611	0.2548611	0.1	-11.20	20.00	AVRG	
1,1-Dichloropropene	47.563743	50.000000	0.3911211	0.1	-4.87	20.00	LINR	
1,1-Dichloroethane	0.9630000	0.9158056	0.9158056	0.2	-4.90	20.00	AVRG	
1,1-Dichloroethene	0.4530000	0.5145126	0.5145126	0.1	13.58	20.00	AVRG	
1,2,3-Trichloropropane	1.0460000	0.9141367	0.9141367	0.1	-12.61	20.00	AVRG	
1,2,4-Trimethylbenzene	52.667619	50.000000	2.6023949	0.1	5.34	20.00	LINR	
1,2,3-Trichlorobenzene	0.7470000	0.7651353	0.7651353	0.1	2.43	20.00	AVRG	
1,2,4-Trichlorobenzene	0.8770000	0.8942006	0.8942006	0.2	1.96	20.00	AVRG	
1,2-Dibromo-3-Chloropropane	50.469945	50.000000	0.1561804	0.05	0.94	20.00	LINR	
1,2-Dichloroethane	0.4750000	0.4581261	0.4581261	0.1	-3.55	20.00	AVRG	
1,2-Dichloropropane	0.3650000	0.3463833	0.3463833	0.1	-5.10	20.00	AVRG	
1,2-Dibromoethane	0.3610000	0.3220047	0.3220047	0.1	-10.80	20.00	AVRG	
1,2-Dichlorobenzene	1.6240000	1.4363176	1.4363176	0.4	-11.56	20.00	AVRG	
1,3,5-Trimethylbenzene	54.084609	50.000000	2.6035902	0.1	8.17	20.00	LINR	
1,3-Dichloropropane	0.5680000	0.5198905	0.5198905	0.1	-8.47	20.00	AVRG	
1,3-Dichlorobenzene	1.7060000	1.5013910	1.5013910	0.6	-11.99	20.00	AVRG	
1,4-Dichlorobenzene	1.6680000	1.5061865	1.5061865	0.4	-9.70	20.00	AVRG	
2,2-Dichloropropane	0.6800000	0.5913325	0.5913325	0.1	-13.04	20.00	AVRG	
2-Butanone	0.2160000	0.2133245	0.2133245	0.1	-1.24	20.00	AVRG	
2-Hexanone	0.2430000	0.2368218	0.2368218	0.1	-2.54	20.00	AVRG	
2-Chlorotoluene	2.5700000	2.2305602	2.2305602	0.1	-13.21	20.00	AVRG	
4-Chlorotoluene	51.735740	50.000000	2.4460010	0.1	3.47	20.00	LINR	
p-Isopropyltoluene	2.7990000	2.4790642	2.4790642	0.1	-11.43	20.00	AVRG	
Acetone	125.51136	100.00000	0.1679048	0.1	25.51	20.00	2RDR	<-
Benzene	1.2510000	1.1815844	1.1815844	0.5	-5.55	20.00	AVRG	
Bromodichloromethane	0.4180000	0.4360657	0.4360657	0.2	4.32	20.00	AVRG	
Bromobenzene	1.0100000	0.8979360	0.8979360	0.1	-11.10	20.00	AVRG	
Bromochloromethane	0.2390000	0.2479729	0.2479729	0.1	3.75	20.00	AVRG	
Bromomethane	43.321461	50.000000	0.3497616	0.1	-13.36	20.00	2RDR	
Carbon Disulfide	0.9190000	0.8961651	0.8961651	0.1	-2.48	20.00	AVRG	
Bromoform	0.2710000	0.2839910	0.2839910	0.1	4.79	20.00	AVRG	
Chloroethane	50.505440	50.000000	0.3991365	0.1	1.01	20.00	2RDR	
Carbon Tetrachloride	50.144888	50.000000	0.4282522	0.1	0.29	20.00	LINR	
Chloromethane	47.185248	50.000000	0.8588852	0.1	-5.63	20.00	LINR	
Chloroform	0.8720000	0.8104648	0.8104648	0.2	-7.06	20.00	AVRG	
Chlorobenzene	0.9770000	0.9475991	0.9475991	0.5	-3.01	20.00	AVRG	
cis-1,2-Dichloroethene	0.5160000	0.4968057	0.4968057	0.1	-3.72	20.00	AVRG	
cis-1,3-Dichloropropene	0.4940000	0.4962483	0.4962483	0.2	0.46	20.00	AVRG	
Dichlorodifluoromethane	0.4520000	0.5216260	0.5216260	0.1	15.40	20.00	AVRG	

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1711140

Instrument ID: VOA2 Calibration Date: 12/03/17 Time: 0911

Lab File ID: E120229 Init. Calib. Date(s): 12/02/17 12/02/17

Init. Calib. Times: 1018 1332

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE	
Dibromochloromethane	0.4080000	0.4050043	0.4050043	0.1	-0.73	20.00	AVRG	
Dibromomethane	0.1890000	0.1913893	0.1913893	0.1	1.26	20.00	AVRG	
Ethylbenzene	0.5030000	0.4791000	0.4791000	0.1	-4.75	20.00	AVRG	
Hexachlorobutadiene	54.168784	50.000000	0.4066909	0.1	8.34	20.00	LINR	
m,p-Xylenes	0.6410000	0.5858905	0.5858905	0.1	-8.60	20.00	AVRG	
o-Xylene	0.6590000	0.6194606	0.6194606	0.3	-6.00	20.00	AVRG	
Isopropylbenzene	51.192817	50.000000	1.5438088	0.1	2.38	20.00	2RDR	
Methylene Chloride	0.4980000	0.4375217	0.4375217	0.1	-12.14	20.00	AVRG	
n-Propylbenzene	53.567267	50.000000	3.4191919	0.1	7.13	20.00	LINR	
n-Butylbenzene	2.0380000	1.8718810	1.8718810	0.05	-8.15	20.00	AVRG	
Naphthalene	55.819654	50.000000	2.1063899	0.2	11.64	20.00	LINR	
Styrene	1.0750000	1.0056341	1.0056341	0.3	-6.45	20.00	AVRG	
sec-Butylbenzene	54.276240	50.000000	2.9513622	0.1	8.55	20.00	LINR	
tert-Butylbenzene	54.928853	50.000000	2.2401725	0.1	9.86	20.00	LINR	
trans-1,2-Dichloroethene	0.4300000	0.4401914	0.4401914	0.1	2.37	20.00	AVRG	
Toluene	1.5440000	1.4369814	1.4369814	0.4	-6.93	20.00	AVRG	
trans-1,3-Dichloropropene	0.4290000	0.4368866	0.4368866	0.1	1.84	20.00	AVRG	
Tetrachloroethene	0.3160000	0.3125641	0.3125641	0.2	-1.09	20.00	AVRG	
Trichlorofluoromethane	0.6950000	0.7187878	0.7187878	0.1	3.42	20.00	AVRG	
Trichloroethene	0.3440000	0.3632478	0.3632478	0.2	5.60	20.00	AVRG	
Vinyl Chloride	54.464152	50.000000	0.6782642	0.1	8.93	20.00	LINR	
Freon TF	0.4090000	0.5103977	0.5103977	0.1	24.79	20.00	AVRG	<-
4-Methyl-2-Pentanone	0.3940000	0.3649768	0.3649768	0.1	-7.37	20.00	AVRG	
4-Bromofluorobenzene	0.4750000	0.4817662	0.4817662	0.1	1.42	20.00	AVRG	
Toluene-d8	1.2370000	1.2506087	1.2506087	0.1	1.10	20.00	AVRG	
Dibromofluoromethane	0.4940000	0.4267886	0.4267886	0.1	-13.60	20.00	AVRG	
1,2-Dichloroethane-d4	0.5760000	0.5505297	0.5505297	0.1	-4.42	20.00	AVRG	

FORM VII VOA

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17111408

Lab File ID (Standard): E120202 Date Analyzed: 12/02/17

Instrument ID: VOA2 Time Analyzed: 2206

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

		IS1(CBZ) AREA #	RT #	IS2(DFB) AREA #	RT #	IS3(DCB) AREA #	RT #
	12 HOUR STD	308193	9.53	336448	6.57	145007	11.83
	UPPER LIMIT	616386	10.03	672896	7.07	290014	12.33
	LOWER LIMIT	154097	9.03	168224	6.07	72504	11.33
	CLIENT SAMPLE NO.						
01	VLCSW-171202	311725	9.53	343081	6.57	144852	11.84
02	VLCSDW-171202	314807	9.53	342428	6.58	146164	11.83
03	VBLKW-171202	315792	9.53	344757	6.57	144752	11.84
04	HS17111408-08	315812	9.53	340368	6.57	147373	11.84
05	HS17111408-01	301202	9.53	332138	6.58	136094	11.83
06	HS17111408-03	301111	9.53	326081	6.57	138623	11.83
07	HS17111408-04	301699	9.53	329225	6.57	139629	11.84
08	HS17111408-05	304568	9.53	333268	6.57	137495	11.84
09	HS17111408-06	303043	9.53	334809	6.57	137146	11.84
10	HS17120056-01	299393	9.53	331217	6.57	139802	11.84
11	HS17120056-01	299828	9.53	332383	6.58	140055	11.84
12							
13							
14							
15							
16							
17							
18							
19							
20							

IS1 (CBZ) = Chlorobenzene-d5
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM VIII VOA

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17111408

Lab File ID (Standard): E120202 Date Analyzed: 12/02/17

Instrument ID: VOA2 Time Analyzed: 2206

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

		IS4 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	229449	5.78				
	UPPER LIMIT	458898	6.28				
	LOWER LIMIT	114725	5.28				
	CLIENT SAMPLE NO.						
01	VLCSW-171202	227417	5.78				
02	VLCSDW-171202	230258	5.78				
03	VBLKW-171202	248084	5.78				
04	HS17111408-08	243391	5.78				
05	HS17111408-01	235593	5.78				
06	HS17111408-03	231013	5.78				
07	HS17111408-04	228400	5.78				
08	HS17111408-05	237399	5.78				
09	HS17111408-06	236463	5.78				
10	HS17120056-01	222252	5.78				
11	HS17120056-01	223941	5.78				
12							
13							
14							
15							
16							
17							
18							
19							
20							

IS4 = Pentafluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM VIII VOA

MSVOA02 -Logbook

Batch: 29843
Date: 12-02-2017
Method: 8260
Comments:

Analyst: Anjana Poluri
Reviewer:
Laboratory: Houston

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
1	BFB	TUNE	12-02-2017 09:53 am	1.00	50 mL	50 mL	D120201.D	Liquid	Y	NA
2	*Auto find/purged* VSTD00.5	ICAL1	12-02-2017 10:18 am	1.00	50 mL	50 mL	D120202.D	Liquid	Y	NA
3	*0.5 uL cal std/250 mL DI* VSTD001	ICAL2	12-02-2017 10:42 am	1.00	50 mL	50 mL	D120203.D	Liquid	Y	NA
4	*1 uL cal std/250 mL DI* VSTD002	ICAL3	12-02-2017 11:06 am	1.00	50 mL	50 mL	D120204.D	Liquid	Y	NA
5	*2 uL cal std/250 mL DI* VSTD005	ICAL4	12-02-2017 11:31 am	1.00	50 mL	50 mL	D120205.D	Liquid	Y	NA
6	*5 uL cal std/250 mL DI* VSTD010	ICAL5	12-02-2017 11:55 am	1.00	50 mL	50 mL	D120206.D	Liquid	Y	NA
7	*2 uL cal std/50 mL DI* VSTD020	ICAL6	12-02-2017 12:19 pm	1.00	50 mL	50 mL	D120207.D	Liquid	Y	NA
8	*4 uL cal std/50 mL DI* VSTD050	ICAL7	12-02-2017 12:44 pm	1.00	50 mL	50 mL	D120208.D	Liquid	Y	NA
9	*10 uL cal std/50 mL DI* VSTD100	ICAL8	12-02-2017 01:08 pm	1.00	50 mL	50 mL	D120209.D	Liquid	Y	NA
10	*20 uL cal std/50 mL DI* VSTD200	ICAL9	12-02-2017 01:32 pm	1.00	50 mL	50 mL	D120210.D	Liquid	Y	NA
11	*40 uL cal std/50 mL DI* BLK	SAMP	12-02-2017 01:57 pm	1.00	50 mL	50 mL	D120211.D	Liquid	Y	NA
12	*Cleanup blk* VSTD050	CCV	12-02-2017 02:21 pm	1.00	50 mL	50 mL	D120212.D	Liquid	Y	NA
13	*10 uL cal std/50 mL DI* VSTD050	CCV	12-02-2017 02:45 pm	1.00	50 mL	50 mL	D120213.D	Liquid	Y	NA
14	*10 uL cal std/50 mL DI* VLCSW-171202	LCS	12-02-2017 03:10 pm	1.00	50 mL	50 mL	D120214.D	Liquid	Y	NA
15	*10 uL cal std/50 mL DI* BLK	SAMP	12-02-2017 03:34 pm	1.00	50 mL	50 mL	D120215.D	Liquid	Y	NA
16	*Cleanup blk* VBLKW171202	MBLK	12-02-2017 03:59 pm	1.00	50 mL	50 mL	D120216.D	Liquid	Y	NA
17	HS17120047-01	SAMP	12-02-2017 04:23 pm	1.00	50 mL	50 mL	D120217.D	Liquid	Y	<2
18	HS17120054-01	SAMP	12-02-2017 04:47 pm	1.00	50 mL	50 mL	D120218.D	Liquid	Y	<2
19	HS17120054-02	SAMP	12-02-2017 05:12 pm	1.00	50 mL	50 mL	D120219.D	Liquid	Y	<2
20	HS17120054-03	SAMP	12-02-2017 05:37 pm	1.00	50 mL	50 mL	D120220.D	Liquid	Y	<2
21	HS17120054-04	SAMP	12-02-2017 06:01 pm	1.00	50 mL	50 mL	D120221.D	Liquid	Y	<2
22	HS17120054-05	SAMP	12-02-2017 06:25 pm	1.00	50 mL	50 mL	D120222.D	Liquid	Y	<2
23	HS17120054-06	SAMP	12-02-2017 06:50 pm	1.00	50 mL	50 mL	D120223.D	Liquid	Y	<2
24	HS17120054-07	SAMP	12-02-2017 07:14 pm	1.00	50 mL	50 mL	D120224.D	Liquid	Y	<2
25	HS17120054-08	SAMP	12-02-2017 07:39 pm	1.00	50 mL	50 mL	D120225.D	Liquid	Y	<2
26	HS17120054-09	SAMP	12-02-2017 08:03 pm	1.00	50 mL	50 mL	D120226.D	Liquid	Y	<2
27	HS17120054-09MS	MS	12-02-2017 08:28 pm	1.00	50 mL	50 mL	D120227.D	Liquid	Y	<2
28	*8 uL cal std/40 mL sample* HS17120054-09MSD	MSD	12-02-2017 08:52 pm	1.00	50 mL	50 mL	D120228.D	Liquid	Y	<2
29	*8 uL cal std/40 mL sample* CCV_END	CCV_END	12-02-2017 09:17 pm	1.00	50 mL	50 mL	D120229.D	Liquid	Y	NA
30	*10 uL cal std/50 mL DI* BFB	TUNE	12-02-2017 09:41 pm	1.00	50 mL	50 mL	E120201.D	Liquid	Y	NA
31	*Auto find/purged* CCV	CCV	12-02-2017 10:06 pm	1.00	50 mL	50 mL	E120202.D	Liquid	Y	NA

MSVOA02 -Logbook

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
32	VLCSW-171202	LCS	12-02-2017 10:31 pm	1.00	50 mL	50 mL	E120203.D	Liquid	Y	NA
	10 uL cal std/50 mL DI									
33	VLCSDW-171202	LCSD	12-02-2017 10:55 pm	1.00	50 mL	50 mL	E120204.D	Liquid	Y	NA
	10 uL cal std/50 mL DI									
34	BLK	SAMP	12-02-2017 11:19 pm	1.00	50 mL	50 mL	E120205.D	Liquid	Y	NA
	Cleanup blk									
35	VBLKW-171202	MBLK	12-02-2017 11:44 pm	1.00	50 mL	50 mL	E120206.D	Liquid	Y	NA
36	HS17120054-10	SAMP	12-03-2017 12:08 am	1.00	50 mL	50 mL	E120207.D	Liquid	Y	<2
37	HS17120054-11	SAMP	12-03-2017 12:33 am	1.00	50 mL	50 mL	E120208.D	Liquid	Y	<2
38	HS17120056-01	SAMP	12-03-2017 12:57 am	1.00	50 mL	50 mL	E120209.D	Liquid	Y	<2
39	HS17120056-02	SAMP	12-03-2017 01:22 am	1.00	50 mL	50 mL	E120210.D	Liquid	Y	<2
40	HS17120056-03	SAMP	12-03-2017 01:47 am	1.00	50 mL	50 mL	E120211.D	Liquid	Y	<2
41	HS17120056-04	SAMP	12-03-2017 02:11 am	1.00	50 mL	50 mL	E120212.D	Liquid	Y	<2
42	HS17120056-05	SAMP	12-03-2017 02:36 am	1.00	50 mL	50 mL	E120213.D	Liquid	Y	<2
43	HS17120056-06	SAMP	12-03-2017 03:00 am	1.00	50 mL	50 mL	E120214.D	Liquid	Y	<2
44	HS17120056-07	SAMP	12-03-2017 03:25 am	1.00	50 mL	50 mL	E120215.D	Liquid	Y	<2
45	HS17120056-08	SAMP	12-03-2017 03:49 am	1.00	50 mL	50 mL	E120216.D	Liquid	Y	<2
46	HS17120056-09	SAMP	12-03-2017 04:14 am	1.00	50 mL	50 mL	E120217.D	Liquid	Y	<2
47	HS17120056-10	SAMP	12-03-2017 04:38 am	1.00	50 mL	50 mL	E120218.D	Liquid	Y	<2
48	HS17120056-11	SAMP	12-03-2017 05:03 am	1.00	50 mL	50 mL	E120219.D	Liquid	Y	<2
49	HS17111408-08	SAMP	12-03-2017 05:27 am	1.00	50 mL	50 mL	E120220.D	Liquid	Y	<2
50	HS17111408-01	SAMP	12-03-2017 05:52 am	1.00	50 mL	50 mL	E120221.D	Liquid	Y	<2
51	HS17111408-03	SAMP	12-03-2017 06:17 am	1.00	50 mL	50 mL	E120222.D	Liquid	Y	<2
52	HS17111408-04	SAMP	12-03-2017 06:41 am	1.00	50 mL	50 mL	E120223.D	Liquid	Y	<2
53	HS17111408-05	SAMP	12-03-2017 07:06 am	1.00	50 mL	50 mL	E120224.D	Liquid	Y	<2
54	HS17111408-06	SAMP	12-03-2017 07:30 am	1.00	50 mL	50 mL	E120225.D	Liquid	Y	<2
55	HS17111381-14	SAMP	12-03-2017 07:58 am	5.00	10 mL	50 mL	E120226.D	Liquid	Y	<2
56	HS17120056-01MS	MS	12-03-2017 08:22 am	1.00	50 mL	50 mL	E120227.D	Liquid	Y	<2
	8 uL cal std/40 mL sample									
57	HS17120056-01MSD	MSD	12-03-2017 08:47 am	1.00	50 mL	50 mL	E120228.D	Liquid	Y	<2
	8 uL cal std/40 mL sample									
58	CCV_END	CCV_END	12-03-2017 09:11 am	1.00	50 mL	50 mL	E120229.D	Liquid	Y	NA
	10 uL cal std/50 mL DI									

Chemical	Value
SURR ID	29814-95-03
IS ID	29814-95-04
ICV STD ID	29814-95-02
LCS/MS ID	29814-95-01
CAL STD ID	29814-95-01
BFB ID	29814-95-03
pH Paper	634-37-03

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120201.D Page 2

Date : 02-DEC-2017 21:41

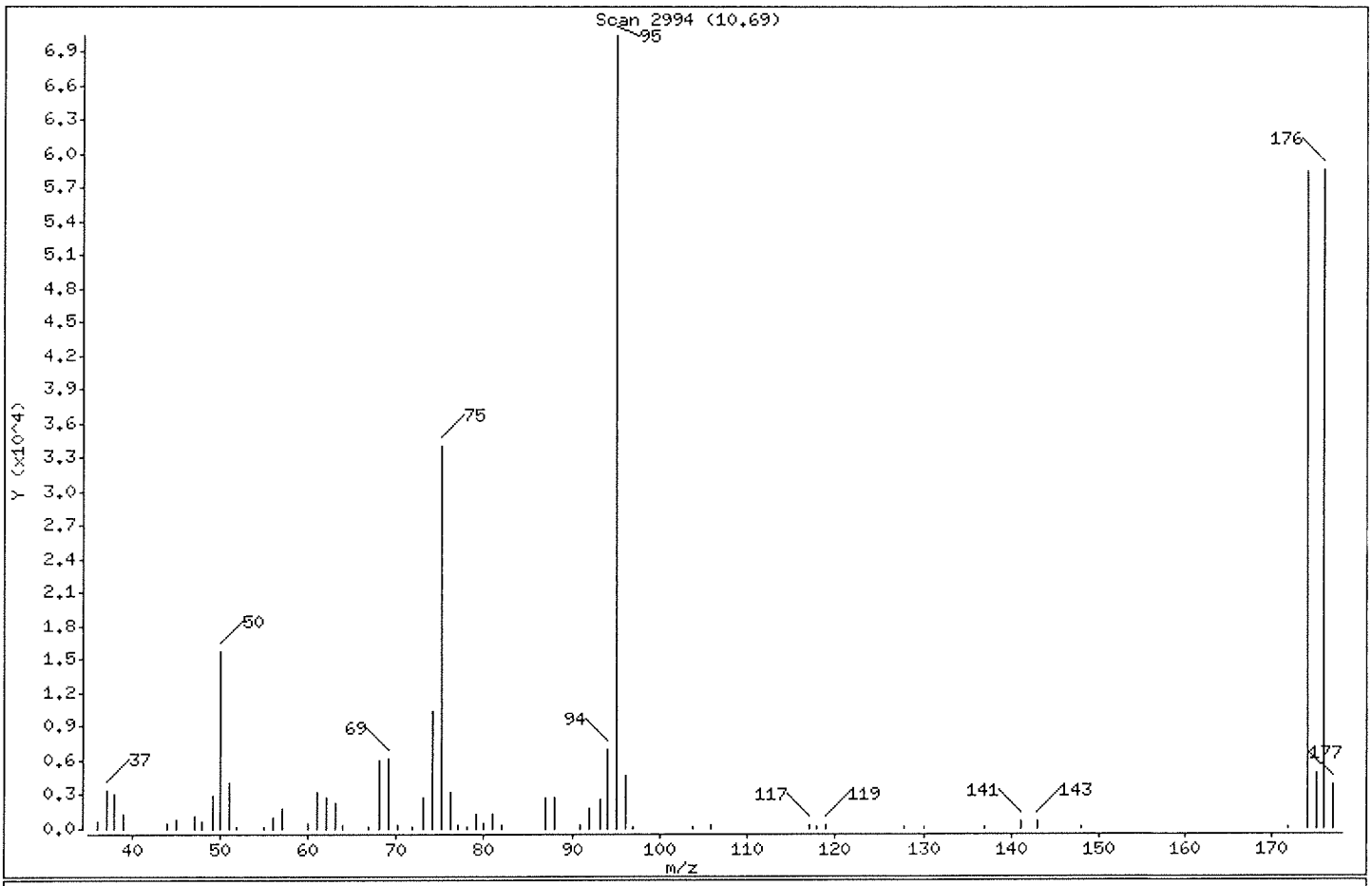
Client ID: BFB Instrument: VOA2.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0 Operator: AP

Column phase: DB624 Column diameter: 0.18

1 bfb



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	22.30
75	30.00 - 60.00% of mass 95	48.20
96	5.00 - 9.00% of mass 95	6.77
173	Less than 2.00% of mass 174	0.00 (0.00)
174	Greater than 50.00% of mass 95	83.03
175	5.00 - 9.00% of mass 174	6.97 (8.40)
176	95.00 - 101.00% of mass 174	83.24 (100.25)
177	5.00 - 9.00% of mass 176	5.60 (6.73)

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120201.D

Date : 02-DEC-2017 21:41

Client ID: BFB Instrument: VOA2.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0 Operator: AP

Column phase: DB624 Column diameter: 0.18

Data File: E120201.D
Spectrum: Scan 2994 (10.69)
Location of Maximum: 95.10
Number of points: 60

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.10	641	61.10	3218	80.00	464	118.80	314
37.10	3338	62.10	2810	80.90	1229	127.80	173
38.10	3023	63.10	2334	82.00	282	130.00	179
39.10	1266	64.00	275	87.00	2763	136.90	192
44.10	410	66.90	186	88.00	2676	141.00	726
45.10	746	68.10	6029	90.80	291	142.90	621
47.10	1072	69.10	6147	92.00	1829	147.90	235
48.00	621	70.10	369	93.10	2533	171.70	158
49.10	2841	71.90	224	94.10	6906	174.00	58560
50.10	15725	73.10	2789	95.10	70528	175.10	4917
51.10	3988	74.10	10321	96.00	4773	176.00	58704
52.00	168	75.10	33992	97.00	240	177.00	3953
55.00	213	76.10	3184	103.80	173		
56.00	956	77.00	321	105.90	283		
57.10	1857	78.10	226	117.00	361		
60.00	486	79.00	1225	117.80	153		

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120201.D

Date : 02-DEC-2017 21:41

Client ID: BFB

Instrument: VOA2.i

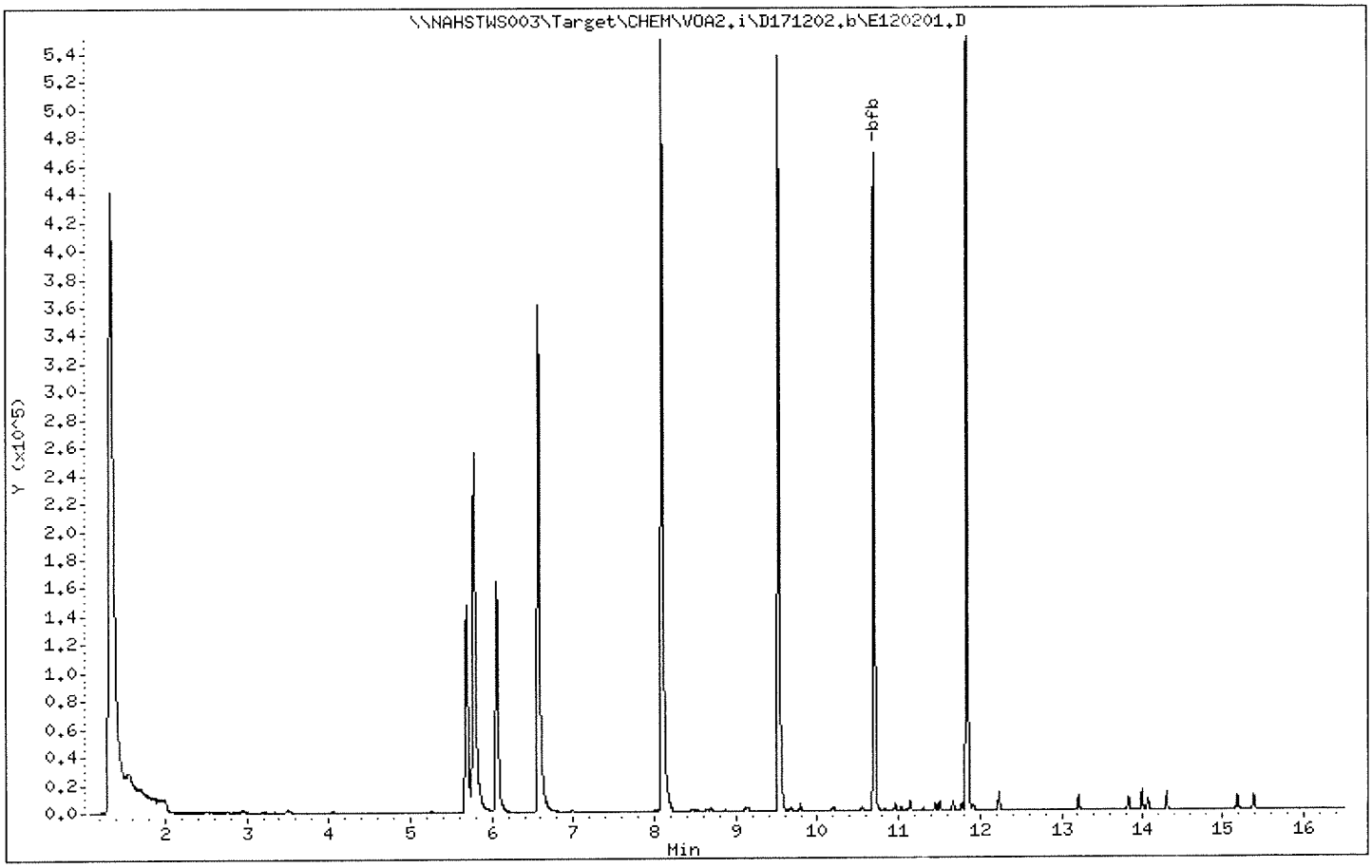
Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: AP

Column phase: DB624

Column diameter: 0.18



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120202.D
Report Date: 01-Feb-2018 15:27

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120202.D
Lab Smp Id: CCV Client Smp ID: CCV
Inj Date : 02-DEC-2017 22:06
Operator : AP Inst ID: VOA2.i
Smp Info : CCV;CCV;2;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\CHEM\VOA2.i\D171202.b\8260LL.m
Meth Date : 01-Feb-2018 15:27 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 13:32 Cal File: D120210.D
Als bottle: 30 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
31 1,1,1-Trichloroethane	97	5.651	5.651	(0.977)	153241	50.0000	46.78
60 1,1,1,2-Tetrachloroethane	131	9.646	9.646	(1.012)	112667	50.0000	48.08
68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.919)	133258	50.0000	46.29
53 1,1,2-Trichloroethane	83	8.597	8.597	(0.902)	83263	50.0000	47.05
32 1,1-Dichloropropene	75	5.856	5.856	(0.891)	114328	50.0000	41.09
22 1,1-Dichloroethane	63	4.277	4.277	(0.740)	204254	50.0000	46.80
11 1,1-Dichloroethene	96	2.750	2.750	(0.476)	99280	50.0000	47.79
71 1,2,3-Trichloropropane	75	10.904	10.904	(0.921)	142903	50.0000	47.10
79 1,2,4-Trimethylbenzene	105	11.501	11.501	(0.972)	357681	50.0000	49.84
93 1,2,3-Trichlorobenzene	182	14.302	14.302	(1.209)	110491	50.0000	50.97
90 1,2,4-Trichlorobenzene	180	13.821	13.821	(1.168)	128871	50.0000	50.66
89 1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	24776	50.0000	55.27
33 1,2-Dichloroethane	62	6.145	6.145	(0.935)	155059	50.0000	48.55
42 1,2-Dichloropropane	63	7.066	7.066	(1.075)	117715	50.0000	47.30
57 1,2-Dibromoethane	107	9.068	9.068	(0.952)	103755	50.0000	46.65
88 1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	208845	50.0000	44.83
75 1,3,5-Trimethylbenzene	105	11.135	11.135	(0.941)	351017	50.0000	50.14
54 1,3-Dichloropropane	76	8.754	8.754	(0.919)	166017	50.0000	47.44
83 1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	214619	50.0000	43.57
84 1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	203117	50.0000	41.89
26 2,2-Dichloropropane	77	5.041	5.041	(0.872)	141951	50.0000	45.47

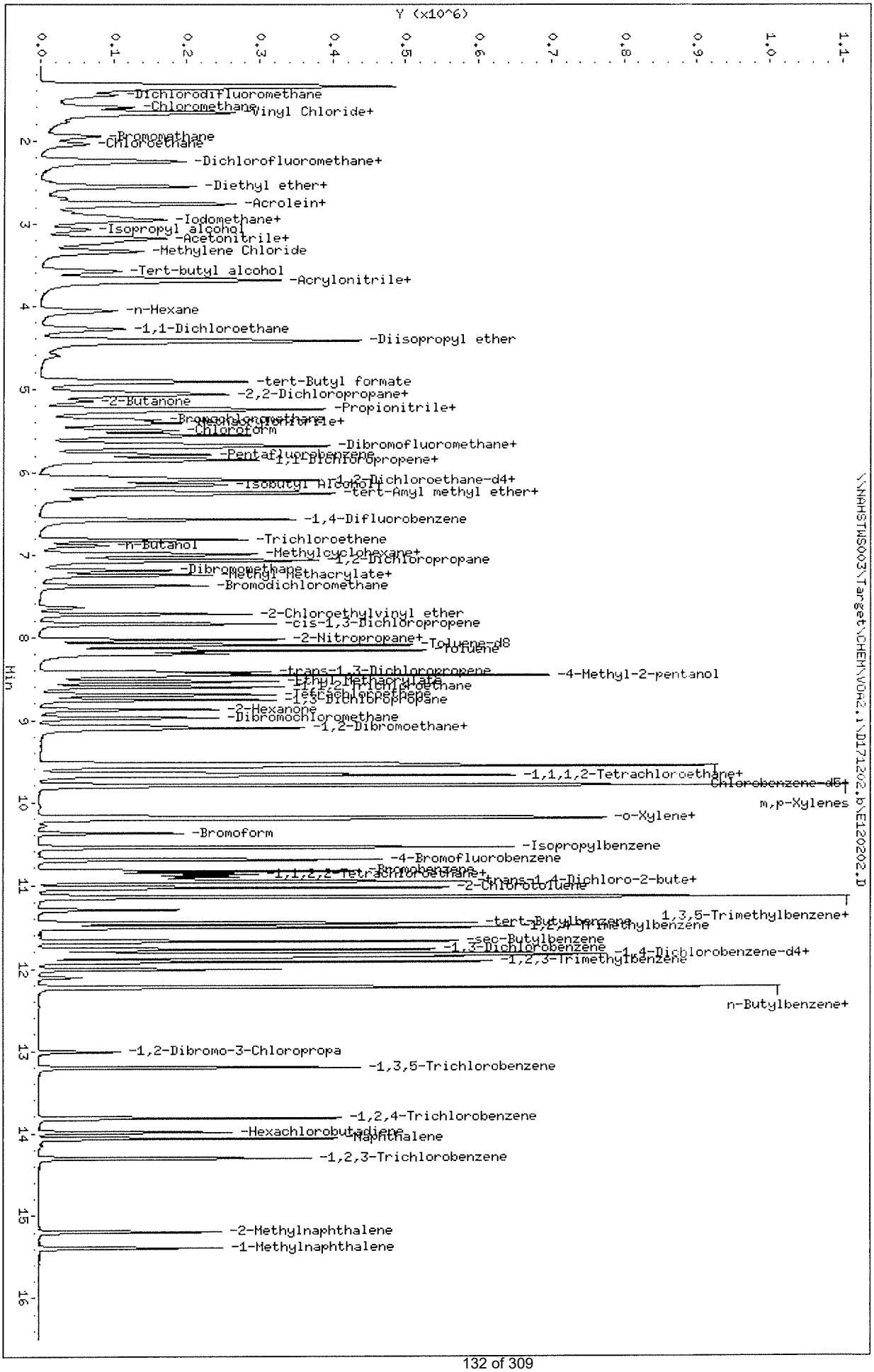
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Report Date: 01-Feb-2018 15:27

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
24	2-Butanone	43	5.144	5.144	(0.890)	105072	100.000	105.82
52	2-Hexanone	43	8.866	8.866	(0.931)	157549	100.000	104.97
76	2-Chlorotoluene	91	11.029	11.029	(0.932)	309174	50.0000	41.47
77	4-Chlorotoluene	91	11.141	11.141	(0.941)	343447	50.0000	50.04
45	4-Methyl-2-Pentanone	43	8.029	8.029	(0.843)	239470	100.000	98.47
10	Acetone	43	2.853	2.853	(0.493)	73015	100.000	118.99(M)
37	Benzene	78	6.091	6.091	(0.927)	389042	50.0000	46.22
39	Bromodichloromethane	83	7.377	7.377	(1.123)	148709	50.0000	52.87
74	Bromobenzene	156	10.833	10.833	(0.915)	130086	50.0000	44.39
29	Bromochloromethane	128	5.365	5.365	(0.928)	57926	50.0000	52.76
6	Bromomethane	94	1.941	1.941	(0.336)	88657	50.0000	49.16
19	Carbon Disulfide	76	2.952	2.952	(0.511)	366513	100.000	86.87
66	Bromoform	173	10.374	10.374	(1.089)	92436	50.0000	55.28
7	Chloroethane	64	2.038	2.038	(0.352)	90634	50.0000	49.91
34	Carbon Tetrachloride	117	5.837	5.837	(0.888)	125572	50.0000	43.67
3	Chloromethane	50	1.595	1.595	(0.276)	224381	50.0000	54.15
28	Chloroform	83	5.497	5.497	(0.951)	182844	50.0000	45.70
59	Chlorobenzene	112	9.553	9.553	(1.003)	275170	50.0000	45.69
27	cis-1,2-Dichloroethene	96	5.070	5.070	(0.877)	114368	50.0000	48.30
46	cis-1,3-Dichloropropene	75	7.839	7.839	(1.193)	177061	50.0000	53.31
2	Dichlorodifluoromethane	85	1.450	1.450	(0.251)	105529	50.0000	50.84
55	Dibromochloromethane	129	8.972	8.972	(0.942)	128938	50.0000	51.29
44	Dibromomethane	93	7.188	7.188	(1.094)	67014	50.0000	52.73
61	Ethylbenzene	106	9.672	9.672	(1.015)	137536	50.0000	44.38
91	Hexachlorobutadiene	225	13.988	13.988	(1.182)	52717	50.0000	48.21
62	m,p-Xylenes	106	9.790	9.790	(1.028)	338906	100.000	85.75
63	o-Xylene	106	10.179	10.179	(1.068)	181478	50.0000	44.66
67	Isopropylbenzene	105	10.548	10.548	(1.107)	433144	50.0000	46.21
17	Methylene Chloride	84	3.331	3.331	(0.576)	102662	50.0000	44.94
73	n-Propylbenzene	91	10.955	10.955	(0.926)	451082	50.0000	48.48
87	n-Butylbenzene	91	12.223	12.223	(1.033)	249253	50.0000	42.15
92	Naphthalene	128	14.061	14.061	(1.188)	315764	50.0000	57.77
64	Styrene	104	10.198	10.198	(1.070)	306981	50.0000	46.32
81	sec-Butylbenzene	105	11.668	11.668	(0.986)	384702	50.0000	48.61
78	tert-Butylbenzene	119	11.453	11.453	(0.968)	288585	50.0000	48.61
20	trans-1,2-Dichloroethene	96	3.665	3.665	(0.634)	93553	50.0000	47.42
50	Toluene	91	8.160	8.160	(0.857)	413393	50.0000	43.42
51	trans-1,3-Dichloropropene	75	8.417	8.417	(1.281)	158731	50.0000	54.94
56	Tetrachloroethene	164	8.690	8.690	(0.912)	84906	50.0000	43.64
8	Trichlorofluoromethane	101	2.253	2.253	(0.390)	152624	50.0000	47.83
38	Trichloroethene	130	6.819	6.819	(1.038)	110109	50.0000	47.61
5	Vinyl Chloride	62	1.681	1.681	(0.291)	159647	50.0000	55.92
$ 35	1,2-Dichloroethane-d4	65	6.055	6.055	(1.047)	126677	50.0000	47.96
* 36	1,4-Difluorobenzene	114	6.572	6.572	(1.000)	336448	50.0000	
* 70	1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	145007	50.0000	
* 1	Pentafluorobenzene	168	5.782	5.782	(1.000)	229449	50.0000	
* 47	Chlorobenzene-d5	117	9.527	9.527	(1.000)	308193	50.0000	
$ 30	Dibromofluoromethane	113	5.683	5.683	(0.983)	97383	50.0000	42.93
$ 48	Toluene-d8	98	8.096	8.096	(0.850)	384842	50.0000	50.48
$ 69	4-Bromofluorobenzene	95	10.695	10.695	(1.123)	149385	50.0000	51.02
82	p-Isopropyltoluene	119	11.818	11.818	(0.999)	330838	50.0000	40.75
138	Freon TF	101	2.766	2.766	(0.478)	90150	50.0000	47.98

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120202.D
Report Date: 01-Feb-2018 15:27

QC Flag Legend

M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120202.D
Date : 02-DEC-2017 22:06
Client ID: CCV
Sample Info: CCV;CCV;2;;
Purge Volume: 5.0
Column phase: DB624

\\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120202.D

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120203.D
Report Date: 01-Feb-2018 15:28

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120203.D
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Inj Date : 02-DEC-2017 22:31
Operator : AP Inst ID: VOA2.i
Smp Info : VLCSW-171202;VLCSW-171202;3;;LCS
Misc Info : HS15080001;WATER;0;1;
Comment :
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Meth Date : 01-Feb-2018 15:27 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 13:32 Cal File: D120210.D
Als bottle: 31 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

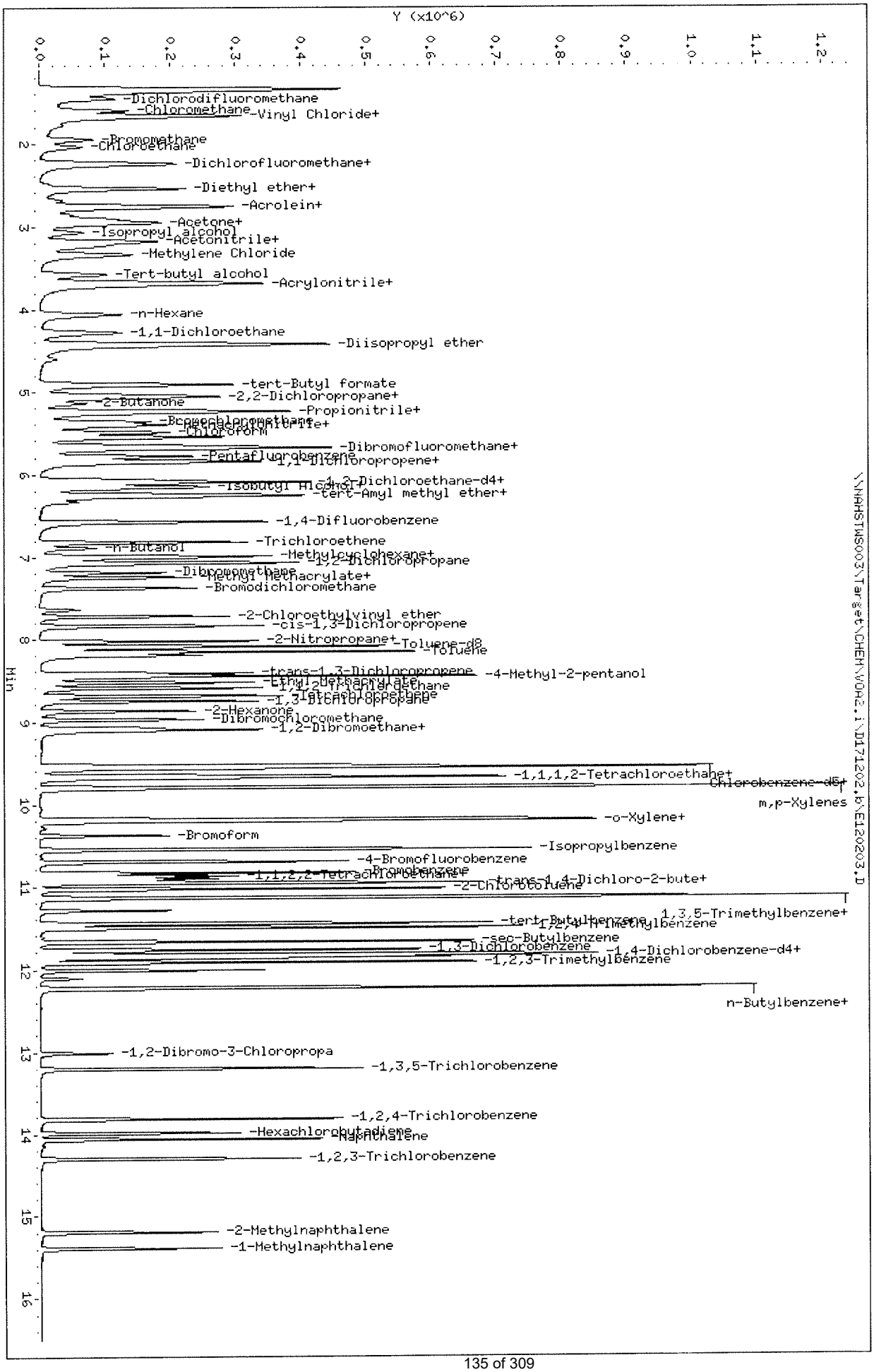
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
31 1,1,1-Trichloroethane	97	5.654	5.651	(0.978)	172583	53.1650	53.16
60 1,1,1,2-Tetrachloroethane	131	9.646	9.646	(1.012)	120374	50.7918	50.79
68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.918)	133591	46.4574	46.45
53 1,1,2-Trichloroethane	83	8.597	8.597	(0.902)	85082	47.5412	47.54
32 1,1-Dichloropropene	75	5.856	5.856	(0.891)	132261	46.8783	46.87
22 1,1-Dichloroethane	63	4.277	4.277	(0.740)	219786	50.1653	50.16
11 1,1-Dichloroethene	96	2.747	2.750	(0.475)	106341	51.6540	51.65
71 1,2,3-Trichloropropane	75	10.901	10.904	(0.921)	143674	47.4097	47.40
79 1,2,4-Trimethylbenzene	105	11.501	11.501	(0.972)	394361	55.1680	55.16
93 1,2,3-Trichlorobenzene	182	14.302	14.302	(1.208)	119605	55.2429	55.24
90 1,2,4-Trichlorobenzene	180	13.818	13.821	(1.167)	142969	56.2676	56.26
89 1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	24925	55.6718	55.67
33 1,2-Dichloroethane	62	6.142	6.145	(0.935)	161817	49.6935	49.69
42 1,2-Dichloropropane	63	7.066	7.066	(1.075)	122007	48.6943	48.69
57 1,2-Dibromoethane	107	9.068	9.068	(0.952)	105358	46.8358	46.83
88 1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	224974	47.8087	47.80
75 1,3,5-Trimethylbenzene	105	11.135	11.135	(0.941)	388124	55.7181	55.71
54 1,3-Dichloropropane	76	8.754	8.754	(0.919)	170420	48.1529	48.15
83 1,3-Dichlorobenzene	146	11.770	11.767	(0.994)	235562	47.6548	47.65
84 1,4-Dichlorobenzene	146	11.860	11.857	(1.002)	226184	46.8158	46.81
26 2,2-Dichloropropane	77	5.044	5.041	(0.872)	157854	51.0231	51.02

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120203.D
Report Date: 01-Feb-2018 15:28

							CONCENTRATIONS	
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	ON-COLUMN (ug/l)	FINAL (ug/l)
	24 2-Butanone	43	5.141	5.144	(0.889)	101234	102.866	102.86
	52 2-Hexanone	43	8.866	8.866	(0.931)	157988	104.074	104.07
	76 2-Chlorotoluene	91	11.029	11.029	(0.932)	337655	45.3446	45.34
	77 4-Chlorotoluene	91	11.141	11.141	(0.941)	372975	54.5445	54.54
	45 4-Methyl-2-Pentanone	43	8.029	8.029	(0.843)	237306	96.4762	96.47
	10 Acetone	43	2.859	2.853	(0.494)	72980	119.346	119.34
	37 Benzene	78	6.094	6.091	(0.927)	419221	48.8479	48.84
	39 Bromodichloromethane	83	7.377	7.377	(1.123)	155827	54.3329	54.33
	74 Bromobenzene	156	10.833	10.833	(0.915)	138228	47.2260	47.22
	29 Bromochloromethane	128	5.365	5.365	(0.928)	59460	54.6501	54.65
	6 Bromomethane	94	1.951	1.941	(0.337)	88915	49.9133	49.91
	19 Carbon Disulfide	76	2.952	2.952	(0.511)	404572	96.7502	96.75
	66 Bromoform	173	10.378	10.374	(1.089)	92227	54.5324	54.53
	7 Chloroethane	64	2.041	2.038	(0.353)	94474	52.8380	52.83
	34 Carbon Tetrachloride	117	5.837	5.837	(0.888)	146282	49.9243	49.92
	3 Chloromethane	50	1.598	1.595	(0.276)	239955	58.5207	58.52
	28 Chloroform	83	5.494	5.497	(0.950)	191216	48.2286	48.22
	59 Chlorobenzene	112	9.556	9.553	(1.003)	294625	48.3705	48.37
	27 cis-1,2-Dichloroethene	96	5.067	5.070	(0.876)	118023	50.2890	50.28
	46 cis-1,3-Dichloropropene	75	7.839	7.839	(1.193)	183634	54.2207	54.22
	2 Dichlorodifluoromethane	85	1.454	1.450	(0.251)	122462	59.5267	59.52
	55 Dibromochloromethane	129	8.972	8.972	(0.942)	134027	52.7195	52.71
	44 Dibromomethane	93	7.191	7.188	(1.094)	68718	53.0270	53.02
	61 Ethylbenzene	106	9.672	9.672	(1.015)	153694	49.0389	49.03
	91 Hexachlorobutadiene	225	13.991	13.988	(1.182)	62258	57.3587	57.35
	62 m,p-Xylenes	106	9.790	9.790	(1.028)	375002	93.8179	93.81
	63 o-Xylene	106	10.179	10.179	(1.068)	198704	48.3557	48.35
	67 Isopropylbenzene	105	10.548	10.548	(1.107)	486320	51.7843	51.78
	17 Methylene Chloride	84	3.334	3.331	(0.577)	107429	47.4520	47.45
	73 n-Propylbenzene	91	10.955	10.955	(0.925)	510414	55.2888	55.28
	87 n-Butylbenzene	91	12.223	12.223	(1.033)	286263	48.4689	48.46
	92 Naphthalene	128	14.061	14.061	(1.188)	325934	59.7766	59.77
	64 Styrene	104	10.198	10.198	(1.070)	329052	49.0885	49.08
	81 sec-Butylbenzene	105	11.671	11.668	(0.986)	438171	55.6715	55.67
	78 tert-Butylbenzene	119	11.449	11.453	(0.967)	332265	56.2828	56.28
	20 trans-1,2-Dichloroethene	96	3.665	3.665	(0.634)	101282	51.7970	51.79
	50 Toluene	91	8.157	8.160	(0.856)	448935	46.6213	46.62
	51 trans-1,3-Dichloropropene	75	8.417	8.417	(1.281)	165622	56.2204	56.22
	56 Tetrachloroethene	164	8.693	8.690	(0.912)	97191	49.3976	49.39
	8 Trichlorofluoromethane	101	2.256	2.253	(0.390)	170376	53.8768	53.87
	38 Trichloroethene	130	6.819	6.819	(1.038)	123008	52.1674	52.16
	5 Vinyl Chloride	62	1.681	1.681	(0.291)	176003	62.4466	62.44
$	35 1,2-Dichloroethane-d4	65	6.058	6.055	(1.048)	126782	48.3576	48.35
*	36 1,4-Difluorobenzene	114	6.572	6.572	(1.000)	343081	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	11.838	11.834	(1.000)	144852	50.0000	
*	1 Pentafluorobenzene	168	5.782	5.782	(1.000)	227417	50.0000	
*	47 Chlorobenzene-d5	117	9.527	9.527	(1.000)	311725	50.0000	
$	30 Dibromofluoromethane	113	5.686	5.683	(0.983)	97544	43.3887	43.38
$	48 Toluene-d8	98	8.093	8.096	(0.849)	390573	50.6298	50.62
$	69 4-Bromofluorobenzene	95	10.699	10.695	(1.123)	151536	51.1757	51.17
	82 p-Isopropyltoluene	119	11.818	11.818	(0.998)	374528	46.1837	46.18
	138 Freon TF	101	2.763	2.766	(0.478)	99935	53.6652	53.66



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120203.D
Date : 02-DEC-2017 22:31
Client ID: VLCSW-171202
Sample Info: VLCSW-171202;VLCSW-171202;3;;LCS
Purge Volume: 5.0
Column phase: DB624

\\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120203.D

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120204.D
Report Date: 01-Feb-2018 15:28

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120204.D
Lab Smp Id: VLCSDW-171202 Client Smp ID: VLCSDW-171202
Inj Date : 02-DEC-2017 22:55
Operator : AP Inst ID: VOA2.i
Smp Info : VLCSDW-171202;VLCSDW-171202;3;;LCSD
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\CHEM\VOA2.i\D171202.b\8260LL.m
Meth Date : 01-Feb-2018 15:27 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 13:32 Cal File: D120210.D
Als bottle: 32 QC Sample: LCSD
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

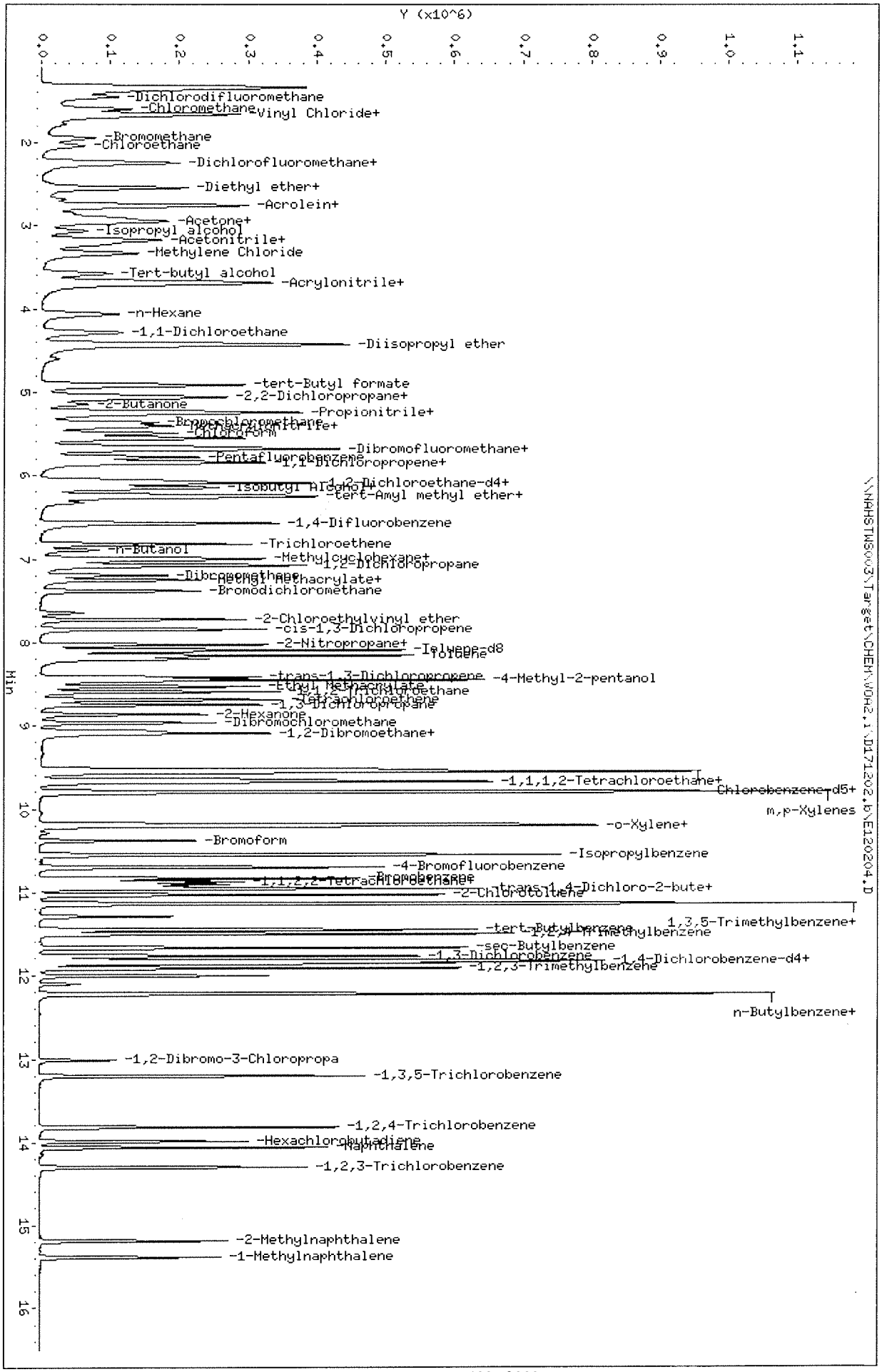
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
31 1,1,1-Trichloroethane	97	5.657	5.651	(0.978)	165250	50.2779	50.27
60 1,1,1,2-Tetrachloroethane	131	9.646	9.646	(1.012)	115576	48.2899	48.28
68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.919)	132772	45.7581	45.75
53 1,1,2-Trichloroethane	83	8.597	8.597	(0.902)	84180	46.5767	46.57
32 1,1-Dichloropropene	75	5.853	5.856	(0.890)	125853	44.6822	44.68
22 1,1-Dichloroethane	63	4.281	4.277	(0.740)	213211	48.0641	48.06
11 1,1-Dichloroethene	96	2.753	2.750	(0.476)	101512	48.7000	48.69
71 1,2,3-Trichloropropane	75	10.904	10.904	(0.921)	142474	46.5917	46.59
79 1,2,4-Trimethylbenzene	105	11.501	11.501	(0.972)	371956	51.3828	51.38
93 1,2,3-Trichlorobenzene	182	14.302	14.302	(1.209)	117074	53.5885	53.58
90 1,2,4-Trichlorobenzene	180	13.817	13.821	(1.168)	139687	54.4824	54.48
89 1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	23881	52.8282	52.82
33 1,2-Dichloroethane	62	6.145	6.145	(0.935)	156973	48.2979	48.29
42 1,2-Dichloropropane	63	7.066	7.066	(1.075)	119258	47.6879	47.68
57 1,2-Dibromoethane	107	9.068	9.068	(0.952)	105841	46.5899	46.58
88 1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	215929	45.4747	45.47
75 1,3,5-Trimethylbenzene	105	11.135	11.135	(0.941)	366788	52.0570	52.05
54 1,3-Dichloropropane	76	8.754	8.754	(0.919)	168019	47.0097	47.00
83 1,3-Dichlorobenzene	146	11.770	11.767	(0.995)	221429	44.3936	44.39
84 1,4-Dichlorobenzene	146	11.860	11.857	(1.002)	212567	43.6024	43.60
26 2,2-Dichloropropane	77	5.044	5.041	(0.872)	150826	48.1499	48.14

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120204.D
Report Date: 01-Feb-2018 15:28

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
24	2-Butanone	43	5.147	5.144	(0.890)	101733	102.098	102.09
52	2-Hexanone	43	8.866	8.866	(0.931)	156867	102.324	102.32
76	2-Chlorotoluene	91	11.029	11.029	(0.932)	321536	42.7924	42.79
77	4-Chlorotoluene	91	11.141	11.141	(0.941)	355512	51.4367	51.43
45	4-Methyl-2-Pentanone	43	8.032	8.029	(0.843)	237798	95.7298	95.72
10	Acetone	43	2.859	2.853	(0.494)	72940	118.463	118.46
37	Benzene	78	6.097	6.091	(0.927)	404476	47.2197	47.21
39	Bromodichloromethane	83	7.377	7.377	(1.122)	151586	52.9547	52.95
74	Bromobenzene	156	10.833	10.833	(0.915)	131891	44.6564	44.65
29	Bromochloromethane	128	5.368	5.365	(0.928)	59823	54.3054	54.30
6	Bromomethane	94	1.941	1.941	(0.336)	89903	49.8261	49.82
19	Carbon Disulfide	76	2.955	2.952	(0.511)	397351	93.8509	93.85
66	Bromoform	173	10.377	10.374	(1.089)	103858	60.8084	60.80
7	Chloroethane	64	2.041	2.038	(0.353)	90257	49.4857	49.48
34	Carbon Tetrachloride	117	5.837	5.837	(0.888)	136667	46.7167	46.71
3	Chloromethane	50	1.598	1.595	(0.276)	239180	57.5744	57.57
28	Chloroform	83	5.494	5.497	(0.950)	187896	46.8065	46.80
59	Chlorobenzene	112	9.556	9.553	(1.003)	280236	45.5577	45.55
27	cis-1,2-Dichloroethene	96	5.070	5.070	(0.877)	117202	49.3230	49.32
46	cis-1,3-Dichloropropene	75	7.842	7.839	(1.193)	179172	53.0044	53.00
2	Dichlorodifluoromethane	85	1.457	1.450	(0.252)	117146	56.2401	56.24
55	Dibromochloromethane	129	8.972	8.972	(0.942)	130949	51.0045	51.00
44	Dibromomethane	93	7.194	7.188	(1.094)	68940	53.2998	53.29
61	Ethylbenzene	106	9.672	9.672	(1.015)	145086	45.8391	45.83
91	Hexachlorobutadiene	225	13.987	13.988	(1.182)	60420	55.0908	55.09
62	m,p-Xylenes	106	9.793	9.790	(1.028)	357690	88.6107	88.61
63	o-Xylene	106	10.179	10.179	(1.068)	188828	45.5024	45.50
67	Isopropylbenzene	105	10.548	10.548	(1.107)	506388	53.5517	53.55
17	Methylene Chloride	84	3.337	3.331	(0.577)	108132	47.1732	47.17
73	n-Propylbenzene	91	10.955	10.955	(0.926)	480982	51.4505	51.45
87	n-Butylbenzene	91	12.223	12.223	(1.033)	269496	45.2204	45.22
92	Naphthalene	128	14.061	14.061	(1.188)	318702	57.8583	57.85
64	Styrene	104	10.198	10.198	(1.070)	317691	46.9297	46.92
81	sec-Butylbenzene	105	11.667	11.668	(0.986)	414152	52.0412	52.04
78	tert-Butylbenzene	119	11.449	11.453	(0.967)	309308	51.7994	51.79
20	trans-1,2-Dichloroethene	96	3.668	3.665	(0.634)	99838	50.4286	50.42
50	Toluene	91	8.160	8.160	(0.857)	427272	43.9372	43.93
51	trans-1,3-Dichloropropene	75	8.417	8.417	(1.280)	161115	54.7948	54.79
56	Tetrachloroethene	164	8.690	8.690	(0.912)	91462	46.0307	46.03
8	Trichlorofluoromethane	101	2.259	2.253	(0.391)	158917	49.6332	49.63
38	Trichloroethene	130	6.819	6.819	(1.037)	115151	48.9284	48.92
5	Vinyl Chloride	62	1.681	1.681	(0.291)	165303	57.7720	57.77
$ 35	1,2-Dichloroethane-d4	65	6.058	6.055	(1.048)	128001	48.2202	48.22
* 36	1,4-Difluorobenzene	114	6.575	6.572	(1.000)	342428	50.0000	
* 70	1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	146164	50.0000	
* 1	Pentafluorobenzene	168	5.782	5.782	(1.000)	230258	50.0000	
* 47	Chlorobenzene-d5	117	9.527	9.527	(1.000)	314807	50.0000	
$ 30	Dibromofluoromethane	113	5.686	5.683	(0.983)	99705	43.6099	43.60
$ 48	Toluene-d8	98	8.093	8.096	(0.849)	391991	50.3419	50.34
$ 69	4-Bromofluorobenzene	95	10.695	10.695	(1.123)	162890	54.4715	54.47
82	p-Isopropyltoluene	119	11.818	11.818	(0.999)	351616	42.9692	42.96
138	Freon TF	101	2.766	2.766	(0.478)	100425	53.2629	53.26



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120204.D
Date : 02-DEC-2017 22:55
Client ID: VLCSDW-171202
Sample Info: VLCSDW-171202;VLCSDW-171202;3;;LCSD
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

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Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120206.D
Report Date: 01-Feb-2018 15:28

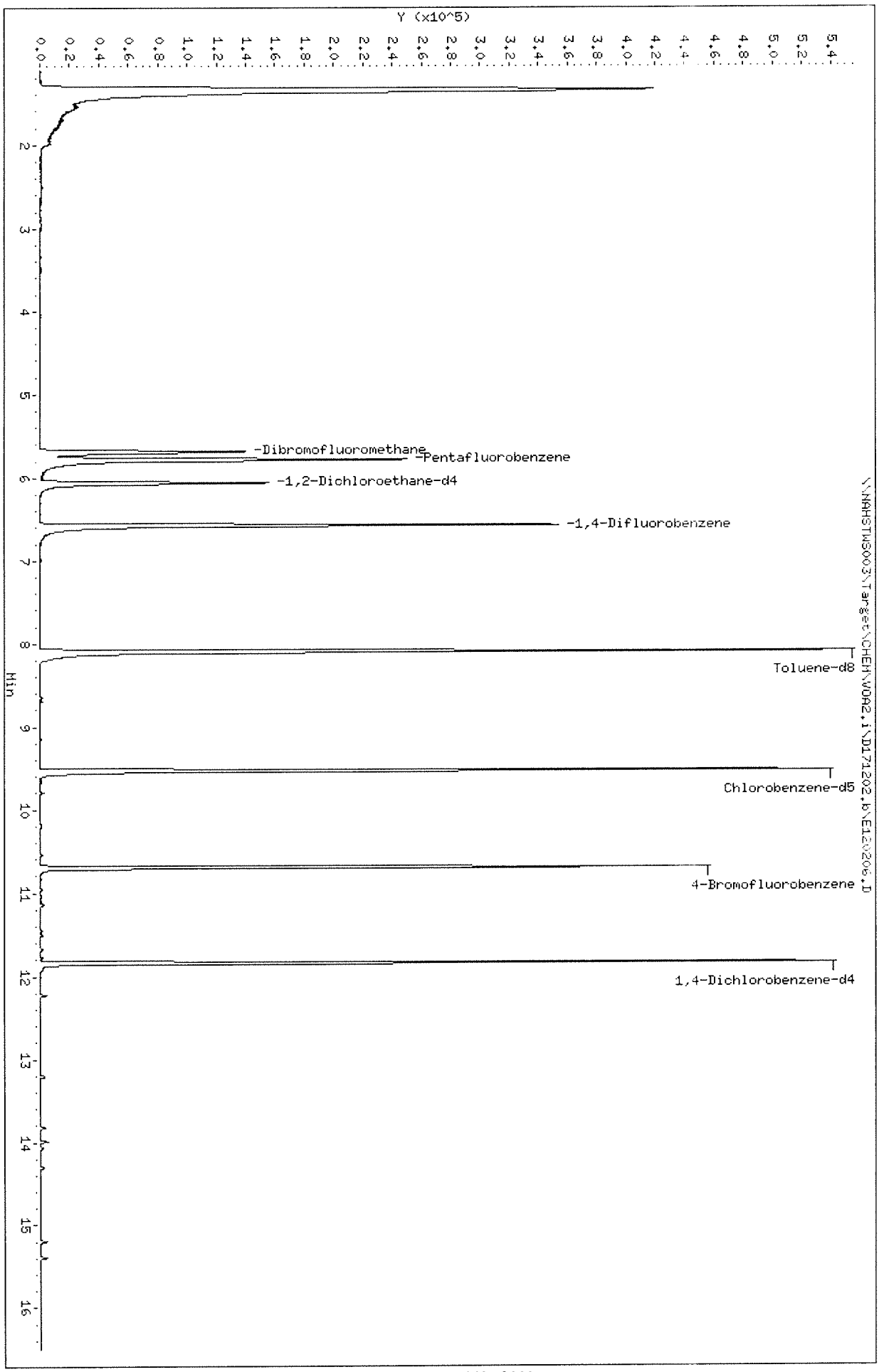
ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120206.D
Lab Smp Id: VBLKW-171202 Client Smp ID: VBLKW-171202
Inj Date : 02-DEC-2017 23:44
Operator : AP Inst ID: VOA2.i
Smp Info : VBLKW-171202;VBLKW-171202;3;;BLANK
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\CHEM\VOA2.i\D171202.b\8260LL.m
Meth Date : 01-Feb-2018 15:27 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 13:32 Cal File: D120210.D
Als bottle: 34 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINA.. (ug/l)
$ 35 1,2-Dichloroethane-d4	65	6.062	6.055	(1.049)	131010	45.8074	45.80
* 36 1,4-Difluorobenzene	114	6.572	6.572	(1.000)	344757	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	11.838	11.834	(1.000)	144752	50.0000	
* 1 Pentafluorobenzene	168	5.779	5.782	(1.000)	248084	50.0000	
* 47 Chlorobenzene-d5	117	9.527	9.527	(1.000)	315792	50.0000	
$ 30 Dibromofluoromethane	113	5.686	5.683	(0.984)	109069	44.4735	44.47
$ 48 Toluene-d8	98	8.090	8.096	(0.849)	402057	51.4736	51.47
$ 69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	149083	49.6989	49.69


Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120206.D
Date : 02-DEC-2017 23:44
Client ID: VBLKW-171202
Sample Info: VBLKW-171202;VBLKW-171202;3;;BLANK
Purge Volume: 5.0
Column phase: DB624
Instrument: VOA2.i
Operator: AP
Column diameter: 0.18
Y (x10^5)
-Dibromofluoromethane
-Pentafluorobenzene
-1,2-Dichloroethane-d4
-1,4-Difluorobenzene
Toluene-d8
Chlorobenzene-d5
4-Bromofluorobenzene
1,4-Dichlorobenzene-d4
\\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120206.D
Min

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120220.D
Report Date: 01-Feb-2018 15:28

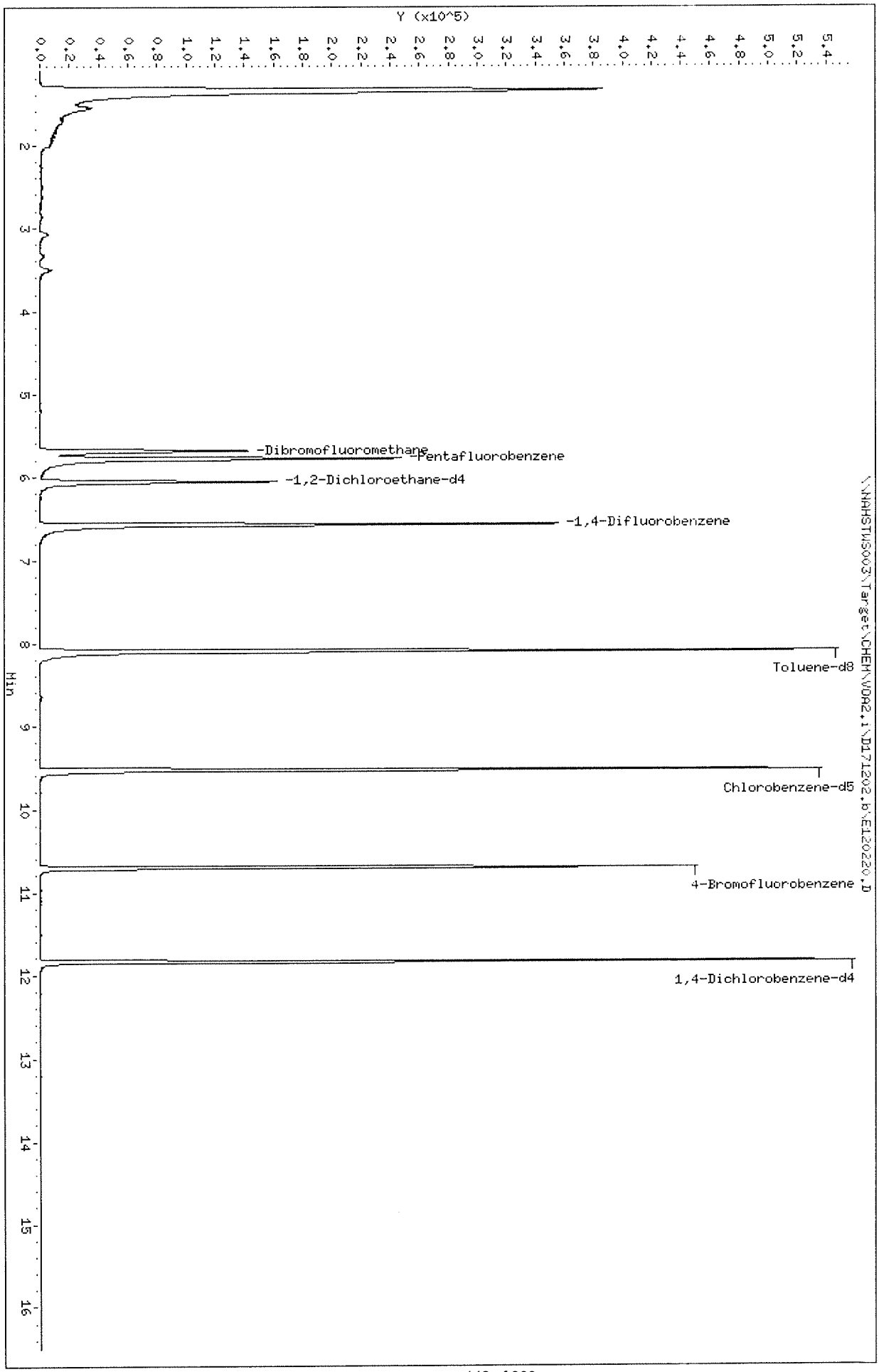
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Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120220.D
Lab Smp Id: HS17111408-08 Client Smp ID: HS17111408-08
Inj Date : 03-DEC-2017 05:27
Operator : AP Inst ID: VOA2.i
Smp Info : HS17111408-08;HS17111408-08;;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\CHEM\VOA2.i\D171202.b\8260LL.m
Meth Date : 01-Feb-2018 15:27 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 13:32 Cal File: D120210.D
Als bottle: 48
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
$ 35 1,2-Dichloroethane-d4	65	6.058	6.055	(1.048)	135671	48.3518	48.35
* 36 1,4-Difluorobenzene	114	6.572	6.572	(1.000)	340368	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	11.838	11.834	(1.000)	147373	50.0000	
* 1 Pentafluorobenzene	168	5.779	5.782	(1.000)	243391	50.0000	
* 47 Chlorobenzene-d5	117	9.527	9.527	(1.000)	315812	50.0000	
$ 30 Dibromofluoromethane	113	5.686	5.683	(0.984)	110653	45.9894	45.98
$ 48 Toluene-d8	98	8.090	8.096	(0.849)	401898	51.4500	51.45
$ 69 4-Bromofluorobenzene	95	10.698	10.695	(1.123)	150154	50.0527	50.05


Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120220.D
Date : 03-DEC-2017 05:27
Client ID: HS17111408-08
Sample Info: HS17111408-08;HS17111408-08;;;
Purge Volume: 5.0
Column phase: DB624
Instrument: VOA2.i
Operator: AP
Column diameter: 0.18
Y (x10^5)
Min
-Dibromofluoromethane
-Pentafluorobenzene
-1,2-Dichloroethane-d4
-1,4-Difluorobenzene
Toluene-d8
Chlorobenzene-d5
4-Bromofluorobenzene
1,4-Dichlorobenzene-d4
\\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120220.D

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120221.D
Report Date: 01-Feb-2018 15:28

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Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120221.D
Lab Smp Id: HS17111408-01 Client Smp ID: HS17111408-01
Inj Date : 03-DEC-2017 05:52
Operator : AP Inst ID: VOA2.i
Smp Info : HS17111408-01;HS17111408-01;;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\CHEM\VOA2.i\D171202.b\8260LL.m
Meth Date : 01-Feb-2018 15:27 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 13:32 Cal File: D120210.D
Als bottle: 49
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

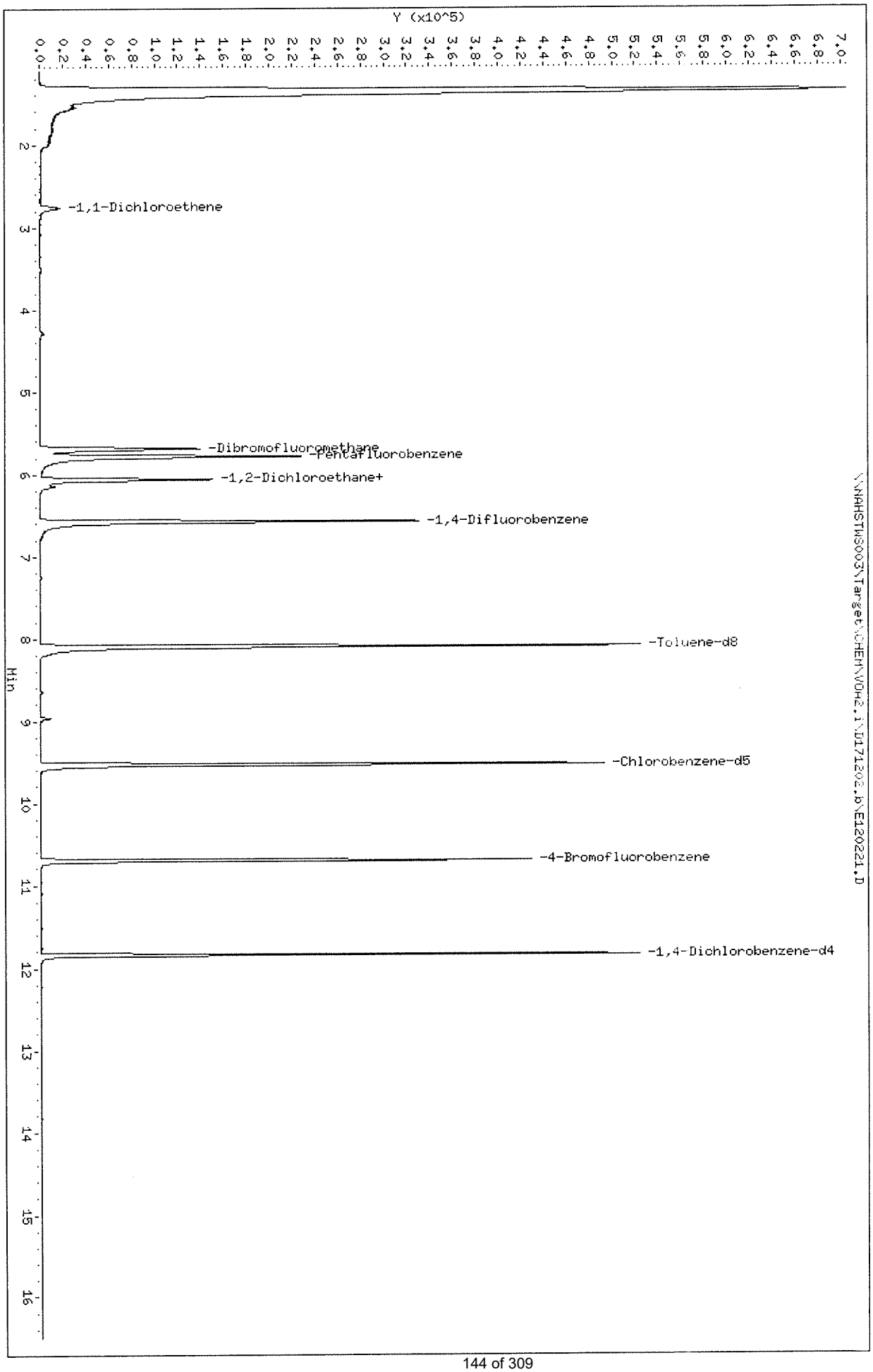
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
	11 1,1-Dichloroethene	96	2.753	2.750	(0.476)	12008	5.63034	5.63 (M)
	33 1,2-Dichloroethane	62	6.148	6.145	(0.935)	9192	3.10617	3.11 (aM)
$	35 1,2-Dichloroethane-d4	65	6.058	6.055	(1.048)	129819	47.6905	47.69
*	36 1,4-Difluorobenzene	114	6.575	6.572	(1.000)	332138	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	136094	50.0000	
*	1 Pentafluorobenzene	168	5.779	5.782	(1.000)	235593	50.0000	
*	47 Chlorobenzene-d5	117	9.527	9.527	(1.000)	301202	50.0000	
$	30 Dibromofluoromethane	113	5.686	5.683	(0.984)	104853	45.0212	45.02
$	48 Toluene-d8	98	8.090	8.096	(0.849)	385046	51.6836	51.68
$	69 4-Bromofluorobenzene	95	10.698	10.695	(1.123)	141609	49.4940	49.49

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120221.D
Date : 03-DEC-2017 05:52
Client ID: HS17111408-01
Sample Info: HS17111408-01;HS17111408-01;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120221.D

Date : 03-DEC-2017 05:52

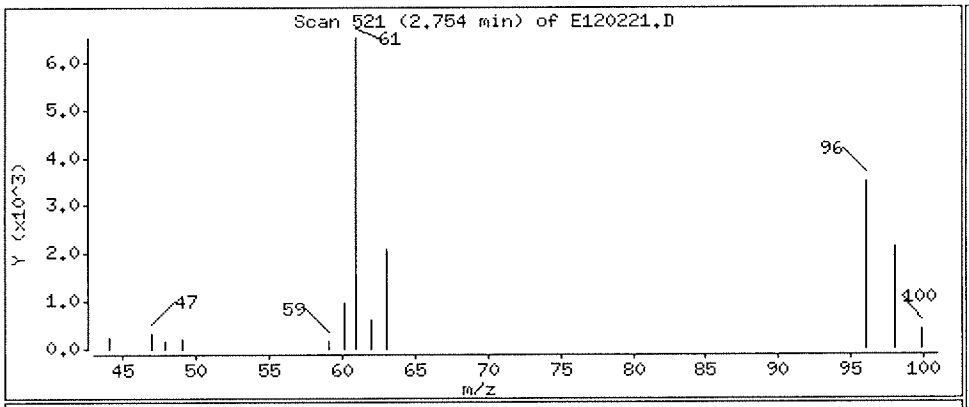
Client ID: HS17111408-01 Instrument: VOA2.i

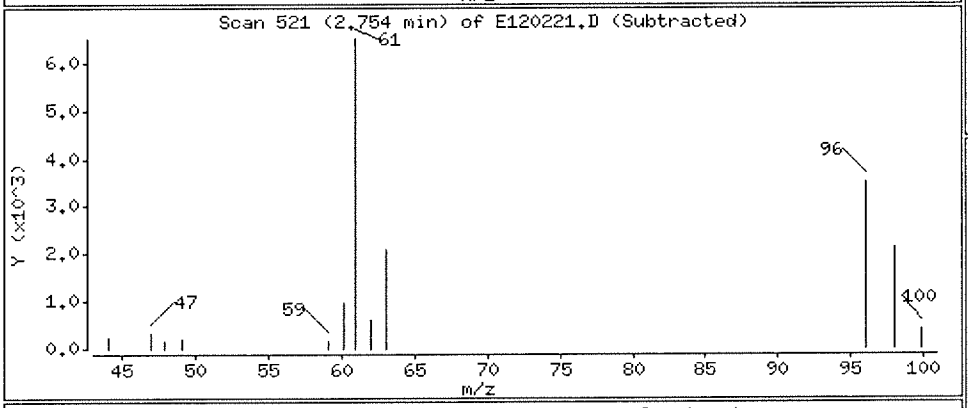
Sample Info: HS17111408-01;HS17111408-01;;;

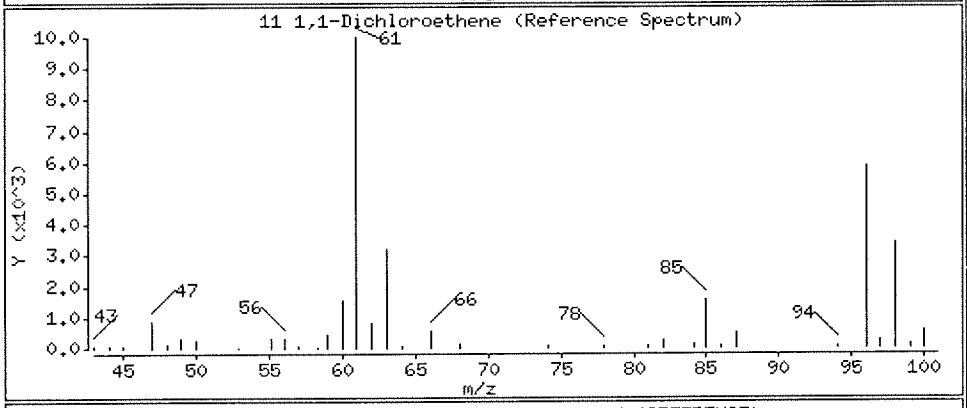
Purge Volume: 5.0 Operator: AP

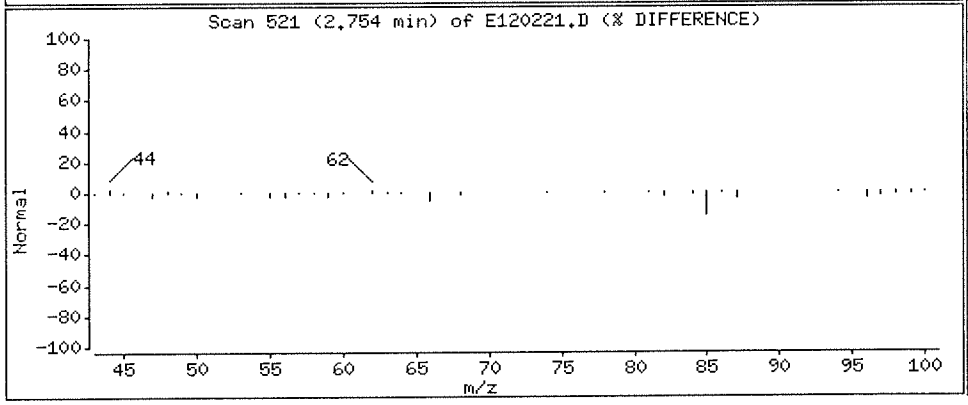
Column phase: DB624 Column diameter: 0.18

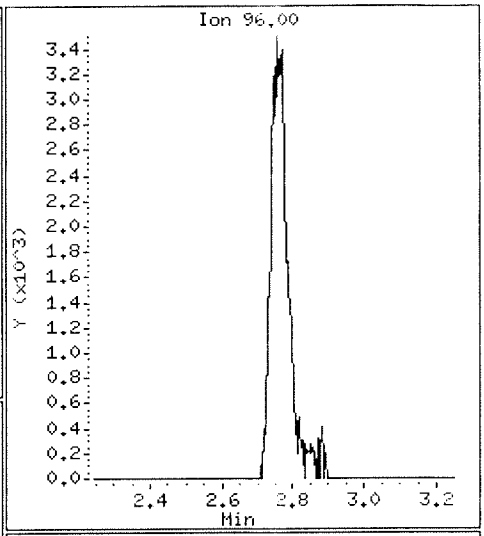
11 1,1-Dichloroethene Concentration: 5.63 ug/l Review Code:

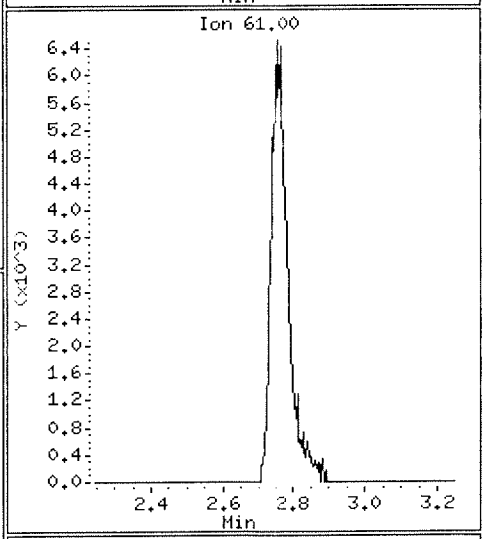


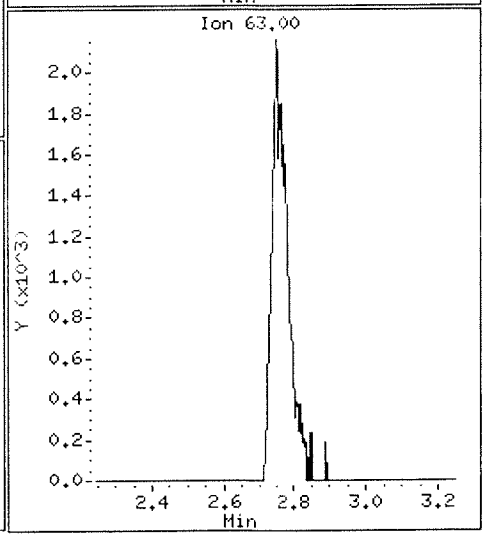












Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120221.D

Date : 03-DEC-2017 05:52

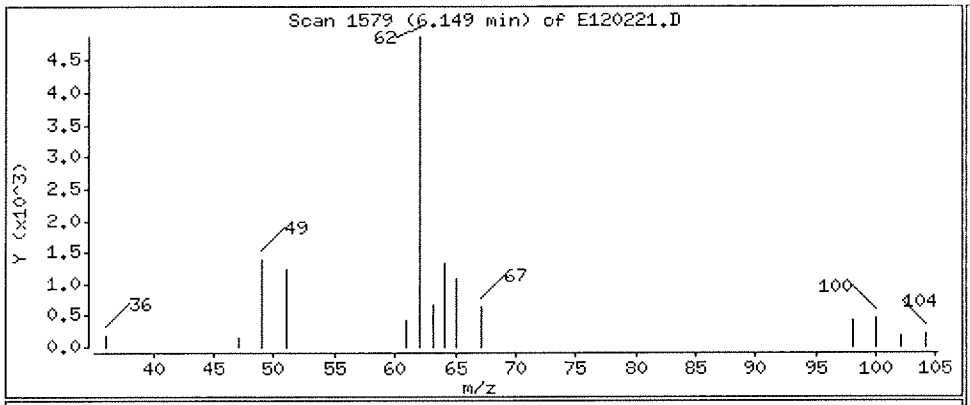
Client ID: HS17111408-01 Instrument: VOA2.i

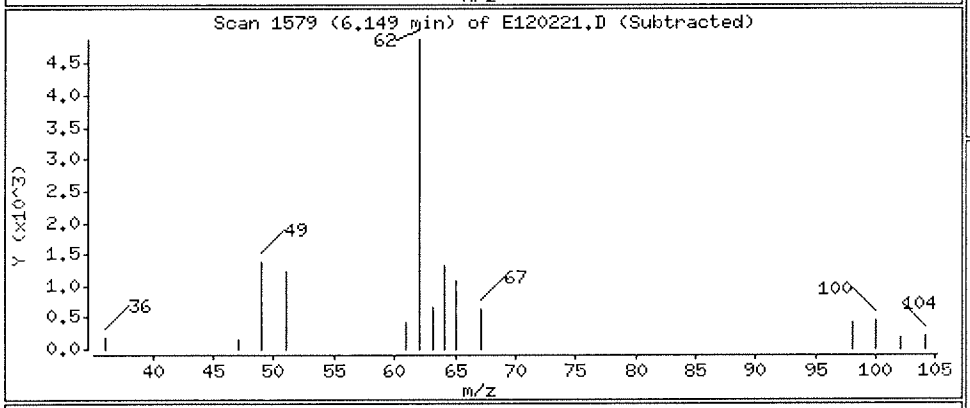
Sample Info: HS17111408-01;HS17111408-01;;;

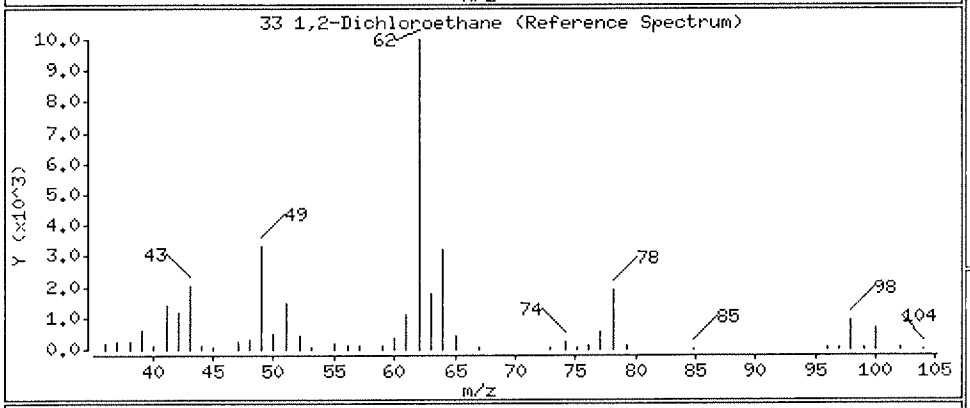
Purge Volume: 5.0 Operator: AP

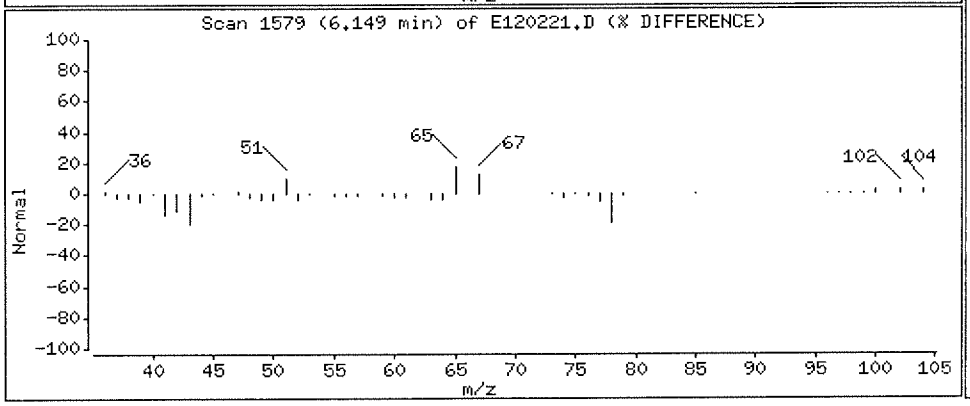
Column phase: DB624 Column diameter: 0.18

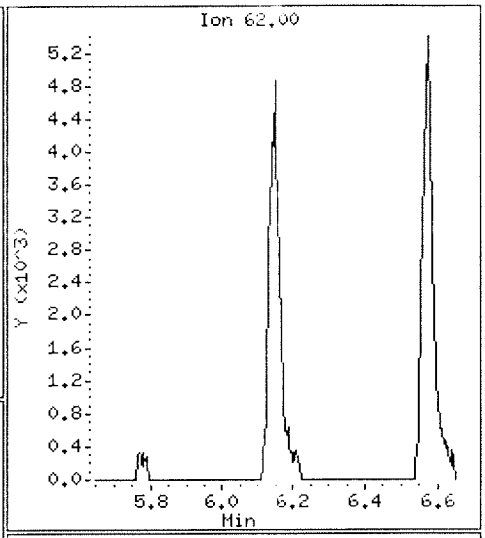
33 1,2-Dichloroethane Concentration: 3.10 ug/l Review Code:

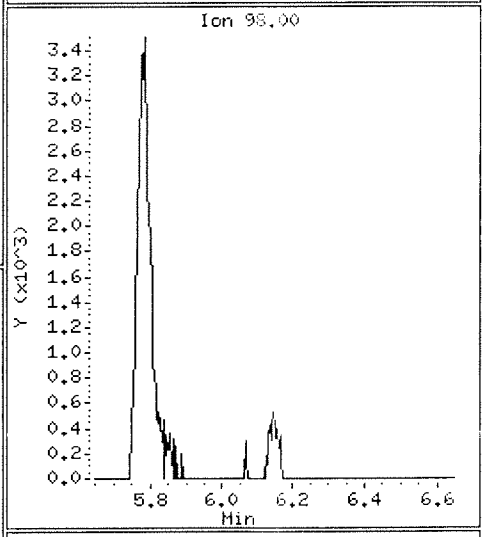


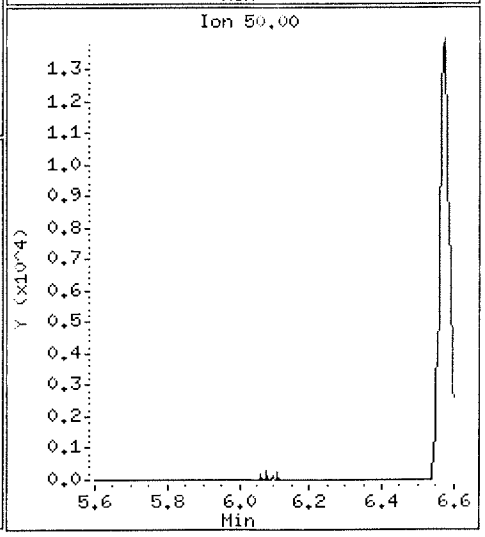












Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120222.D
Report Date: 01-Feb-2018 15:28

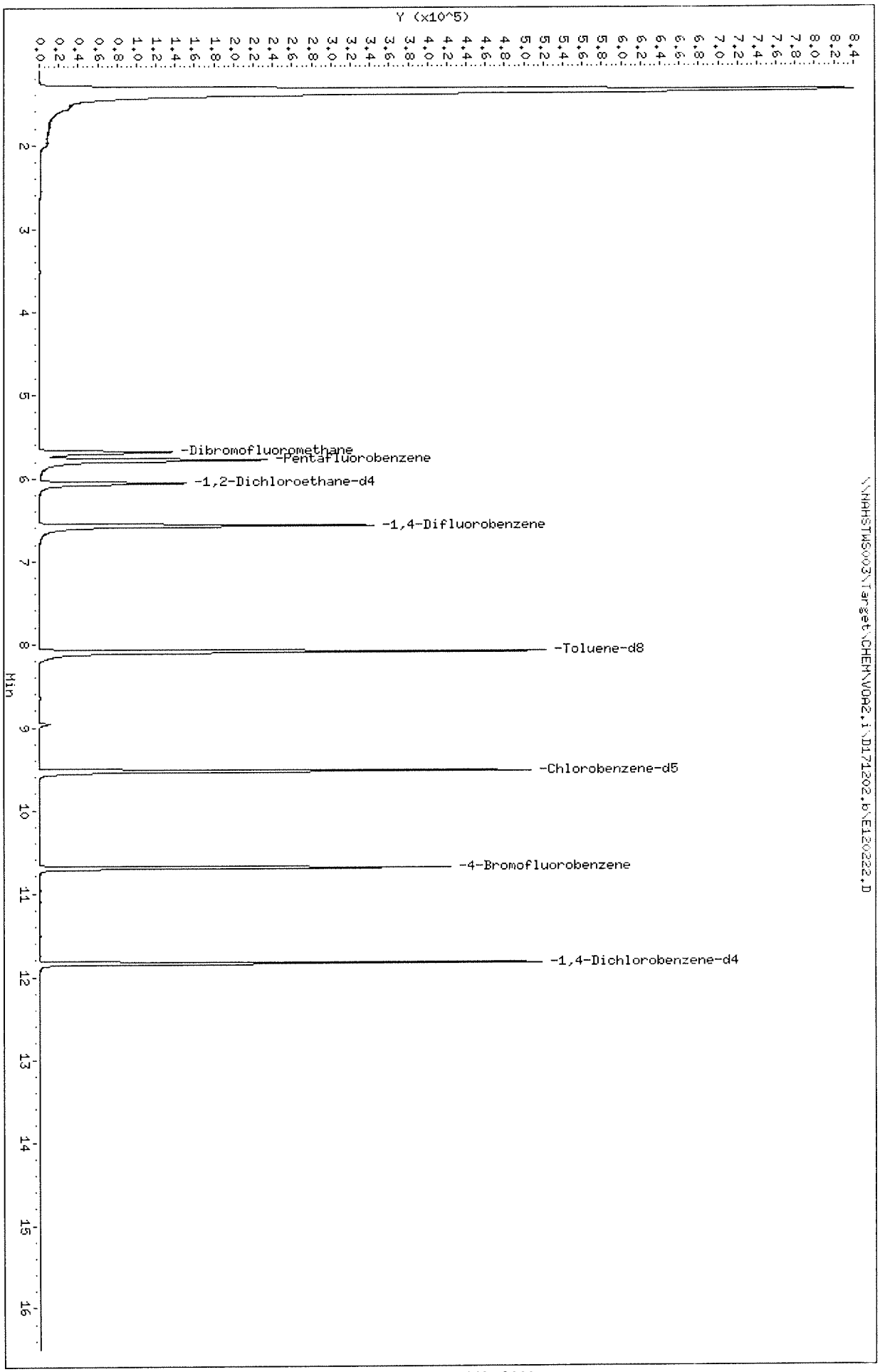
ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120222.D
Lab Smp Id: HS17111408-03 Client Smp ID: HS17111408-03
Inj Date : 03-DEC-2017 06:17
Operator : AP Inst ID: VOA2.i
Smp Info : HS17111408-03;HS17111408-03;;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\CHEM\VOA2.i\D171202.b\8260LL.m
Meth Date : 01-Feb-2018 15:27 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 13:32 Cal File: D120210.D
Als bottle: 50
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
$ 35 1,2-Dichloroethane-d4	65	6.058	6.055	(1.048)	129579	48.6551	48.65
* 36 1,4-Difluorobenzene	114	6.572	6.572	(1.000)	326081	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	138623	50.0000	
* 1 Pentafluorobenzene	168	5.779	5.782	(1.000)	231013	50.0000	
* 47 Chlorobenzene-d5	117	9.527	9.527	(1.000)	301111	50.0000	
$ 30 Dibromofluoromethane	113	5.683	5.683	(0.983)	104220	45.6366	45.63
$ 48 Toluene-d8	98	8.093	8.096	(0.849)	383818	51.5344	51.53
$ 69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	143209	50.0683	50.06


Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120222.D
Date : 03-DEC-2017 06:17
Client ID: HS17111408-03
Sample Info: HS17111408-03;HS17111408-03;;;
Purge Volume: 5.0
Column phase: DB624
Instrument: VOA2.i
Operator: AP
Column diameter: 0.18
\\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120222.D
Y (x10^5)
Min
-Dibromofluoromethane
-Pentafluorobenzene
-1,2-Dichloroethane-d4
-1,4-Difluorobenzene
-Toluene-d8
-Chlorobenzene-d5
-4-Bromofluorobenzene
-1,4-Dichlorobenzene-d4

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120223.D
Report Date: 01-Feb-2018 15:28

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120223.D
Lab Smp Id: HS17111408-04 Client Smp ID: HS17111408-04
Inj Date : 03-DEC-2017 06:41
Operator : AP Inst ID: VOA2.i
Smp Info : HS17111408-04;HS17111408-04;;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\CHEM\VOA2.i\D171202.b\8260LL.m
Meth Date : 01-Feb-2018 15:27 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 13:32 Cal File: D120210.D
Als bottle: 51
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

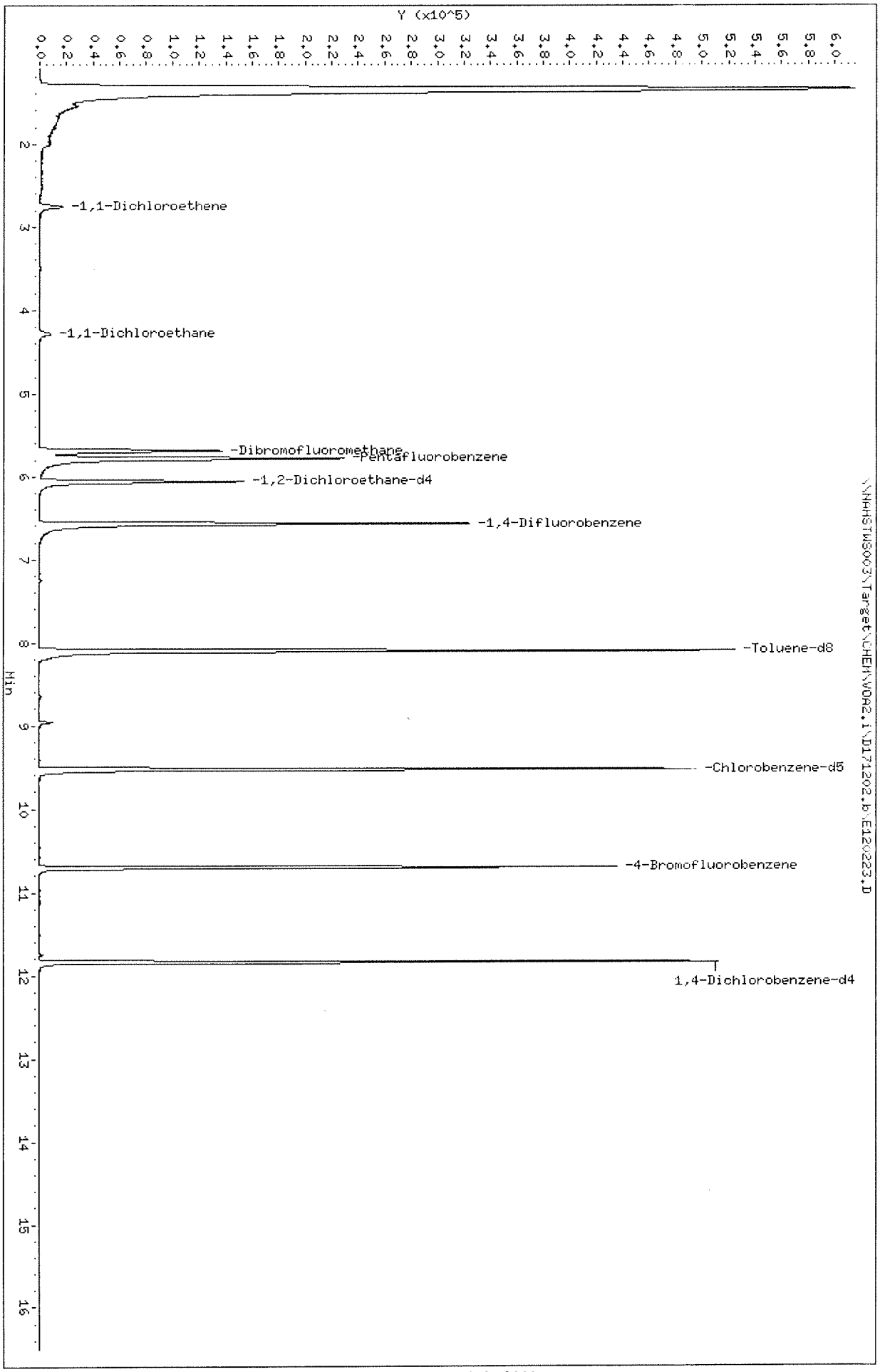
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
22 1,1-Dichloroethane	63	4.281	4.277	(0.741)	15920	3.61804	3.61 (aM)
11 1,1-Dichloroethene	96	2.756	2.750	(0.477)	10757	5.20261	5.20
$ 35 1,2-Dichloroethane-d4	65	6.058	6.055	(1.048)	128859	48.9383	48.93
* 36 1,4-Difluorobenzene	114	6.572	6.572	(1.000)	329226	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	11.838	11.834	(1.000)	139629	50.0000	
* 1 Pentafluorobenzene	168	5.779	5.782	(1.000)	228400	50.0000	
* 47 Chlorobenzene-d5	117	9.527	9.527	(1.000)	301699	50.0000	
$ 30 Dibromofluoromethane	113	5.683	5.683	(0.983)	105030	46.5131	46.51
$ 48 Toluene-d8	98	8.090	8.096	(0.849)	385152	51.6127	51.61
$ 69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	143949	50.2290	50.22

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.


Y (x10^5)
Min
-1,1-Dichloroethene
-1,1-Dichloroethane
-Dibromofluoromethane
-Pentafluorobenzene
-1,2-Dichloroethane-d4
-1,4-Difluorobenzene
-Toluene-d8
-Chlorobenzene-d5
-4-Bromofluorobenzene
1,4-Dichlorobenzene-d4
\\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120223.D
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120223.D
Date : 03-DEC-2017 06:41
Client ID: HS17111408-04
Sample Info: HS17111408-04;HS17111408-04;;;
Purge Volume: 5.0
Column phase: DB624
Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120223.D

Date : 03-DEC-2017 06:41

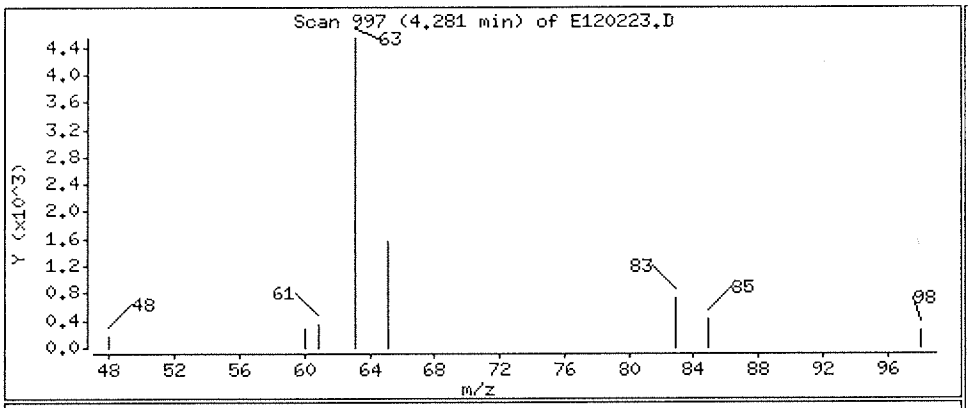
Client ID: HS17111408-04 Instrument: VOA2.i

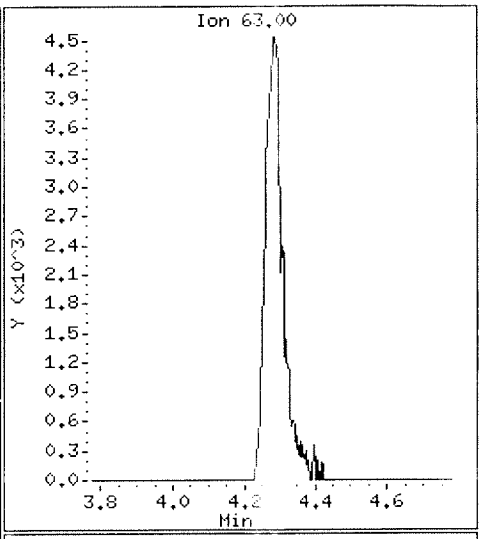
Sample Info: HS17111408-04;HS17111408-04;;;

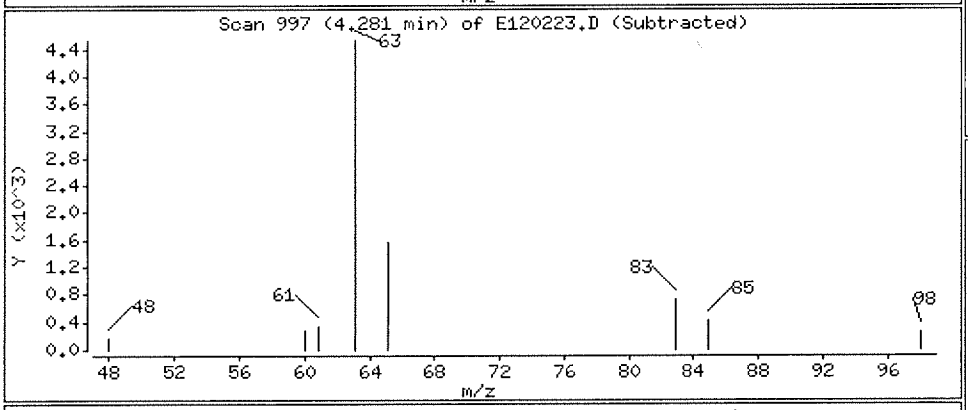
Purge Volume: 5.0 Operator: AP

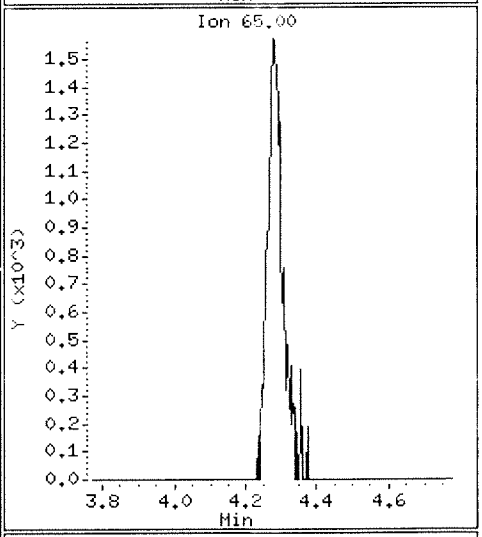
Column phase: DB624 Column diameter: 0.18

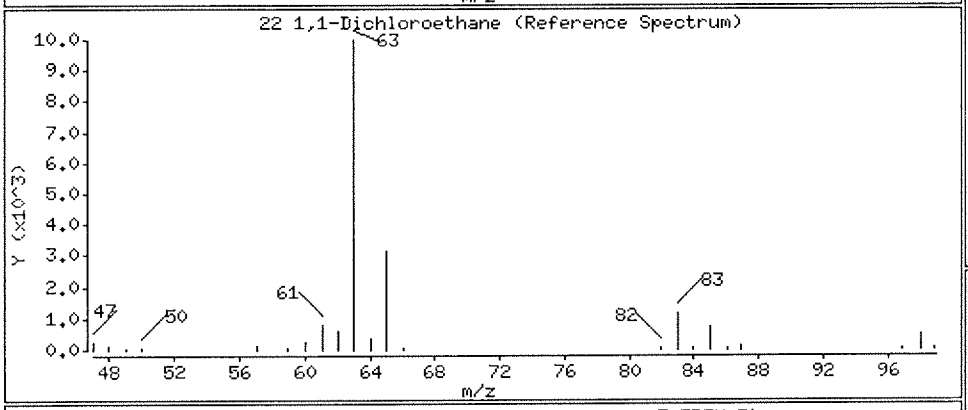
22 1,1-Dichloroethane Concentration: 3.61 ug/l Review Code:

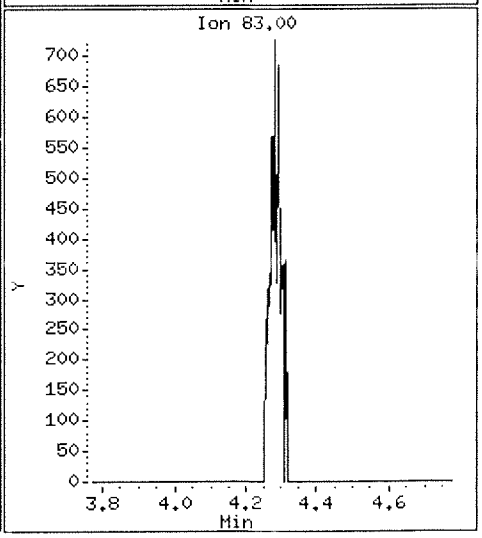


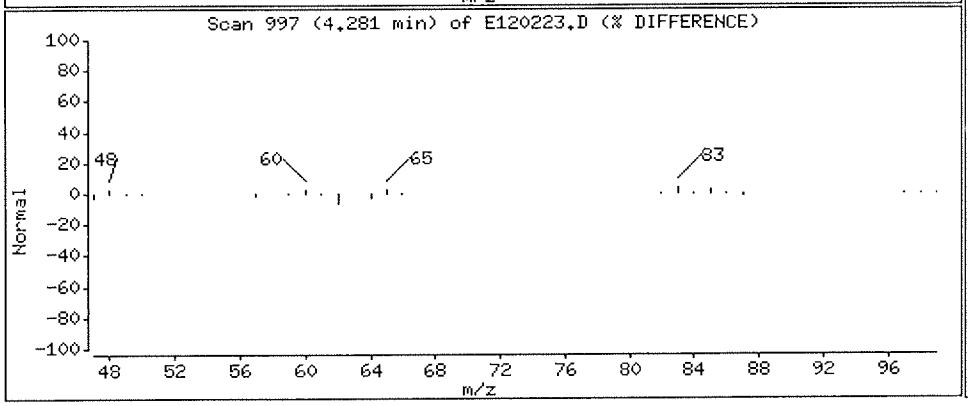












Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120223.D

Date : 03-DEC-2017 06:41

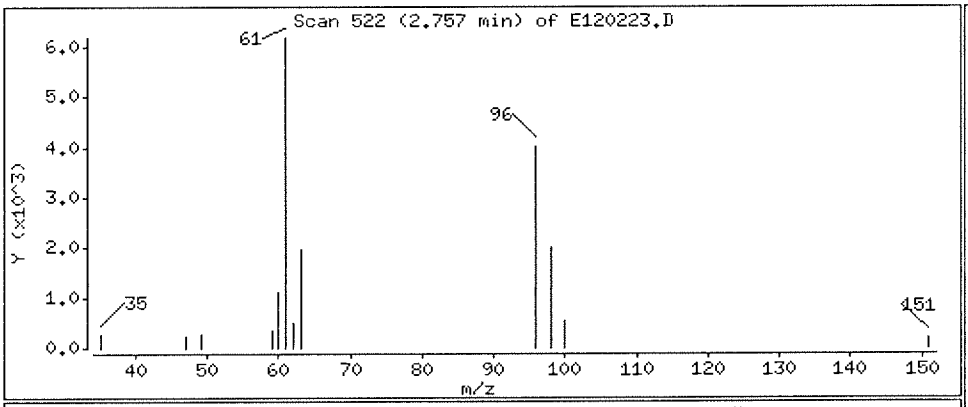
Client ID: HS17111408-04 Instrument: VOA2.i

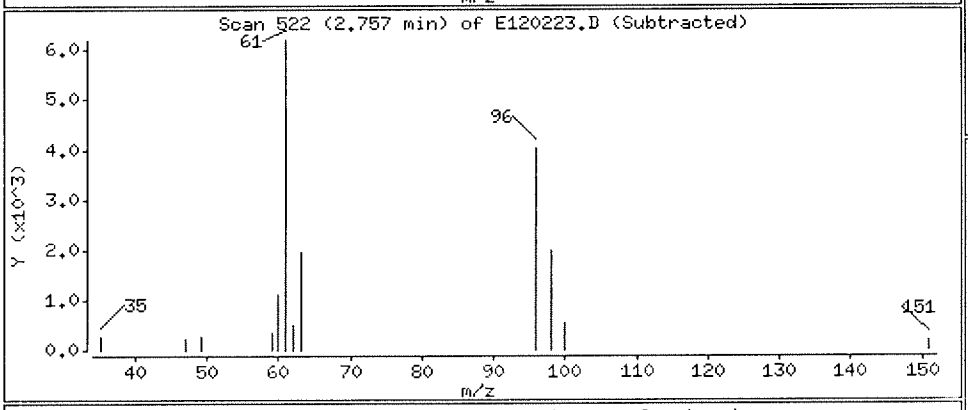
Sample Info: HS17111408-04;HS17111408-04;;;

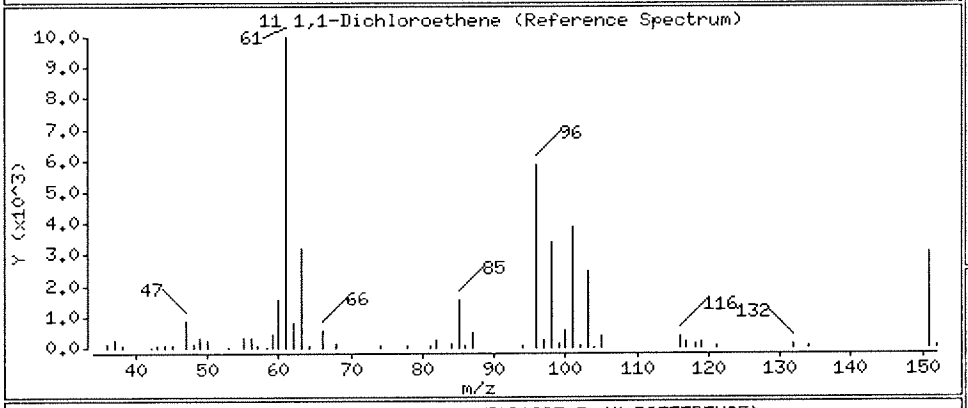
Purge Volume: 5.0 Operator: AP

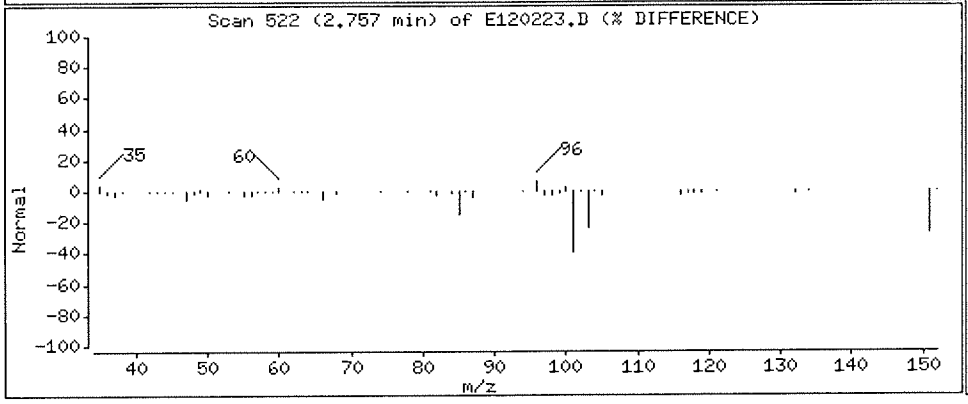
Column phase: DB624 Column diameter: 0.18

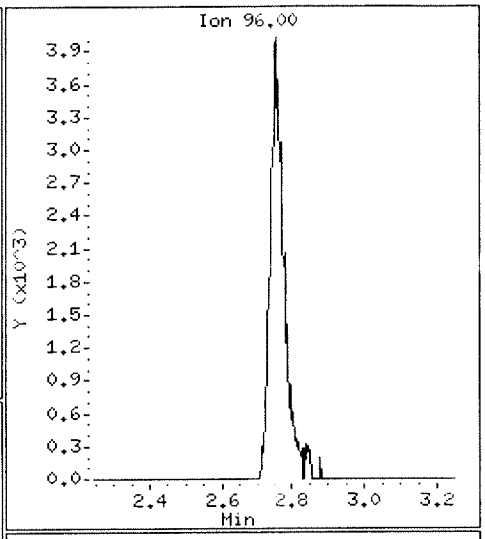
11 1,1-Dichloroethene Concentration: 5.20 ug/l Review Code:

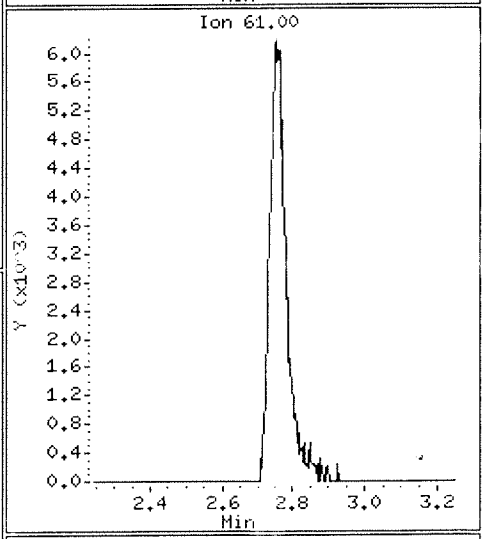


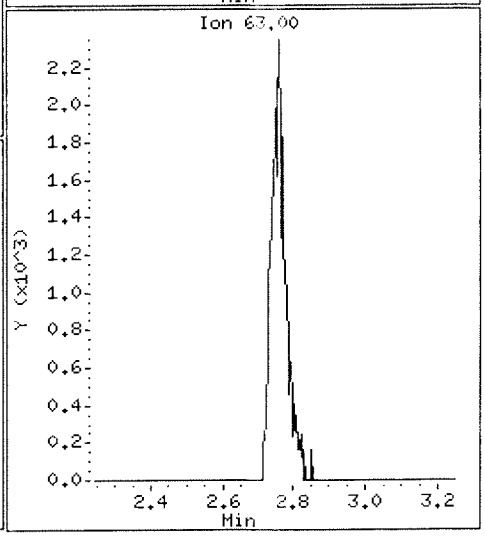












Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120224.D
Report Date: 01-Feb-2018 15:28

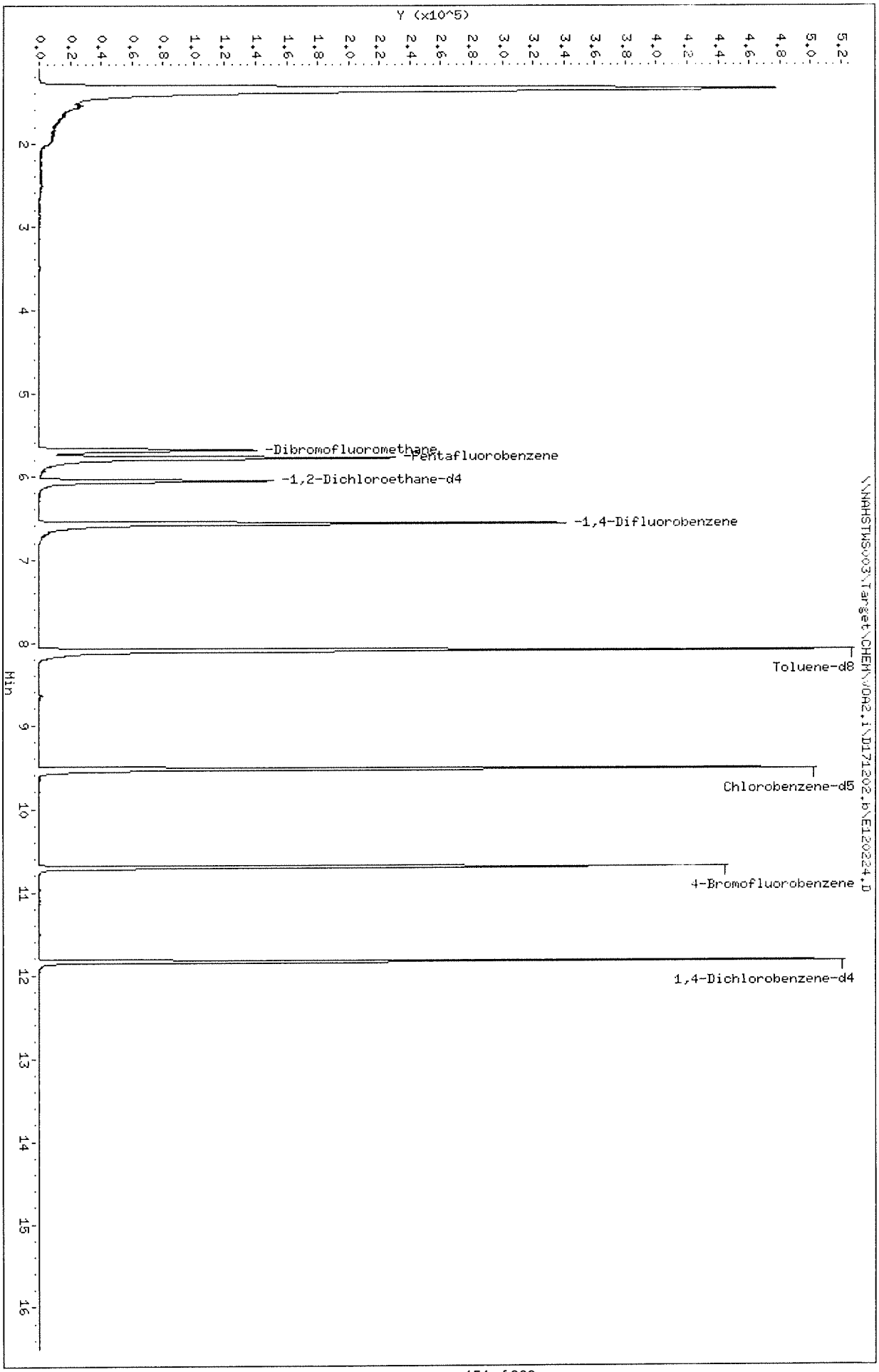
ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120224.D
Lab Smp Id: HS17111408-05 Client Smp ID: HS17111408-05
Inj Date : 03-DEC-2017 07:06
Operator : AP Inst ID: VOA2.i
Smp Info : HS17111408-05;HS17111408-05;;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\CHEM\VOA2.i\D171202.b\8260LL.m
Meth Date : 01-Feb-2018 15:27 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 13:32 Cal File: D120210.D
Als bottle: 52
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
$ 35 1,2-Dichloroethane-d4	65	6.062	6.055	(1.049)	131938	48.2082	48.20
* 36 1,4-Difluorobenzene	114	6.572	6.572	(1.000)	333268	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	11.838	11.834	(1.000)	137495	50.0000	
* 1 Pentafluorobenzene	168	5.776	5.782	(1.000)	237399	50.0000	
* 47 Chlorobenzene-d5	117	9.527	9.527	(1.000)	304568	50.0000	
$ 30 Dibromofluoromethane	113	5.686	5.683	(0.984)	104945	44.7180	44.71
$ 48 Toluene-d8	98	8.093	8.096	(0.849)	388847	51.6170	51.61
$ 69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	141670	48.9681	48.96


Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120224.D
Date : 03-DEC-2017 07:06
Client ID: HS17111408-05
Sample Info: HS17111408-05;HS17111408-05;;;
Purge Volume: 5.0
Column phase: DB624
Instrument: VOA2.i
Operator: AP
Column diameter: 0.18
Y (x10^5)
Min
-Dibromofluoromethane
-Pentafluorobenzene
-1,2-Dichloroethane-d4
-1,4-Difluorobenzene
Toluene-d8
Chlorobenzene-d5
4-Bromofluorobenzene
1,4-Dichlorobenzene-d4
\\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120224.D

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120225.D
Report Date: 01-Feb-2018 15:28

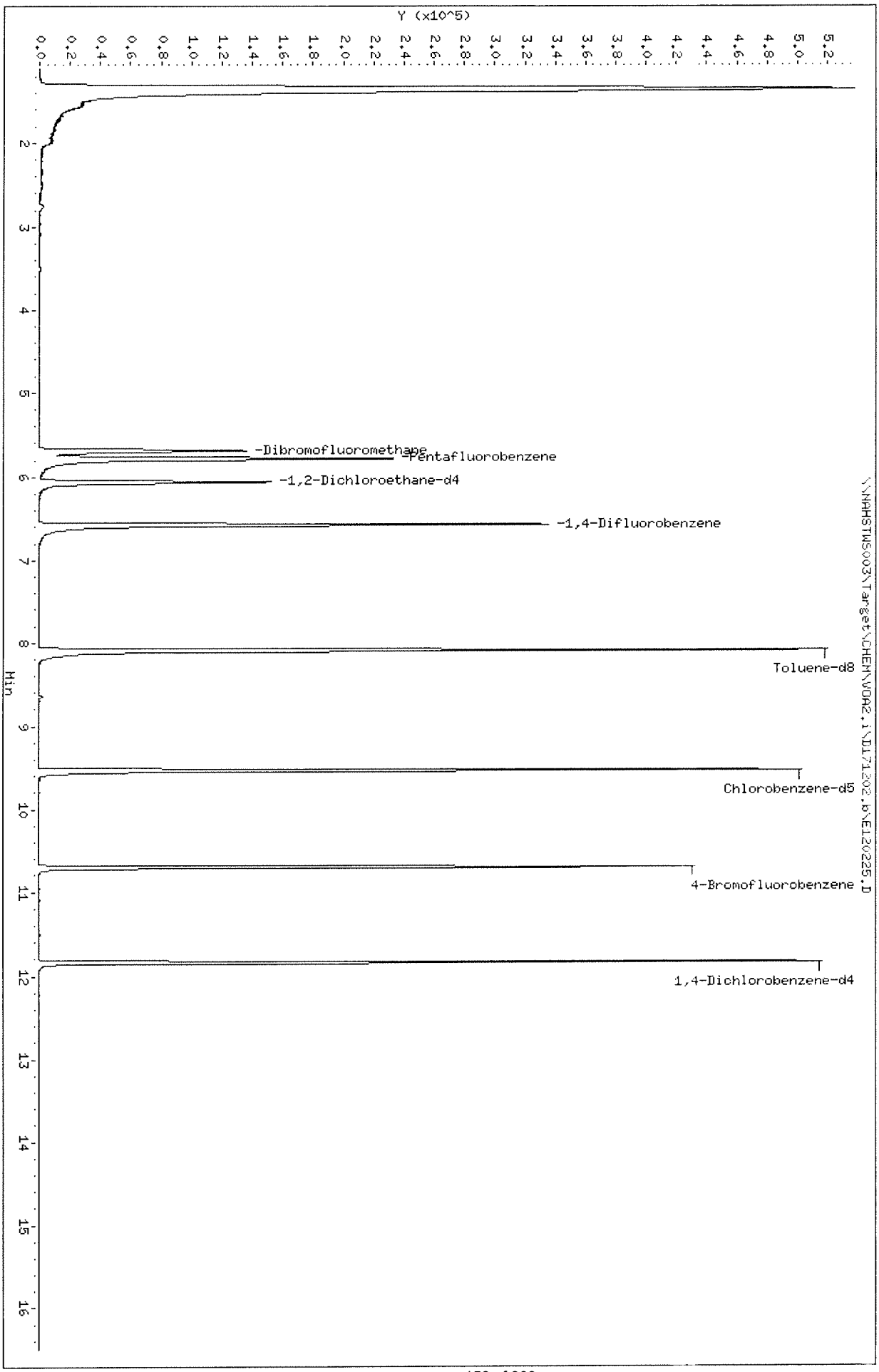
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Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120225.D
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Inj Date : 03-DEC-2017 07:30
Operator : AP Inst ID: VOA2.i
Smp Info : HS17111408-06;HS17111408-06;;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\CHEM\VOA2.i\D171202.b\8260LL.m
Meth Date : 01-Feb-2018 15:27 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 13:32 Cal File: D120210.D
Als bottle: 53
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
$ 35 1,2-Dichloroethane-d4	65	6.058	6.055	(1.048)	128777	47.2395	47.23
* 36 1,4-Difluorobenzene	114	6.572	6.572	(1.000)	334809	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	11.838	11.834	(1.000)	137146	50.0000	
* 1 Pentafluorobenzene	168	5.782	5.782	(1.000)	236463	50.0000	
* 47 Chlorobenzene-d5	117	9.527	9.527	(1.000)	303043	50.0000	
$ 30 Dibromofluoromethane	113	5.689	5.683	(0.984)	104946	44.8954	44.89
$ 48 Toluene-d8	98	8.093	8.096	(0.849)	389146	51.9166	51.91
$ 69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	142427	49.4775	49.47


Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120225.D
Date : 03-DEC-2017 07:30
Client ID: HS17111408-06
Sample Info: HS17111408-06;HS17111408-06;;;
Purge Volume: 5.0
Column phase: DB624
Instrument: VOA2.i
Operator: AP
Column diameter: 0.18
Y (x10^5)
Min
-Dibromofluoromethane
-Pentafluorobenzene
-1,2-Dichloroethane-d4
-1,4-Difluorobenzene
Toluene-d8
Chlorobenzene-d5
4-Bromofluorobenzene
1,4-Dichlorobenzene-d4
\\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120225.D

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120227.D
Report Date: 01-Feb-2018 15:28

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Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120227.D
Lab Smp Id: HS17120056-01MS Client Smp ID: HS17120056-01MS
Inj Date : 03-DEC-2017 08:22
Operator : AP Inst ID: VOA2.i
Smp Info : HS17120056-01MS;HS17120056-01MS;3;;MS
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\CHEM\VOA2.i\D171202.b\8260LL.m
Meth Date : 01-Feb-2018 15:27 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 13:32 Cal File: D120210.D
Als bottle: 55 QC Sample: MS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

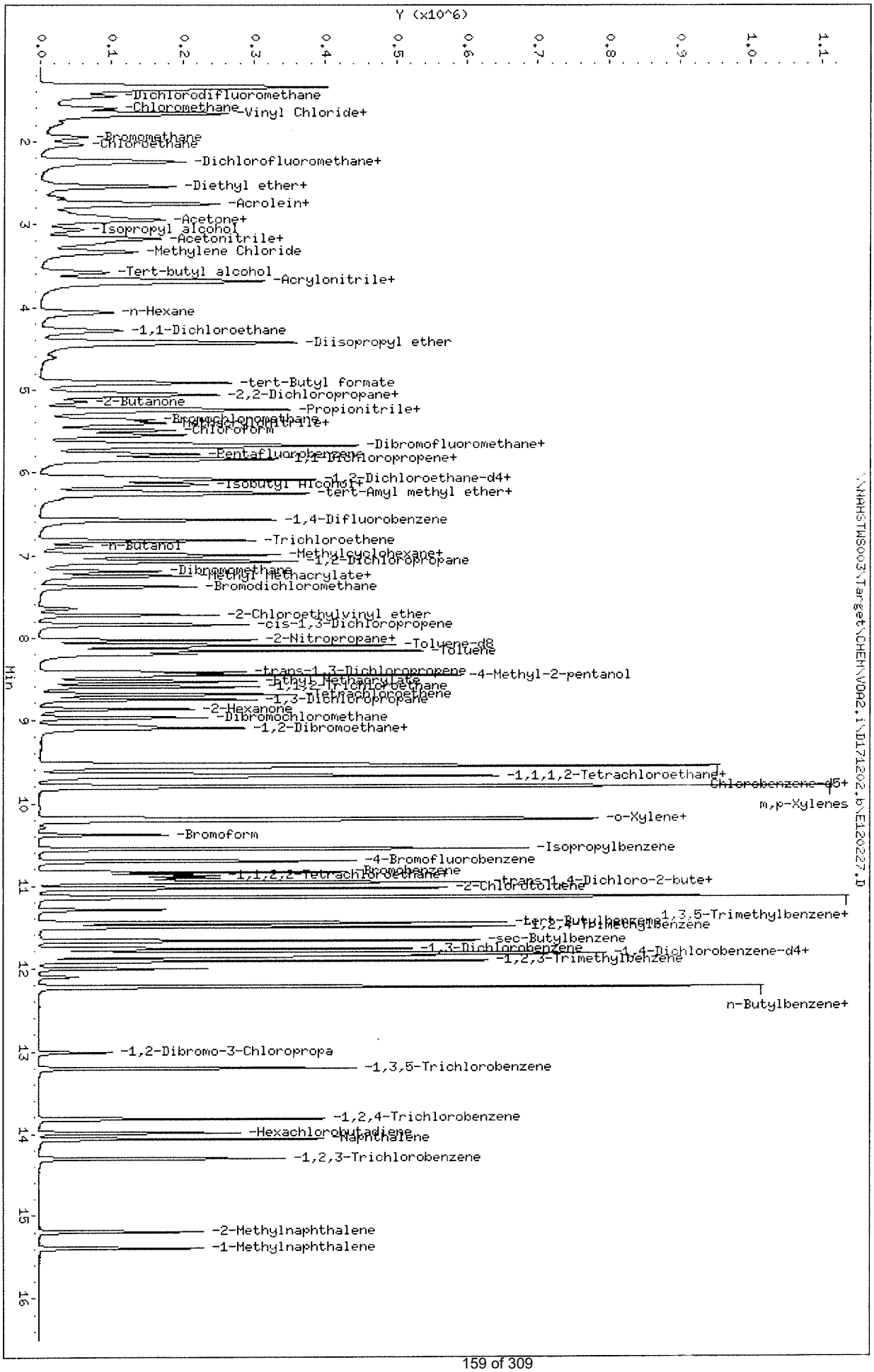
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
31 1,1,1-Trichloroethane	97	5.654	5.651	(0.978)	171201	53.9649	53.96
60 1,1,1,2-Tetrachloroethane	131	9.646	9.646	(1.012)	110849	48.5675	48.56
68 1,1,2,2-Tetrachloroethane	83	10.875	10.872	(0.919)	114434	41.2329	41.23
53 1,1,2-Trichloroethane	83	8.597	8.597	(0.902)	77927	45.3368	45.33
32 1,1-Dichloropropene	75	5.853	5.856	(0.891)	129146	47.4162	47.41
22 1,1-Dichloroethane	63	4.278	4.277	(0.740)	205295	47.9467	47.94
11 1,1-Dichloroethene	96	2.750	2.750	(0.476)	89952	44.7086	44.70
71 1,2,3-Trichloropropane	75	10.904	10.904	(0.921)	129672	44.3349	44.33
79 1,2,4-Trimethylbenzene	105	11.501	11.501	(0.972)	362859	52.5245	52.52
93 1,2,3-Trichlorobenzene	182	14.302	14.302	(1.208)	104593	50.0543	50.05
90 1,2,4-Trichlorobenzene	180	13.821	13.821	(1.168)	125303	51.0963	51.09
89 1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	22613	52.2931	52.29
33 1,2-Dichloroethane	62	6.145	6.145	(0.935)	146636	46.6445	46.64
42 1,2-Dichloropropane	63	7.066	7.066	(1.075)	112633	46.5632	46.56
57 1,2-Dibromoethane	107	9.068	9.068	(0.952)	97779	45.2571	45.25
88 1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	201319	44.3272	44.32
75 1,3,5-Trimethylbenzene	105	11.135	11.135	(0.941)	361196	53.6547	53.65
54 1,3-Dichloropropane	76	8.754	8.754	(0.919)	152366	44.8249	44.82
83 1,3-Dichlorobenzene	146	11.770	11.767	(0.994)	210312	44.0836	44.08
84 1,4-Dichlorobenzene	146	11.860	11.857	(1.002)	199645	42.8154	42.81
26 2,2-Dichloropropane	77	5.041	5.041	(0.872)	132105	43.6926	43.69

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120227.D
Report Date: 01-Feb-2018 15:28

			QUANT SIG					CONCENTRATIONS	
		Compounds	MASS	RT	EXP RT	REL RT	RESPONSE	ON-COLUMN (ug/l)	FINAL (ug/l)
	24	2-Butanone	43	5.144	5.144	(0.890)	92495	96.1708	96.17
	52	2-Hexanone	43	8.866	8.866	(0.931)	141007	96.7142	96.71
	76	2-Chlorotoluene	91	11.029	11.029	(0.932)	314546	43.7671	43.76
	77	4-Chlorotoluene	91	11.138	11.141	(0.941)	342109	51.7596	51.75
	45	4-Methyl-2-Pentanone	43	8.029	8.029	(0.843)	219364	92.8553	92.85
	10	Acetone	43	2.856	2.853	(0.494)	62778	105.613	105.61
	37	Benzene	78	6.094	6.091	(0.927)	389994	47.0700	47.07
	39	Bromodichloromethane	83	7.377	7.377	(1.123)	143700	51.8993	51.89
	74	Bromobenzene	156	10.833	10.833	(0.915)	126611	44.8195	44.81
	29	Bromochloromethane	128	5.365	5.365	(0.928)	55646	52.3332	52.33
	6	Bromomethane	94	1.945	1.941	(0.336)	71669	39.1237	39.12
	19	Carbon Disulfide	76	2.952	2.952	(0.511)	390705	95.6054	95.60
	66	Bromoform	173	10.375	10.374	(1.089)	85351	52.5455	52.54
	7	Chloroethane	64	2.041	2.038	(0.353)	84787	47.9957	47.99
	34	Carbon Tetrachloride	117	5.834	5.837	(0.888)	143785	50.8342	50.83
	3	Chloromethane	50	1.598	1.595	(0.276)	185932	45.8970	45.89
	28	Chloroform	83	5.494	5.497	(0.950)	182197	47.0218	47.02
	59	Chlorobenzene	112	9.556	9.553	(1.003)	271030	46.3296	46.32
	27	cis-1,2-Dichloroethene	96	5.070	5.070	(0.877)	112416	49.0126	49.01
	46	cis-1,3-Dichloropropene	75	7.839	7.839	(1.193)	165300	50.5558	50.55
	2	Dichlorodifluoromethane	85	1.451	1.450	(0.251)	114167	56.7843	56.78
	55	Dibromochloromethane	129	8.972	8.972	(0.942)	121304	49.6803	49.68
	44	Dibromomethane	93	7.191	7.188	(1.094)	62297	49.7621	49.76
	61	Ethylbenzene	106	9.672	9.672	(1.015)	142636	47.3852	47.38
	91	Hexachlorobutadiene	225	13.988	13.988	(1.182)	55292	52.6246	52.62
	62	m,p-Xylenes	106	9.794	9.790	(1.028)	350679	91.3465	91.34
	63	o-Xylene	106	10.179	10.179	(1.068)	183214	46.4226	46.42
	67	Isopropylbenzene	105	10.548	10.548	(1.107)	459959	50.9206	50.92
	17	Methylene Chloride	84	3.334	3.331	(0.577)	100053	45.2210	45.22
	73	n-Propylbenzene	91	10.955	10.955	(0.925)	472294	52.8937	52.89
	87	n-Butylbenzene	91	12.223	12.223	(1.033)	261072	45.8004	45.80
	92	Naphthalene	128	14.062	14.061	(1.188)	297303	56.3761	56.37
	64	Styrene	104	10.198	10.198	(1.070)	298481	46.3620	46.36
	81	sec-Butylbenzene	105	11.668	11.668	(0.986)	412354	54.2420	54.24
	78	tert-Butylbenzene	119	11.453	11.453	(0.967)	308197	54.0292	54.02
	20	trans-1,2-Dichloroethene	96	3.665	3.665	(0.634)	96001	50.2372	50.23
	50	Toluene	91	8.160	8.160	(0.857)	418602	45.2510	45.25
	51	trans-1,3-Dichloropropene	75	8.417	8.417	(1.281)	145443	51.1391	51.13
	56	Tetrachloroethene	164	8.690	8.690	(0.912)	93538	49.4992	49.49
	8	Trichlorofluoromethane	101	2.253	2.253	(0.390)	156979	50.7940	50.79
	38	Trichloroethene	130	6.819	6.819	(1.038)	119941	52.6887	52.68
	5	Vinyl Chloride	62	1.682	1.681	(0.291)	147705	53.3225	53.32
$	35	1,2-Dichloroethane-d4	65	6.055	6.055	(1.047)	124821	48.5990	48.59
*	36	1,4-Difluorobenzene	114	6.572	6.572	(1.000)	331217	50.0000	
*	70	1,4-Dichlorobenzene-d4	152	11.838	11.834	(1.000)	139802	50.0000	
*	1	Pentafluorobenzene	168	5.783	5.782	(1.000)	222252	50.0000	
*	47	Chlorobenzene-d5	117	9.527	9.527	(1.000)	299393	50.0000	
$	30	Dibromofluoromethane	113	5.686	5.683	(0.983)	97264	44.2696	44.26
$	48	Toluene-d8	98	8.093	8.096	(0.849)	373062	50.3776	50.37
$	69	4-Bromofluorobenzene	95	10.695	10.695	(1.123)	143903	50.5997	50.59
	82	p-Isopropyltoluene	119	11.819	11.818	(0.998)	343528	43.8912	43.89
	138	Freon TF	101	2.766	2.766	(0.478)	86139	47.3207	47.32


Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120227.D
Date : 03-DEC-2017 08:22
Client ID: HS17120056-01HS
Sample Info: HS17120056-01HS;HS17120056-01HS;3;;HS
Purge Volume: 5.0
Column phase: DB624
Instrument: VOA2.i
Operator: AP
Column diameter: 0.18
\\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120227.D
Y (x10^6)
Min
-Dichlorodifluoromethane
-Chloromethane
-Vinyl Chloride+
-Bromomethane
-Chloroethane
-Dichlorofluoromethane+
-Diethyl ether+
-Acrolein+
-Acetone+
-Isopropyl alcohol
-Acetonitrile+
-Methylene Chloride
-Tert-butyl alcohol
-Acrylonitrile+
-n-Hexane
-1,1-Dichloroethane
-Diisopropyl ether
-tert-Butyl formate
-2,2-Dichloropropane+
-2-Butanone
-Propionitrile+
-Bromochloromethane
-Chloroform
-Dibromofluoromethane+
-Pentafluorobenzene
-1,1-Dichloropropene+
-1,2-Dichloroethane-d4+
-Isobutyl Alcohol+
-tert-Amyl methyl ether+
-1,4-Difluorobenzene
-Trichloroethene
-n-Butanol
-Methylcyclohexane+
-1,2-Dichloropropane
-Dibromomethane
Methyl Methacrylate+
-Bromodichloromethane
-2-Chloroethylvinyl ether
-cis-1,3-Dichloropropene
-2-Nitropropane+
-Toluene-d8
-Toluene
-trans-1,3-Dichloropropene
-4-Methyl-2-pentanol
-Ethyl Methacrylate
-1,1,2-Trichloroethane
-Tetrachloroethene
-1,3-Dichloropropane
-2-Hexanone
-Dibromochloromethane
-1,2-Dibromoethane+
-1,1,1,2-Tetrachloroethane+
Chlorobenzene-d5+
m,p-Xylenes
-o-Xylene+
-Bromoform
-Isopropylbenzene
-4-Bromofluorobenzene
-Bromobenzene
-1,1,2,2-Tetrachloroethane+
-trans-1,4-Dichloro-2-bute+
-2-Chlorotoluene
-tert-Butylbenzene
1,3,5-Trimethylbenzene+
1,2,4-Trimethylbenzene
-sec-Butylbenzene
-1,3-Dichlorobenzene
-1,4-Dichlorobenzene-d4+
-1,2,3-Trimethylbenzene
n-Butylbenzene+
-1,2-Dibromo-3-Chloropropa
-1,3,5-Trichlorobenzene
-1,2,4-Trichlorobenzene
-Hexachlorobutadiene
-Naphthalene
-1,2,3-Trichlorobenzene
-2-Methylnaphthalene
-1-Methylnaphthalene

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120228.D
Report Date: 01-Feb-2018 15:28

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120228.D
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Inj Date : 03-DEC-2017 08:47
Operator : AP Inst ID: VOA2.i
Smp Info : HS17120056-01MSD;HS17120056-01MSD;3;;MSD
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\CHEM\VOA2.i\D171202.b\8260LL.m
Meth Date : 01-Feb-2018 15:27 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 13:32 Cal File: D120210.D
Als bottle: 55 QC Sample: MSD
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

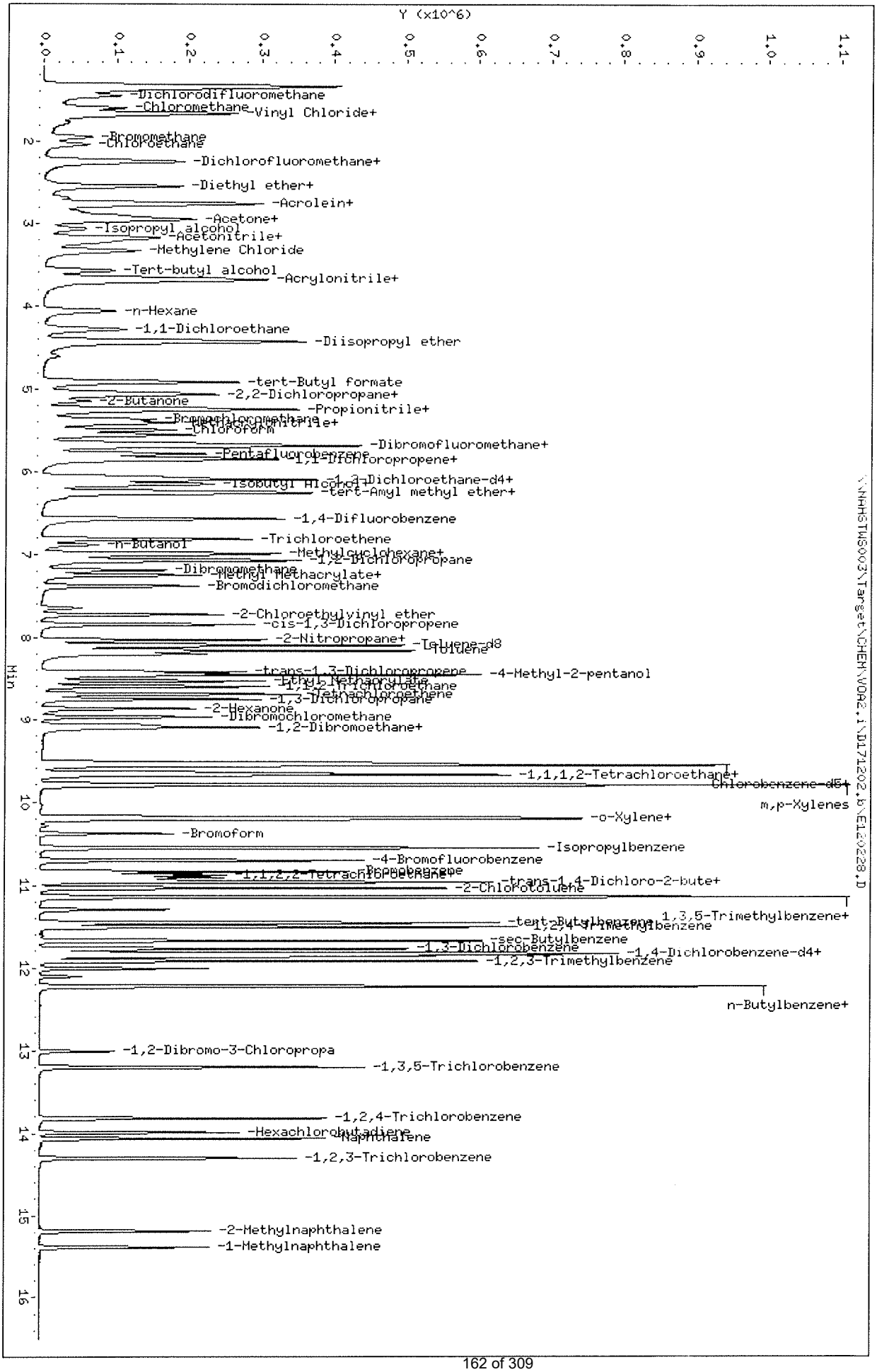
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
31 1,1,1-Trichloroethane	97	5.654	5.651	(0.978)	165506	51.7760	51.77
60 1,1,1,2-Tetrachloroethane	131	9.646	9.646	(1.012)	109867	48.1979	48.19
68 1,1,2,2-Tetrachloroethane	83	10.875	10.872	(0.919)	115917	41.6918	41.69
53 1,1,2-Trichloroethane	83	8.597	8.597	(0.902)	76937	44.4635	44.46
32 1,1-Dichloropropene	75	5.853	5.856	(0.890)	125769	46.0081	46.00
22 1,1-Dichloroethane	63	4.284	4.277	(0.741)	201572	46.7221	46.72
11 1,1-Dichloroethene	96	2.750	2.750	(0.476)	112062	55.2778	55.27
71 1,2,3-Trichloropropane	75	10.904	10.904	(0.921)	129226	44.1026	44.10
79 1,2,4-Trimethylbenzene	105	11.501	11.501	(0.972)	353405	51.0217	51.02
93 1,2,3-Trichlorobenzene	182	14.302	14.302	(1.208)	105233	50.2696	50.26
90 1,2,4-Trichlorobenzene	180	13.821	13.821	(1.168)	124115	50.5204	50.52
89 1,2-Dibromo-3-Chloropropane	75	13.012	13.009	(1.099)	21803	50.3044	50.30
33 1,2-Dichloroethane	62	6.145	6.145	(0.935)	151382	47.9852	47.98
42 1,2-Dichloropropane	63	7.066	7.066	(1.075)	110565	45.5479	45.54
57 1,2-Dibromoethane	107	9.068	9.068	(0.952)	97081	44.8688	44.86
88 1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	198771	43.6878	43.68
75 1,3,5-Trimethylbenzene	105	11.135	11.135	(0.941)	353239	52.3309	52.33
54 1,3-Dichloropropane	76	8.754	8.754	(0.919)	153656	45.1389	45.13
83 1,3-Dichlorobenzene	146	11.770	11.767	(0.994)	204548	42.7979	42.79
84 1,4-Dichlorobenzene	146	11.860	11.857	(1.002)	195003	41.7443	41.74
26 2,2-Dichloropropane	77	5.044	5.041	(0.872)	129131	42.3868	42.38

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120228.D
Report Date: 01-Feb-2018 15:28

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
24	2-Butanone	43	5.141	5.144	(0.889)	94404	97.4153	97.41
52	2-Hexanone	43	8.866	8.866	(0.931)	141587	96.9712	96.97
76	2-Chlorotoluene	91	11.029	11.029	(0.932)	302804	42.0572	42.05
77	4-Chlorotoluene	91	11.141	11.141	(0.941)	333287	50.2904	50.29
45	4-Methyl-2-Pentanone	43	8.029	8.029	(0.843)	219825	92.9155	92.91
10	Acetone	43	2.862	2.853	(0.495)	80533	134.246	134.24
37	Benzene	78	6.094	6.091	(0.927)	381078	45.8326	45.83
39	Bromodichloromethane	83	7.380	7.377	(1.122)	141481	50.9186	50.91
74	Bromobenzene	156	10.833	10.833	(0.915)	122577	43.3131	43.31
29	Bromochloromethane	128	5.368	5.365	(0.928)	54472	50.8427	50.84
6	Bromomethane	94	1.938	1.941	(0.335)	75069	41.0681	41.06
19	Carbon Disulfide	76	2.952	2.952	(0.511)	447182	108.600	108.59
66	Bromoform	173	10.378	10.374	(1.089)	83965	51.6172	51.61
7	Chloroethane	64	2.041	2.038	(0.353)	86666	48.9047	48.90
34	Carbon Tetrachloride	117	5.837	5.837	(0.888)	141309	49.7755	49.77
3	Chloromethane	50	1.598	1.595	(0.276)	193441	47.4693	47.46
28	Chloroform	83	5.494	5.497	(0.950)	178081	45.6129	45.61
59	Chlorobenzene	112	9.556	9.553	(1.003)	263060	44.9019	44.90
27	cis-1,2-Dichloroethene	96	5.067	5.070	(0.876)	108879	47.1129	47.11
46	cis-1,3-Dichloropropene	75	7.839	7.839	(1.192)	162129	49.4120	49.41
2	Dichlorodifluoromethane	85	1.450	1.450	(0.251)	109181	53.8948	53.89
55	Dibromochloromethane	129	8.972	8.972	(0.942)	121223	49.5751	49.57
44	Dibromomethane	93	7.191	7.188	(1.094)	62351	49.6465	49.64
61	Ethylbenzene	106	9.672	9.672	(1.015)	137687	45.6747	45.67
91	Hexachlorobutadiene	225	13.988	13.988	(1.182)	54964	52.2028	52.20
62	m,p-Xylenes	106	9.794	9.790	(1.028)	340911	88.6732	88.67
63	o-Xylene	106	10.179	10.179	(1.068)	179423	45.3961	45.39
67	Isopropylbenzene	105	10.548	10.548	(1.107)	446564	49.2246	49.22
17	Methylene Chloride	84	3.334	3.331	(0.577)	98626	44.2399	44.23
73	n-Propylbenzene	91	10.955	10.955	(0.925)	459216	51.2549	51.25
87	n-Butylbenzene	91	12.223	12.223	(1.033)	252149	44.1551	44.15
92	Naphthalene	128	14.065	14.061	(1.188)	297625	56.3336	56.33
64	Styrene	104	10.201	10.198	(1.071)	290606	45.0733	45.07
81	sec-Butylbenzene	105	11.671	11.668	(0.986)	402879	52.8584	52.85
78	tert-Butylbenzene	119	11.453	11.453	(0.967)	303960	53.1652	53.16
20	trans-1,2-Dichloroethene	96	3.665	3.665	(0.634)	93907	48.7708	48.77
50	Toluene	91	8.157	8.160	(0.856)	407518	43.9994	43.99
51	trans-1,3-Dichloropropene	75	8.417	8.417	(1.280)	143307	50.2113	50.21
56	Tetrachloroethene	164	8.690	8.690	(0.912)	90844	48.0038	48.00
8	Trichlorofluoromethane	101	2.256	2.253	(0.390)	160047	51.3961	51.39
38	Trichloroethene	130	6.822	6.819	(1.038)	117841	51.5846	51.58
5	Vinyl Chloride	62	1.685	1.681	(0.291)	150030	53.7706	53.77
$ 35	1,2-Dichloroethane-d4	65	6.055	6.055	(1.047)	125711	48.6934	48.69
* 36	1,4-Difluorobenzene	114	6.575	6.572	(1.000)	332383	50.0000	
* 70	1,4-Dichlorobenzene-d4	152	11.838	11.834	(1.000)	140055	50.0000	
* 1	Pentafluorobenzene	168	5.782	5.782	(1.000)	223941	50.0000	
* 47	Chlorobenzene-d5	117	9.527	9.527	(1.000)	299828	50.0000	
$ 30	Dibromofluoromethane	113	5.689	5.683	(0.984)	96247	43.4763	43.47
$ 48	Toluene-d8	98	8.096	8.096	(0.850)	375056	50.5734	50.57
$ 69	4-Bromofluorobenzene	95	10.695	10.695	(1.123)	143987	50.5558	50.55
82	p-Isopropyltoluene	119	11.818	11.818	(0.998)	336373	42.8994	42.89
138	Freon TF	101	2.766	2.766	(0.478)	108717	59.2873	59.28


Y (x10^6)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
1.1
Min
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
-Dichlorodifluoromethane
-Chloromethane
-Vinyl Chloride+
-Bromomethane
-Chloroethane
-Dichlorofluoromethane+
-Diethyl ether+
-Acrolein+
-Acetone+
-Isopropyl alcohol
-Acetonitrile+
-Methylene Chloride
-Tert-butyl alcohol
-Acrylonitrile+
-n-Hexane
-1,1-Dichloroethane
-Diisopropyl ether
-tert-Butyl formate
-2,2-Dichloropropane+
-2-Butanone
-Propionitrile+
-Bromochloromethane
-Chloroform
-Dibromofluoromethane+
-Pentafluorobenzene
-1,1-Dichloropropene+
-1,2-Dichloroethane-d4+
-Isobutyl Alcohol
-tert-Amyl methyl ether+
-1,4-Difluorobenzene
-Trichloroethene
-n-Butanol
-Methylcyclohexane+
-1,2-Dichloropropane
-Dibromomethane
-Methyl Methacrylate+
-Bromodichloromethane
-2-Chloroethylvinyl ether
-cis-1,3-Dichloropropene
-2-Nitropropane+
-Toluene-d8
Toluene
-trans-1,3-Dichloropropene
-4-Methyl-2-pentanol
-Ethyl Methacrylate
-1,1,2-Trichloroethane
-Tetrachloroethene
-1,3-Dichloropropane
-2-Hexanone
-Dibromochloromethane
-1,2-Dibromoethane+
-1,1,1,2-Tetrachloroethane+
Chlorobenzene-d5+
m,p-Xylenes
-o-Xylene+
-Bromoform
-Isopropylbenzene
-4-Bromofluorobenzene
-Bromobenzene
-1,1,2,2-Tetrachloroethane
-trans-1,4-Dichloro-2-bute+
-2-Chlorotoluene
-tert-Butylbenzene
1,3,5-Trimethylbenzene+
1,2,4-Trimethylbenzene
-sec-Butylbenzene
-1,3-Dichlorobenzene
-1,4-Dichlorobenzene-d4+
-1,2,3-Trimethylbenzene
n-Butylbenzene+
-1,2-Dibromo-3-Chloropropa
-1,3,5-Trichlorobenzene
-1,2,4-Trichlorobenzene
-Hexachlorobutadiene
-Naphthalene
-1,2,3-Trichlorobenzene
-2-Methylnaphthalene
-1-Methylnaphthalene
\\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120228.D
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120228.D
Date : 03-DEC-2017 08:47
Client ID: HS17120056-01MSD
Sample Info: HS17120056-01MSD;HS17120056-01MSD;3;;MSD
Purge Volume: 5.0
Column phase: DB624
Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120229.D
Report Date: 01-Feb-2018 15:28

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120229.D
Lab Smp Id: CCV_END Client Smp ID: CCV_END
Inj Date : 03-DEC-2017 09:11
Operator : AP Inst ID: VOA2.i
Smp Info : CCV_END;CCV_END;2;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\CHEM\VOA2.i\D171202.b\8260LL.m
Meth Date : 01-Feb-2018 15:28 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 13:32 Cal File: D120210.D
Als bottle: 56 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

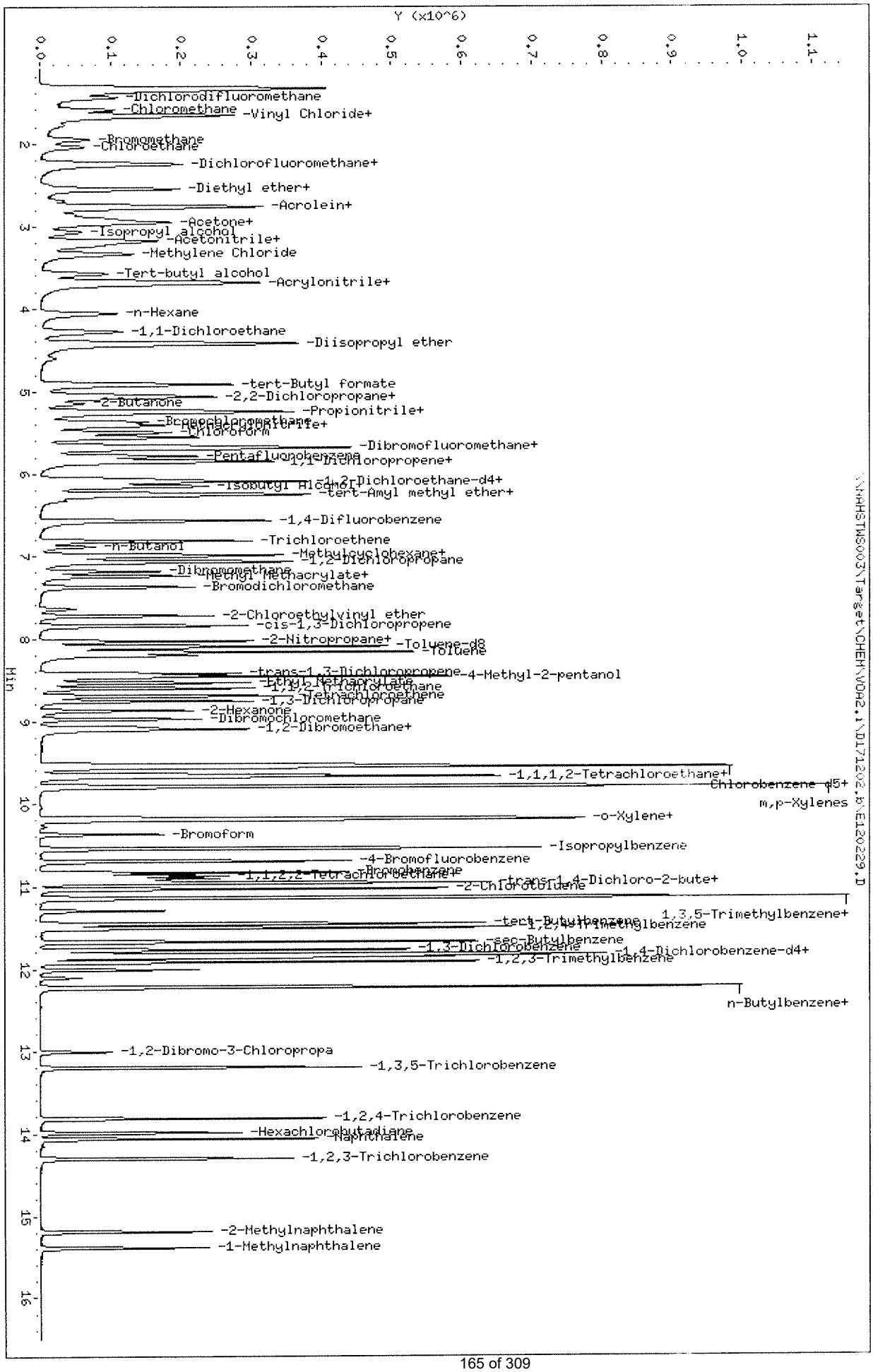
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
31 1,1,1-Trichloroethane	97	5.651	5.651	(0.977)	169039	50.0000	53.31
60 1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.012)	110763	50.0000	48.85
68 1,1,2,2-Tetrachloroethane	83	10.875	10.875	(0.919)	116731	50.0000	41.83
53 1,1,2-Trichloroethane	83	8.600	8.600	(0.903)	75995	50.0000	44.39
32 1,1-Dichloropropene	75	5.853	5.853	(0.890)	128646	50.0000	47.56
22 1,1-Dichloroethane	63	4.277	4.277	(0.740)	203416	50.0000	47.53
11 1,1-Dichloroethene	96	2.750	2.750	(0.476)	114282	50.0000	56.83
71 1,2,3-Trichloropropane	75	10.907	10.907	(0.921)	128481	50.0000	43.69
79 1,2,4-Trimethylbenzene	105	11.501	11.501	(0.972)	365764	50.0000	52.66
93 1,2,3-Trichlorobenzene	182	14.302	14.302	(1.208)	107539	50.0000	51.19
90 1,2,4-Trichlorobenzene	180	13.818	13.818	(1.167)	125679	50.0000	50.97
89 1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	21951	50.0000	50.46
33 1,2-Dichloroethane	62	6.145	6.145	(0.935)	150685	50.0000	48.26
42 1,2-Dichloropropane	63	7.066	7.066	(1.075)	113931	50.0000	47.42
57 1,2-Dibromoethane	107	9.068	9.068	(0.952)	96016	50.0000	44.62
88 1,2-Dichlorobenzene	146	12.226	12.226	(1.033)	201873	50.0000	44.31
75 1,3,5-Trimethylbenzene	105	11.135	11.135	(0.941)	365932	50.0000	54.08
54 1,3-Dichloropropane	76	8.754	8.754	(0.919)	155022	50.0000	45.79
83 1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	211019	50.0000	43.99
84 1,4-Dichlorobenzene	146	11.860	11.860	(1.002)	211693	50.0000	45.15
26 2,2-Dichloropropane	77	5.041	5.041	(0.872)	131345	50.0000	43.46

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120229.D
Report Date: 01-Feb-2018 15:28

			QUANT SIG					AMOUNTS	
		Compounds	MASS	RT	EXP RT	REL RT	RESPONSE	CAL-AMT (ug/l)	ON-COL (ug/l)
	24	2-Butanone	43	5.144	5.144	(0.890)	94766	100.000	98.59
	52	2-Hexanone	43	8.866	8.866	(0.931)	141232	100.000	97.26
	76	2-Chlorotoluene	91	11.029	11.029	(0.932)	313503	50.0000	43.39
	77	4-Chlorotoluene	91	11.141	11.141	(0.941)	343783	50.0000	51.73
	45	4-Methyl-2-Pentanone	43	8.029	8.029	(0.843)	217659	100.000	92.50
	10	Acetone	43	2.853	2.853	(0.493)	74589	100.000	125.51
	37	Benzene	78	6.094	6.094	(0.927)	388642	50.0000	47.23
	39	Bromodichloromethane	83	7.380	7.380	(1.122)	143429	50.0000	52.16
	74	Bromobenzene	156	10.833	10.833	(0.915)	126204	50.0000	44.43
	29	Bromochloromethane	128	5.365	5.365	(0.928)	55079	50.0000	51.83
	6	Bromomethane	94	1.951	1.951	(0.337)	77688	50.0000	43.32
	19	Carbon Disulfide	76	2.952	2.952	(0.511)	398107	100.000	97.47
	66	Bromoform	173	10.378	10.378	(1.089)	84681	50.0000	52.34
	7	Chloroethane	64	2.041	2.041	(0.353)	88655	50.0000	50.50
	34	Carbon Tetrachloride	117	5.834	5.834	(0.887)	140859	50.0000	50.14
	3	Chloromethane	50	1.592	1.592	(0.275)	190773	50.0000	47.18
	28	Chloroform	83	5.494	5.494	(0.950)	180018	50.0000	46.48
	59	Chlorobenzene	112	9.556	9.556	(1.003)	282557	50.0000	48.49
	27	cis-1,2-Dichloroethene	96	5.070	5.070	(0.877)	110349	50.0000	48.14
	46	cis-1,3-Dichloropropene	75	7.839	7.839	(1.192)	163224	50.0000	50.27
	2	Dichlorodifluoromethane	85	1.450	1.450	(0.251)	115862	50.0000	57.66
	55	Dibromochloromethane	129	8.972	8.972	(0.942)	120765	50.0000	49.66
	44	Dibromomethane	93	7.191	7.191	(1.094)	62951	50.0000	50.66
	61	Ethylbenzene	106	9.672	9.672	(1.015)	142859	50.0000	47.65
	91	Hexachlorobutadiene	225	13.991	13.991	(1.182)	57160	50.0000	54.16
	62	m,p-Xylenes	106	9.794	9.794	(1.028)	349404	100.000	91.38
	63	o-Xylene	106	10.179	10.179	(1.068)	184732	50.0000	46.49
	67	Isopropylbenzene	105	10.548	10.548	(1.107)	460336	50.0000	51.19
	17	Methylene Chloride	84	3.337	3.337	(0.577)	97181	50.0000	43.94
	73	n-Propylbenzene	91	10.955	10.955	(0.925)	480564	50.0000	53.56
	87	n-Butylbenzene	91	12.223	12.223	(1.033)	263091	50.0000	45.30
	92	Naphthalene	128	14.061	14.061	(1.188)	296051	50.0000	55.81
	64	Styrene	104	10.198	10.198	(1.070)	299862	50.0000	46.76
	81	sec-Butylbenzene	105	11.671	11.671	(0.986)	414811	50.0000	54.27
	78	tert-Butylbenzene	119	11.453	11.453	(0.967)	314854	50.0000	54.92
	20	trans-1,2-Dichloroethene	96	3.668	3.668	(0.634)	97774	50.0000	51.19
	50	Toluene	91	8.160	8.160	(0.857)	428482	50.0000	46.51
	51	trans-1,3-Dichloropropene	75	8.417	8.417	(1.280)	143699	50.0000	50.87
	56	Tetrachloroethene	164	8.690	8.690	(0.912)	93201	50.0000	49.52
	8	Trichlorofluoromethane	101	2.256	2.256	(0.390)	159859	50.0000	51.69
	38	Trichloroethene	130	6.819	6.819	(1.037)	119478	50.0000	52.85
	5	Vinyl Chloride	62	1.681	1.681	(0.291)	150654	50.0000	54.46
$	35	1,2-Dichloroethane-d4	65	6.058	6.058	(1.048)	122282	50.0000	47.75
*	36	1,4-Difluorobenzene	114	6.575	6.575	(1.000)	328916	50.0000	
*	70	1,4-Dichlorobenzene-d4	152	11.838	11.838	(1.000)	140949	50.0000	
*	1	Pentafluorobenzene	168	5.782	5.782	(1.000)	222117	50.0000	
*	47	Chlorobenzene-d5	117	9.527	9.527	(1.000)	298182	50.0000	
$	30	Dibromofluoromethane	113	5.683	5.683	(0.983)	94797	50.0000	43.17
$	48	Toluene-d8	98	8.093	8.093	(0.849)	372909	50.0000	50.56
$	69	4-Bromofluorobenzene	95	10.698	10.698	(1.123)	143654	50.0000	50.71
	82	p-Isopropyltoluene	119	11.818	11.818	(0.998)	348450	50.0000	44.28
	138	Freon TF	101	2.766	2.766	(0.478)	113368	50.0000	62.33


Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120229.D
Date : 03-DEC-2017 09:11
Client ID: CCV_END
Sample Info: CCV_END;CCV_END;2;;
Purge Volume: 5.0
Column phase: DB624
Instrument: VOA2.i
Operator: AP
Column diameter: 0.18
\\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\E120229.D
Y (x10^6)
Min
-Dichlorodifluoromethane
-Chloromethane
-Vinyl Chloride+
-Bromomethane
-Chloroethane
-Dichlorofluoromethane+
-Diethyl ether+
-Acrolein+
-Acetone+
-Isopropyl alcohol
-Acetonitrile+
-Methylene Chloride
-Tert-butyl alcohol
-Acrylonitrile+
-n-Hexane
-1,1-Dichloroethane
-Diisopropyl ether
-tert-Butyl formate
-2,2-Dichloropropane+
-2-Butanone
-Propionitrile+
-Bromochloromethane
-Chloroform
-Dibromofluoromethane+
-Pentafluorobenzene
-1,1-Dichloropropene+
-1,2-Dichloroethane-d4+
-Isobutyl Alcohol
-tert-Amyl methyl ether+
-1,4-Difluorobenzene
-Trichloroethene
-n-Butanol
-Methylcyclohexane+
-1,2-Dichloropropane
-Dibromomethane
-Methyl Methacrylate+
-Bromodichloromethane
-2-Chloroethylvinyl ether
-cis-1,3-Dichloropropene
-2-Nitropropane+
-Toluene-d8
-Toluene
-trans-1,3-Dichloropropene
-4-Methyl-2-pentanol
-Ethyl Methacrylate
-1,1,2-Trichloroethane
-Tetrachloroethene
-1,3-Dichloropropane
-2-Hexanone
-Dibromochloromethane
-1,2-Dibromoethane+
-1,1,1,2-Tetrachloroethane+
-Chlorobenzene-d5+
m,p-Xylenes
-o-Xylene+
-Bromoform
-Isopropylbenzene
-4-Bromofluorobenzene
-Bromobenzene
-1,1,2,2-Tetrachloroethane
-trans-1,4-Dichloro-2-bute+
-2-Chlorotoluene
-tert-Butylbenzene
1,3,5-Trimethylbenzene+
1,2,4-Trimethylbenzene
-sec-Butylbenzene
-1,3-Dichlorobenzene
-1,4-Dichlorobenzene-d4+
-1,2,3-Trimethylbenzene
n-Butylbenzene+
-1,2-Dibromo-3-Chloropropa
-1,3,5-Trichlorobenzene
-1,2,4-Trichlorobenzene
-Hexachlorobutadiene
-Naphthalene
-1,2,3-Trichlorobenzene
-2-Methylnaphthalene
-1-Methylnaphthalene

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17111408

Lab File ID: D120501 BFB Injection Date: 12/05/17

Instrument ID: VOA2 BFB Injection Time: 0851

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	20.5
75	30.0 - 60.0% of mass 95	48.6
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	91.6
175	5.0 - 9.0% of mass 174	7.0 (7.7)1
176	95.0 - 101.0% of mass 174	87.3 (95.3)1
177	5.0 - 9.0% of mass 176	6.0 (6.9)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CCV	CCV	D120502	12/05/17	0915
02	VLCSW-171205	VLCSW-171205	D120505	12/05/17	1029
03	VBLKW-171205	VBLKW-171205	D120507	12/05/17	1118
04	HS17111395-0	HS17111395-03M	D120516	12/05/17	1501
05	HS17111395-0	HS17111395-03M	D120517	12/05/17	1525
06	HS17111408-0	HS17111408-02	D120523	12/05/17	1800
07	HS17111408-0	HS17111408-02	D120524	12/05/17	1828
08	HS17111408-0	HS17111408-07	D120525	12/05/17	1852
09	HS17111408-0	HS17111408-07	D120526	12/05/17	1919
10	CCV_END	CCV_END	D120529	12/05/17	2033
11					
12					
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20					
21					
22					

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17111408

Instrument ID: VOA2 Calibration Date: 12/05/17 Time: 0915

Lab File ID: D120502 Init. Calib. Date(s): 12/02/17 12/02/17

Init. Calib. Times: 1018 1332

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
1,1,1-Trichloroethane	0.7140000	0.7348156	0.7348156	0.1	2.92	20.00	AVRG
1,1,1,2-Tetrachloroethane	0.3800000	0.3738242	0.3738242	0.1	-1.62	20.00	AVRG
1,1,2,2-Tetrachloroethane	0.9920000	0.8786695	0.8786695	0.3	-11.42	20.00	AVRG
1,1,2-Trichloroethane	0.2870000	0.2641994	0.2641994	0.1	-7.94	20.00	AVRG
1,1-Dichloropropene	46.904026	50.000000	0.3857204	0.1	-6.19	20.00	LINR
1,1-Dichloroethane	0.9630000	0.8967046	0.8967046	0.2	-6.88	20.00	AVRG
1,1-Dichloroethene	0.4530000	0.4302895	0.4302895	0.1	-5.01	20.00	AVRG
1,2,3-Trichloropropane	1.0460000	0.9637660	0.9637660	0.1	-7.86	20.00	AVRG
1,2,4-Trimethylbenzene	52.988644	50.000000	2.6178162	0.1	5.98	20.00	LINR
1,2,3-Trichlorobenzene	0.7470000	0.7694577	0.7694577	0.1	3.01	20.00	AVRG
1,2,4-Trichlorobenzene	0.8770000	0.9421706	0.9421706	0.2	7.43	20.00	AVRG
1,2-Dibromo-3-Chloropropane	52.318903	50.000000	0.1618290	0.05	4.64	20.00	LINR
1,2-Dichloroethane	0.4750000	0.4683264	0.4683264	0.1	-1.40	20.00	AVRG
1,2-Dichloropropane	0.3650000	0.3488195	0.3488195	0.1	-4.43	20.00	AVRG
1,2-Dibromoethane	0.3610000	0.3334317	0.3334317	0.1	-7.64	20.00	AVRG
1,2-Dichlorobenzene	1.6240000	1.4652701	1.4652701	0.4	-9.77	20.00	AVRG
1,3,5-Trimethylbenzene	54.252731	50.000000	2.6113979	0.1	8.50	20.00	LINR
1,3-Dichloropropane	0.5680000	0.5305385	0.5305385	0.1	-6.60	20.00	AVRG
1,3-Dichlorobenzene	1.7060000	1.5375514	1.5375514	0.6	-9.87	20.00	AVRG
1,4-Dichlorobenzene	1.6680000	1.4396255	1.4396255	0.4	-13.69	20.00	AVRG
2,2-Dichloropropane	0.6800000	0.7338697	0.7338697	0.1	7.92	20.00	AVRG
2-Butanone	0.2160000	0.2106291	0.2106291	0.1	-2.49	20.00	AVRG
2-Hexanone	0.2430000	0.2364177	0.2364177	0.1	-2.71	20.00	AVRG
2-Chlorotoluene	2.5700000	2.2418353	2.2418353	0.1	-12.77	20.00	AVRG
4-Chlorotoluene	52.253361	50.000000	2.4697499	0.1	4.51	20.00	LINR
p-Isopropyltoluene	2.7990000	2.4864921	2.4864921	0.1	-11.16	20.00	AVRG
Acetone	118.63189	100.00000	0.1586143	0.1	18.63	20.00	2RDR
Benzene	1.2510000	1.1499312	1.1499312	0.5	-8.08	20.00	AVRG
Bromodichloromethane	0.4180000	0.4432896	0.4432896	0.2	6.05	20.00	AVRG
Bromobenzene	1.0100000	0.8994967	0.8994967	0.1	-10.94	20.00	AVRG
Bromochloromethane	0.2390000	0.2503468	0.2503468	0.1	4.75	20.00	AVRG
Bromomethane	44.178180	50.000000	0.3552278	0.1	-11.64	20.00	2RDR
Carbon Disulfide	0.9190000	0.9749824	0.9749824	0.1	6.09	20.00	AVRG
Bromoform	0.2710000	0.2970811	0.2970811	0.1	9.62	20.00	AVRG
Chloroethane	46.573205	50.000000	0.3714302	0.1	-6.85	20.00	2RDR
Carbon Tetrachloride	48.439165	50.000000	0.4137530	0.1	-3.12	20.00	LINR
Chloromethane	48.119054	50.000000	0.8750518	0.1	-3.76	20.00	LINR
Chloroform	0.8720000	0.8031747	0.8031747	0.2	-7.89	20.00	AVRG
Chlorobenzene	0.9770000	0.9034336	0.9034336	0.5	-7.53	20.00	AVRG
cis-1,2-Dichloroethene	0.5160000	0.4769058	0.4769058	0.1	-7.58	20.00	AVRG
cis-1,3-Dichloropropene	0.4940000	0.5198126	0.5198126	0.2	5.22	20.00	AVRG
Dichlorodifluoromethane	0.4520000	0.4881173	0.4881173	0.1	7.99	20.00	AVRG

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1711140

Instrument ID: VOA2 Calibration Date: 12/05/17 Time: 0915

Lab File ID: D120502 Init. Calib. Date(s): 12/02/17 12/02/17

Init. Calib. Times: 1018 1332

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Dibromochloromethane	0.4080000	0.4215581	0.4215581	0.1	3.32	20.00	AVRG
Dibromomethane	0.1890000	0.1939890	0.1939890	0.1	2.64	20.00	AVRG
Ethylbenzene	0.5030000	0.4810889	0.4810889	0.1	-4.36	20.00	AVRG
Hexachlorobutadiene	55.159046	50.000000	0.4138661	0.1	10.32	20.00	LINR
m,p-Xylenes	0.6410000	0.5858562	0.5858562	0.1	-8.60	20.00	AVRG
o-Xylene	0.6590000	0.6127614	0.6127614	0.3	-7.02	20.00	AVRG
Isopropylbenzene	50.931005	50.000000	1.5365913	0.1	1.86	20.00	2RDR
Methylene Chloride	0.4980000	0.4495595	0.4495595	0.1	-9.73	20.00	AVRG
n-Propylbenzene	52.953690	50.000000	3.3819469	0.1	5.91	20.00	LINR
n-Butylbenzene	2.0380000	1.9452649	1.9452649	0.05	-4.55	20.00	AVRG
Naphthalene	56.124245	50.000000	2.1174536	0.2	12.25	20.00	LINR
Styrene	1.0750000	0.9995151	0.9995151	0.3	-7.02	20.00	AVRG
sec-Butylbenzene	54.162002	50.000000	2.9453367	0.1	8.32	20.00	LINR
tert-Butylbenzene	54.413499	50.000000	2.2197517	0.1	8.83	20.00	LINR
trans-1,2-Dichloroethene	0.4300000	0.4186636	0.4186636	0.1	-2.64	20.00	AVRG
Toluene	1.5440000	1.3782493	1.3782493	0.4	-10.74	20.00	AVRG
trans-1,3-Dichloropropene	0.4290000	0.4691623	0.4691623	0.1	9.36	20.00	AVRG
Tetrachloroethene	0.3160000	0.3168196	0.3168196	0.2	0.26	20.00	AVRG
Trichlorofluoromethane	0.6950000	0.7259734	0.7259734	0.1	4.46	20.00	AVRG
Trichloroethene	0.3440000	0.3409854	0.3409854	0.2	-0.88	20.00	AVRG
Vinyl Chloride	52.041447	50.000000	0.6492315	0.1	4.08	20.00	LINR
Freon TF	0.4090000	0.4366813	0.4366813	0.1	6.77	20.00	AVRG
4-Methyl-2-Pentanone	0.3940000	0.3700332	0.3700332	0.1	-6.08	20.00	AVRG
4-Bromofluorobenzene	0.4750000	0.4858396	0.4858396	0.1	2.28	20.00	AVRG
Toluene-d8	1.2370000	1.2609170	1.2609170	0.1	1.93	20.00	AVRG
Dibromofluoromethane	0.4940000	0.4287625	0.4287625	0.1	-13.20	20.00	AVRG
1,2-Dichloroethane-d4	0.5760000	0.5620980	0.5620980	0.1	-2.41	20.00	AVRG

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17111408

Instrument ID: VOA2 Calibration Date: 12/05/17 Time: 2033

Lab File ID: D120529 Init. Calib. Date(s): 12/02/17 12/02/17

Init. Calib. Times: 1018 1332

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
1,1,1-Trichloroethane	0.7140000	0.7587603	0.7587603	0.1	6.27	20.00	AVRG
1,1,1,2-Tetrachloroethane	0.3800000	0.3715192	0.3715192	0.1	-2.23	20.00	AVRG
1,1,2,2-Tetrachloroethane	0.9920000	0.8691519	0.8691519	0.3	-12.38	20.00	AVRG
1,1,2-Trichloroethane	0.2870000	0.2569974	0.2569974	0.1	-10.45	20.00	AVRG
1,1-Dichloropropene	48.152052	50.000000	0.3959373	0.1	-3.70	20.00	LINR
1,1-Dichloroethane	0.9630000	0.9028151	0.9028151	0.2	-6.25	20.00	AVRG
1,1-Dichloroethene	0.4530000	0.4150572	0.4150572	0.1	-8.38	20.00	AVRG
1,2,3-Trichloropropane	1.0460000	0.9352348	0.9352348	0.1	-10.59	20.00	AVRG
1,2,4-Trimethylbenzene	52.427222	50.000000	2.5908468	0.1	4.85	20.00	LINR
1,2,3-Trichlorobenzene	0.7470000	0.7614320	0.7614320	0.1	1.93	20.00	AVRG
1,2,4-Trichlorobenzene	0.8770000	0.9075559	0.9075559	0.2	3.48	20.00	AVRG
1,2-Dibromo-3-Chloropropane	52.446730	50.000000	0.1622195	0.05	4.89	20.00	LINR
1,2-Dichloroethane	0.4750000	0.4514197	0.4514197	0.1	-4.96	20.00	AVRG
1,2-Dichloropropane	0.3650000	0.3298956	0.3298956	0.1	-9.62	20.00	AVRG
1,2-Dibromoethane	0.3610000	0.3313192	0.3313192	0.1	-8.22	20.00	AVRG
1,2-Dichlorobenzene	1.6240000	1.4494955	1.4494955	0.4	-10.74	20.00	AVRG
1,3,5-Trimethylbenzene	53.873056	50.000000	2.5937656	0.1	7.75	20.00	LINR
1,3-Dichloropropane	0.5680000	0.5128458	0.5128458	0.1	-9.71	20.00	AVRG
1,3-Dichlorobenzene	1.7060000	1.5028077	1.5028077	0.6	-11.91	20.00	AVRG
1,4-Dichlorobenzene	1.6680000	1.4185838	1.4185838	0.4	-14.95	20.00	AVRG
2,2-Dichloropropane	0.6800000	0.6693682	0.6693682	0.1	-1.56	20.00	AVRG
2-Butanone	0.2160000	0.2080957	0.2080957	0.1	-3.66	20.00	AVRG
2-Hexanone	0.2430000	0.2342610	0.2342610	0.1	-3.60	20.00	AVRG
2-Chlorotoluene	2.5700000	2.2411268	2.2411268	0.1	-12.80	20.00	AVRG
4-Chlorotoluene	51.967190	50.000000	2.4566202	0.1	3.93	20.00	LINR
p-Isopropyltoluene	2.7990000	2.4926111	2.4926111	0.1	-10.95	20.00	AVRG
Acetone	105.84616	100.00000	0.1415407	0.1	5.85	20.00	2RDR
Benzene	1.2510000	1.1485356	1.1485356	0.5	-8.19	20.00	AVRG
Bromodichloromethane	0.4180000	0.4314446	0.4314446	0.2	3.22	20.00	AVRG
Bromobenzene	1.0100000	0.9028981	0.9028981	0.1	-10.60	20.00	AVRG
Bromochloromethane	0.2390000	0.2447603	0.2447603	0.1	2.41	20.00	AVRG
Bromomethane	44.486343	50.000000	0.3571857	0.1	-11.03	20.00	2RDR
Carbon Disulfide	0.9190000	0.8287675	0.8287675	0.1	-9.82	20.00	AVRG
Bromoform	0.2710000	0.2890465	0.2890465	0.1	6.66	20.00	AVRG
Chloroethane	48.678087	50.000000	0.3863010	0.1	-2.64	20.00	2RDR
Carbon Tetrachloride	50.892820	50.000000	0.4346099	0.1	1.78	20.00	LINR
Chloromethane	47.999199	50.000000	0.8729768	0.1	-4.00	20.00	LINR
Chloroform	0.8720000	0.8073599	0.8073599	0.2	-7.41	20.00	AVRG
Chlorobenzene	0.9770000	0.8961851	0.8961851	0.5	-8.27	20.00	AVRG
cis-1,2-Dichloroethene	0.5160000	0.4864206	0.4864206	0.1	-5.73	20.00	AVRG
cis-1,3-Dichloropropene	0.4940000	0.4932160	0.4932160	0.2	-0.16	20.00	AVRG
Dichlorodifluoromethane	0.4520000	0.4798187	0.4798187	0.1	6.15	20.00	AVRG

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1711140

Instrument ID: VOA2 Calibration Date: 12/05/17 Time: 2033

Lab File ID: D120529 Init. Calib. Date(s): 12/02/17 12/02/17

Init. Calib. Times: 1018 1332

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Dibromochloromethane	0.4080000	0.4076133	0.4076133	0.1	-0.09	20.00	AVRG
Dibromomethane	0.1890000	0.1857868	0.1857868	0.1	-1.70	20.00	AVRG
Ethylbenzene	0.5030000	0.4814267	0.4814267	0.1	-4.29	20.00	AVRG
Hexachlorobutadiene	54.496984	50.000000	0.4090690	0.1	8.99	20.00	LINR
m,p-Xylenes	0.6410000	0.5816905	0.5816905	0.1	-9.25	20.00	AVRG
o-Xylene	0.6590000	0.6079333	0.6079333	0.3	-7.75	20.00	AVRG
Isopropylbenzene	50.975737	50.000000	1.5378249	0.1	1.95	20.00	2RDR
Methylene Chloride	0.4980000	0.4421640	0.4421640	0.1	-11.21	20.00	AVRG
n-Propylbenzene	53.086248	50.000000	3.3899933	0.1	6.17	20.00	LINR
n-Butylbenzene	2.0380000	1.9050968	1.9050968	0.05	-6.52	20.00	AVRG
Naphthalene	56.654140	50.000000	2.1367011	0.2	13.31	20.00	LINR
Styrene	1.0750000	0.9925292	0.9925292	0.3	-7.67	20.00	AVRG
sec-Butylbenzene	54.147676	50.000000	2.9445811	0.1	8.30	20.00	LINR
tert-Butylbenzene	54.035748	50.000000	2.2047835	0.1	8.07	20.00	LINR
trans-1,2-Dichloroethene	0.4300000	0.4109694	0.4109694	0.1	-4.42	20.00	AVRG
Toluene	1.5440000	1.3854872	1.3854872	0.4	-10.27	20.00	AVRG
trans-1,3-Dichloropropene	0.4290000	0.4463605	0.4463605	0.1	4.05	20.00	AVRG
Tetrachloroethene	0.3160000	0.3128300	0.3128300	0.2	-1.00	20.00	AVRG
Trichlorofluoromethane	0.6950000	0.7471114	0.7471114	0.1	7.50	20.00	AVRG
Trichloroethene	0.3440000	0.3439362	0.3439362	0.2	-0.02	20.00	AVRG
Vinyl Chloride	54.238801	50.000000	0.6755637	0.1	8.48	20.00	LINR
Freon TF	0.4090000	0.4221836	0.4221836	0.1	3.22	20.00	AVRG
4-Methyl-2-Pentanone	0.3940000	0.3672397	0.3672397	0.1	-6.79	20.00	AVRG
4-Bromofluorobenzene	0.4750000	0.4851389	0.4851389	0.1	2.13	20.00	AVRG
Toluene-d8	1.2370000	1.2594388	1.2594388	0.1	1.81	20.00	AVRG
Dibromofluoromethane	0.4940000	0.4328968	0.4328968	0.1	-12.37	20.00	AVRG
1,2-Dichloroethane-d4	0.5760000	0.5669756	0.5669756	0.1	-1.57	20.00	AVRG

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17111408

Lab File ID (Standard): D120502 Date Analyzed: 12/05/17

Instrument ID: VOA2 Time Analyzed: 0915

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

		IS1(CBZ) AREA #	RT #	IS2(DFB) AREA #	RT #	IS3(DCB) AREA #	RT #
	12 HOUR STD	294906	9.53	327797	6.58	139289	11.84
	UPPER LIMIT	589812	10.03	655594	7.08	278578	12.34
	LOWER LIMIT	147453	9.03	163899	6.08	69645	11.34
	CLIENT SAMPLE NO.						
01	VLCSW-171205	299672	9.53	325295	6.58	138464	11.84
02	VBLKW-171205	293643	9.53	325460	6.57	133109	11.83
03	HS17111395-03	293530	9.53	328146	6.58	136244	11.84
04	HS17111395-03	291351	9.53	322433	6.57	134689	11.84
05	HS17111408-02	294231	9.53	316808	6.58	133994	11.84
06	HS17111408-02	286832	9.53	322757	6.57	129699	11.83
07	HS17111408-07	287395	9.53	319008	6.57	130055	11.84
08	HS17111408-07	278849	9.52	319560	6.57	127682	11.83
09							
10							
11							
12							
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16							
17							
18							
19							
20							

IS1 (CBZ) = Chlorobenzene-d5
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17111408

Lab File ID (Standard): D120502 Date Analyzed: 12/05/17

Instrument ID: VOA2 Time Analyzed: 0915

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

		IS4 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	222004	5.78				
	UPPER LIMIT	444008	6.28				
	LOWER LIMIT	111002	5.28				
	CLIENT SAMPLE NO.						
01	VLCSW-171205	225129	5.79				
02	VBLKW-171205	234893	5.78				
03	HS17111395-03	223445	5.78				
04	HS17111395-03	219234	5.79				
05	HS17111408-02	236276	5.78				
06	HS17111408-02	229864	5.78				
07	HS17111408-07	228384	5.78				
08	HS17111408-07	238046	5.78				
09							
10							
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17							
18							
19							
20							

IS4 = Pentafluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM VIII VOA

MSVOA02 -Logbook

Batch: 30139 **Analyst:** Anjana Poluri

Date: 12-05-2017 **Reviewer:**

Method: 8260 **Laboratory:** Houston

Comments:

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
1	BFB	TUNE	12-05-2017 08:51 am	1.00	50 mL	50 mL	D120501.D	Liquid	Y	NA
	Auto find/purged									
2	CCV	CCV	12-05-2017 09:15 am	1.00	50 mL	50 mL	D120502.D	Liquid	Y	NA
	10 uL cal std/50 ml DI									
3	CCV	CCV	12-05-2017 09:40 am	1.00	50 mL	50 mL	D120503.D	Liquid	Y	NA
	10 uL cal std/50 ml DI									
4	CCB	SAMP	12-05-2017 10:04 am	1.00	50 mL	50 mL	D120504.D	Liquid	Y	NA
	CCB									
5	VLCSW-171205	LCS	12-05-2017 10:29 am	1.00	50 mL	50 mL	D120505.D	Liquid	Y	NA
	10 uL cal std/50 ml DI									
6	BLK	SAMP	12-05-2017 10:53 am	1.00	50 mL	50 mL	D120506.D	Liquid	Y	NA
	Cleanup blk									
7	VBLKW-171205	MBLK	12-05-2017 11:18 am	1.00	50 mL	50 mL	D120507.D	Liquid	Y	NA
8	HS17120012-03	SAMP	12-05-2017 11:42 am	1.00	50 mL	50 mL	D120508.D	Liquid	Y	<2
9	HS17120018-02	SAMP	12-05-2017 12:07 pm	1.00	50 mL	50 mL	D120509.D	Liquid	Y	<2
10	HS17120012-01	SAMP	12-05-2017 12:31 pm	1.00	50 mL	50 mL	D120510.D	Liquid	Y	<2
11	HS17120012-02	SAMP	12-05-2017 12:56 pm	1.00	50 mL	50 mL	D120511.D	Liquid	Y	<2
12	HS17120018-01	SAMP	12-05-2017 01:20 pm	1.00	50 mL	50 mL	D120512.D	Liquid	Y	<2
13	HS17111395-04	SAMP	12-05-2017 01:45 pm	1.00	50 mL	50 mL	D120513.D	Liquid	Y	<2
14	HS17111395-03	SAMP	12-05-2017 02:09 pm	1.00	50 mL	50 mL	D120514.D	Liquid	Y	<2
15	HS17111395-03	SAMP	12-05-2017 02:36 pm	5.00	10 mL	50 mL	D120515.D	Liquid	Y	<2
16	HS17111395-03MS	MS	12-05-2017 03:01 pm	1.00	50 mL	50 mL	D120516.D	Liquid	Y	<2
	8 uL cal std/40 ml sample									
17	HS17111395-03MSD	MSD	12-05-2017 03:25 pm	1.00	50 mL	50 mL	D120517.D	Liquid	Y	<2
	8 uL cal std/40 ml sample									
18	HS17111425-09	SAMP	12-05-2017 03:52 pm	10.00	5 mL	50 mL	D120518.D	Liquid	Y	<2
19	HS17111395-01	SAMP	12-05-2017 04:17 pm	1.00	50 mL	50 mL	D120519.D	Liquid	Y	<2
20	HS17111395-01	SAMP	12-05-2017 04:44 pm	5.00	10 mL	50 mL	D120520.D	Liquid	Y	<2
21	HS17111395-02	SAMP	12-05-2017 05:09 pm	1.00	50 mL	50 mL	D120521.D	Liquid	Y	<2
22	HS17111395-02	SAMP	12-05-2017 05:36 pm	5.00	10 mL	50 mL	D120522.D	Liquid	Y	<2
23	HS17111408-02	SAMP	12-05-2017 06:00 pm	1.00	50 mL	50 mL	D120523.D	Liquid	Y	<2
24	HS17111408-02	SAMP	12-05-2017 06:28 pm	5.00	10 mL	50 mL	D120524.D	Liquid	Y	<2
25	HS17111408-07	SAMP	12-05-2017 06:52 pm	1.00	50 mL	50 mL	D120525.D	Liquid	Y	<2
26	HS17111408-07	SAMP	12-05-2017 07:19 pm	5.00	10 mL	50 mL	D120526.D	Liquid	Y	<2
27	HS17120020-04	SAMP	12-05-2017 07:44 pm	1.00	50 mL	50 mL	D120527.D	Liquid	Y	<2
28	HS17120020-05	SAMP	12-05-2017 08:08 pm	1.00	50 mL	50 mL	D120528.D	Liquid	Y	<2
29	CCV_END	CCV	12-05-2017 08:33 pm	1.00	50 mL	50 mL	D120529.D	Liquid	Y	<2
30	BFB	TUNE	12-05-2017 08:57 pm	1.00	50 mL	50 mL	E120501.D	Liquid	Y	NA
	Auto find/purged									
31	CCV	CCV	12-05-2017 09:22 pm	1.00	50 mL	50 mL	E120502.D	Liquid	Y	NA
	10 uL cal std/50 ml DI									
32	CCV	CCV	12-05-2017 09:47 pm	1.00	50 mL	50 mL	E120503.D	Liquid	Y	NA
	10 uL cal std/50 ml DI									
33	CCB	SAMP	12-05-2017 10:11 pm	1.00	50 mL	50 mL	E120504.D	Liquid	Y	NA
	Cleanup blk									
34	VLCSW-171205	LCS	12-05-2017 10:36 pm	1.00	50 mL	50 mL	E120505.D	Liquid	Y	NA
	10 uL cal std/50 ml DI									

MSVOA02 -Logbook

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
35	BLK	SAMP	12-05-2017 11:00 pm	1.00	50 mL	50 mL	E120506.D	Liquid	Y	NA
36	VBLKW-171205	MBLK	12-05-2017 11:25 pm	1.00	50 mL	50 mL	E120507.D	Liquid	Y	NA
37	HS17120107-02	SAMP	12-05-2017 11:49 pm	1.00	50 mL	50 mL	E120508.D	Liquid	Y	<2
38	HS17120107-04	SAMP	12-06-2017 12:14 am	1.00	50 mL	50 mL	E120509.D	Liquid	Y	<2
39	HS17120107-06	SAMP	12-06-2017 12:38 am	1.00	50 mL	50 mL	E120510.D	Liquid	Y	<2
40	HS17120107-09	SAMP	12-06-2017 01:03 am	1.00	50 mL	50 mL	E120511.D	Liquid	Y	<2
41	HS17120105-01	SAMP	12-06-2017 01:28 am	1.00	50 mL	50 mL	E120512.D	Liquid	Y	<2
42	HS17120178-01	SAMP	12-06-2017 01:52 am	1.00	50 mL	50 mL	E120513.D	Liquid	Y	<2
43	HS17120178-02	SAMP	12-06-2017 02:17 am	1.00	50 mL	50 mL	E120514.D	Liquid	Y	<2
44	HS17120178-03	SAMP	12-06-2017 02:41 am	1.00	50 mL	50 mL	E120515.D	Liquid	Y	<2
45	HS17120105-01MS	MS	12-06-2017 03:06 am	1.00	50 mL	50 mL	E120516.D	Liquid	Y	<2
	8 uL cal std/40 ml sample									
46	HS17120105-01MSD	MSD	12-06-2017 03:30 am	1.00	50 mL	50 mL	E120517.D	Liquid	Y	<2
	8 uL cal std/40 ml sample									
47	HS17111425-10	SAMP	12-06-2017 03:55 am	1.00	50 mL	50 mL	E120518.D	Liquid	Y	<2
48	HS17120088-01	SAMP	12-06-2017 04:20 am	1.00	50 mL	50 mL	E120519.D	Liquid	Y	<2
49	HS17120105-02	SAMP	12-06-2017 04:44 am	1.00	50 mL	50 mL	E120520.D	Liquid	Y	<2
50	HS17120105-03	SAMP	12-06-2017 05:09 am	1.00	50 mL	50 mL	E120521.D	Liquid	Y	<2
51	HS17120105-04	SAMP	12-06-2017 05:34 am	1.00	50 mL	50 mL	E120522.D	Liquid	Y	<2
52	HS17120105-05	SAMP	12-06-2017 05:58 am	1.00	50 mL	50 mL	E120523.D	Liquid	Y	<2
53	HS17120020-06	SAMP	12-06-2017 06:23 am	1.00	50 mL	50 mL	E120524.D	Liquid	Y	<2
54	HS17120014-07	SAMP	12-06-2017 06:47 am	1.00	50 mL	50 mL	E120525.D	Liquid	Y	<2
55	HS17120028-05	SAMP	12-06-2017 07:12 am	1.00	50 mL	50 mL	E120526.D	Liquid	Y	<2
56	HS17120028-06	SAMP	12-06-2017 07:37 am	1.00	50 mL	50 mL	E120527.D	Liquid	Y	<2
57	HS17120028-07	SAMP	12-06-2017 08:01 am	1.00	50 mL	50 mL	E120528.D	Liquid	Y	<2
58	HS17120028-08	SAMP	12-06-2017 08:26 am	1.00	50 mL	50 mL	E120529.D	Liquid	Y	<2

Chemical	Value
SURR ID	29814-95-03
IS ID	29814-95-04
LCS/MS ID	29814-95-01
CAL STD ID	29814-95-01
BFB ID	29814-95-03
pH Paper	634-37-03

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120501.D Page 2

Date : 05-DEC-2017 08:51

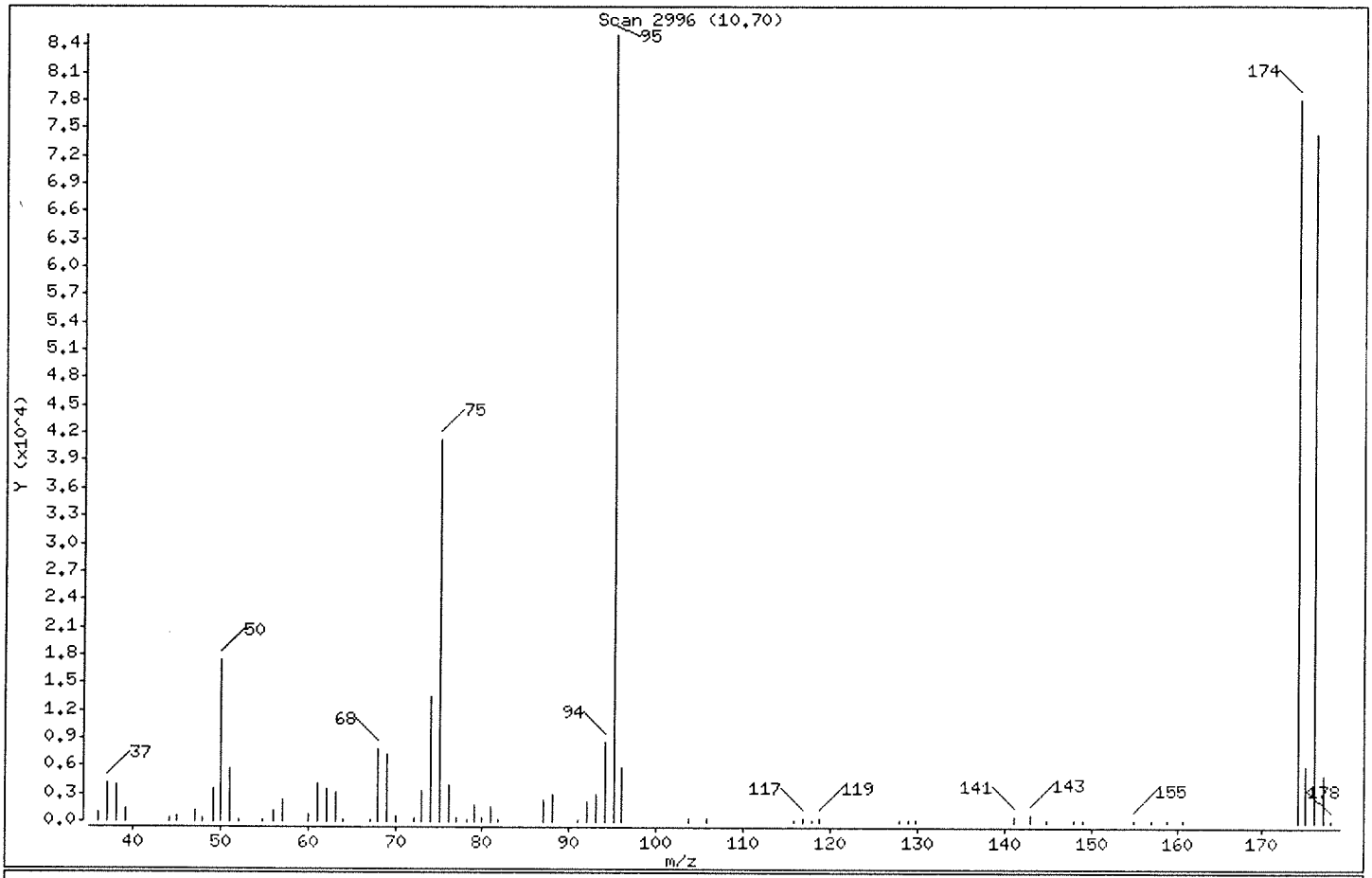
Client ID: BFB Instrument: VOA2.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0 Operator: AP

Column phase: DB624 Column diameter: 0.18

1 bfb



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	20.49
75	30.00 - 60.00% of mass 95	48.56
96	5.00 - 9.00% of mass 95	6.83
173	Less than 2.00% of mass 174	0.00 (0.00)
174	Greater than 50.00% of mass 95	91.62
175	5.00 - 9.00% of mass 174	7.02 (7.67)
176	95.00 - 101.00% of mass 174	87.29 (95.28)
177	5.00 - 9.00% of mass 176	5.98 (6.85)

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120501.D

Date : 05-DEC-2017 08:51

Client ID: BFB Instrument: VOA2.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0 Operator: AP

Column phase: DB624 Column diameter: 0.18

Data File: D120501.D
Spectrum: Scan 2996 (10.70)
Location of Maximum: 95.10
Number of points: 66

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	932	62.10	3492	81.70	273	129.80	215
37.10	4029	63.10	3219	87.00	2387	141.00	673
38.10	3933	64.10	278	88.00	2981	143.00	689
39.10	1291	67.10	219	91.00	292	144.90	214
44.10	379	68.10	7800	92.00	2058	148.00	163
45.10	516	69.10	7280	93.10	2986	149.00	204
47.10	1228	70.10	580	94.10	8604	154.90	234
47.90	482	72.10	340	95.10	85032	156.90	217
49.10	3475	73.00	3301	96.00	5805	158.90	167
50.10	17424	74.10	13517	103.80	397	160.80	186
51.10	5615	75.10	41288	105.90	306	174.00	77904
52.10	179	76.10	3930	115.80	179	175.00	5972
54.90	273	77.00	402	116.90	458	176.00	74224
56.00	1146	78.20	282	117.90	290	177.00	5085
57.10	2408	79.00	1846	118.80	387	177.90	236
60.00	813	80.00	411	128.00	226		
61.10	4070	81.00	1485	129.00	166		

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120501.D

Date : 05-DEC-2017 08:51

Client ID: BFB

Instrument: VOA2.i

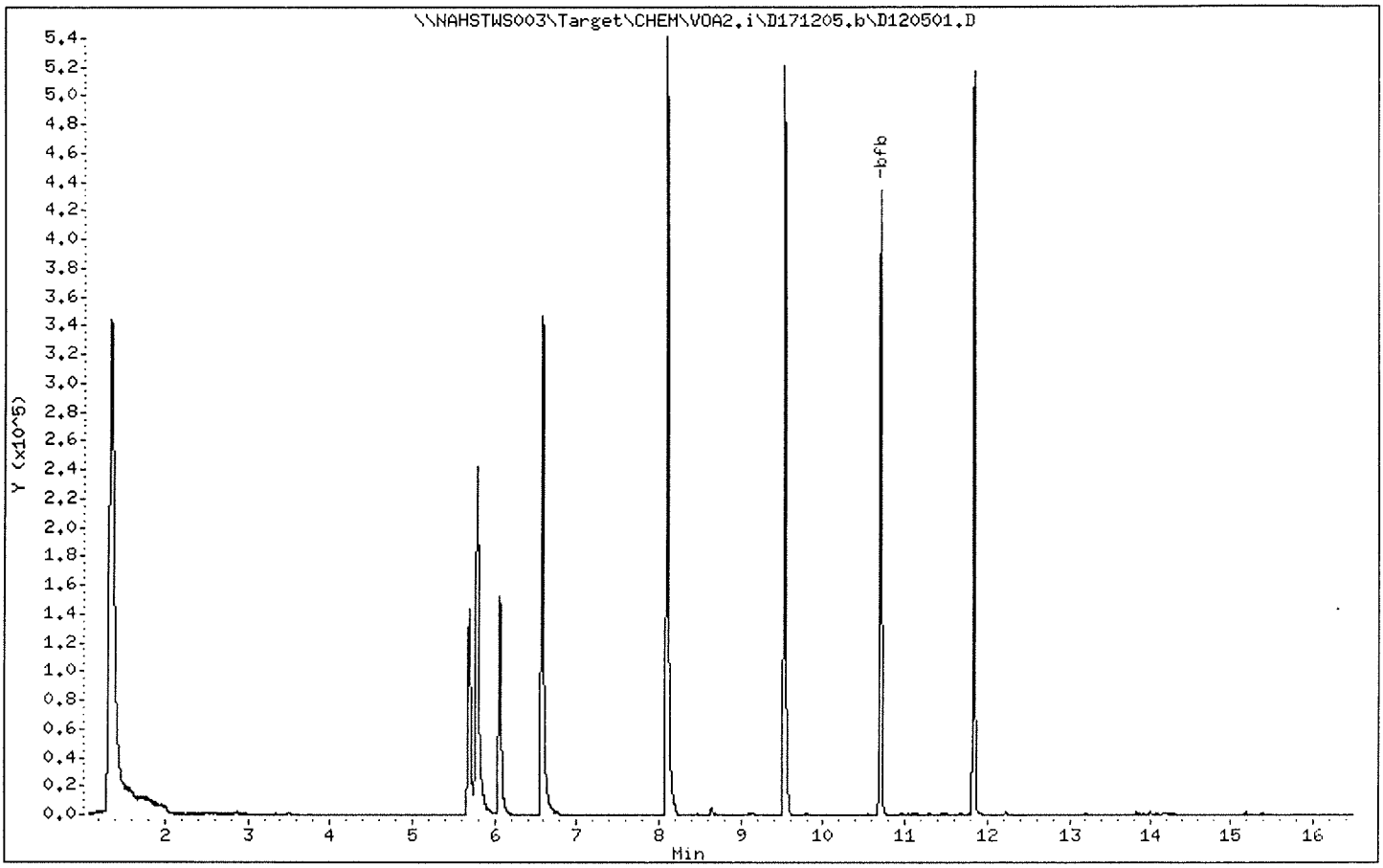
Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: AP

Column phase: DB624

Column diameter: 0.18



ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120502.D
Lab Smp Id: CCV Client Smp ID: CCV
Inj Date : 05-DEC-2017 09:15
Operator : AP Inst ID: VOA2.i
Smp Info : CCV;CCV;2;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\chem\voa2.i\D171205.b\8260LL.m
Meth Date : 01-Feb-2018 16:10 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 11:31 Cal File: D120205.D
Als bottle: 2 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

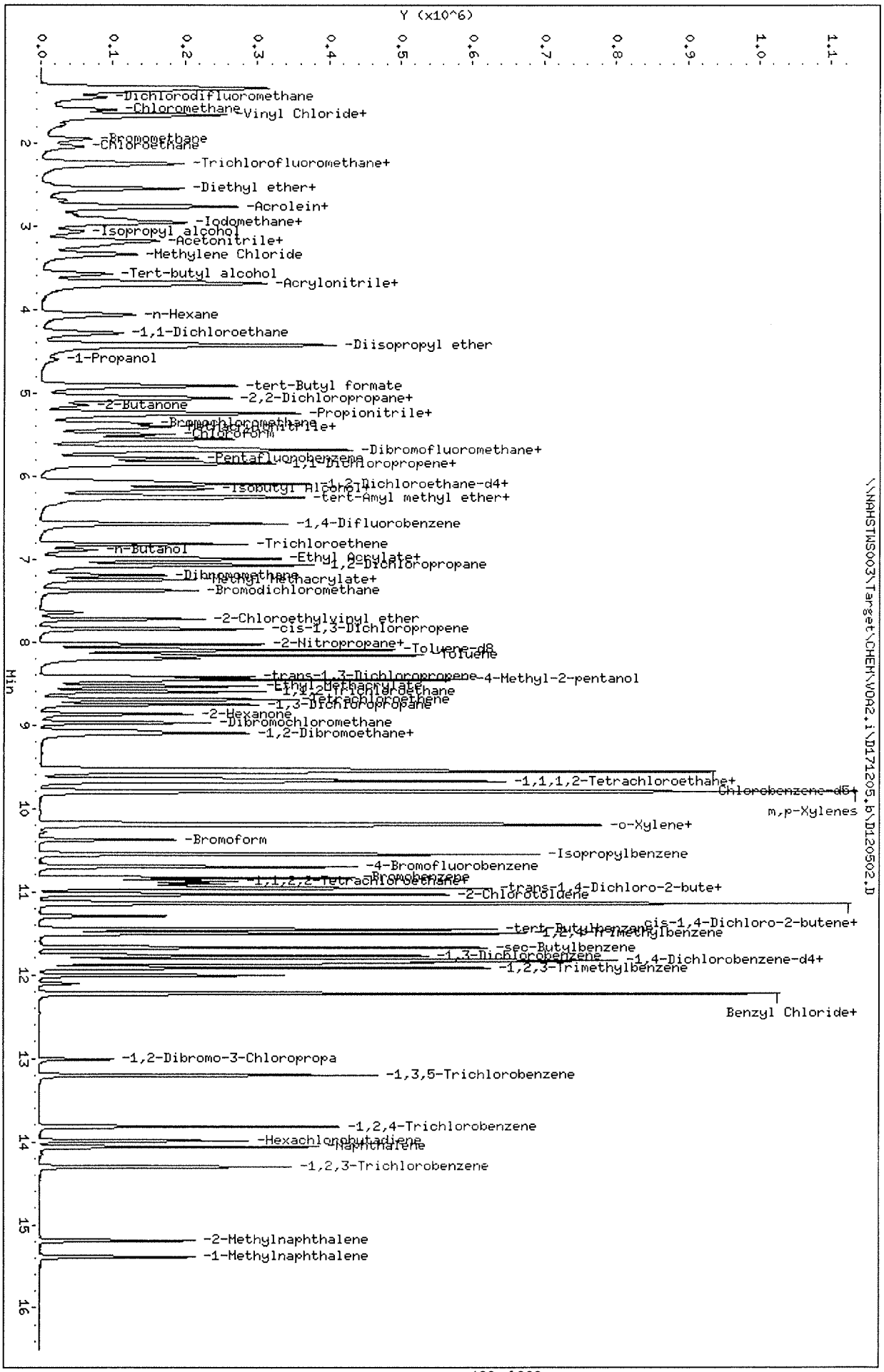
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL AMT (ug/l)	AMOUNTS ON-COL (ug/l)
31 1,1,1-Trichloroethane	97	5.654	5.654	(0.978)	163132	50.0000	51.47
60 1,1,1,2-Tetrachloroethane	131	9.649	9.649	(1.013)	110243	50.0000	49.17
68 1,1,2,2-Tetrachloroethane	83	10.875	10.875	(0.918)	122389	50.0000	44.26
53 1,1,2-Trichloroethane	83	8.597	8.597	(0.902)	77914	50.0000	46.01
32 1,1-Dichloropropene	75	5.859	5.859	(0.891)	126438	50.0000	46.90
22 1,1-Dichloroethane	63	4.287	4.287	(0.741)	199072	50.0000	46.54
11 1,1-Dichloroethene	96	2.753	2.753	(0.476)	95526	50.0000	47.53
71 1,2,3-Trichloropropane	75	10.904	10.904	(0.921)	134242	50.0000	46.06
79 1,2,4-Trimethylbenzene	105	11.504	11.504	(0.972)	364633	50.0000	52.98
93 1,2,3-Trichlorobenzene	182	14.305	14.305	(1.208)	107177	50.0000	51.47
90 1,2,4-Trichlorobenzene	180	13.821	13.821	(1.167)	131234	50.0000	53.71
89 1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	22541	50.0000	52.31
33 1,2-Dichloroethane	62	6.148	6.148	(0.935)	153516	50.0000	49.34
42 1,2-Dichloropropane	63	7.069	7.069	(1.075)	114342	50.0000	47.76
57 1,2-Dibromoethane	107	9.071	9.071	(0.952)	98331	50.0000	46.20
88 1,2-Dichlorobenzene	146	12.226	12.226	(1.033)	204096	50.0000	45.10
75 1,3,5-Trimethylbenzene	105	11.135	11.135	(0.940)	363739	50.0000	54.25
54 1,3-Dichloropropane	76	8.757	8.757	(0.919)	156459	50.0000	46.72
83 1,3-Dichlorobenzene	146	11.770	11.770	(0.994)	214164	50.0000	45.05
84 1,4-Dichlorobenzene	146	11.863	11.863	(1.002)	200524	50.0000	43.16
26 2,2-Dichloropropane	77	5.044	5.044	(0.872)	162922	50.0000	53.94

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120502.D Page 2
Report Date: 01-Feb-2018 16:10

			QUANT SIG					AMOUNTS	
		Compounds	MASS	RT	EXP RT	REL RT	RESPONSE	CAL-AMT (ug/l)	ON-COL (ug/l)
	24	2-Butanone	43	5.144	5.144	(0.890)	93521	100.000	97.34
	52	2-Hexanone	43	8.869	8.869	(0.931)	139442	100.000	97.09
	76	2-Chlorotoluene	91	11.032	11.032	(0.932)	312263	50.0000	43.60
	77	4-Chlorotoluene	91	11.141	11.141	(0.941)	344009	50.0000	52.25
	45	4-Methyl-2-Pentanone	43	8.029	8.029	(0.843)	218250	100.000	93.78
	10	Acetone	43	2.859	2.859	(0.494)	70426	100.000	118.63
	37	Benzene	78	6.097	6.097	(0.927)	376944	50.0000	45.96
	39	Bromodichloromethane	83	7.380	7.380	(1.122)	145309	50.0000	53.02
	74	Bromobenzene	156	10.833	10.833	(0.915)	125290	50.0000	44.51
	29	Bromochloromethane	128	5.372	5.372	(0.929)	55578	50.0000	52.32
	6	Bromomethane	94	1.951	1.951	(0.337)	78862	50.0000	44.17
	19	Carbon Disulfide	76	2.958	2.958	(0.512)	432900	100.000	106.04
	66	Bromoform	173	10.377	10.377	(1.089)	87611	50.0000	54.75
	7	Chloroethane	64	2.041	2.041	(0.353)	82459	50.0000	46.57
	34	Carbon Tetrachloride	117	5.837	5.837	(0.888)	135627	50.0000	48.43
	3	Chloromethane	50	1.604	1.604	(0.278)	194265	50.0000	48.11
	28	Chloroform	83	5.497	5.497	(0.951)	178308	50.0000	46.06
	59	Chlorobenzene	112	9.556	9.556	(1.003)	266428	50.0000	46.23
	27	cis-1,2-Dichloroethene	96	5.073	5.073	(0.877)	105875	50.0000	46.21
	46	cis-1,3-Dichloropropene	75	7.842	7.842	(1.193)	170393	50.0000	52.65
	2	Dichlorodifluoromethane	85	1.454	1.454	(0.251)	108364	50.0000	53.95
	55	Dibromochloromethane	129	8.972	8.972	(0.942)	124320	50.0000	51.69
	44	Dibromomethane	93	7.191	7.191	(1.094)	63589	50.0000	51.35
	61	Ethylbenzene	106	9.675	9.675	(1.015)	141876	50.0000	47.84
	91	Hexachlorobutadiene	225	13.991	13.991	(1.182)	57647	50.0000	55.15
	62	m,p-Xylenes	106	9.793	9.793	(1.028)	345545	100.000	91.37
	63	o-Xylene	106	10.179	10.179	(1.068)	180707	50.0000	46.48
	67	Isopropylbenzene	105	10.548	10.548	(1.107)	453150	50.0000	50.93
	17	Methylene Chloride	84	3.337	3.337	(0.577)	99804	50.0000	45.15
	73	n-Propylbenzene	91	10.955	10.955	(0.925)	471068	50.0000	52.95
	87	n-Butylbenzene	91	12.226	12.226	(1.033)	270954	50.0000	47.70
	92	Naphthalene	128	14.065	14.065	(1.188)	294938	50.0000	56.12
	64	Styrene	104	10.201	10.201	(1.071)	294763	50.0000	46.48
	81	sec-Butylbenzene	105	11.671	11.671	(0.986)	410253	50.0000	54.16
	78	tert-Butylbenzene	119	11.452	11.452	(0.967)	309187	50.0000	54.41
	20	trans-1,2-Dichloroethene	96	3.671	3.671	(0.635)	92945	50.0000	48.69
	50	Toluene	91	8.160	8.160	(0.857)	406454	50.0000	44.61
	51	trans-1,3-Dichloropropene	75	8.420	8.420	(1.281)	153790	50.0000	54.63
	56	Tetrachloroethene	164	8.693	8.693	(0.912)	93432	50.0000	50.19
	8	Trichlorofluoromethane	101	2.256	2.256	(0.390)	161169	50.0000	52.20
	38	Trichloroethene	130	6.822	6.822	(1.038)	111774	50.0000	49.61
	5	Vinyl Chloride	62	1.688	1.688	(0.292)	144132	50.0000	52.04
$	35	1,2-Dichloroethane-d4	65	6.062	6.062	(1.048)	124788	50.0000	48.75
*	36	1,4-Difluorobenzene	114	6.575	6.575	(1.000)	327797	50.0000	
*	70	1,4-Dichlorobenzene-d4	152	11.841	11.841	(1.000)	139289	50.0000	
*	1	Pentafluorobenzene	168	5.782	5.782	(1.000)	222004	50.0000	
*	47	Chlorobenzene-d5	117	9.527	9.527	(1.000)	294906	50.0000	
$	30	Dibromofluoromethane	113	5.686	5.686	(0.983)	95187	50.0000	43.37
$	48	Toluene-d8	98	8.093	8.093	(0.849)	371852	50.0000	50.97
$	69	4-Bromofluorobenzene	95	10.698	10.698	(1.123)	143277	50.0000	51.14
	82	p-Isopropyltoluene	119	11.818	11.818	(0.998)	346341	50.0000	44.41
	138	Freon TF	101	2.769	2.769	(0.479)	96945	50.0000	53.32



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120502.D
Date : 05-DEC-2017 09:15
Client ID: CCV
Sample Info: CCV;CCV;2;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120505.D
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Inj Date : 05-DEC-2017 10:29
Operator : AP Inst ID: VOA2.i
Smp Info : VLCSW-171205;VLCSW-171205;3;;LCS
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\chem\voa2.i\D171205.b\8260LL.m
Meth Date : 01-Feb-2018 16:10 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 11:31 Cal File: D120205.D
Als bottle: 5 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

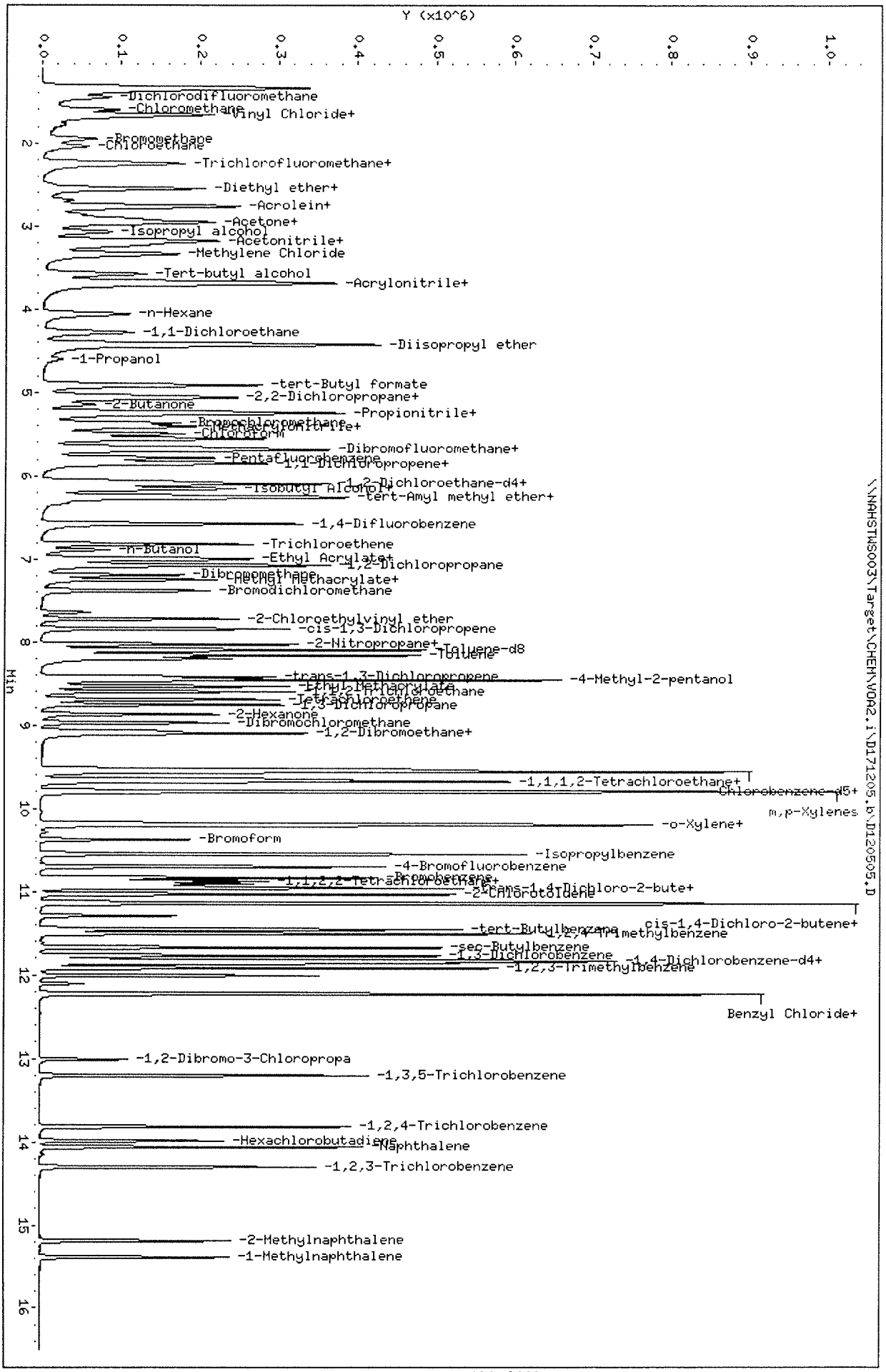
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
31 1,1,1-Trichloroethane	97	5.654	5.654	(0.977)	149055	46.3837	46.38
60 1,1,1,2-Tetrachloroethane	131	9.646	9.649	(1.012)	107561	47.2108	47.21
68 1,1,2,2-Tetrachloroethane	83	10.872	10.875	(0.918)	125728	45.7401	45.74
53 1,1,2-Trichloroethane	83	8.597	8.597	(0.902)	77680	45.1510	45.15
32 1,1-Dichloropropene	75	5.856	5.859	(0.891)	110456	41.2649	41.26
22 1,1-Dichloroethane	63	4.281	4.287	(0.740)	202708	46.7375	46.73
11 1,1-Dichloroethene	96	2.750	2.753	(0.475)	97655	47.9170	47.91
71 1,2,3-Trichloropropane	75	10.901	10.904	(0.921)	136626	47.1639	47.16
79 1,2,4-Trimethylbenzene	105	11.501	11.504	(0.972)	334032	48.7127	48.71
93 1,2,3-Trichlorobenzene	182	14.299	14.305	(1.208)	107022	51.7116	51.71
90 1,2,4-Trichlorobenzene	180	13.821	13.821	(1.168)	123049	50.6620	50.66
89 1,2-Dibromo-3-Chloropropane	75	13.012	13.009	(1.099)	23747	55.4855	55.48
33 1,2-Dichloroethane	62	6.145	6.148	(0.935)	152095	49.2617	49.26
42 1,2-Dichloropropane	63	7.069	7.069	(1.075)	110567	46.5413	46.54
57 1,2-Dibromoethane	107	9.068	9.071	(0.952)	100690	46.5610	46.56
88 1,2-Dichlorobenzene	146	12.226	12.226	(1.033)	197966	44.0101	44.01
75 1,3,5-Trimethylbenzene	105	11.135	11.135	(0.941)	327468	48.9472	48.94
54 1,3-Dichloropropane	76	8.754	8.757	(0.919)	157817	46.3854	46.38
83 1,3-Dichlorobenzene	146	11.767	11.770	(0.994)	201383	42.6199	42.61
84 1,4-Dichlorobenzene	146	11.860	11.863	(1.002)	193192	41.8319	41.83
26 2,2-Dichloropropane	77	5.041	5.044	(0.871)	145527	47.5167	47.51

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120505.D Page 2
Report Date: 01-Feb-2018 16:10

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
	24 2-Butanone	43	5.144	5.144	(0.889)	99677	102.314	102.31
	52 2-Hexanone	43	8.866	8.869	(0.931)	149675	102.564	102.56
	76 2-Chlorotoluene	91	11.029	11.032	(0.932)	284101	39.9129	39.91
	77 4-Chlorotoluene	91	11.144	11.141	(0.941)	331970	50.6790	50.67
	45 4-Methyl-2-Pentanone	43	8.029	8.029	(0.843)	228564	96.6596	96.65
	10 Acetone	43	2.859	2.859	(0.494)	88271	146.015	146.01
	37 Benzene	78	6.094	6.097	(0.927)	365054	44.8620	44.86
	39 Bromodichloromethane	83	7.380	7.380	(1.122)	148146	54.4791	54.47
	74 Bromobenzene	156	10.833	10.833	(0.915)	122060	43.6260	43.62
	29 Bromochloromethane	128	5.365	5.372	(0.927)	56668	52.6133	52.61
	6 Bromomethane	94	1.945	1.951	(0.336)	74939	40.7081	40.70
	19 Carbon Disulfide	76	2.952	2.958	(0.510)	472731	114.199	114.19
	66 Bromoform	173	10.374	10.377	(1.089)	88546	54.4617	54.46
	7 Chloroethane	64	2.038	2.041	(0.352)	82246	45.7133	45.71
	34 Carbon Tetrachloride	117	5.834	5.837	(0.887)	120295	43.2687	43.26
	3 Chloromethane	50	1.598	1.604	(0.276)	169805	41.1417	41.14
	28 Chloroform	83	5.494	5.497	(0.950)	177679	45.2698	45.26
	59 Chlorobenzene	112	9.553	9.556	(1.003)	263018	44.9181	44.91
	27 cis-1,2-Dichloroethene	96	5.067	5.073	(0.876)	109191	46.9986	46.99
	46 cis-1,3-Dichloropropene	75	7.839	7.842	(1.192)	168403	52.4425	52.44
	2 Dichlorodifluoromethane	85	1.454	1.454	(0.251)	88111	43.2646	43.26
	55 Dibromochloromethane	129	8.969	8.972	(0.941)	121645	49.7735	49.77
	44 Dibromomethane	93	7.191	7.191	(1.094)	64831	52.7629	52.76
	61 Ethylbenzene	106	9.672	9.675	(1.015)	128754	42.7336	42.73
	91 Hexachlorobutadiene	225	13.988	13.991	(1.182)	46566	44.4546	44.45
	62 m,p-Xylenes	106	9.794	9.793	(1.028)	312790	81.4011	81.40
	63 o-Xylene	106	10.179	10.179	(1.068)	170477	43.1551	43.15
	67 Isopropylbenzene	105	10.548	10.548	(1.107)	396861	43.3295	43.32
	17 Methylene Chloride	84	3.337	3.337	(0.577)	134546	60.0338	60.03
	73 n-Propylbenzene	91	10.955	10.955	(0.925)	414476	46.5525	46.55
	87 n-Butylbenzene	91	12.223	12.226	(1.033)	225414	39.9270	39.92
	92 Naphthalene	128	14.065	14.065	(1.188)	308601	59.1882	59.18
	64 Styrene	104	10.201	10.201	(1.071)	286286	44.4264	44.42
	81 sec-Butylbenzene	105	11.671	11.671	(0.986)	341043	45.0182	45.01
	78 tert-Butylbenzene	119	11.453	11.452	(0.967)	261604	46.0747	46.07
	20 trans-1,2-Dichloroethene	96	3.664	3.671	(0.633)	106953	55.2531	55.25
	50 Toluene	91	8.157	8.160	(0.856)	385739	41.6696	41.66
	51 trans-1,3-Dichloropropene	75	8.417	8.420	(1.280)	152451	54.5790	54.57
	56 Tetrachloroethene	164	8.693	8.693	(0.912)	78080	41.2805	41.28
	8 Trichlorofluoromethane	101	2.256	2.256	(0.390)	141051	45.0569	45.05
	38 Trichloroethene	130	6.816	6.822	(1.037)	105858	47.3488	47.34
	5 Vinyl Chloride	62	1.685	1.688	(0.291)	125467	44.3709	44.37
$	35 1,2-Dichloroethane-d4	65	6.058	6.062	(1.047)	125212	48.2442	48.24
*	36 1,4-Difluorobenzene	114	6.575	6.575	(1.000)	325295	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	11.838	11.841	(1.000)	138464	50.0000	
*	1 Pentafluorobenzene	168	5.786	5.782	(1.000)	225129	50.0000	
*	47 Chlorobenzene-d5	117	9.527	9.527	(1.000)	299672	50.0000	
$	30 Dibromofluoromethane	113	5.683	5.686	(0.982)	94814	42.6030	42.60
$	48 Toluene-d8	98	8.093	8.093	(0.849)	370328	49.9619	49.96
$	69 4-Bromofluorobenzene	95	10.695	10.698	(1.123)	143797	50.5153	50.51
	82 p-Isopropyltoluene	119	11.818	11.818	(0.998)	300172	38.7224	38.72(M)
	138 Freon TF	101	2.766	2.769	(0.478)	85105	46.1659	46.16

QC Flag Legend

M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120505.D
Date : 05-DEC-2017 10:29
Client ID: VLCSW-171205
Sample Info: VLCSW-171205;VLCSW-171205;3;;LCS
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120507.D Page 1
Report Date: 01-Feb-2018 16:10

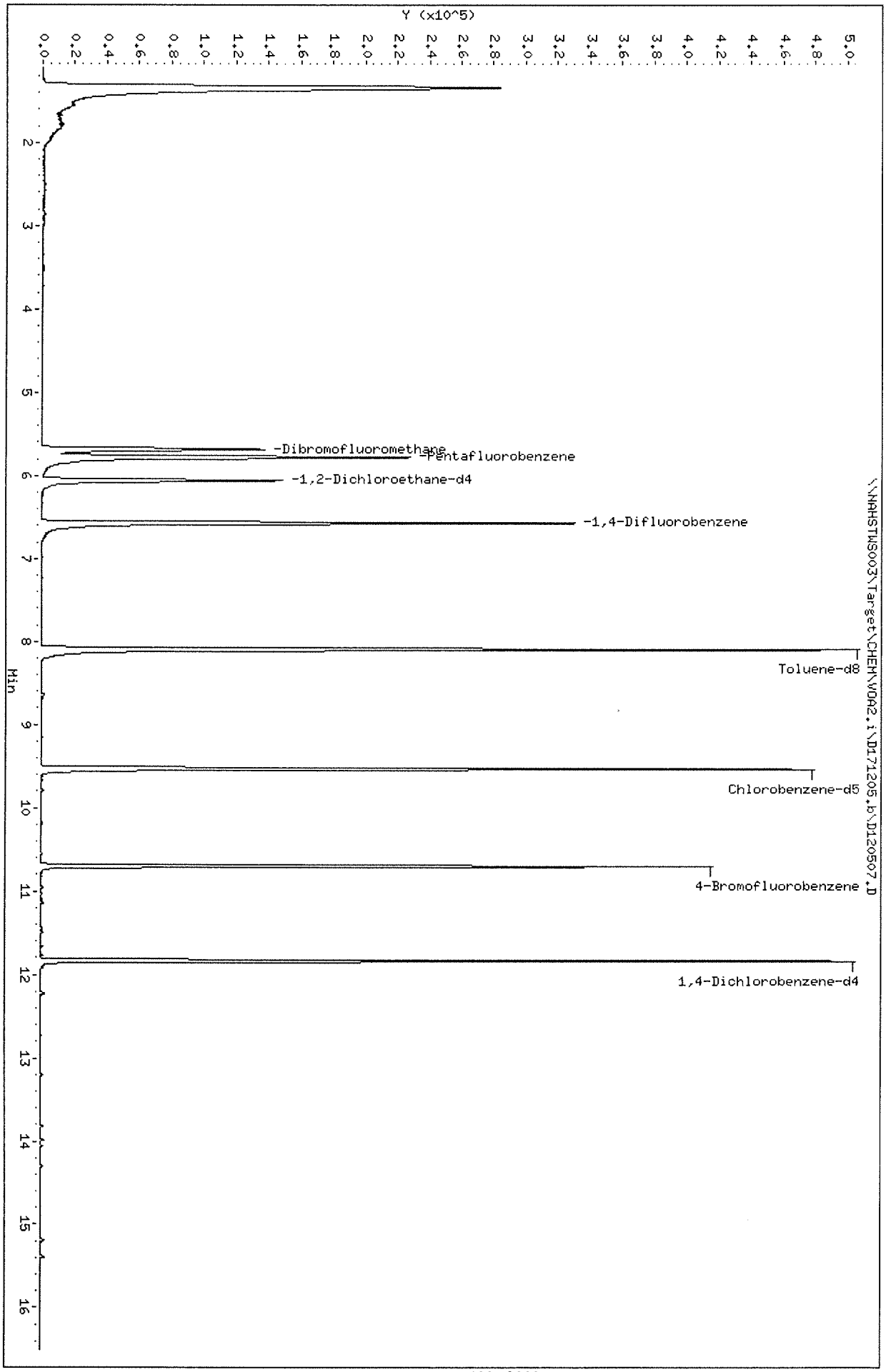
ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120507.D
Lab Smp Id: VBLKW-171205 Client Smp ID: VBLKW-171205
Inj Date : 05-DEC-2017 11:18
Operator : AP Inst ID: VOA2.i
Smp Info : VBLKW-171205;VBLKW-171205;3;;BLANK
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\chem\voa2.i\D171205.b\8260LL.m
Meth Date : 01-Feb-2018 16:10 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 11:31 Cal File: D120205.D
Als bottle: 7 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
$ 35 1,2-Dichloroethane-d4	65	6.058	6.062	(1.048)	128063	47.2916	47.29
* 36 1,4-Difluorobenzene	114	6.572	6.575	(1.000)	325460	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	11.834	11.841	(1.000)	133109	50.0000	
* 1 Pentafluorobenzene	168	5.779	5.782	(1.000)	234893	50.0000	
* 47 Chlorobenzene-d5	117	9.527	9.527	(1.000)	293643	50.0000	
$ 30 Dibromofluoromethane	113	5.686	5.686	(0.984)	105421	45.4000	45.40
$ 48 Toluene-d8	98	8.090	8.093	(0.849)	378492	52.1117	52.11
$ 69 4-Bromofluorobenzene	95	10.695	10.698	(1.123)	138197	49.5448	49.54



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120507.D
Date : 05-DEC-2017 11:18
Client ID: VBLKW-171205
Sample Info: VBLKW-171205;VBLKW-171205;3;;BLANK
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120516.D
Lab Smp Id: HS17111395-03MS Client Smp ID: HS17111395-03MS
Inj Date : 05-DEC-2017 15:01
Operator : AP Inst ID: VOA2.i
Smp Info : HS17111395-03MS;HS17111395-03MS;3;;MS
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\chem\voa2.i\D171205.b\8260LL.m
Meth Date : 01-Feb-2018 16:10 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 11:31 Cal File: D120205.D
Als bottle: 15 QC Sample: MS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

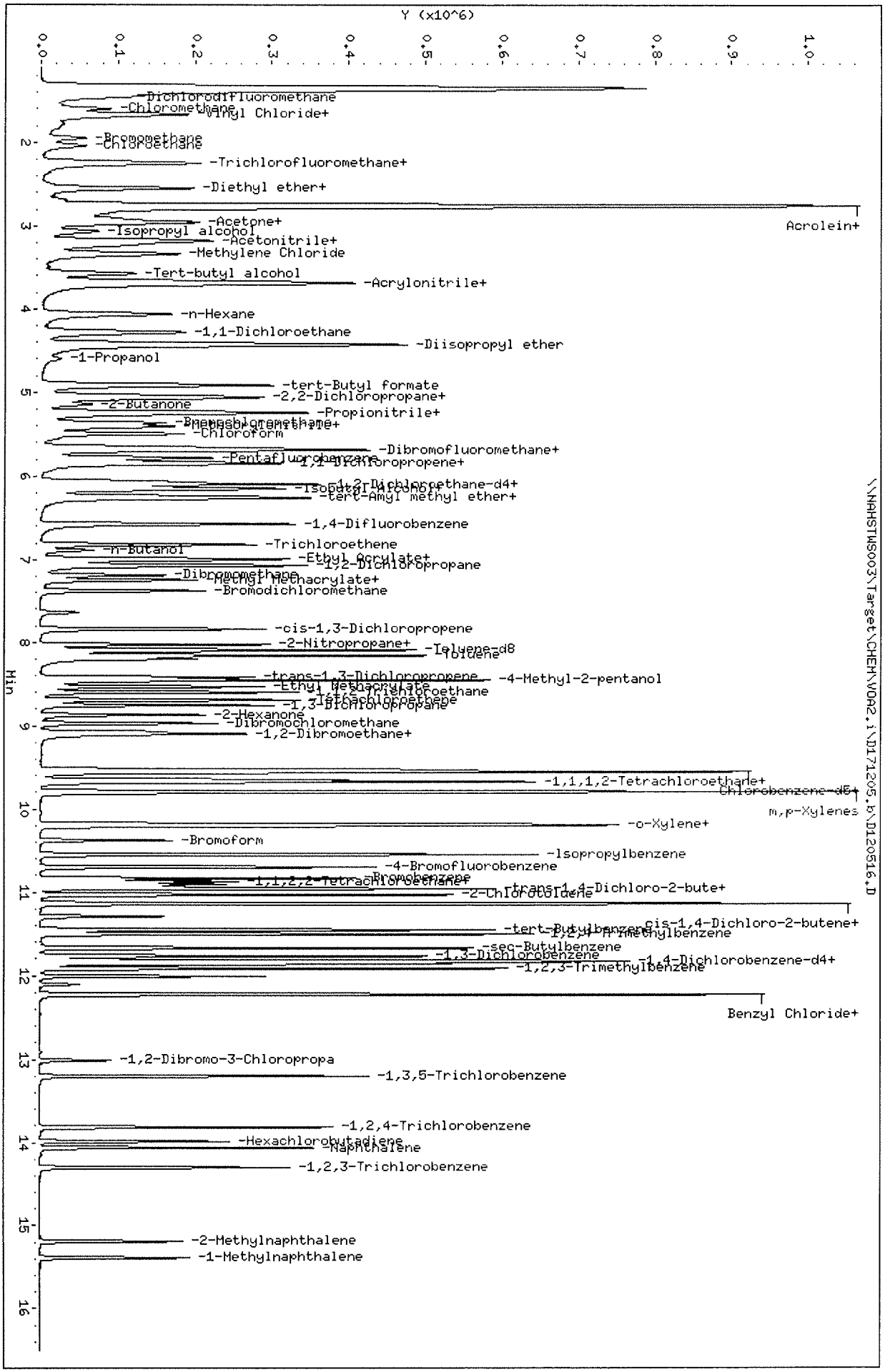
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
31 1,1,1-Trichloroethane	97	5.657	5.654	(0.978)	162532	50.9588	50.95
60 1,1,1,2-Tetrachloroethane	131	9.646	9.649	(1.012)	106887	47.8967	47.89
68 1,1,2,2-Tetrachloroethane	83	10.872	10.875	(0.918)	114890	42.4783	42.47
53 1,1,2-Trichloroethane	83	8.597	8.597	(0.902)	81075	48.1104	48.11
32 1,1-Dichloropropene	75	5.856	5.859	(0.891)	126206	46.7676	46.76
22 1,1-Dichloroethane	63	4.278	4.287	(0.740)	338532	78.6421	78.64
11 1,1-Dichloroethene	96	2.757	2.753	(0.477)	653240	322.945	322.94(A)
71 1,2,3-Trichloropropane	75	10.904	10.904	(0.921)	124015	43.5081	43.50
79 1,2,4-Trimethylbenzene	105	11.501	11.504	(0.972)	340821	50.5683	50.56
93 1,2,3-Trichlorobenzene	182	14.302	14.305	(1.208)	98855	48.5437	48.54
90 1,2,4-Trichlorobenzene	180	13.818	13.821	(1.167)	116373	48.6940	48.69
89 1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	21197	50.2738	50.27
33 1,2-Dichloroethane	62	6.145	6.148	(0.935)	228427	73.3420	73.34
42 1,2-Dichloropropane	63	7.066	7.069	(1.075)	109532	45.7050	45.70
57 1,2-Dibromoethane	107	9.068	9.071	(0.952)	92417	43.6297	43.62
88 1,2-Dichlorobenzene	146	12.226	12.226	(1.033)	188811	42.6588	42.65
75 1,3,5-Trimethylbenzene	105	11.135	11.135	(0.941)	340386	51.8186	51.81
54 1,3-Dichloropropane	76	8.754	8.757	(0.919)	151180	45.3644	45.36
83 1,3-Dichlorobenzene	146	11.767	11.770	(0.994)	198810	42.7609	42.76
84 1,4-Dichlorobenzene	146	11.860	11.863	(1.002)	187452	41.2504	41.25
26 2,2-Dichloropropane	77	5.041	5.044	(0.872)	166639	54.8201	54.82

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120516.D Page 2
Report Date: 01-Feb-2018 16:10

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
24	2-Butanone	43	5.147	5.144	(0.890)	97617	100.954	100.95
52	2-Hexanone	43	8.866	8.869	(0.931)	137783	96.3906	96.39
76	2-Chlorotoluene	91	11.029	11.032	(0.932)	293719	41.9365	41.93
77	4-Chlorotoluene	91	11.138	11.141	(0.941)	323423	50.1632	50.16
45	4-Methyl-2-Pentanone	43	8.029	8.029	(0.843)	212854	91.8993	91.89
10	Acetone	43	2.859	2.859	(0.495)	69282	115.964	115.96
37	Benzene	78	6.097	6.097	(0.927)	371962	45.3138	45.31
39	Bromodichloromethane	83	7.377	7.380	(1.122)	139510	50.8575	50.85
74	Bromobenzene	156	10.833	10.833	(0.915)	120138	43.6388	43.63
29	Bromochloromethane	128	5.365	5.372	(0.928)	56228	52.5982	52.59
6	Bromomethane	94	1.945	1.951	(0.336)	61590	32.2327	32.23
19	Carbon Disulfide	76	2.959	2.958	(0.512)	477351	116.184	116.18
66	Bromoform	173	10.378	10.377	(1.089)	80193	50.3561	50.35
7	Chloroethane	64	2.041	2.041	(0.353)	84148	47.3026	47.30
34	Carbon Tetrachloride	117	5.834	5.837	(0.887)	139707	49.8501	49.85
3	Chloromethane	50	1.601	1.604	(0.277)	150637	36.5151	36.51
28	Chloroform	83	5.497	5.497	(0.951)	177220	45.4931	45.49
59	Chlorobenzene	112	9.556	9.556	(1.003)	256848	44.7823	44.78
27	cis-1,2-Dichloroethene	96	5.073	5.073	(0.877)	122116	52.9579	52.95
46	cis-1,3-Dichloropropene	75	7.839	7.842	(1.192)	162977	50.3118	50.31
2	Dichlorodifluoromethane	85	1.454	1.454	(0.251)	91565	45.2994	45.29
55	Dibromochloromethane	129	8.969	8.972	(0.941)	116163	48.5250	48.52
44	Dibromomethane	93	7.188	7.191	(1.093)	59403	47.9253	47.92
61	Ethylbenzene	106	9.672	9.675	(1.015)	134687	45.6382	45.63
91	Hexachlorobutadiene	225	13.991	13.991	(1.182)	50697	49.3955	49.39
62	m,p-Xylenes	106	9.794	9.793	(1.028)	328286	87.2215	87.22
63	o-Xylene	106	10.182	10.179	(1.069)	172002	44.4522	44.45
67	Isopropylbenzene	105	10.548	10.548	(1.107)	429789	48.3175	48.31
17	Methylene Chloride	84	3.334	3.337	(0.577)	133604	60.0627	60.06
73	n-Propylbenzene	91	10.955	10.955	(0.925)	446280	51.2016	51.20
87	n-Butylbenzene	91	12.223	12.226	(1.033)	242705	43.6902	43.69
92	Naphthalene	128	14.065	14.065	(1.188)	274225	53.2417	53.24
64	Styrene	104	10.198	10.201	(1.070)	279627	44.3010	44.30
81	sec-Butylbenzene	105	11.668	11.671	(0.986)	377457	50.8463	50.84
78	tert-Butylbenzene	119	11.453	11.452	(0.967)	286427	51.4496	51.44
20	trans-1,2-Dichloroethene	96	3.665	3.671	(0.634)	127087	66.1494	66.14
50	Toluene	91	8.160	8.160	(0.857)	399399	44.0481	44.04
51	trans-1,3-Dichloropropene	75	8.417	8.420	(1.280)	141378	50.1750	50.17
56	Tetrachloroethene	164	8.693	8.693	(0.912)	88449	47.7410	47.74
8	Trichlorofluoromethane	101	2.256	2.256	(0.390)	165484	53.2601	53.26
38	Trichloroethene	130	6.819	6.822	(1.037)	113202	50.1937	50.19
5	Vinyl Chloride	62	1.682	1.688	(0.291)	138246	49.4939	49.49
$ 35	1,2-Dichloroethane-d4	65	6.059	6.062	(1.048)	125654	48.7793	48.77
* 36	1,4-Difluorobenzene	114	6.575	6.575	(1.000)	328146	50.0000	
* 70	1,4-Dichlorobenzene-d4	152	11.838	11.841	(1.000)	136244	50.0000	
* 1	Pentafluorobenzene	168	5.783	5.782	(1.000)	223445	50.0000	
* 47	Chlorobenzene-d5	117	9.527	9.527	(1.000)	293530	50.0000	
$ 30	Dibromofluoromethane	113	5.683	5.686	(0.983)	94901	42.9635	42.96
$ 48	Toluene-d8	98	8.093	8.093	(0.849)	366947	50.5416	50.54
$ 69	4-Bromofluorobenzene	95	10.695	10.698	(1.123)	142195	50.9978	50.99
82	p-Isopropyltoluene	119	11.819	11.818	(0.998)	322636	42.2984	42.29
138	Freon TF	101	2.769	2.769	(0.479)	98759	53.9764	53.97

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120516.D
Date : 05-DEC-2017 15:01
Client ID: HS17111395-03MS
Sample Info: HS17111395-03MS;HS17111395-03MS;3;;MS
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

\\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120516.D

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120517.D
Lab Smp Id: HS17111395-03MSD Client Smp ID: HS17111395-03MSD
Inj Date : 05-DEC-2017 15:25
Operator : AP Inst ID: VOA2.i
Smp Info : HS17111395-03MSD;HS17111395-03MSD;3;;MSD
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\chem\voa2.i\D171205.b\8260LL.m
Meth Date : 01-Feb-2018 16:10 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 11:31 Cal File: D120205.D
Als bottle: 15 QC Sample: MSD
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

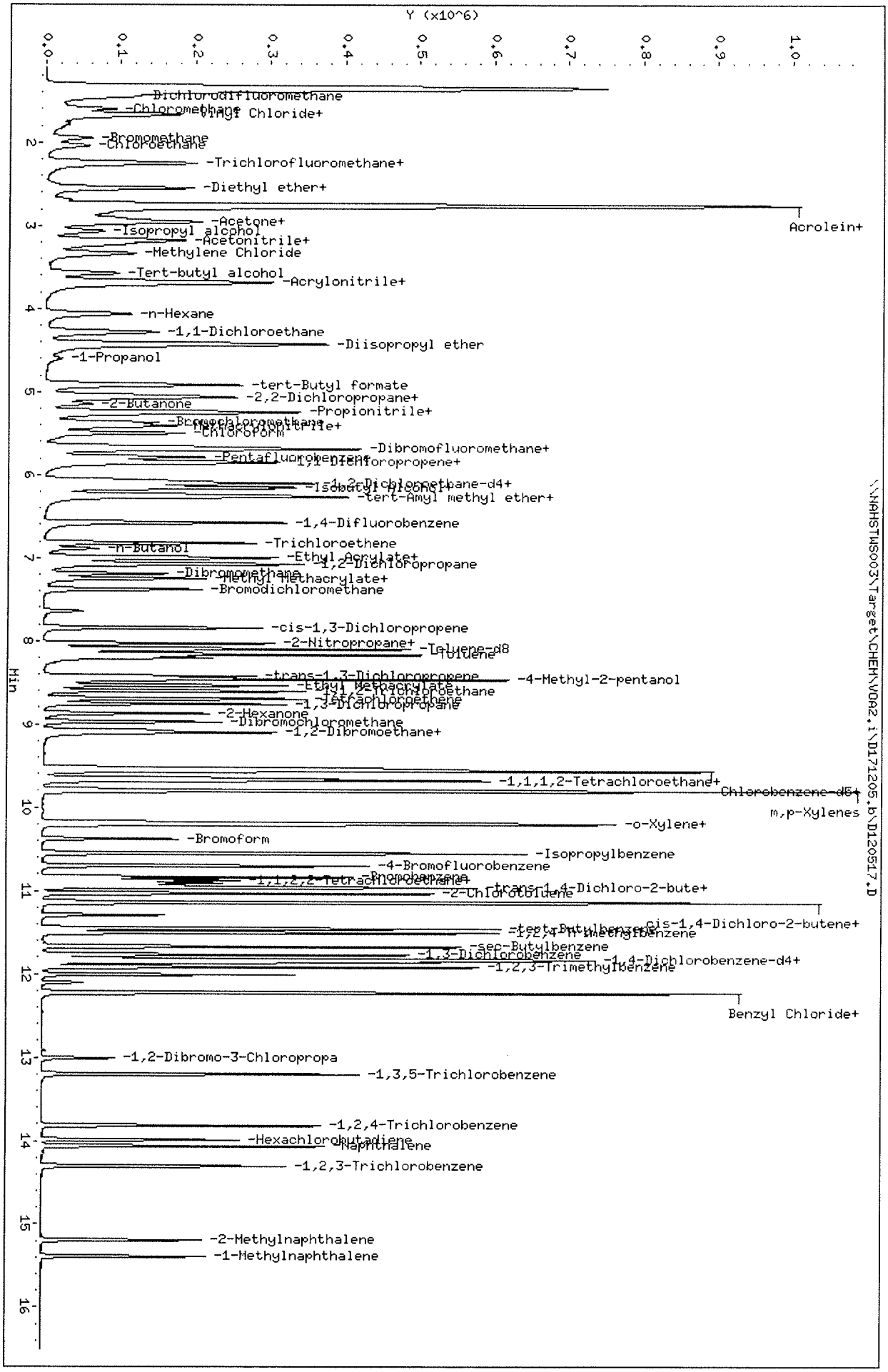
Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
31 1,1,1-Trichloroethane	97	5.654	5.654	(0.977)	160520	51.2946	51.29
60 1,1,1,2-Tetrachloroethane	131	9.646	9.649	(1.012)	106095	47.8973	47.89
68 1,1,2,2-Tetrachloroethane	83	10.872	10.875	(0.919)	116503	43.5720	43.57
53 1,1,2-Trichloroethane	83	8.597	8.597	(0.902)	89524	53.5214	53.52
32 1,1-Dichloropropene	75	5.860	5.859	(0.892)	120652	45.4958	45.49
22 1,1-Dichloroethane	63	4.281	4.287	(0.740)	267877	63.4240	63.42
11 1,1-Dichloroethene	96	2.753	2.753	(0.476)	612398	308.569	308.56(A)
71 1,2,3-Trichloropropane	75	10.901	10.904	(0.921)	125971	44.7045	44.70
79 1,2,4-Trimethylbenzene	105	11.501	11.504	(0.972)	334346	50.1688	50.16
93 1,2,3-Trichlorobenzene	182	14.302	14.305	(1.209)	100588	49.9650	49.96
90 1,2,4-Trichlorobenzene	180	13.818	13.821	(1.168)	118956	50.3495	50.34
89 1,2-Dibromo-3-Chloropropane	75	13.012	13.009	(1.100)	21942	52.6723	52.67
33 1,2-Dichloroethane	62	6.145	6.148	(0.935)	247049	80.7264	80.72
42 1,2-Dichloropropane	63	7.069	7.069	(1.076)	105205	44.6773	44.67
57 1,2-Dibromoethane	107	9.068	9.071	(0.952)	94155	44.7826	44.78
88 1,2-Dichlorobenzene	146	12.223	12.226	(1.033)	187450	42.8403	42.84
75 1,3,5-Trimethylbenzene	105	11.132	11.135	(0.941)	336737	51.8563	51.85
54 1,3-Dichloropropane	76	8.751	8.757	(0.918)	159598	48.2486	48.24
83 1,3-Dichlorobenzene	146	11.767	11.770	(0.994)	196832	42.8242	42.82
84 1,4-Dichlorobenzene	146	11.860	11.863	(1.002)	185483	41.2883	41.28
26 2,2-Dichloropropane	77	5.041	5.044	(0.871)	150819	50.5688	50.56

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
24	2-Butanone	43	5.144	5.144	(0.889)	91493	96.4385	96.43
52	2-Hexanone	43	8.866	8.869	(0.931)	141652	99.8384	99.83
76	2-Chlorotoluene	91	11.029	11.032	(0.932)	289405	41.7976	41.79
77	4-Chlorotoluene	91	11.141	11.141	(0.941)	320429	50.2760	50.27
45	4-Methyl-2-Pentanone	43	8.029	8.029	(0.843)	224476	97.6420	97.64
10	Acetone	43	2.859	2.859	(0.494)	71173	121.384	121.38
37	Benzene	78	6.094	6.097	(0.927)	380476	47.1723	47.17
39	Bromodichloromethane	83	7.377	7.380	(1.123)	138581	51.4140	51.41
74	Bromobenzene	156	10.833	10.833	(0.915)	117427	43.1465	43.14
29	Bromochloromethane	128	5.365	5.372	(0.927)	52786	50.3269	50.32
6	Bromomethane	94	1.948	1.951	(0.337)	64668	35.0302	35.03
19	Carbon Disulfide	76	2.955	2.958	(0.511)	460213	114.164	114.16
66	Bromoform	173	10.378	10.377	(1.089)	85472	54.0724	54.07
7	Chloroethane	64	2.038	2.041	(0.352)	82347	47.1638	47.16
34	Carbon Tetrachloride	117	5.834	5.837	(0.888)	139251	50.5712	50.57
3	Chloromethane	50	1.601	1.604	(0.277)	156497	38.8070	38.80
28	Chloroform	83	5.494	5.497	(0.950)	178189	46.6205	46.62
59	Chlorobenzene	112	9.556	9.556	(1.003)	250307	43.9682	43.96
27	cis-1,2-Dichloroethene	96	5.067	5.073	(0.876)	107465	47.4994	47.49
46	cis-1,3-Dichloropropene	75	7.843	7.842	(1.193)	163146	51.2564	51.25
2	Dichlorodifluoromethane	85	1.450	1.454	(0.251)	91027	45.8982	45.89
55	Dibromochloromethane	129	8.969	8.972	(0.941)	116168	48.8900	48.89
44	Dibromomethane	93	7.191	7.191	(1.094)	59969	49.2392	49.23
61	Ethylbenzene	106	9.672	9.675	(1.015)	133264	45.4937	45.49
91	Hexachlorobutadiene	225	13.988	13.991	(1.182)	52456	51.7907	51.79
62	m,p-Xylenes	106	9.790	9.793	(1.028)	339942	90.9938	90.99
63	o-Xylene	106	10.179	10.179	(1.068)	174025	45.3114	45.31
67	Isopropylbenzene	105	10.548	10.548	(1.107)	423110	47.8873	47.88
17	Methylene Chloride	84	3.341	3.337	(0.577)	95466	43.7418	43.74
73	n-Propylbenzene	91	10.955	10.955	(0.926)	436774	50.6619	50.66
87	n-Butylbenzene	91	12.223	12.226	(1.033)	240167	43.7324	43.73
92	Naphthalene	128	14.061	14.065	(1.188)	286246	56.3385	56.33
64	Styrene	104	10.198	10.201	(1.070)	285483	45.5670	45.56
81	sec-Butylbenzene	105	11.668	11.671	(0.986)	374909	51.0940	51.09
78	tert-Butylbenzene	119	11.449	11.452	(0.967)	284112	51.6284	51.62
20	trans-1,2-Dichloroethene	96	3.671	3.671	(0.635)	88990	47.2094	47.20
50	Toluene	91	8.157	8.160	(0.856)	398659	44.2953	44.29
51	trans-1,3-Dichloropropene	75	8.417	8.420	(1.281)	144552	52.2104	52.21
56	Tetrachloroethene	164	8.687	8.693	(0.912)	93688	50.9470	50.94
8	Trichlorofluoromethane	101	2.256	2.256	(0.390)	160933	52.7902	52.79
38	Trichloroethene	130	6.819	6.822	(1.038)	109461	49.3949	49.39
5	Vinyl Chloride	62	1.682	1.688	(0.291)	137636	50.2534	50.25
$ 35	1,2-Dichloroethane-d4	65	6.058	6.062	(1.047)	126287	49.9667	49.96
* 36	1,4-Difluorobenzene	114	6.572	6.575	(1.000)	322433	50.0000	
* 70	1,4-Dichlorobenzene-d4	152	11.835	11.841	(1.000)	134689	50.0000	
* 1	Pentafluorobenzene	168	5.786	5.782	(1.000)	219234	50.0000	
* 47	Chlorobenzene-d5	117	9.527	9.527	(1.000)	291351	50.0000	
$ 30	Dibromofluoromethane	113	5.686	5.686	(0.983)	95848	44.2256	44.22
$ 48	Toluene-d8	98	8.093	8.093	(0.849)	370990	51.4806	51.48
$ 69	4-Bromofluorobenzene	95	10.695	10.698	(1.123)	139500	50.4054	50.40
82	p-Isopropyltoluene	119	11.818	11.818	(0.999)	318578	42.2486	42.24
138	Freon TF	101	2.766	2.769	(0.478)	92837	51.7143	51.71

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120517.D
Date : 05-DEC-2017 15:25
Client ID: HS17111395-03MSD
Sample Info: HS17111395-03MSD;HS17111395-03MSD;3;;MSD
Purge Volume: 5.0
Column phase: DB624

\\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120517.D

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120523.D
Lab Smp Id: HS17111408-02 Client Smp ID: HS17111408-02
Inj Date : 05-DEC-2017 18:00
Operator : AP Inst ID: VOA2.i
Smp Info : HS17111408-02;HS17111408-02;;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\chem\voa2.i\D171205.b\8260LL.m
Meth Date : 01-Feb-2018 15:54 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 11:31 Cal File: D120205.D
Als bottle: 19
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
	53 1,1,2-Trichloroethane	83	8.597	8.597	(0.902)	9456	5.59788	5.59
	22 1,1-Dichloroethane	63	4.281	4.287	(0.740)	51088	11.2234	11.22(M)
	11 1,1-Dichloroethene	96	2.756	2.753	(0.477)	972543	454.690	454.68(A)
	33 1,2-Dichloroethane	62	6.151	6.148	(0.936)	80935	26.9161	26.91
	27 cis-1,2-Dichloroethene	96	5.076	5.073	(0.878)	3731	1.53015	1.53(aM)
$	35 1,2-Dichloroethane-d4	65	6.062	6.062	(1.048)	132054	48.4800	48.47
*	36 1,4-Difluorobenzene	114	6.575	6.575	(1.000)	316808	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	11.838	11.841	(1.000)	133994	50.0000	
*	1 Pentafluorobenzene	168	5.782	5.782	(1.000)	236276	50.0000	
*	47 Chlorobenzene-d5	117	9.527	9.527	(1.000)	294231	50.0000	
$	30 Dibromofluoromethane	113	5.689	5.686	(0.984)	106042	45.4002	45.40
$	48 Toluene-d8	98	8.093	8.093	(0.849)	378670	52.0320	52.03
$	69 4-Bromofluorobenzene	95	10.698	10.698	(1.123)	137459	49.1818	49.18

QC Flag Legend

a - Target compound detected but, quantitated amount Below Limit Of Quantitation(BLOQ).
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.

00911623

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120523.D

Date : 05-DEC-2017 18:00

Client ID: HS17111408-02

Instrument: VOA2.i

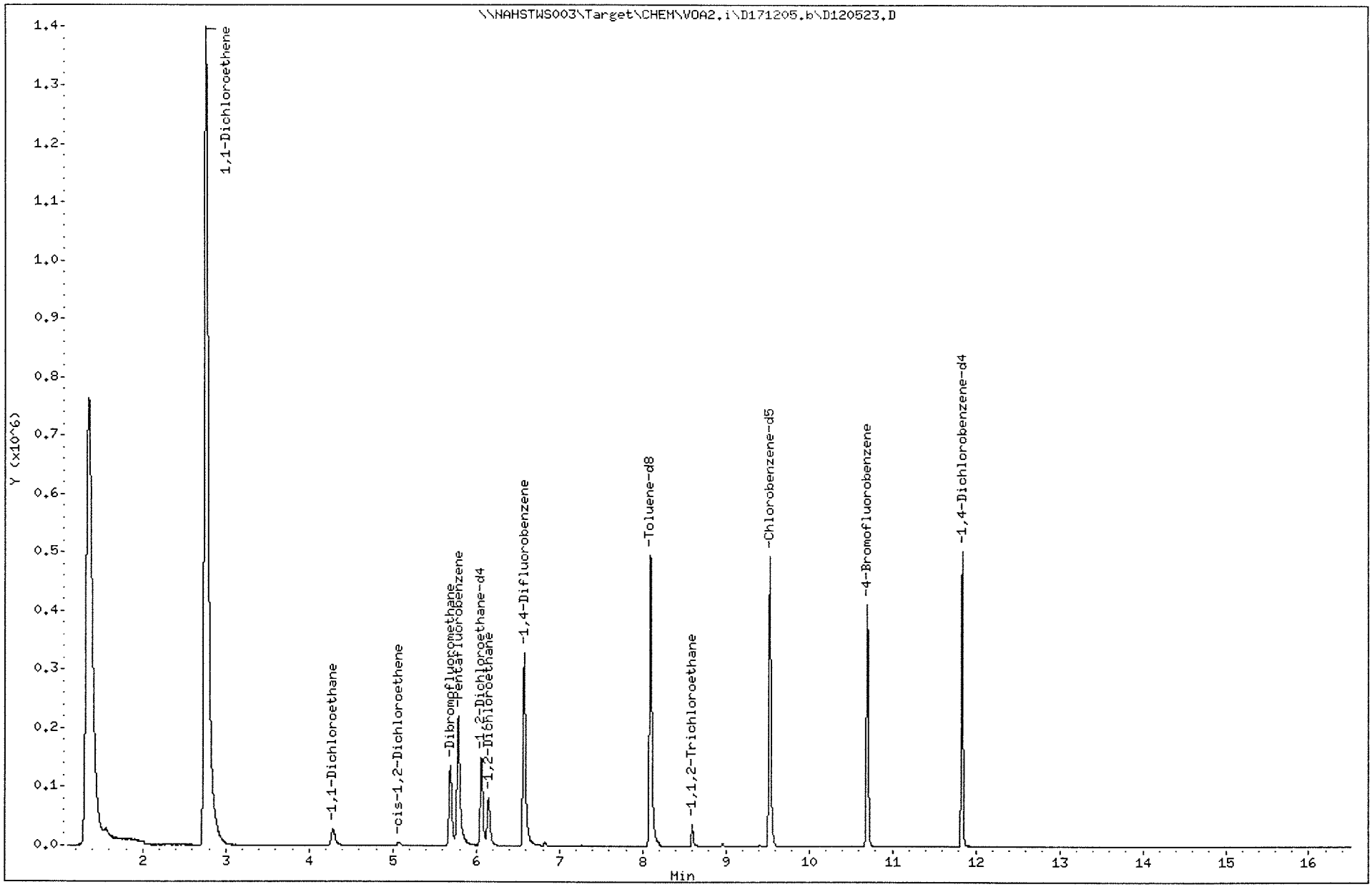
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Purge Volume: 5.0

Operator: AP

Column phase: DB624

Column diameter: 0.18



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Date : 05-DEC-2017 18:00

Client ID: HS17111408-02

Instrument: VOA2.i

Sample Info: HS17111408-02;HS17111408-02;;;

Purge Volume: 5.0

Operator: AP

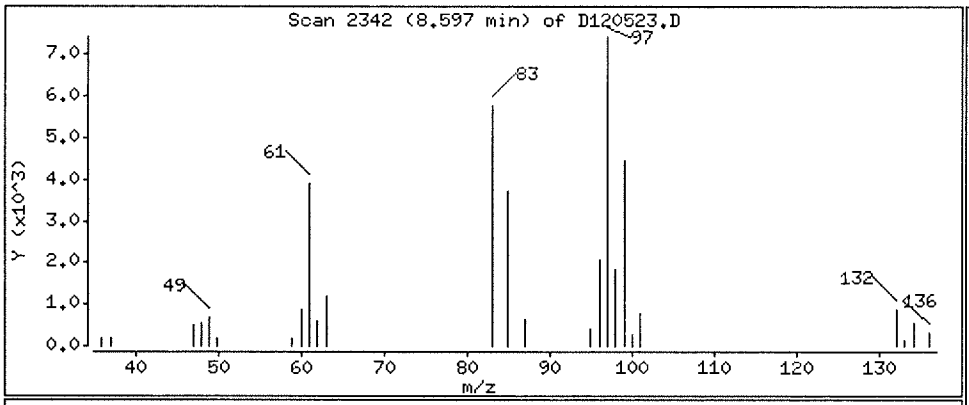
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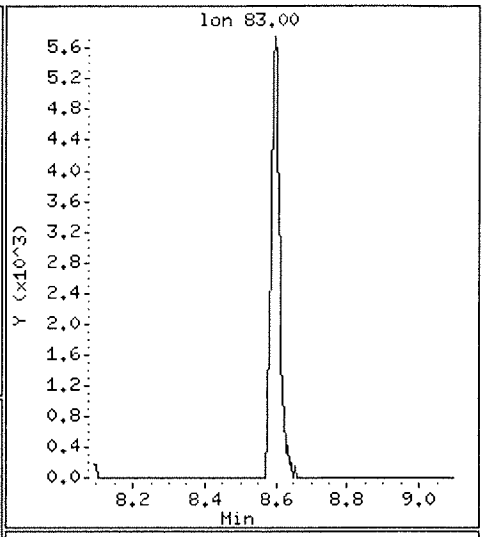
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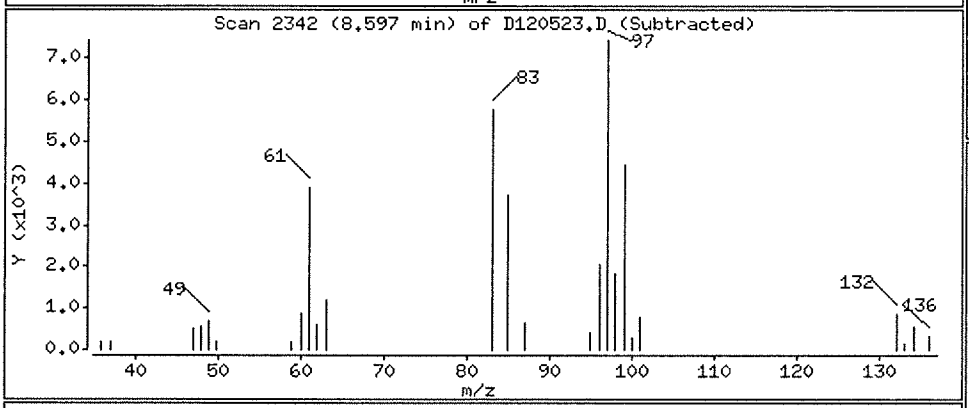
53 1,1,2-Trichloroethane

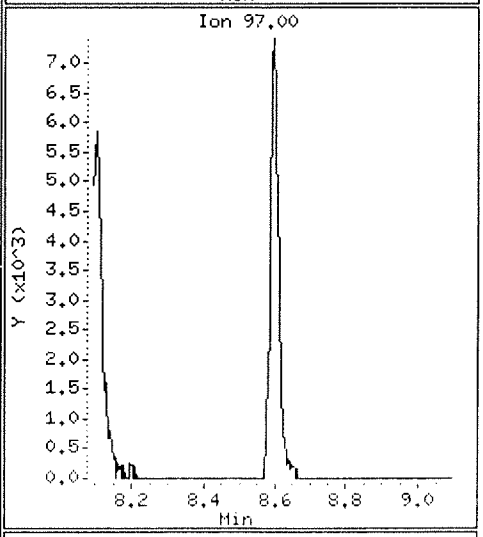
Concentration: 5.59 ug/l

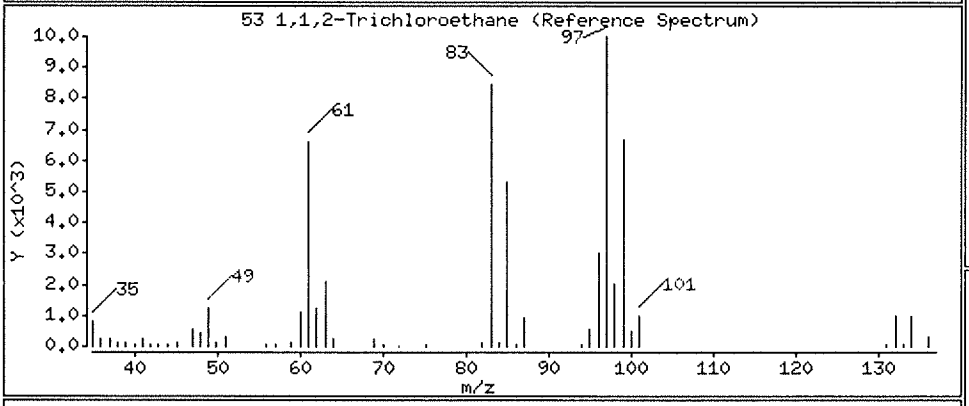
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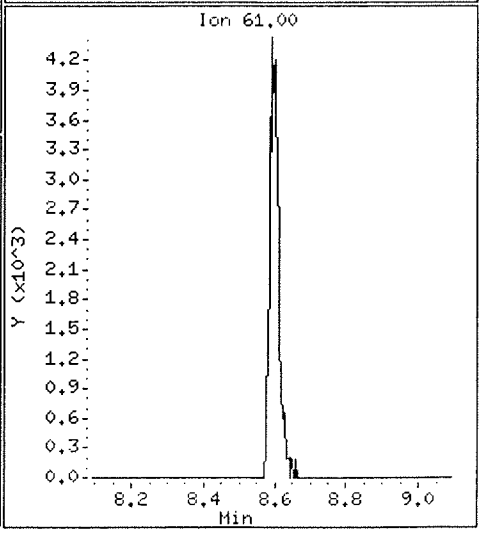


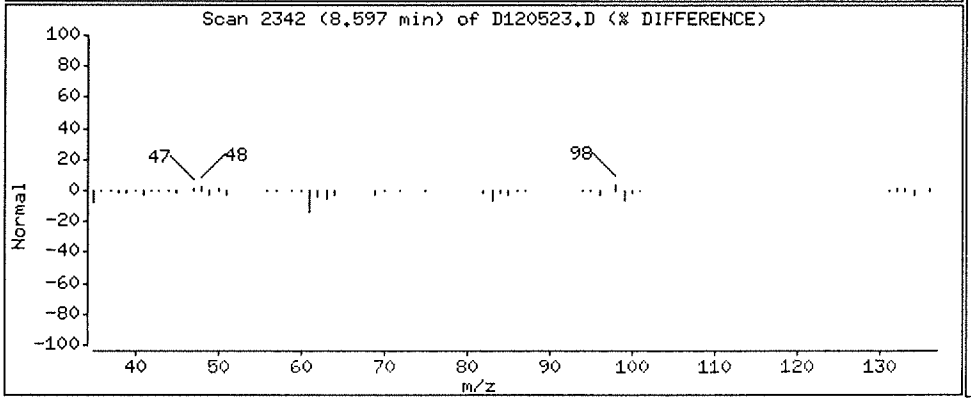












Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120523.D Page 4

Date : 05-DEC-2017 18:00

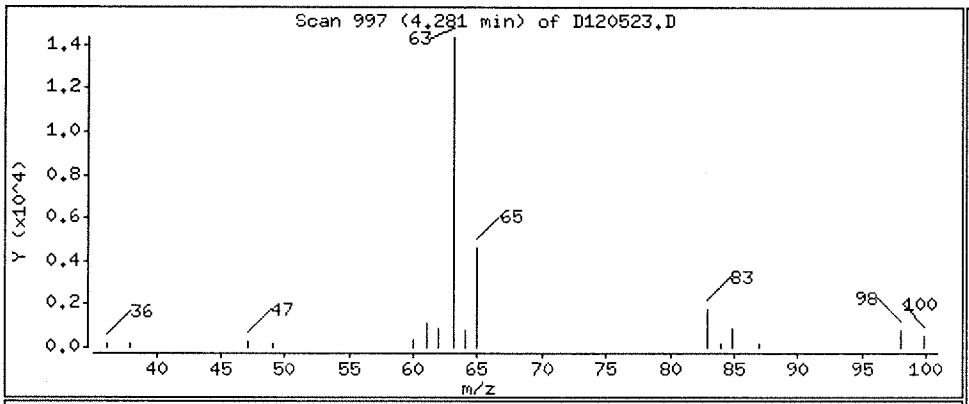
Client ID: HS17111408-02 Instrument: VOA2.i

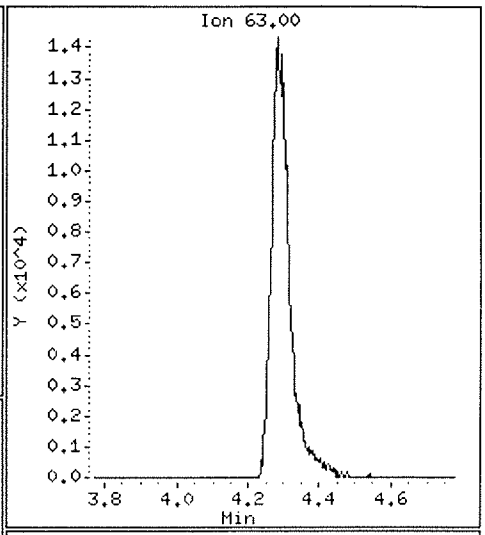
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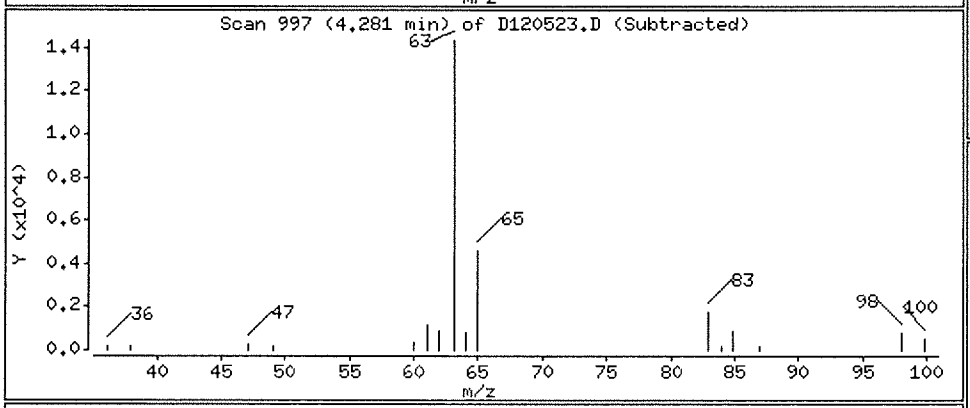
Purge Volume: 5.0 Operator: AP

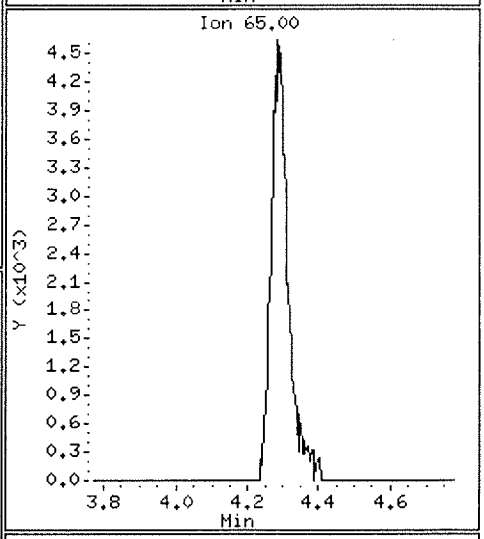
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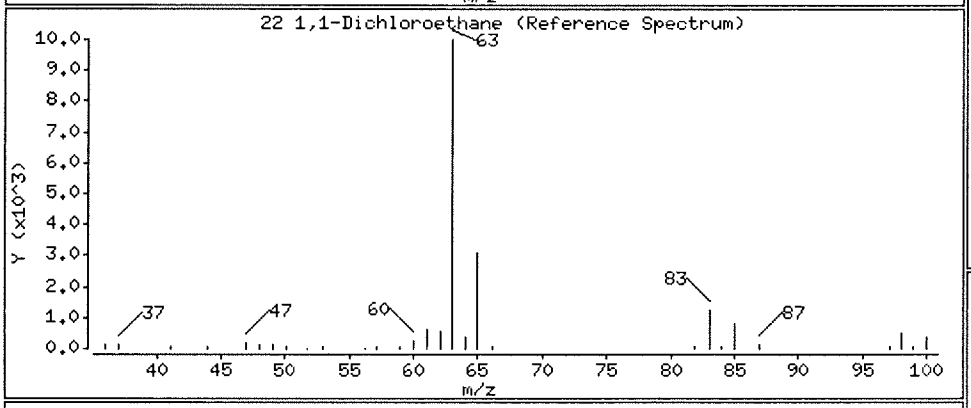
22 1,1-Dichloroethane Concentration: 11.22 ug/l Review Code:

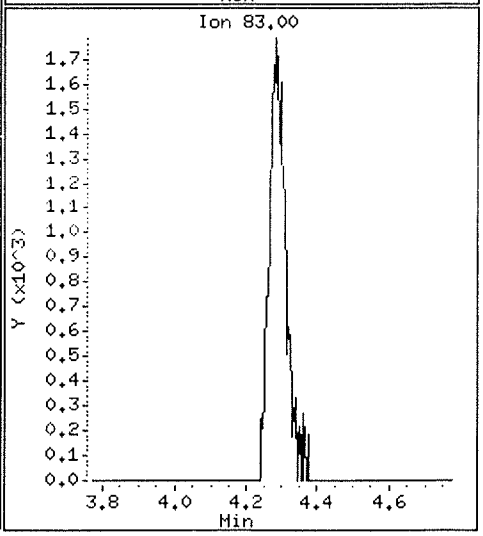


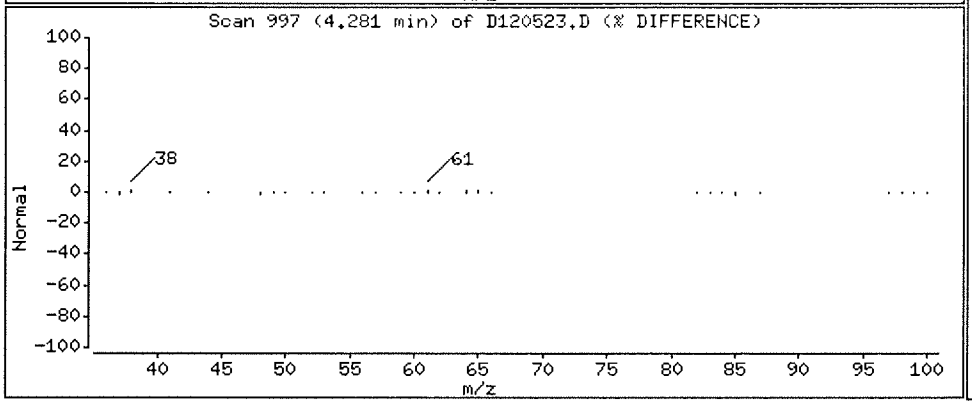












Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120523.D Page 5

Date : 05-DEC-2017 18:00

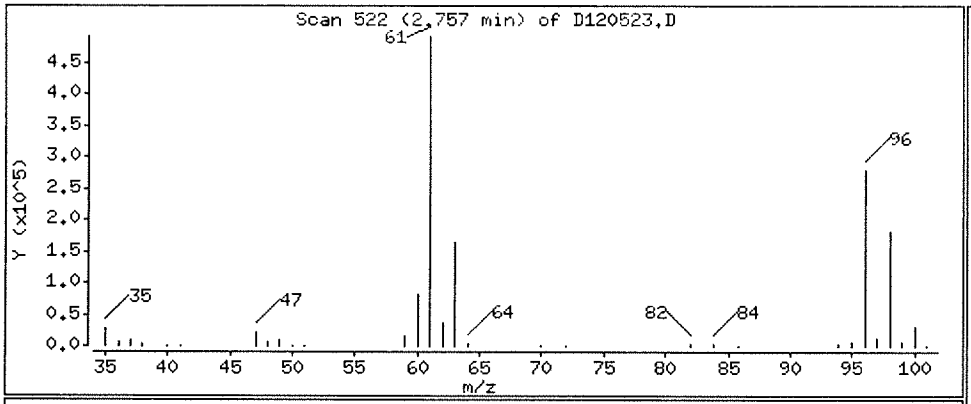
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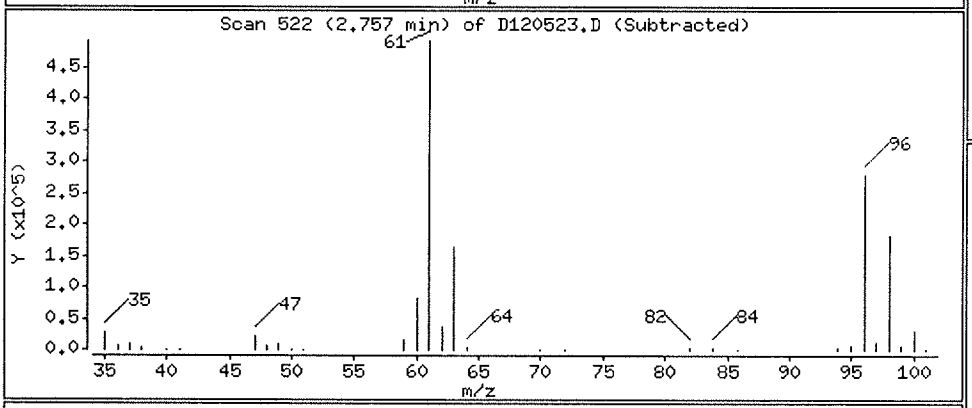
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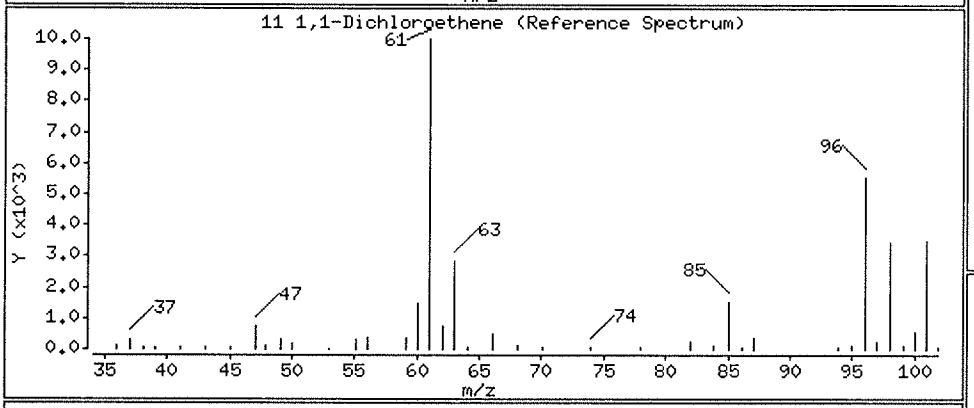
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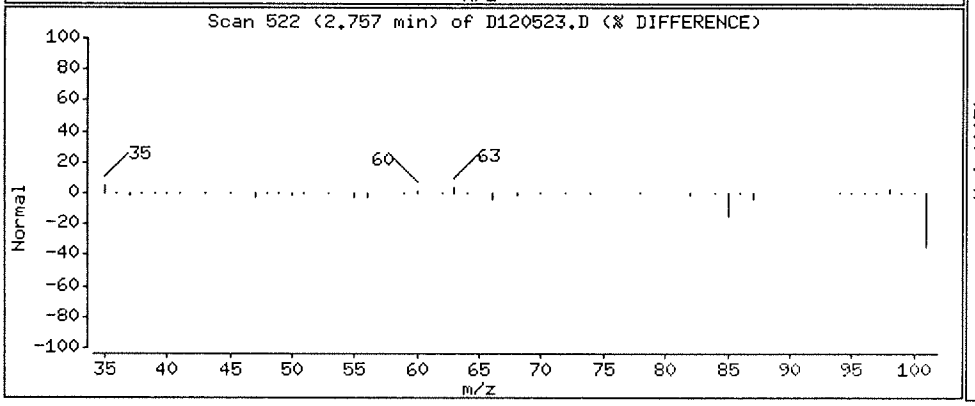
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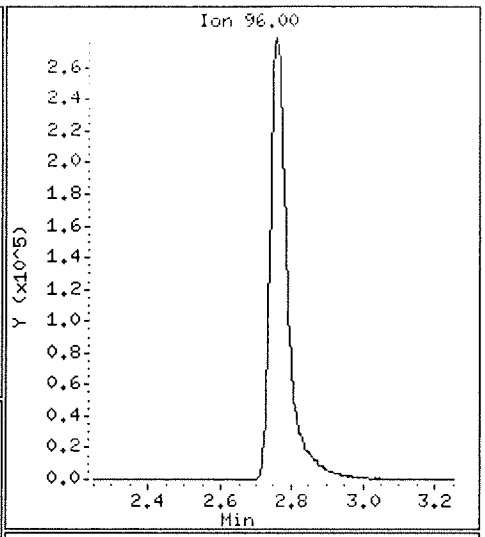
11 1,1-Dichloroethene Concentration: 454.68 ug/l Review Code:

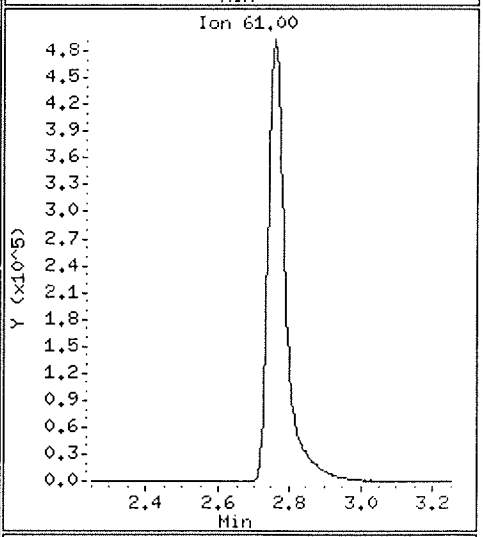


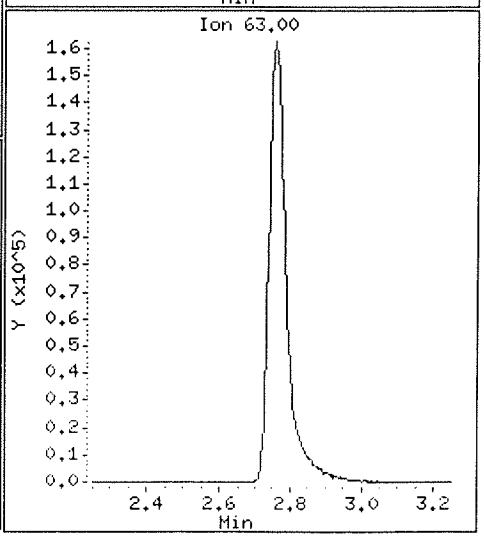












Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120523.D

Date : 05-DEC-2017 18:00

Client ID: HS17111408-02

Instrument: VOA2.i

Sample Info: HS17111408-02;HS17111408-02;;;

Purge Volume: 5.0

Operator: AP

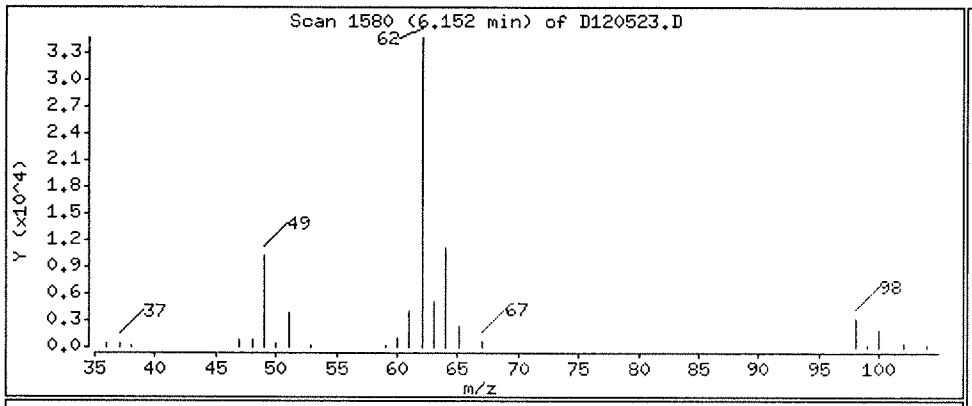
Column phase: DB624

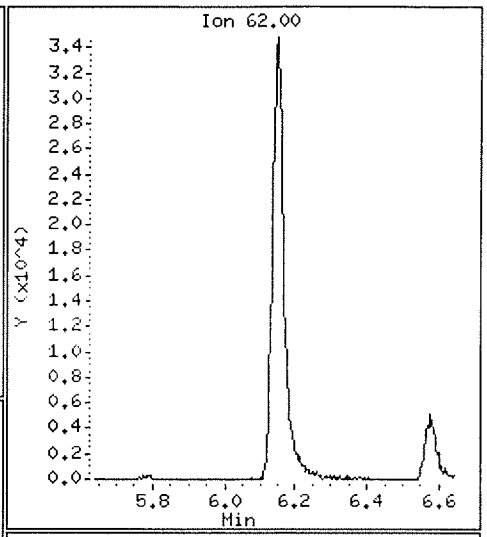
Column diameter: 0.18

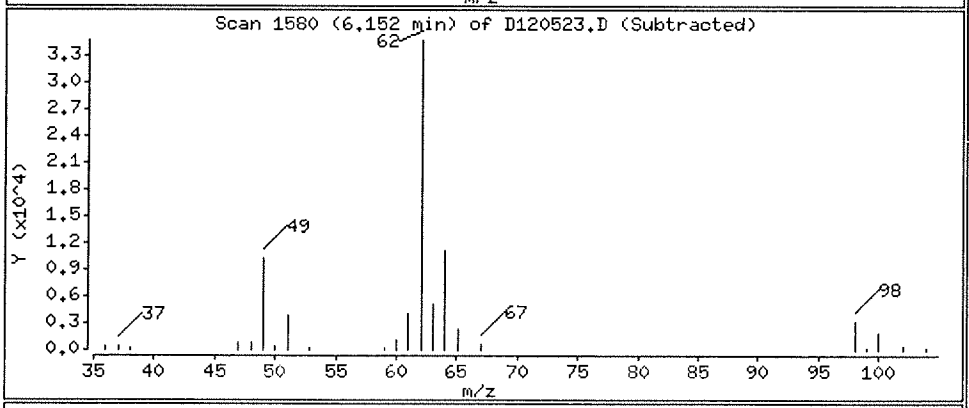
33 1,2-Dichloroethane

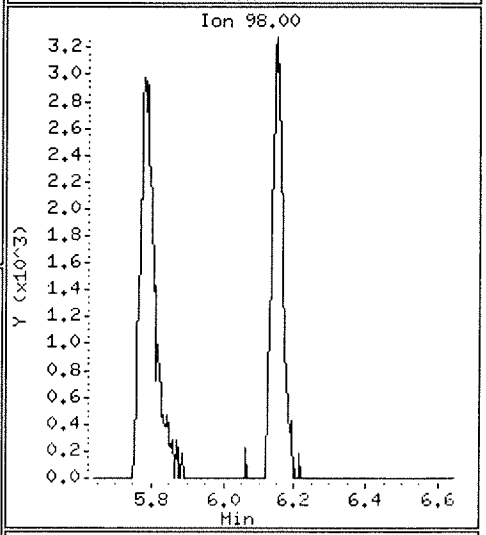
Concentration: 26.91 ug/l

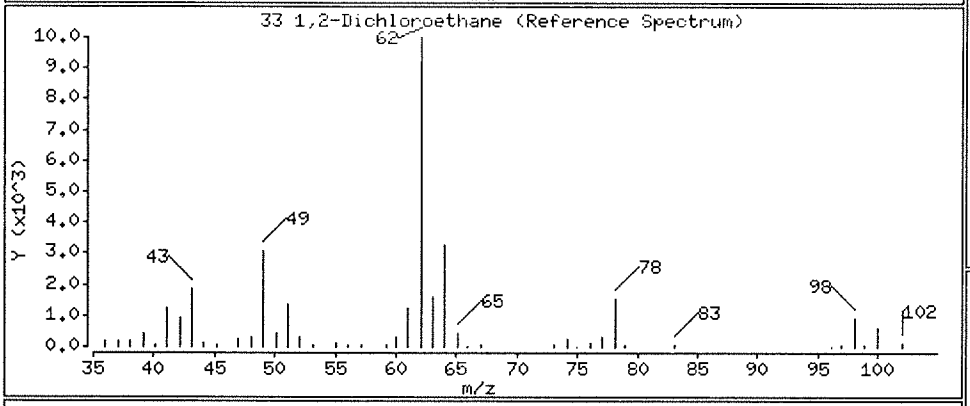
Review Code:

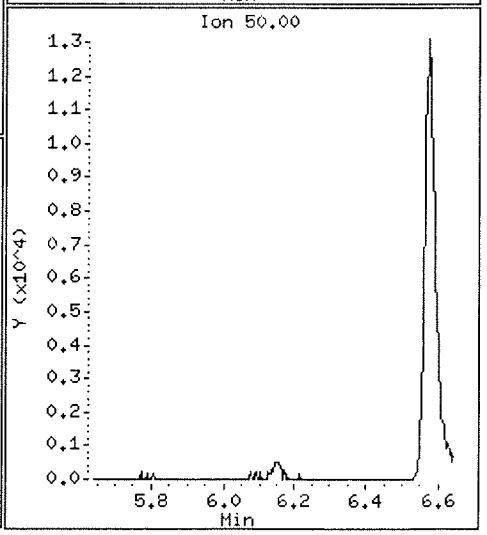


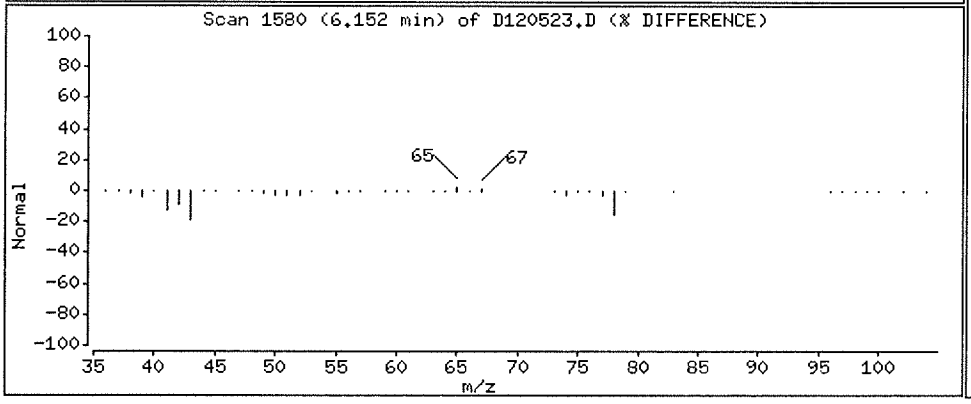












Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120523.D

Date : 05-DEC-2017 18:00

Client ID: HS17111408-02

Instrument: VOA2.i

Sample Info: HS17111408-02;HS17111408-02;;;

Purge Volume: 5.0

Operator: AP

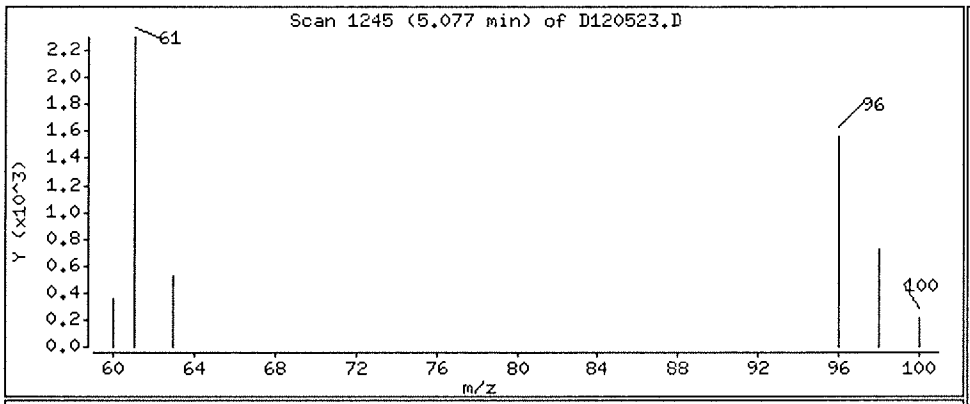
Column phase: DB624

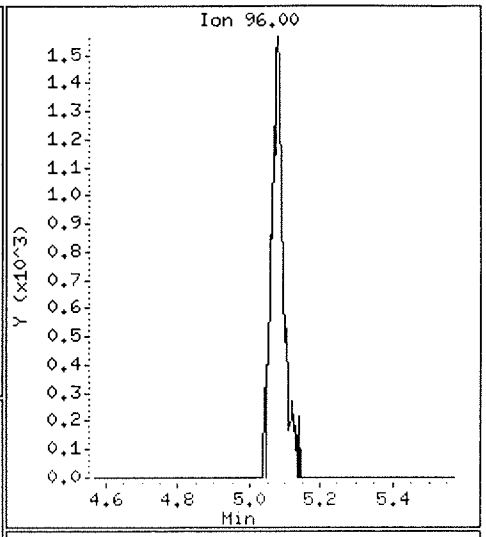
Column diameter: 0.18

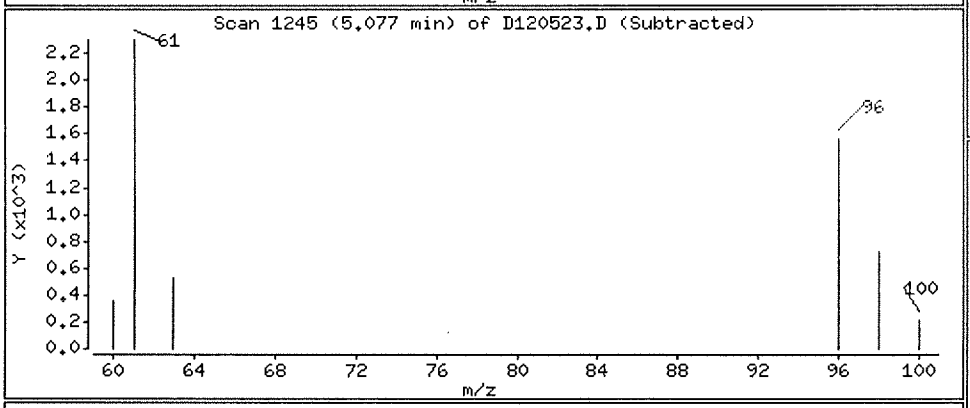
27 cis-1,2-Dichloroethene

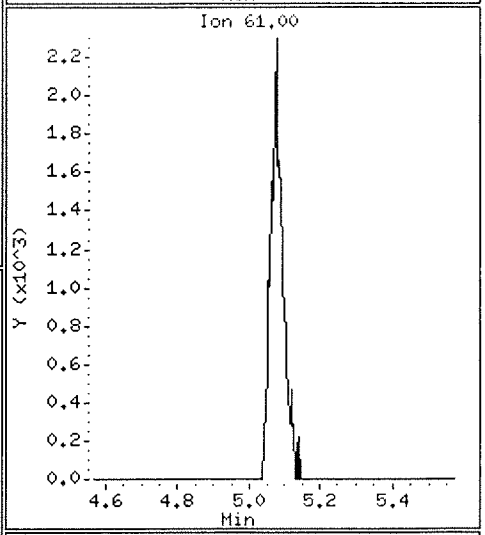
Concentration: 1.53 ug/l

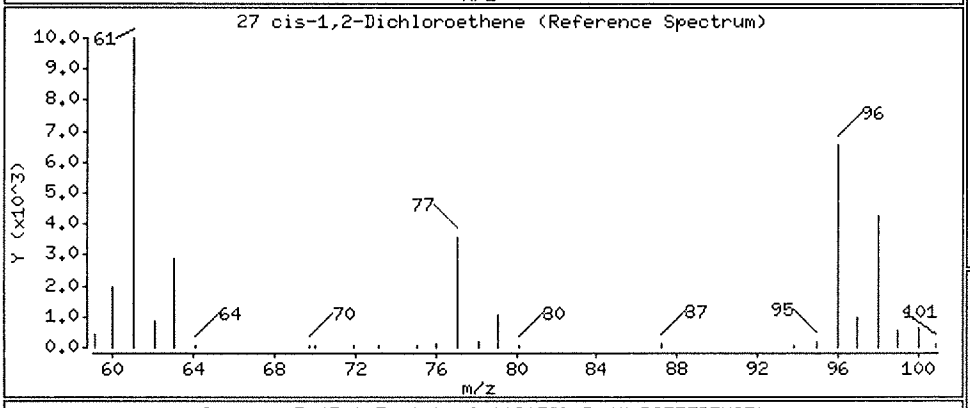
Review Code:

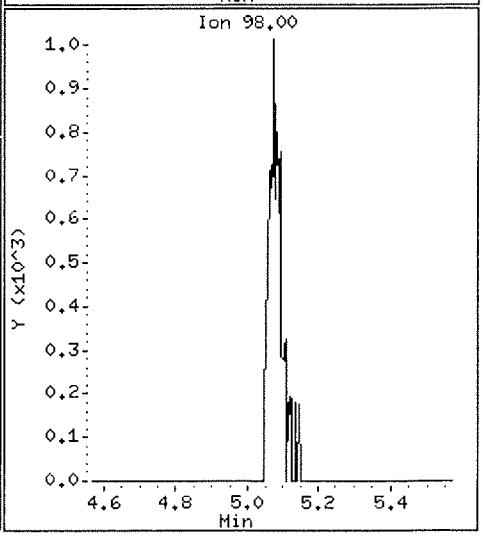


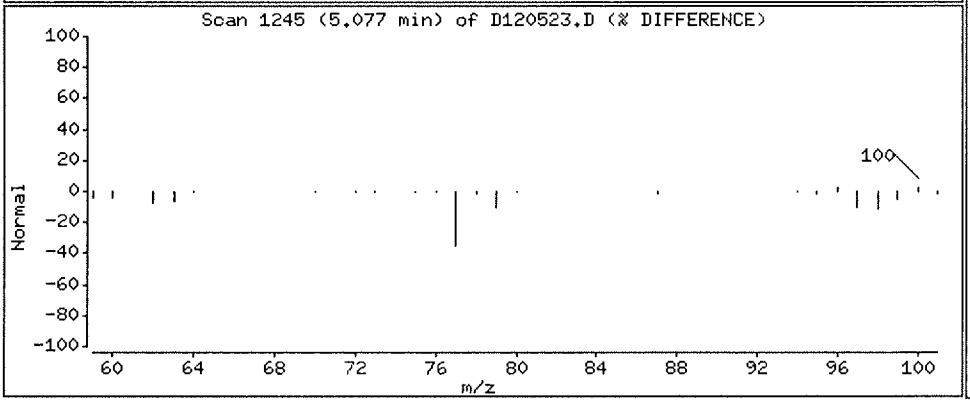












ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120524.D
Lab Smp Id: HS17111408-02 Client Smp ID: HS17111408-02
Inj Date : 05-DEC-2017 18:28
Operator : AP Inst ID: VOA2.i
Smp Info : HS17111408-02;HS17111408-02;;;
Misc Info : HS15080001;WATER;0;5;
Comment :
Method : \\nahstws003\Target\chem\voa2.i\D171205.b\8260LL.m
Meth Date : 01-Feb-2018 15:54 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 11:31 Cal File: D120205.D
Als bottle: 19
Dil Factor: 5.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

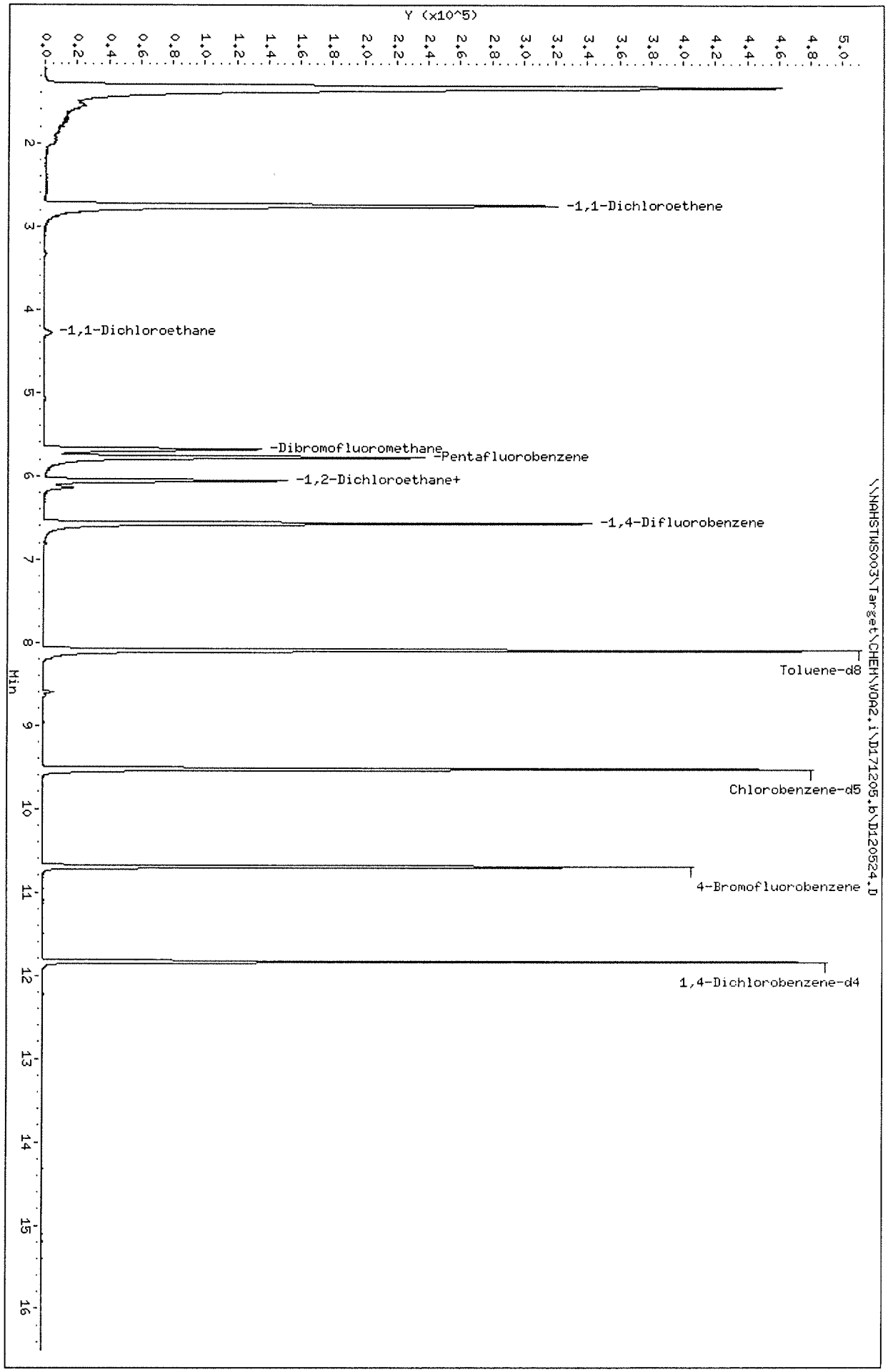
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	5.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
	22 1,1-Dichloroethane	63	4.268	4.287	(0.738)	10235	2.31123	11.55(aM)
	11 1,1-Dichloroethene	96	2.753	2.753	(0.476)	210287	101.057	505.28
	33 1,2-Dichloroethane	62	6.145	6.148	(0.936)	15006	4.89848	24.49(aM)
$	35 1,2-Dichloroethane-d4	65	6.058	6.062	(1.048)	128485	48.4855	48.48
*	36 1,4-Difluorobenzene	114	6.568	6.575	(1.000)	322757	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.841	(1.000)	129699	50.0000	
*	1 Pentafluorobenzene	168	5.779	5.782	(1.000)	229864	50.0000	
*	47 Chlorobenzene-d5	117	9.527	9.527	(1.000)	286832	50.0000	
$	30 Dibromofluoromethane	113	5.683	5.686	(0.983)	104350	45.9220	45.92
$	48 Toluene-d8	98	8.089	8.093	(0.849)	373320	52.6201	52.62
$	69 4-Bromofluorobenzene	95	10.695	10.698	(1.123)	135598	49.7674	49.76

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120524.D
Date : 05-DEC-2017 18:28
Client ID: HS17111408-02
Sample Info: HS17111408-02;HS17111408-02;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120524.D

Date : 05-DEC-2017 18:28

Client ID: HS17111408-02

Instrument: VOA2.i

Sample Info: HS17111408-02;HS17111408-02;;;

Purge Volume: 5.0

Operator: AP

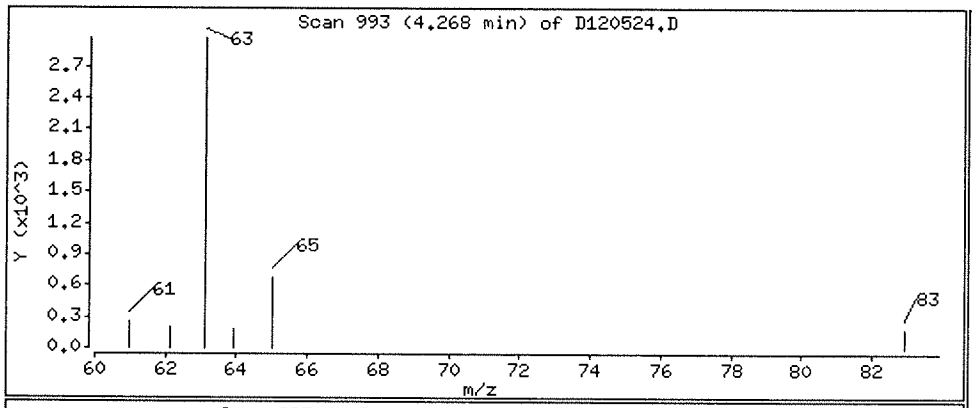
Column phase: DB624

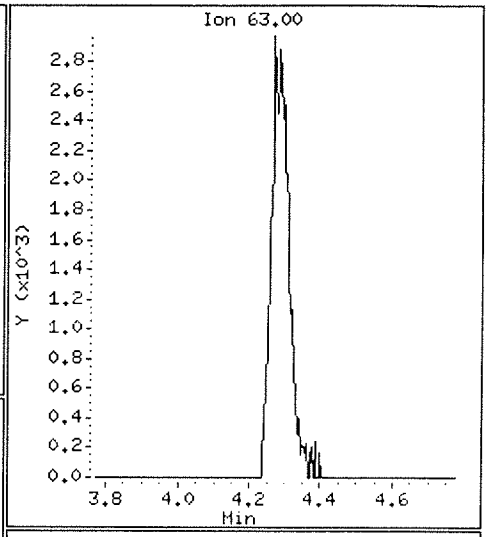
Column diameter: 0.18

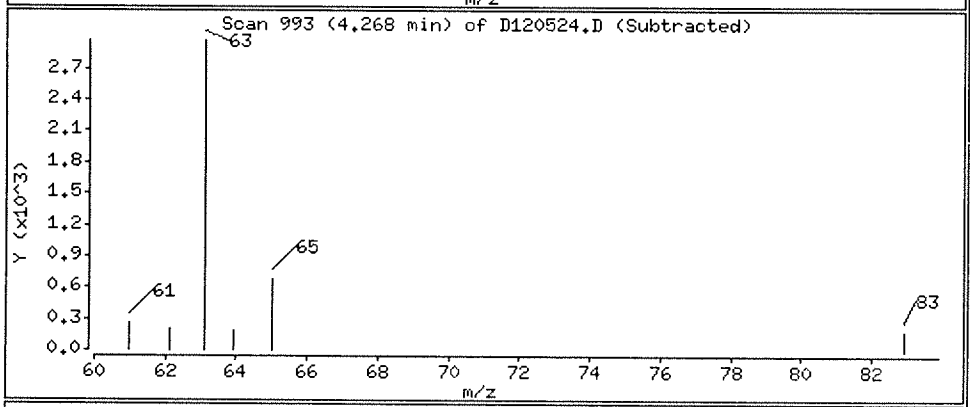
22 1,1-Dichloroethane

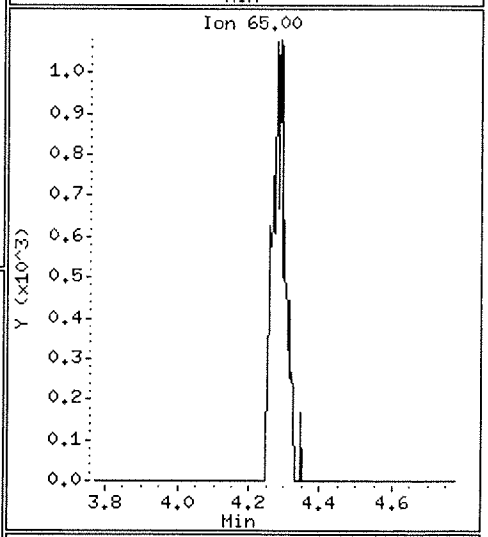
Concentration: 11.55 ug/l

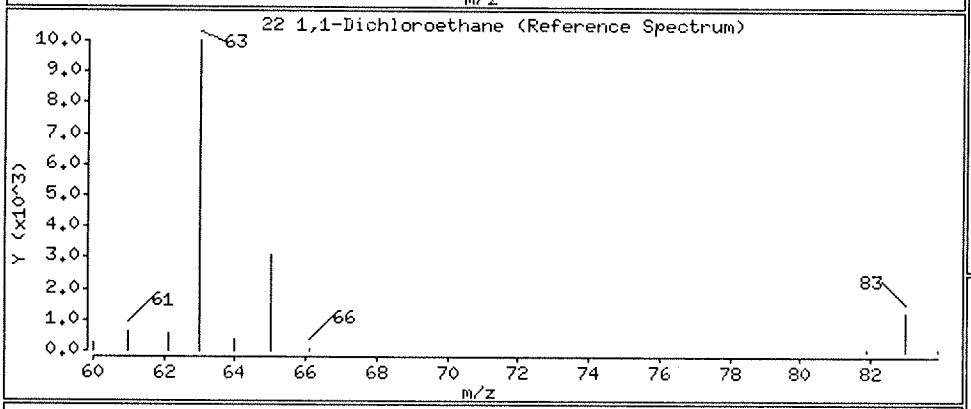
Review Code:

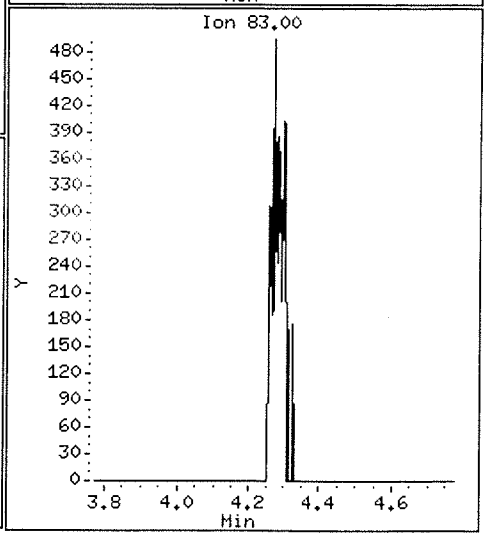


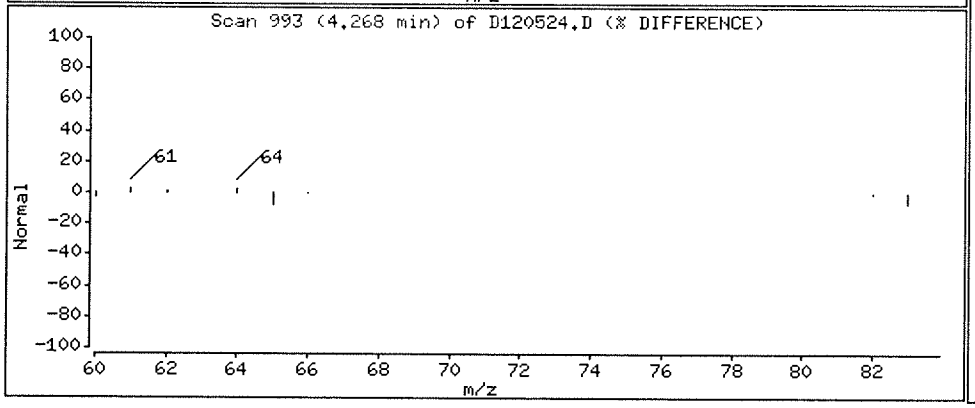












Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120524.D

Date : 05-DEC-2017 18:28

Client ID: HS17111408-02

Instrument: VOA2.i

Sample Info: HS17111408-02;HS17111408-02;;;

Purge Volume: 5.0

Operator: AP

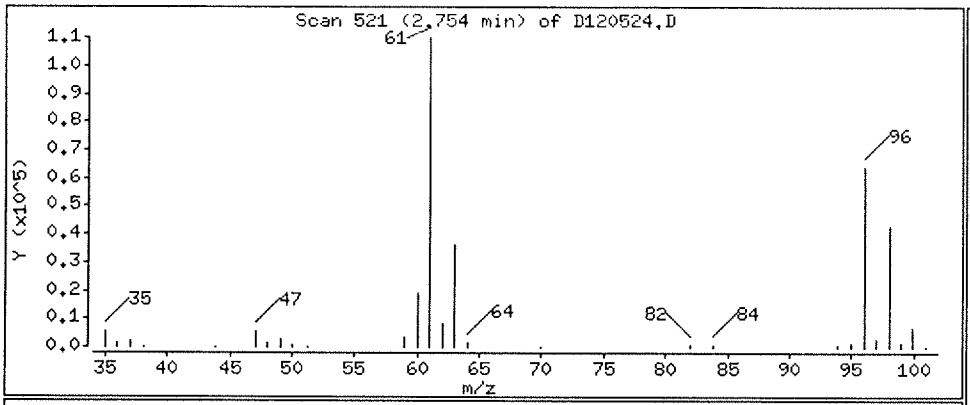
Column phase: DB624

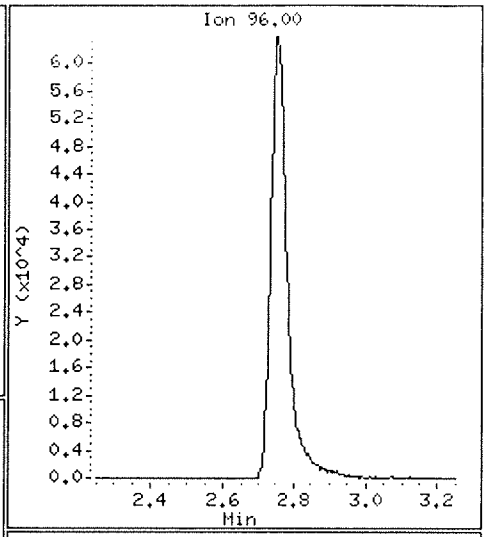
Column diameter: 0.18

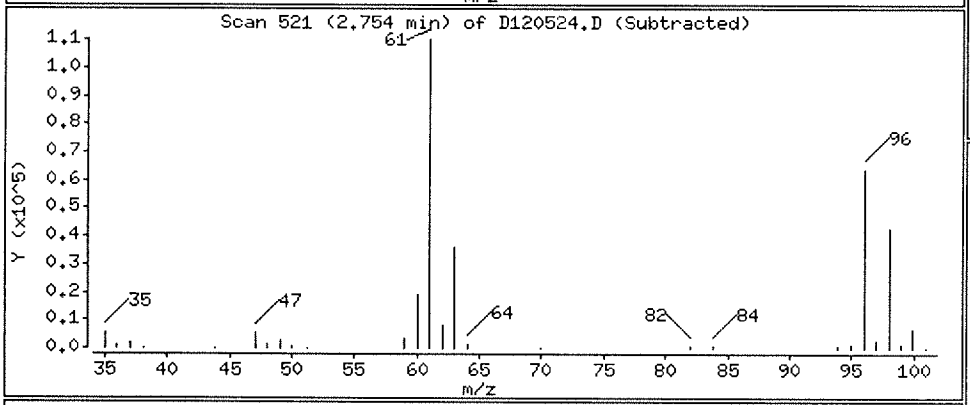
11 1,1-Dichloroethene

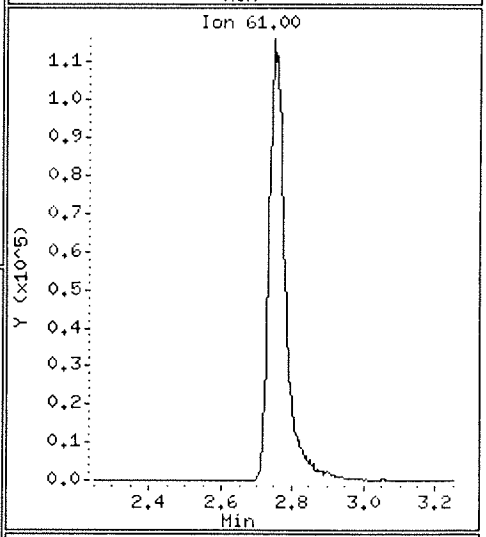
Concentration: 505.28 ug/l

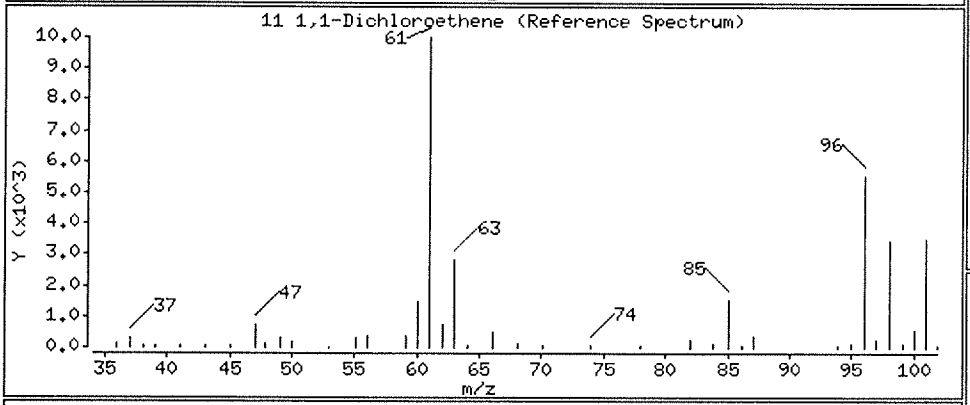
Review Code:

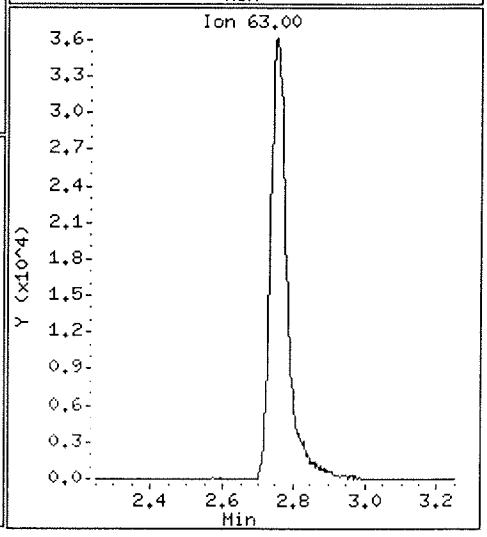


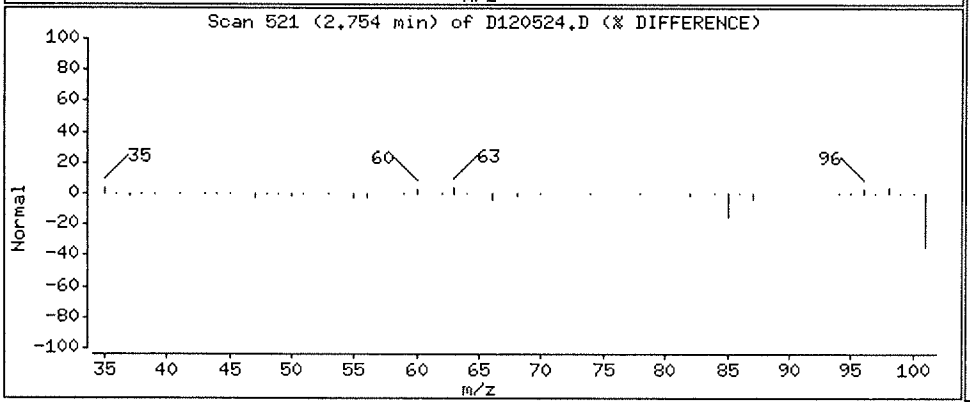












Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120524.D

Date : 05-DEC-2017 18:28

Client ID: HS17111408-02

Instrument: VOA2.i

Sample Info: HS17111408-02;HS17111408-02;;;

Purge Volume: 5.0

Operator: AP

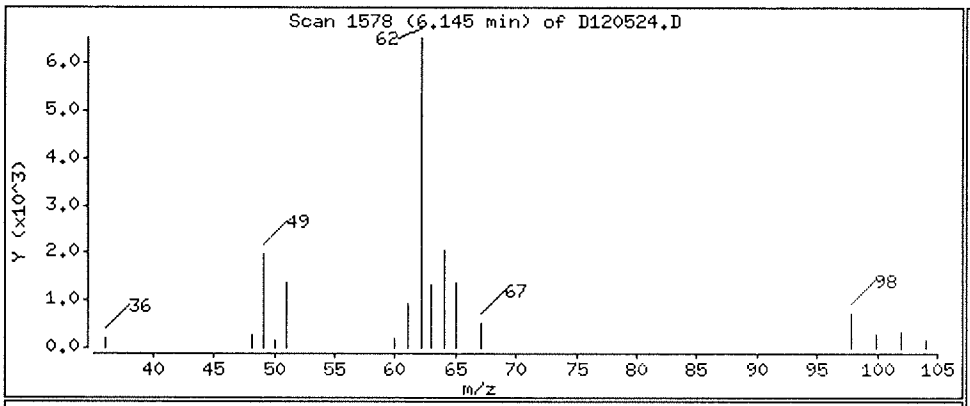
Column phase: DB624

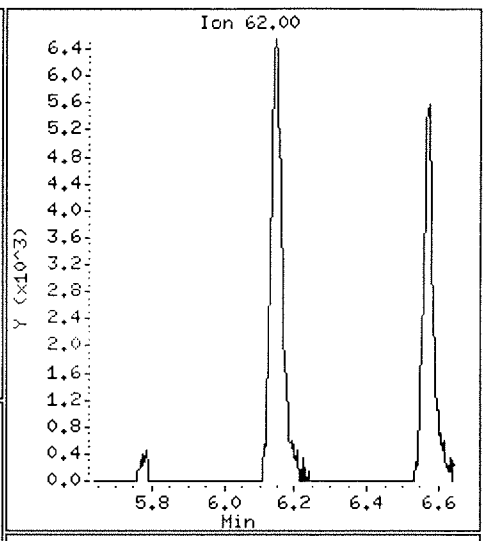
Column diameter: 0.18

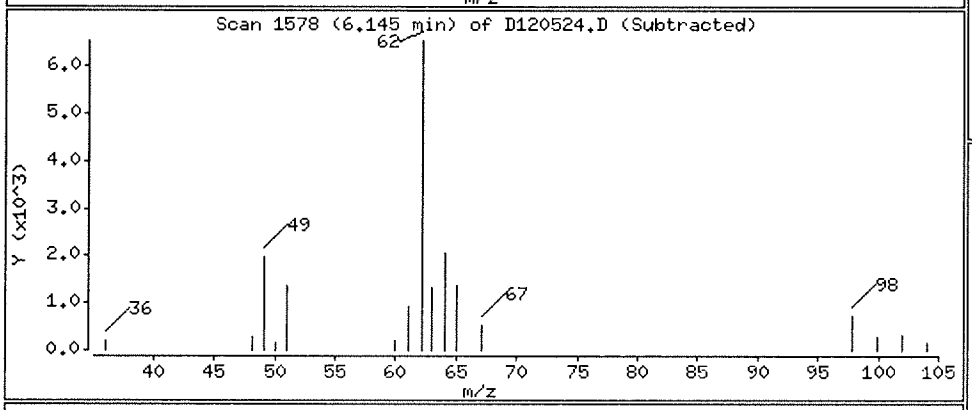
33 1,2-Dichloroethane

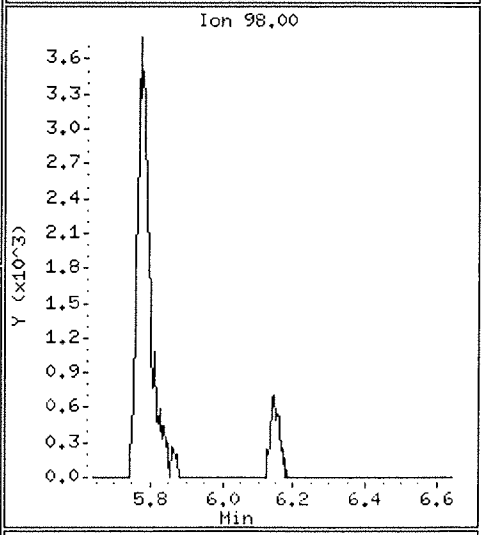
Concentration: 24.49 ug/l

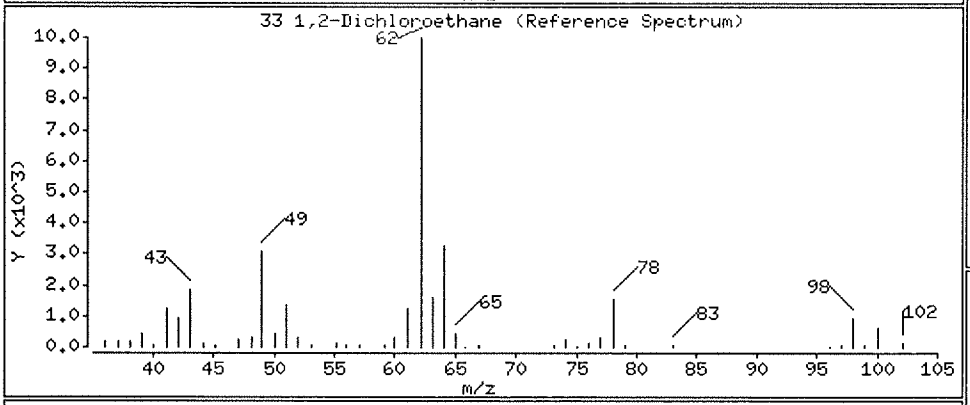
Review Code:

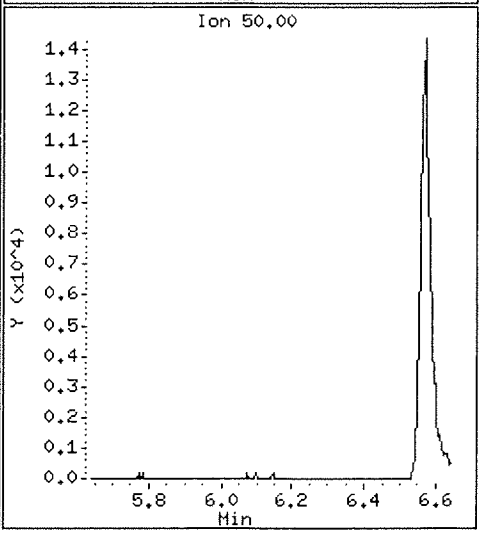


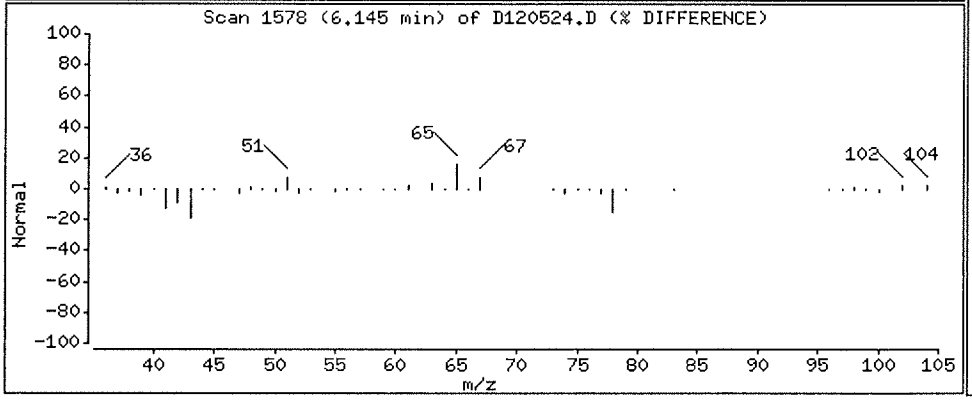












ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120525.D
Lab Smp Id: HS17111408-07 Client Smp ID: HS17111408-07
Inj Date : 05-DEC-2017 18:52
Operator : AP Inst ID: VOA2.i
Smp Info : HS17111408-07;HS17111408-07;;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\chem\voa2.i\D171205.b\8260LL.m
Meth Date : 01-Feb-2018 15:54 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 11:31 Cal File: D120205.D
Als bottle: 20
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
22 1,1-Dichloroethane	63	4.278	4.287	(0.740)	96303	21.8877	21.88
11 1,1-Dichloroethene	96	2.753	2.753	(0.476)	966795	467.622	467.62(A)
33 1,2-Dichloroethane	62	6.142	6.148	(0.935)	84909	28.0430	28.04
27 cis-1,2-Dichloroethene	96	5.067	5.073	(0.877)	2968	1.25929	1.25(aM)
38 Trichloroethene	130	6.822	6.822	(1.038)	4614	2.10445	2.10(a)
$ 35 1,2-Dichloroethane-d4	65	6.059	6.062	(1.048)	126338	47.9842	47.98
* 36 1,4-Difluorobenzene	114	6.572	6.575	(1.000)	319008	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	11.838	11.841	(1.000)	130055	50.0000	
* 1 Pentafluorobenzene	168	5.779	5.782	(1.000)	228384	50.0000	
* 47 Chlorobenzene-d5	117	9.527	9.527	(1.000)	287395	50.0000	
$ 30 Dibromofluoromethane	113	5.686	5.686	(0.984)	101670	45.0325	45.03
$ 48 Toluene-d8	98	8.090	8.093	(0.849)	377079	53.0458	53.04
$ 69 4-Bromofluorobenzene	95	10.695	10.698	(1.123)	136514	50.0055	50.00

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
A - Target compound detected but, quantitated amount
exceeded maximum amount.
M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120525.D

Date : 05-DEC-2017 18:52

Client ID: HS17111408-07

Instrument: VOA2.i

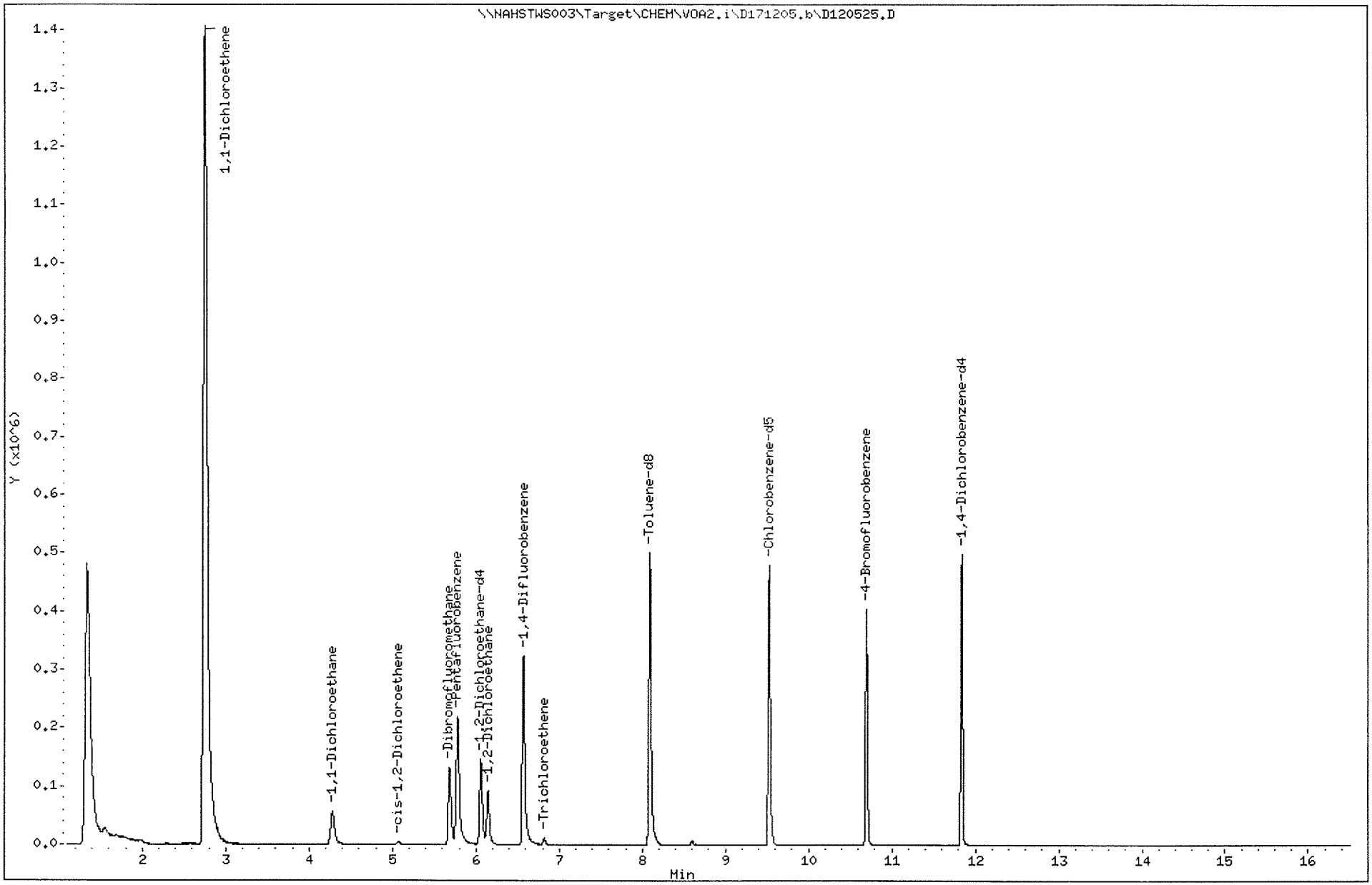
Sample Info: HS17111408-07;HS17111408-07;;;

Purge Volume: 5.0

Operator: AP

Column phase: DB624

Column diameter: 0.18



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120525.D

Date : 05-DEC-2017 18:52

Client ID: HS17111408-07

Instrument: VOA2.i

Sample Info: HS17111408-07;HS17111408-07;;;

Purge Volume: 5.0

Operator: AP

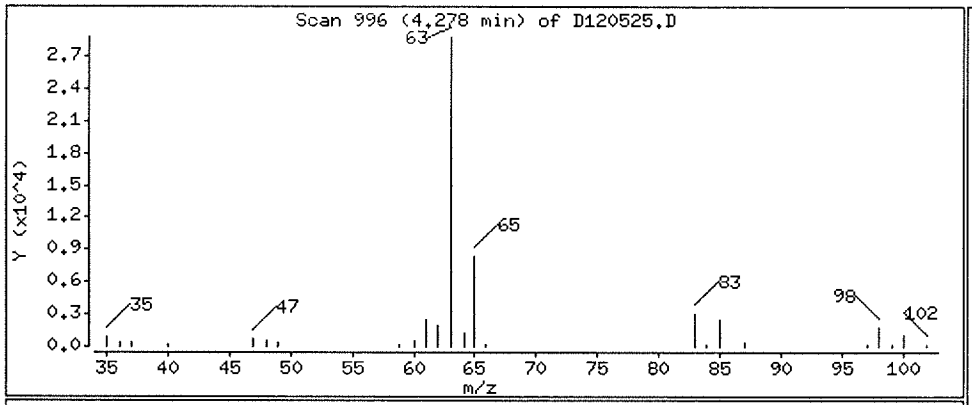
Column phase: DB624

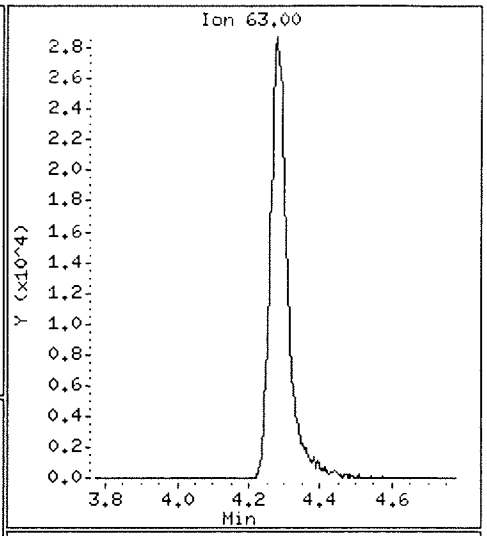
Column diameter: 0.18

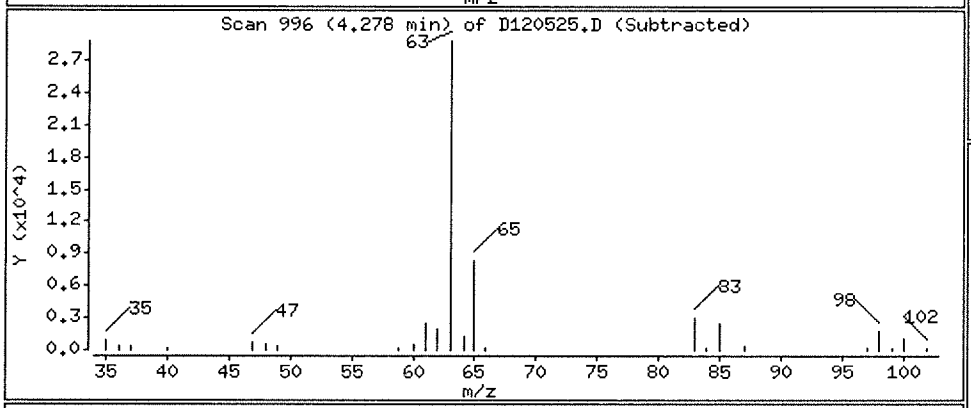
22 1,1-Dichloroethane

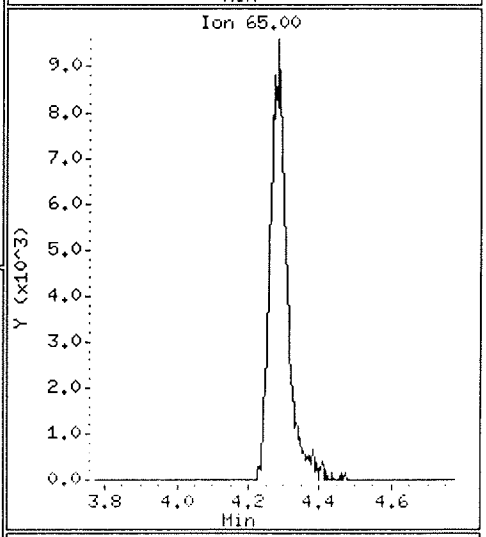
Concentration: 21.88 ug/l

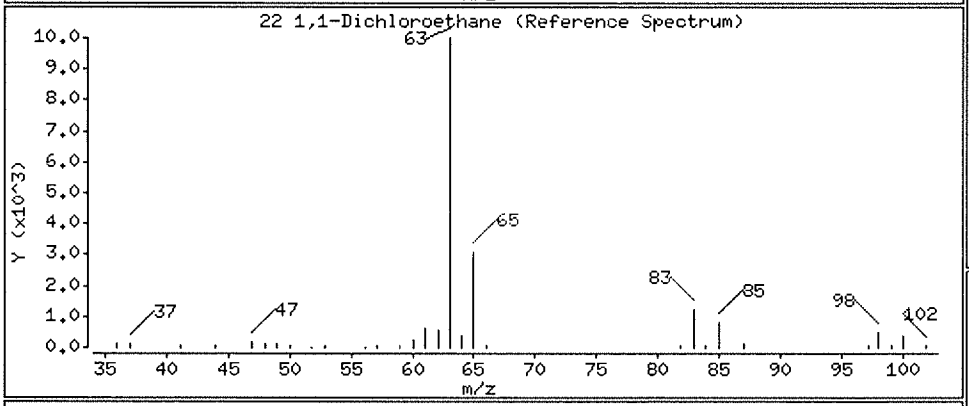
Review Code:

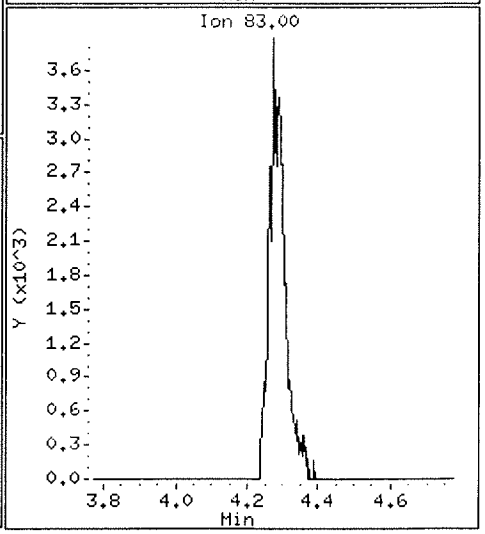


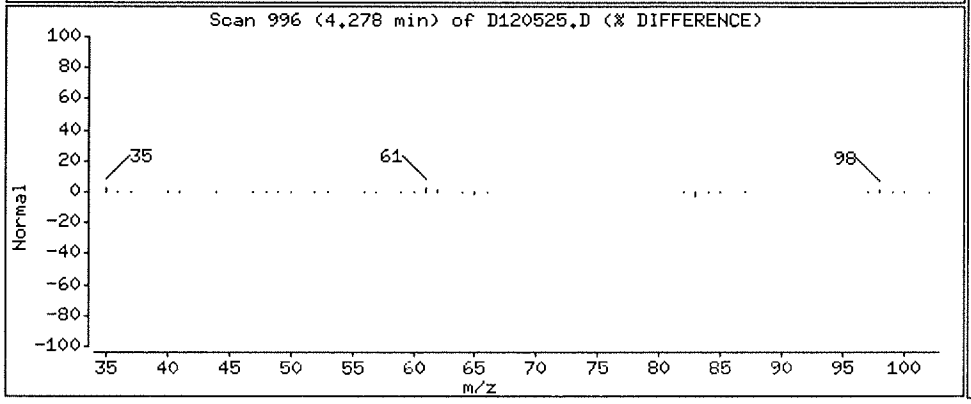












Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120525.D

Date : 05-DEC-2017 18:52

Client ID: HS17111408-07

Instrument: VOA2.i

Sample Info: HS17111408-07;HS17111408-07;;;

Purge Volume: 5.0

Operator: AP

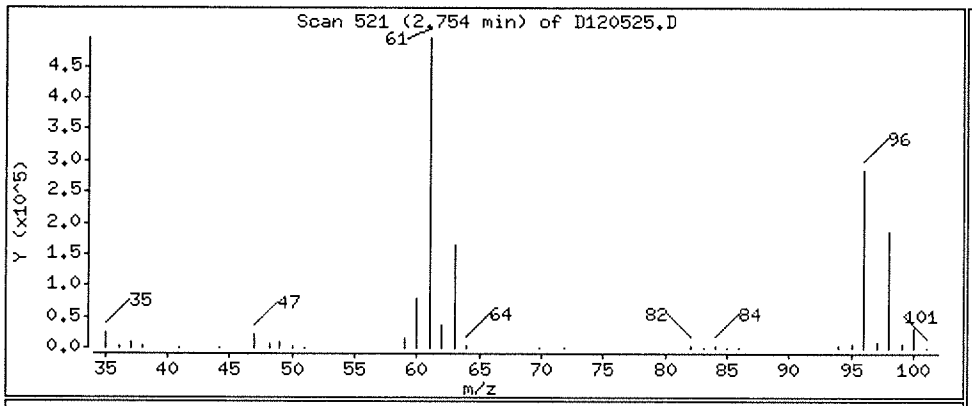
Column phase: DB624

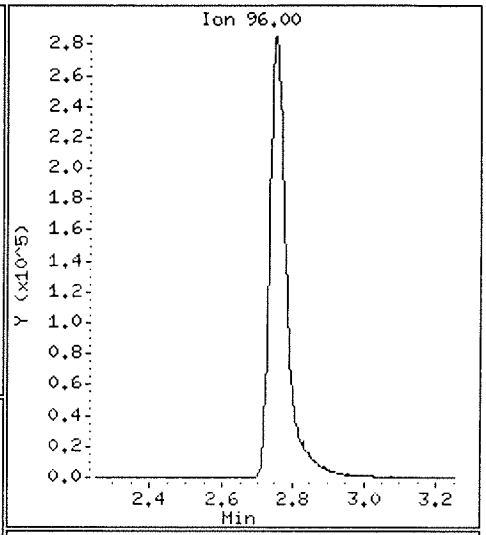
Column diameter: 0.18

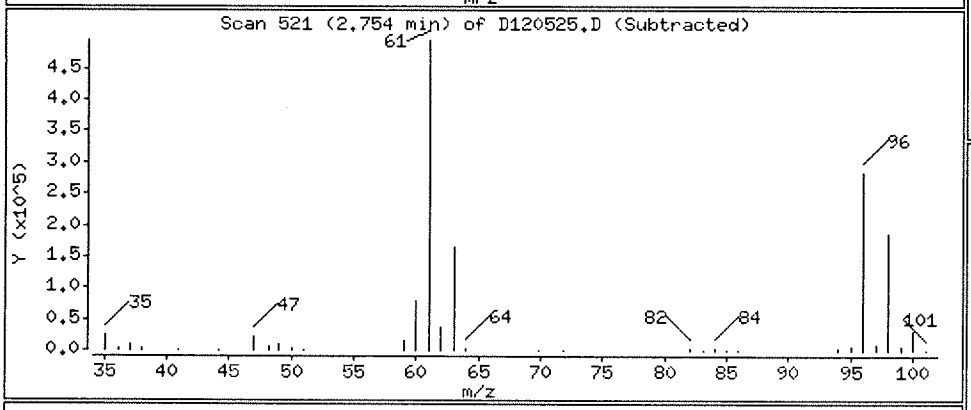
11 1,1-Dichloroethene

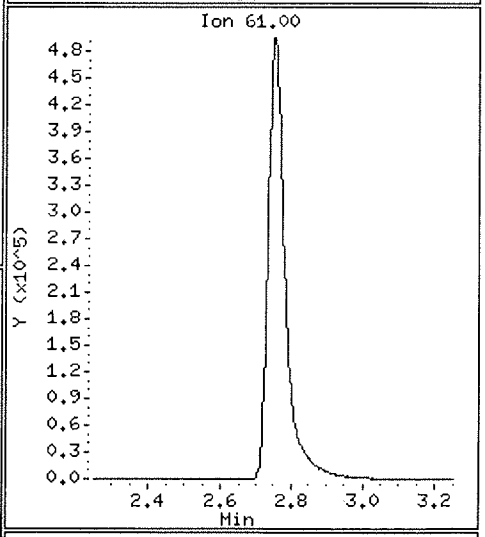
Concentration: 467.62 ug/l

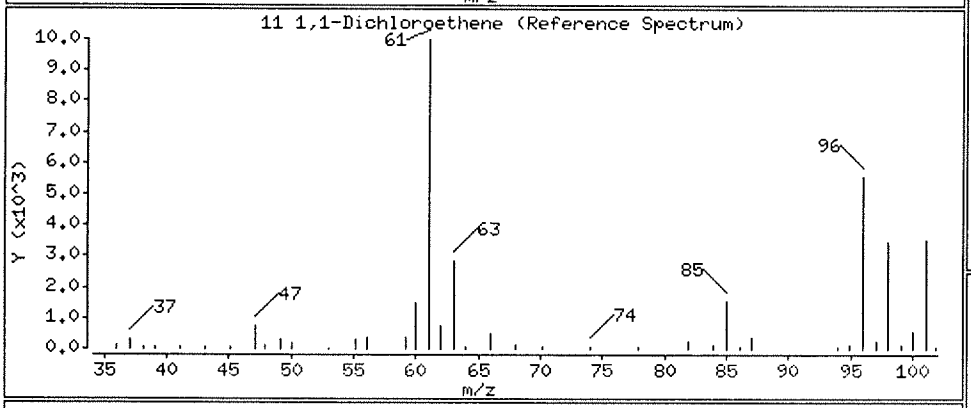
Review Code:

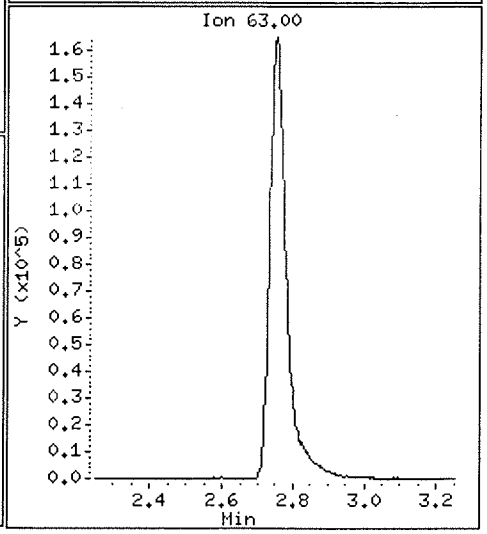


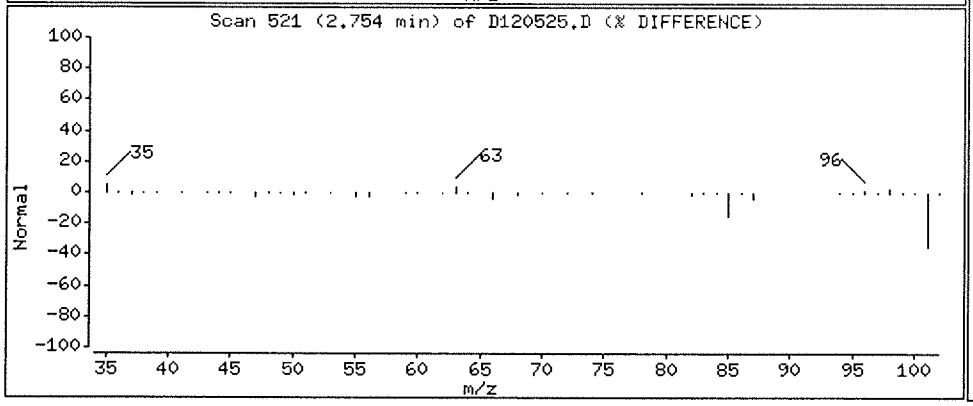












Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120525.D Page 5

Date : 05-DEC-2017 18:52

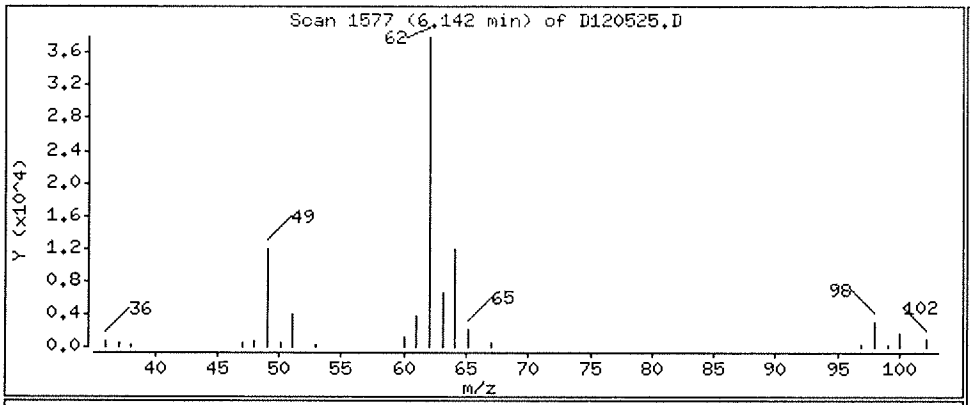
Client ID: HS17111408-07 Instrument: VOA2.i

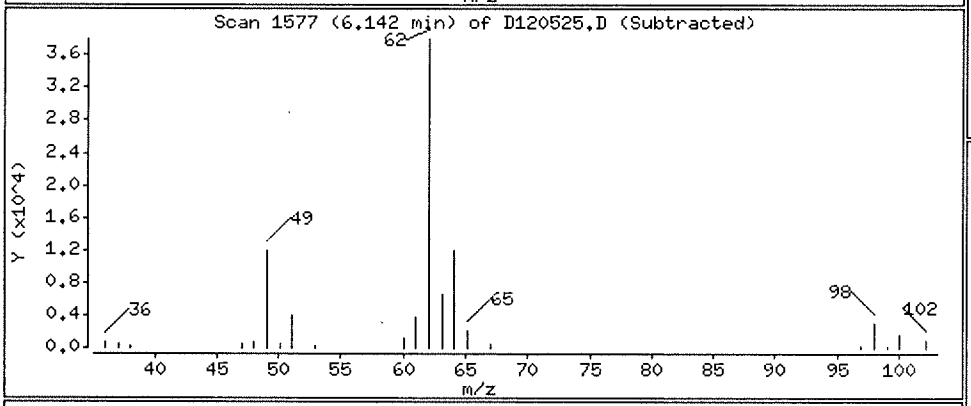
Sample Info: HS17111408-07;HS17111408-07;;;

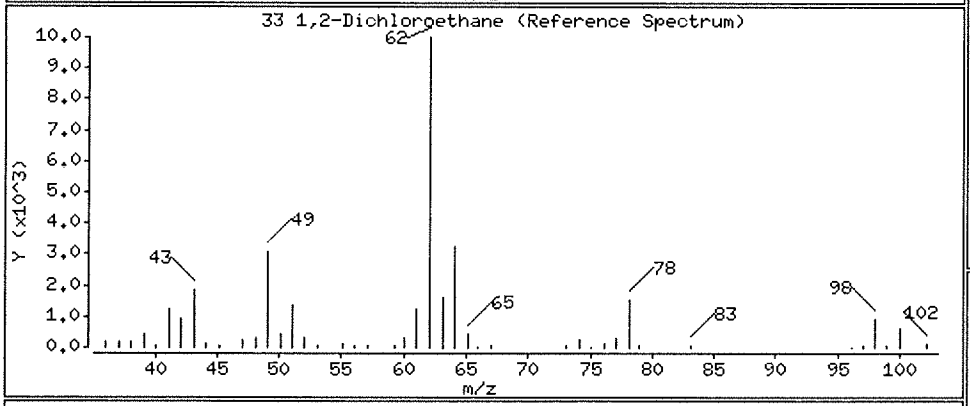
Purge Volume: 5.0 Operator: AP

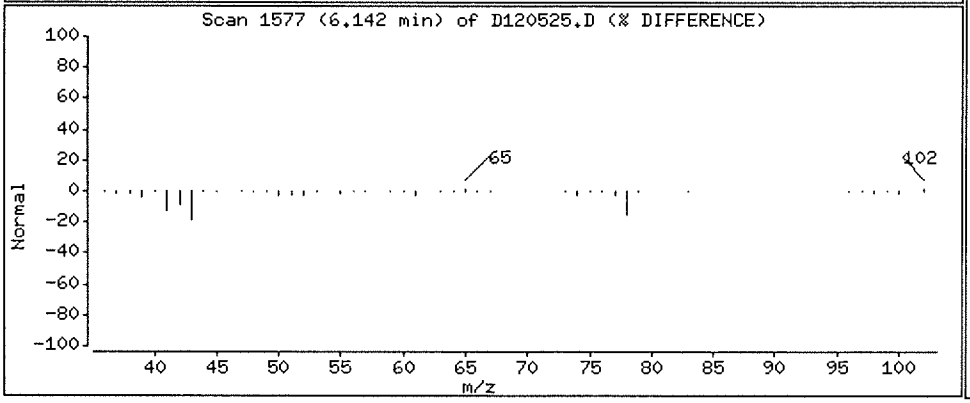
Column phase: DB624 Column diameter: 0.18

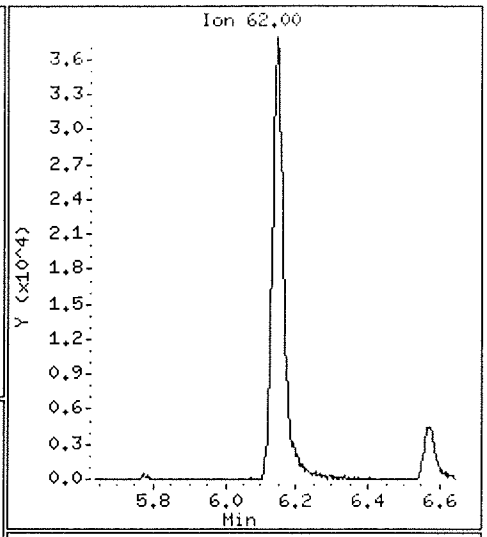
33 1,2-Dichloroethane Concentration: 28.04 ug/l Review Code:

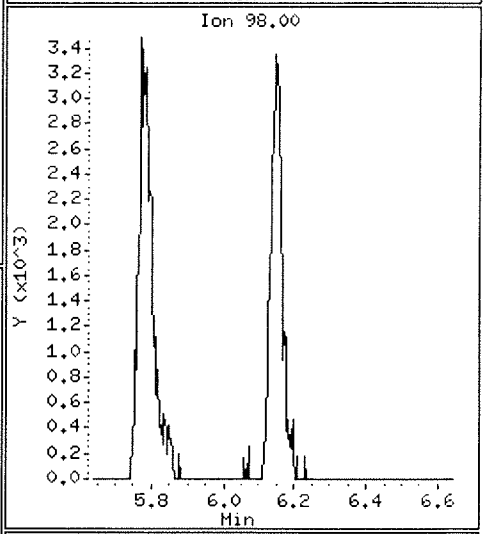


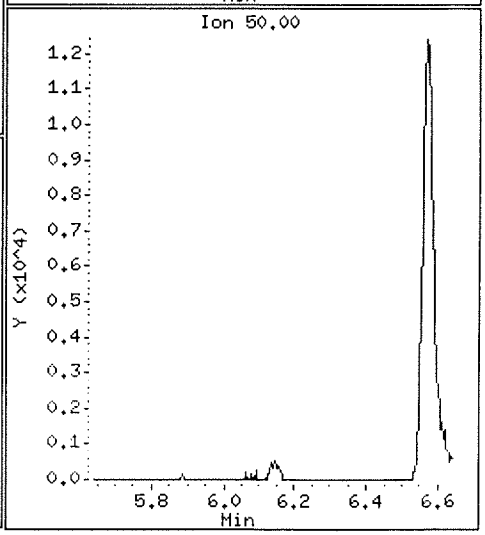












Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120525.D

Date : 05-DEC-2017 18:52

Client ID: HS17111408-07

Instrument: VOA2.i

Sample Info: HS17111408-07;HS17111408-07;;;

Purge Volume: 5.0

Operator: AP

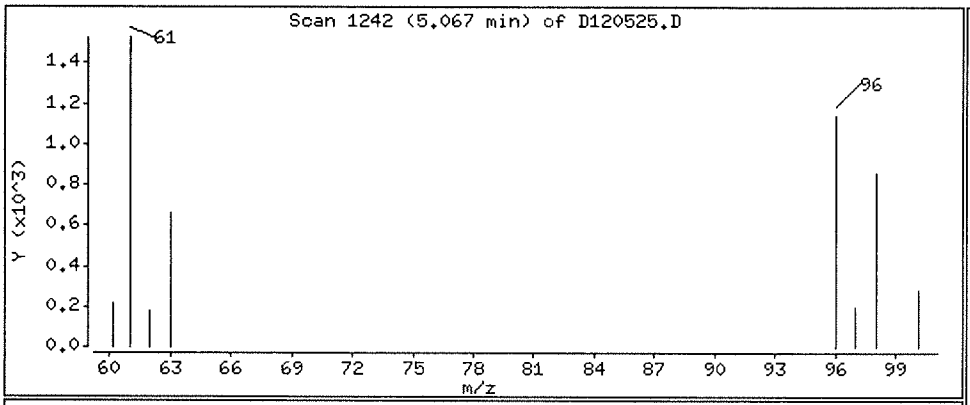
Column phase: DB624

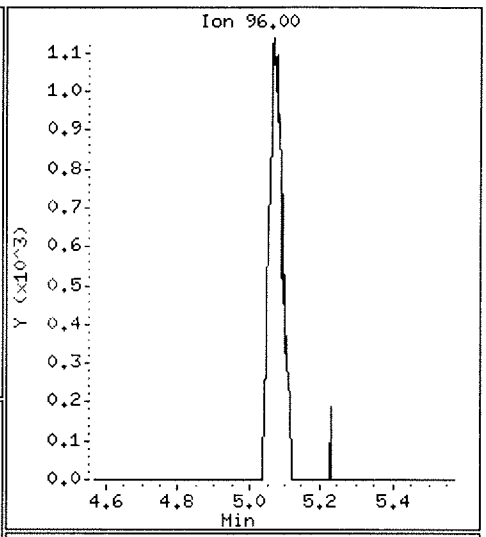
Column diameter: 0.18

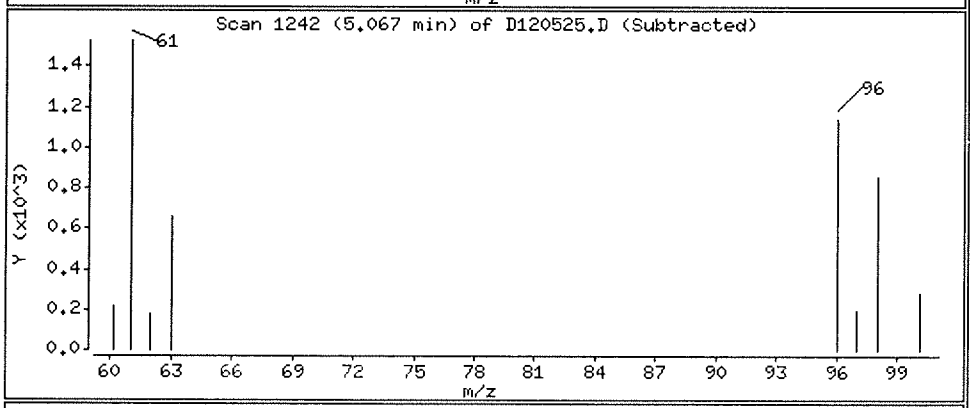
27 cis-1,2-Dichloroethene

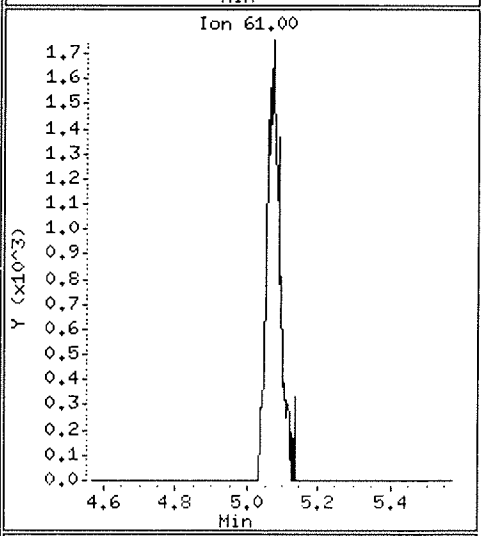
Concentration: 1.25 ug/l

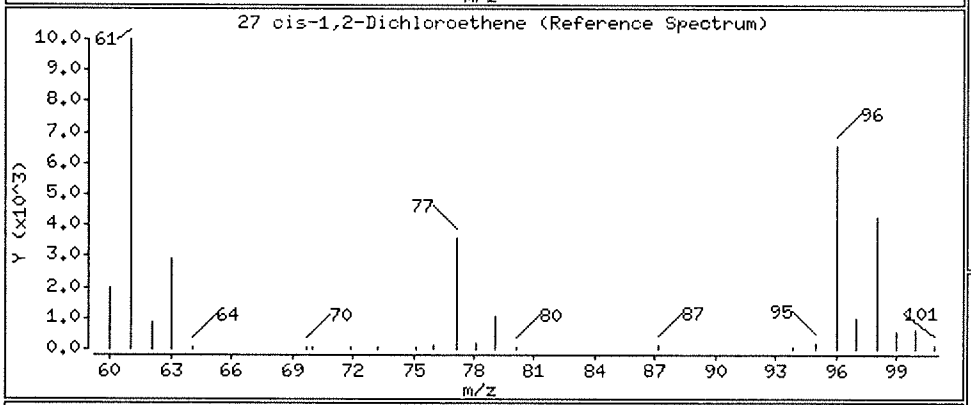
Review Code:

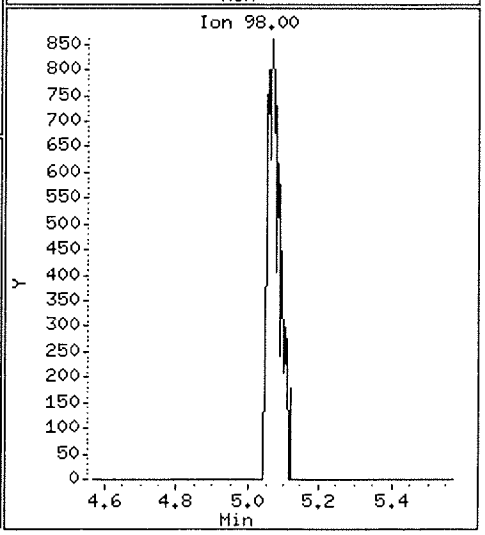


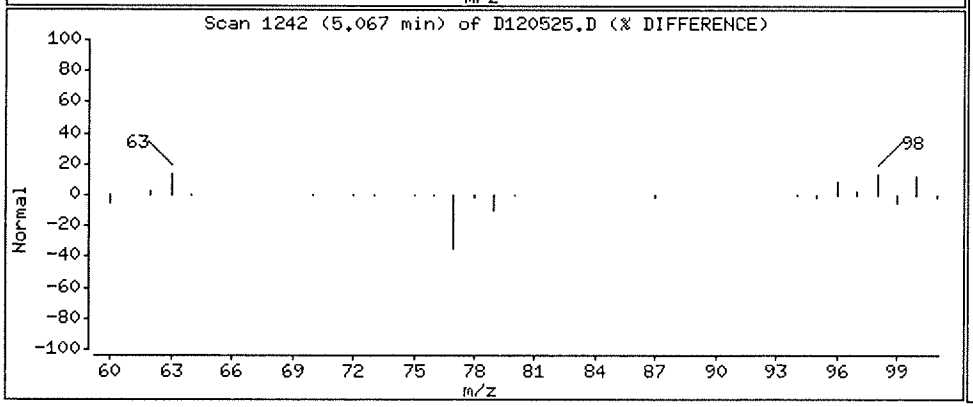












Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120525.D

Date : 05-DEC-2017 18:52

Client ID: HS17111408-07

Instrument: VOA2.i

Sample Info: HS17111408-07;HS17111408-07;;;

Purge Volume: 5.0

Operator: AP

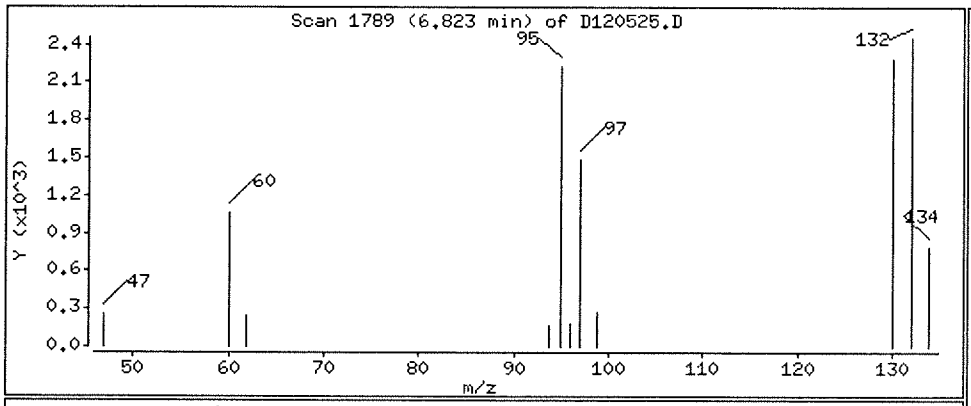
Column phase: DB624

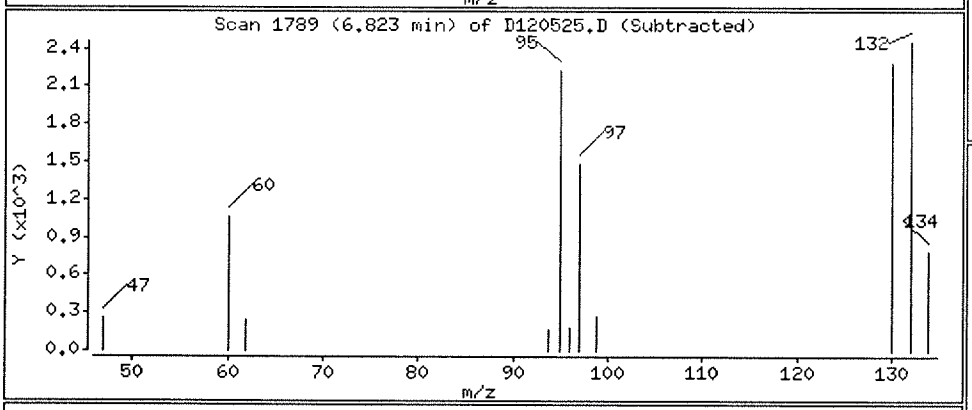
Column diameter: 0.18

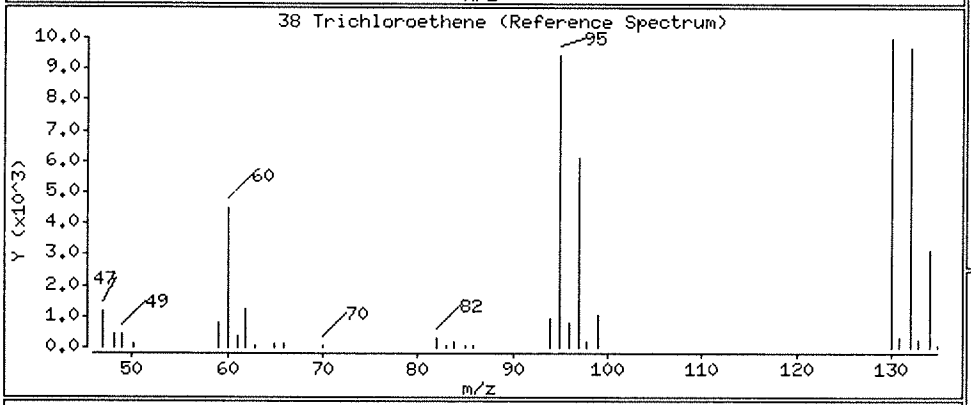
38 Trichloroethene

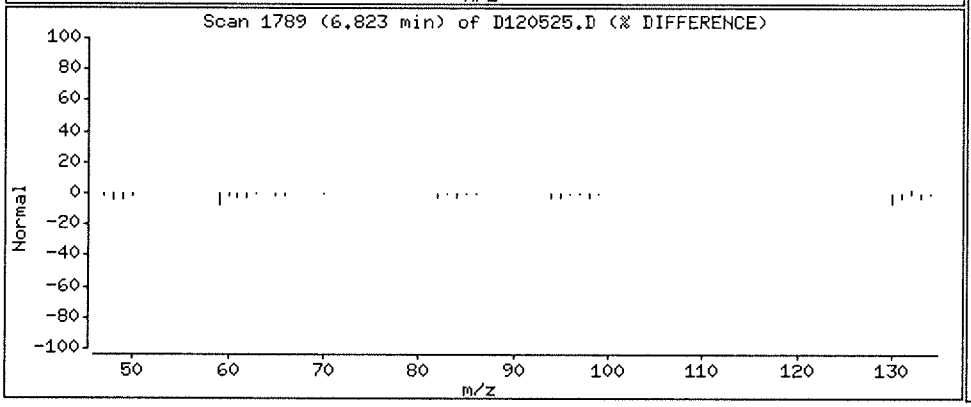
Concentration: 2.10 ug/l

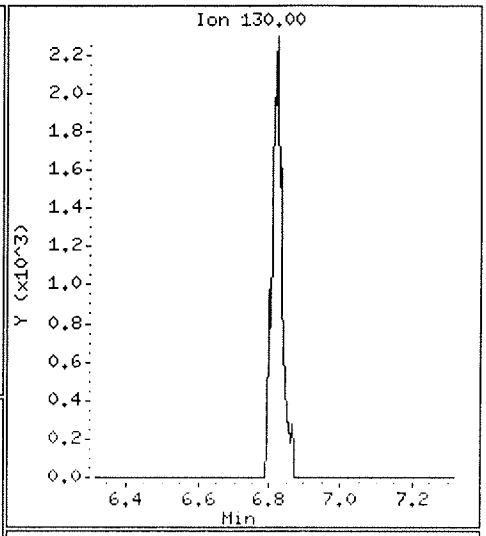
Review Code:

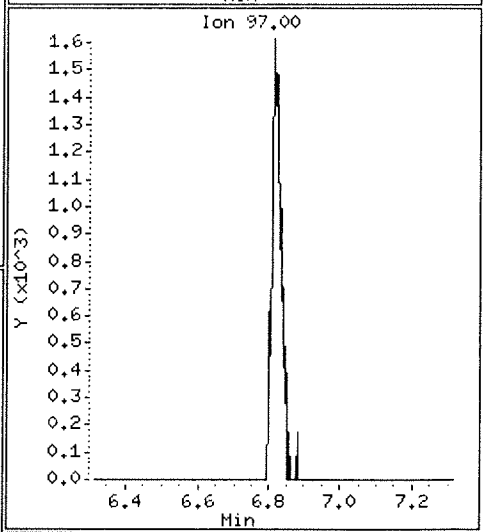


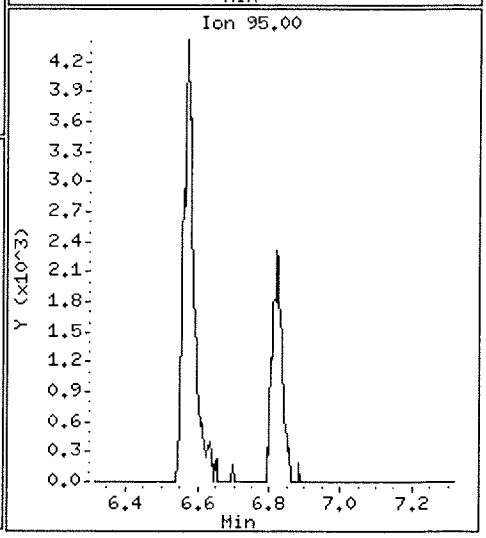












ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120526.D
Lab Smp Id: HS17111408-07 Client Smp ID: HS17111408-07
Inj Date : 05-DEC-2017 19:19
Operator : AP Inst ID: VOA2.i
Smp Info : HS17111408-07;HS17111408-07;;;
Misc Info : HS15080001;WATER;0;5;
Comment :
Method : \\nahstws003\Target\chem\voa2.i\D171205.b\8260LL.m
Meth Date : 01-Feb-2018 15:54 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 11:31 Cal File: D120205.D
Als bottle: 20
Dil Factor: 5.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	5.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
	11 1,1-Dichloroethene	96	2.750	2.753	(0.476)	105985	49.1824	245.91(M)
	33 1,2-Dichloroethane	62	6.142	6.148	(0.935)	9373	3.09028	15.45(aM)
$	35 1,2-Dichloroethane-d4	65	6.052	6.062	(1.048)	129697	47.2606	47.26
*	36 1,4-Difluorobenzene	114	6.569	6.575	(1.000)	319560	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.841	(1.000)	127682	50.0000	
*	1 Pentafluorobenzene	168	5.776	5.782	(1.000)	238046	50.0000	
*	47 Chlorobenzene-d5	117	9.524	9.527	(1.000)	278849	50.0000	
$	30 Dibromofluoromethane	113	5.686	5.686	(0.984)	103223	43.8646	43.86
$	48 Toluene-d8	98	8.086	8.093	(0.849)	364718	52.8794	52.87
$	69 4-Bromofluorobenzene	95	10.695	10.698	(1.123)	130299	49.1917	49.19

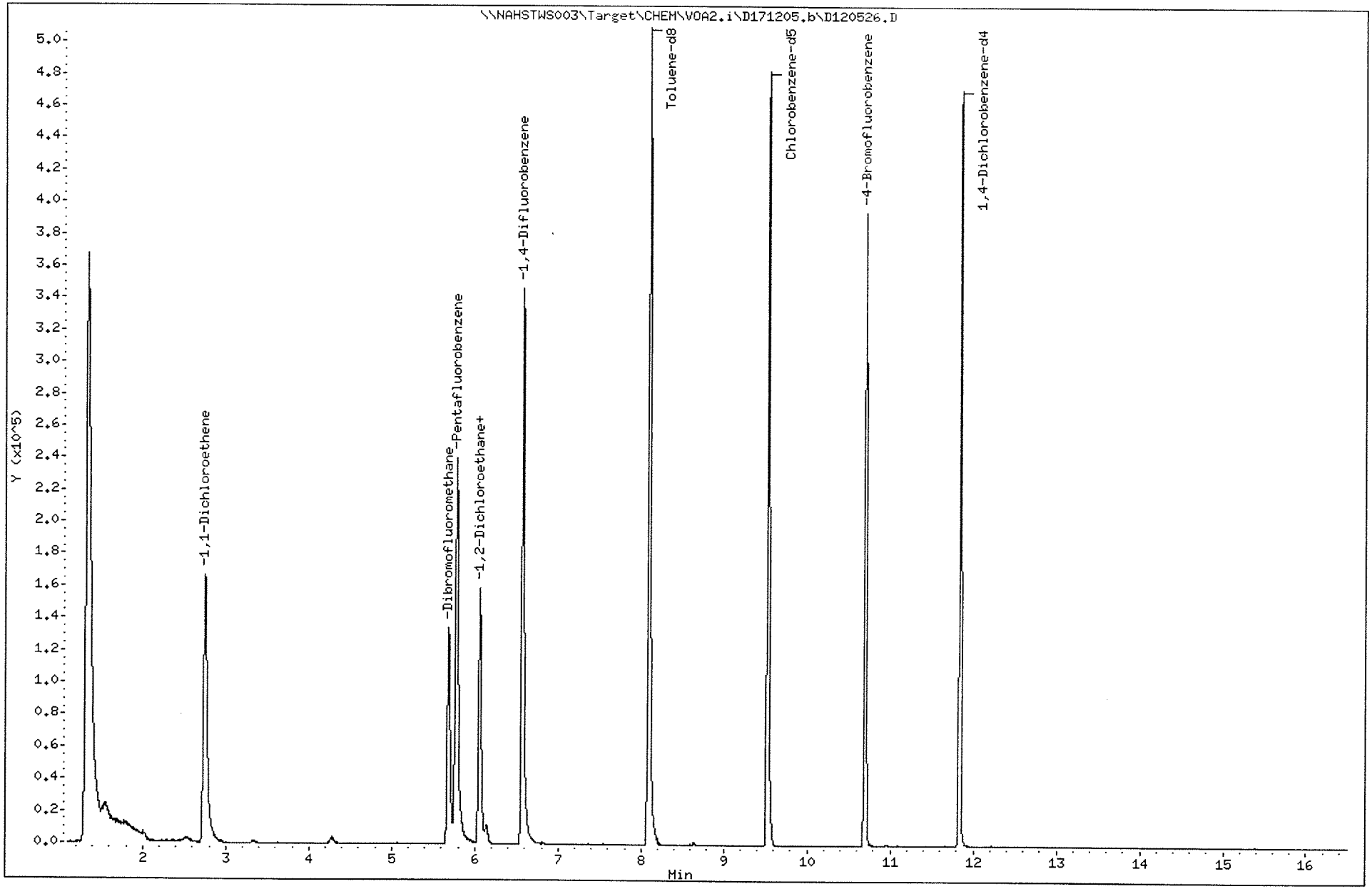
QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.

00911642

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120526.D
Date : 05-DEC-2017 19:19
Client ID: HS17111408-07
Sample Info: HS17111408-07;HS17111408-07;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120526.D

Date : 05-DEC-2017 19:19

Client ID: HS17111408-07

Instrument: VOA2.i

Sample Info: HS17111408-07;HS17111408-07;;;

Purge Volume: 5.0

Operator: AP

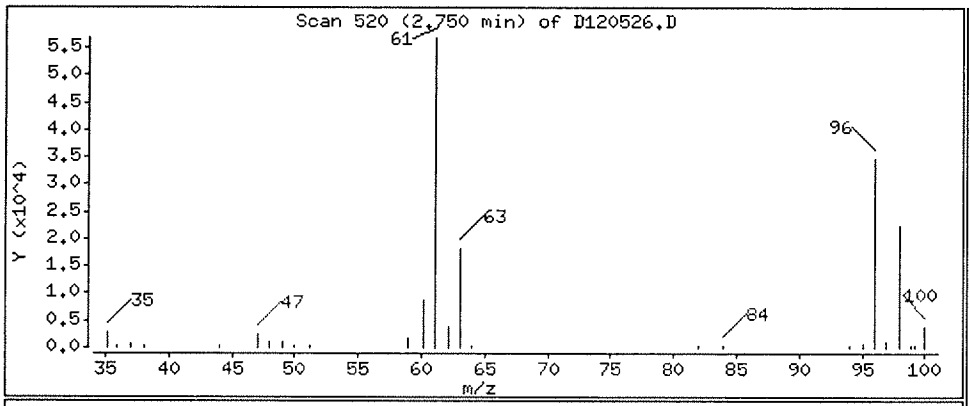
Column phase: DB624

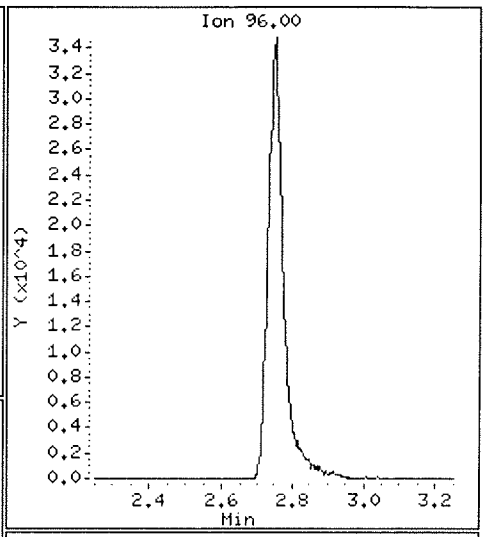
Column diameter: 0.18

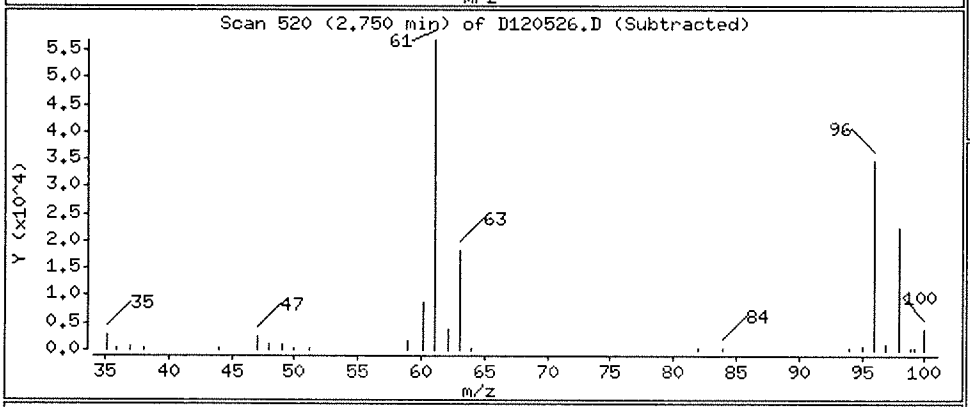
11 1,1-Dichloroethene

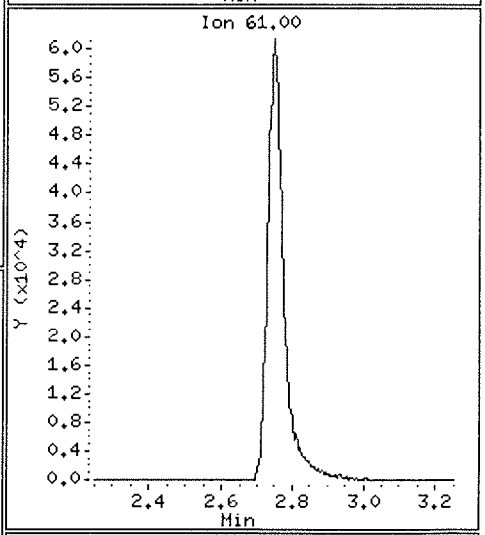
Concentration: 245.91 ug/l

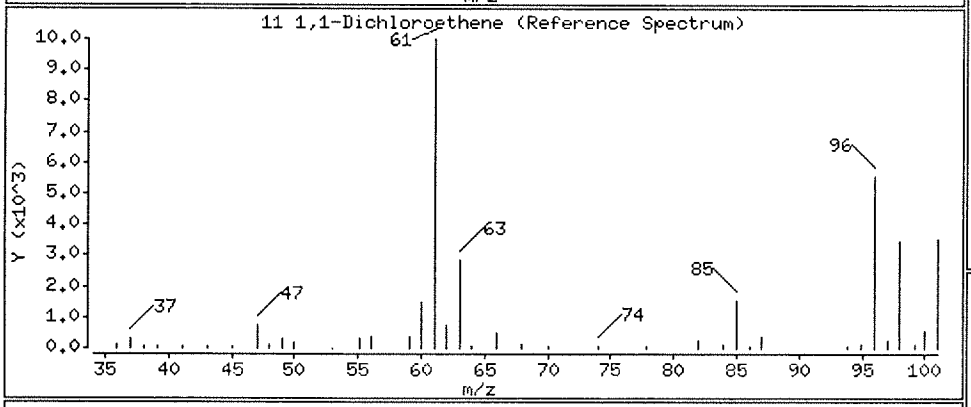
Review Code:

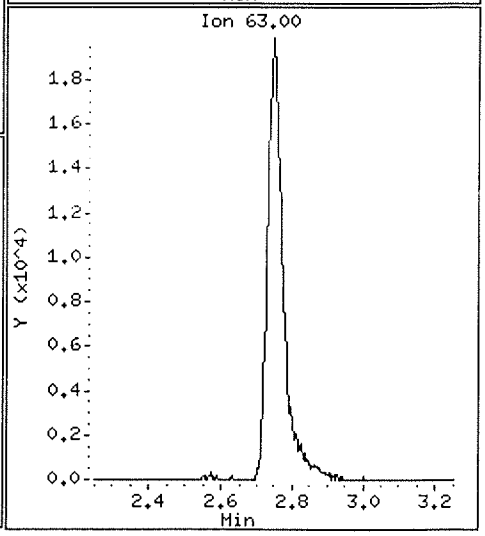


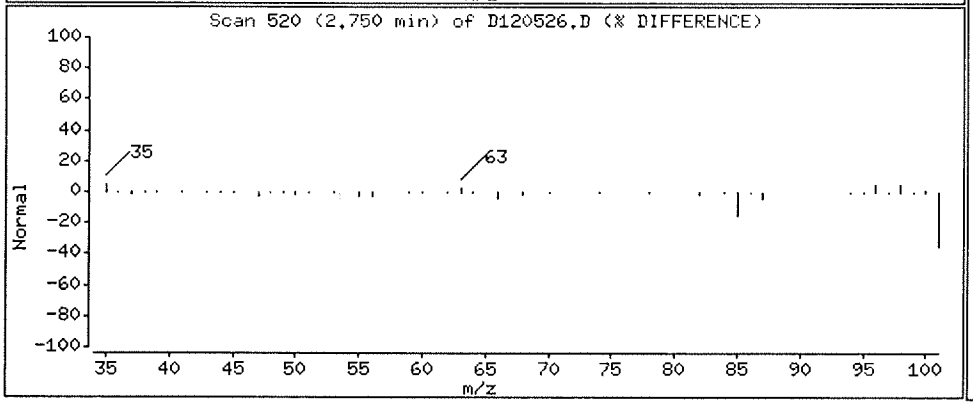












Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120526.D

Date : 05-DEC-2017 19:19

Client ID: HS17111408-07

Instrument: VOA2.i

Sample Info: HS17111408-07;HS17111408-07;;;

Purge Volume: 5.0

Operator: AP

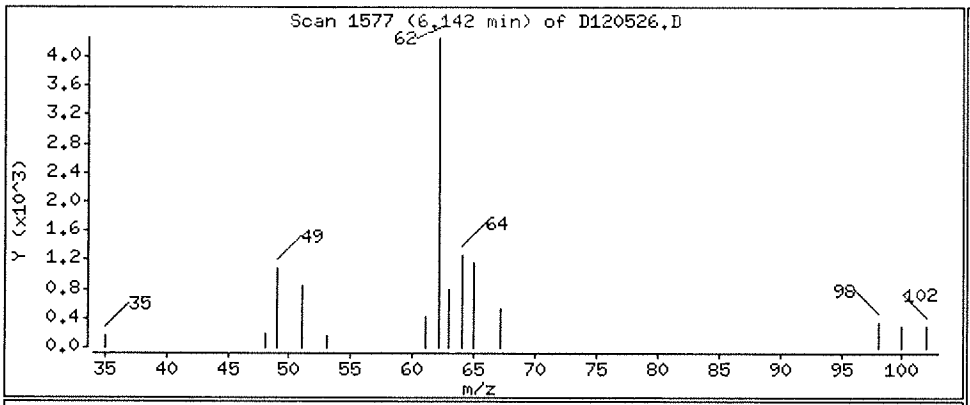
Column phase: DB624

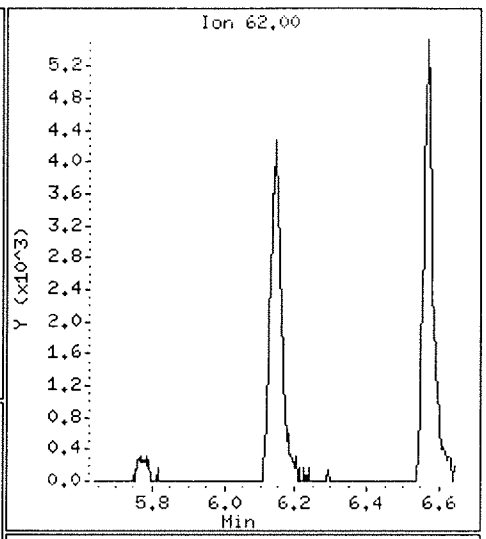
Column diameter: 0.18

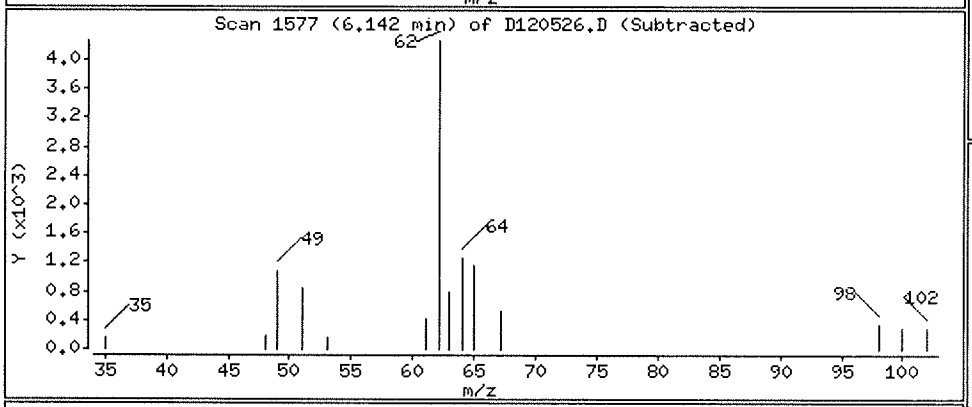
33 1,2-Dichloroethane

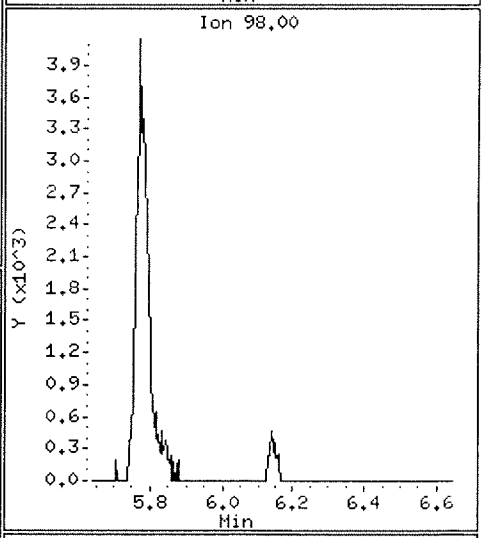
Concentration: 15.45 ug/l

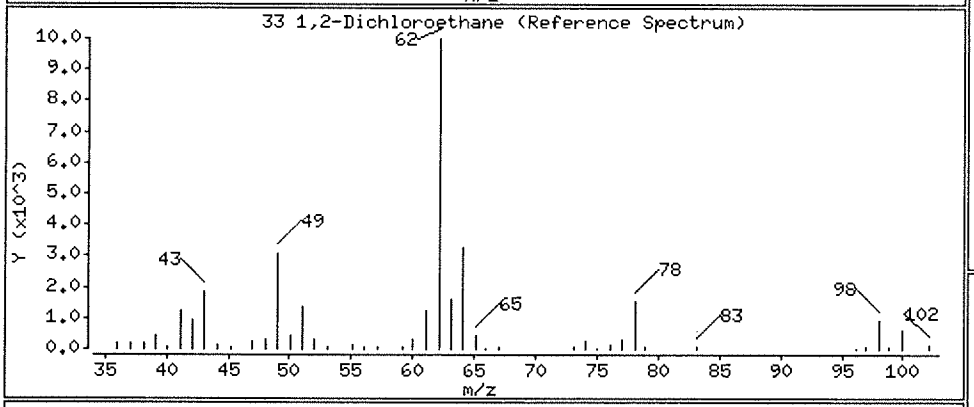
Review Code:

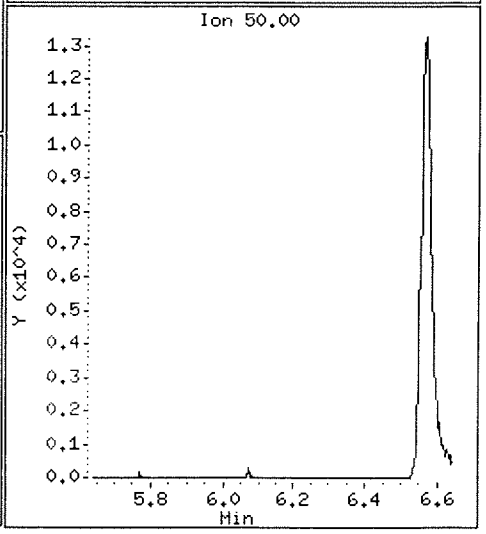


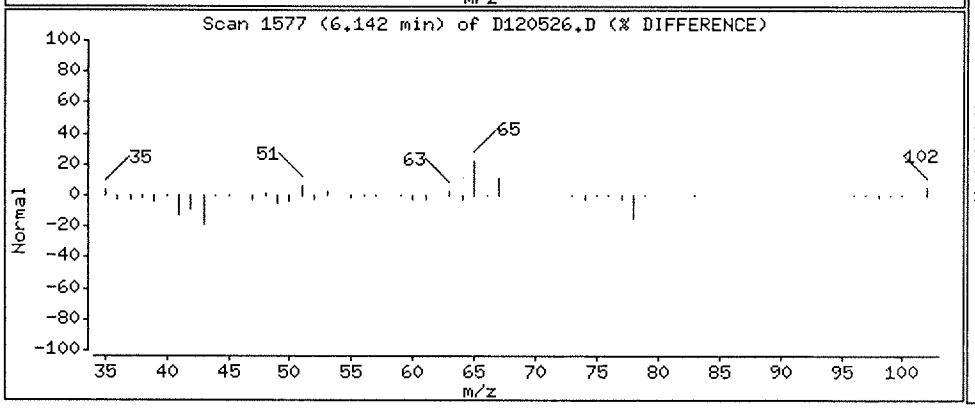












ALS Laboratory Group

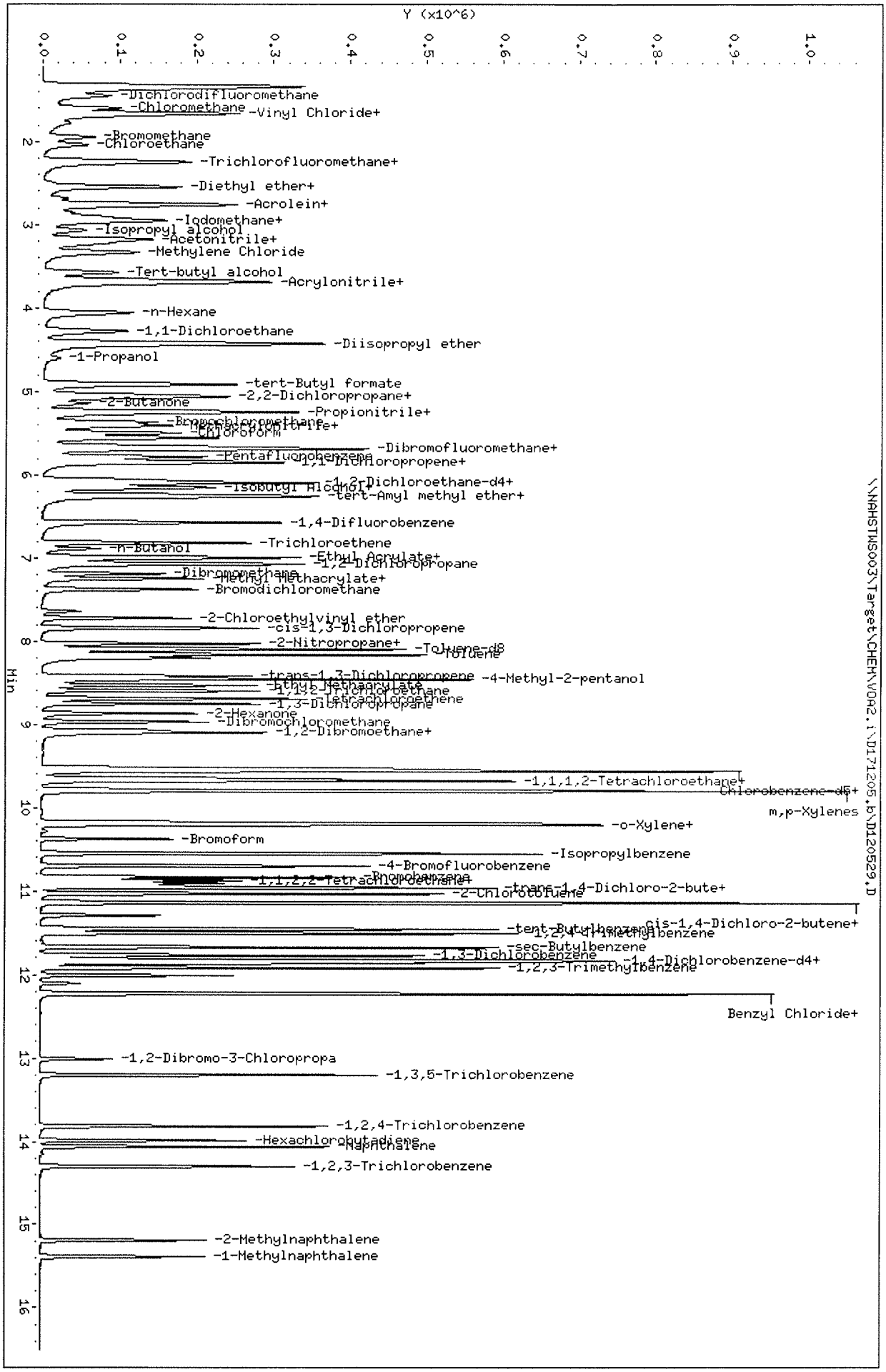
Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120529.D
Lab Smp Id: CCV_END Client Smp ID: CCV_END
Inj Date : 05-DEC-2017 20:33
Operator : AP Inst ID: VOA2.i
Smp Info : CCV_END;CCV_END;2;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\chem\voa2.i\D171205.b\8260LL.m
Meth Date : 01-Feb-2018 15:54 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 11:31 Cal File: D120205.D
Als bottle: 23 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
31 1,1,1-Trichloroethane	97	5.654	5.654	(0.978)	160559	50.0000	53.15
60 1,1,1,2-Tetrachloroethane	131	9.646	9.646	(1.013)	103785	50.0000	48.86
68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.919)	113453	50.0000	43.78
53 1,1,2-Trichloroethane	83	8.593	8.593	(0.902)	71793	50.0000	44.76
32 1,1-Dichloropropene	75	5.853	5.853	(0.891)	123964	50.0000	48.15
22 1,1-Dichloroethane	63	4.274	4.274	(0.740)	191042	50.0000	46.86
11 1,1-Dichloroethene	96	2.750	2.750	(0.476)	87829	50.0000	45.84
71 1,2,3-Trichloropropane	75	10.901	10.901	(0.921)	122079	50.0000	44.70
79 1,2,4-Trimethylbenzene	105	11.501	11.501	(0.972)	338191	50.0000	52.42
93 1,2,3-Trichlorobenzene	182	14.299	14.299	(1.208)	99392	50.0000	50.94
90 1,2,4-Trichlorobenzene	180	13.818	13.818	(1.168)	118466	50.0000	51.73
89 1,2-Dibromo-3-Chloropropane	75	13.006	13.006	(1.099)	21175	50.0000	52.44
33 1,2-Dichloroethane	62	6.142	6.142	(0.935)	141335	50.0000	47.56
42 1,2-Dichloropropane	63	7.063	7.063	(1.075)	103287	50.0000	45.17
57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	92555	50.0000	45.91
88 1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	189207	50.0000	44.61
75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	338572	50.0000	53.87
54 1,3-Dichloropropane	76	8.754	8.754	(0.919)	143265	50.0000	45.17
83 1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	196166	50.0000	44.03
84 1,4-Dichlorobenzene	146	11.860	11.860	(1.002)	185172	50.0000	42.53
26 2,2-Dichloropropane	77	5.038	5.038	(0.872)	141643	50.0000	49.20

			QUANT SIG					AMOUNTS	
		Compounds	MASS	RT	EXP RT	REL RT	RESPONSE	CAL-AMT (ug/l)	ON-COL (ug/l)
	24	2-Butanone	43	5.141	5.141	(0.890)	88069	100.000	96.17
	52	2-Hexanone	43	8.866	8.866	(0.931)	130883	100.000	96.21
	76	2-Chlorotoluene	91	11.029	11.029	(0.932)	292541	50.0000	43.59
	77	4-Chlorotoluene	91	11.138	11.138	(0.941)	320670	50.0000	51.96
	45	4-Methyl-2-Pentanone	43	8.029	8.029	(0.843)	205179	100.000	93.08
	10	Acetone	43	2.853	2.853	(0.494)	59902	100.000	105.84
	37	Benzene	78	6.094	6.094	(0.927)	359595	50.0000	45.91
	39	Bromodichloromethane	83	7.377	7.377	(1.123)	135081	50.0000	51.61
	74	Bromobenzene	156	10.833	10.833	(0.915)	117858	50.0000	44.68
	29	Bromochloromethane	128	5.365	5.365	(0.928)	51793	50.0000	51.15
	6	Bromomethane	94	1.945	1.945	(0.337)	75583	50.0000	44.48
	19	Carbon Disulfide	76	2.952	2.952	(0.511)	350746	100.000	90.14
	66	Bromoform	173	10.374	10.374	(1.089)	80746	50.0000	53.27
	7	Chloroethane	64	2.044	2.044	(0.354)	81744	50.0000	48.67
	34	Carbon Tetrachloride	117	5.834	5.834	(0.888)	136072	50.0000	50.89
	3	Chloromethane	50	1.595	1.595	(0.276)	184728	50.0000	47.99
	28	Chloroform	83	5.494	5.494	(0.951)	170843	50.0000	46.30
	59	Chlorobenzene	112	9.553	9.553	(1.003)	250352	50.0000	45.86
	27	cis-1,2-Dichloroethene	96	5.070	5.070	(0.877)	102930	50.0000	47.13
	46	cis-1,3-Dichloropropene	75	7.839	7.839	(1.193)	154421	50.0000	49.96
	2	Dichlorodifluoromethane	85	1.454	1.454	(0.252)	101533	50.0000	53.04
	55	Dibromochloromethane	129	8.969	8.969	(0.942)	113868	50.0000	49.98
	44	Dibromomethane	93	7.191	7.191	(1.094)	58168	50.0000	49.18
	61	Ethylbenzene	106	9.672	9.672	(1.015)	134488	50.0000	47.88
	91	Hexachlorobutadiene	225	13.991	13.991	(1.182)	53397	50.0000	54.49
	62	m,p-Xylenes	106	9.794	9.794	(1.028)	324994	100.000	90.72
	63	o-Xylene	106	10.179	10.179	(1.069)	169828	50.0000	46.11
	67	Isopropylbenzene	105	10.548	10.548	(1.107)	429596	50.0000	50.97
	17	Methylene Chloride	84	3.331	3.331	(0.576)	93565	50.0000	44.41
	73	n-Propylbenzene	91	10.955	10.955	(0.926)	442506	50.0000	53.08
	87	n-Butylbenzene	91	12.223	12.223	(1.033)	248678	50.0000	46.72
	92	Naphthalene	128	14.061	14.061	(1.188)	278910	50.0000	56.65
	64	Styrene	104	10.198	10.198	(1.071)	277266	50.0000	46.15
	81	sec-Butylbenzene	105	11.668	11.668	(0.986)	384365	50.0000	54.14
	78	tert-Butylbenzene	119	11.449	11.449	(0.967)	287797	50.0000	54.03
	20	trans-1,2-Dichloroethene	96	3.665	3.665	(0.634)	86964	50.0000	47.79
	50	Toluene	91	8.157	8.157	(0.856)	387040	50.0000	44.85
	51	trans-1,3-Dichloropropene	75	8.417	8.417	(1.281)	139751	50.0000	51.98
	56	Tetrachloroethene	164	8.687	8.687	(0.912)	87390	50.0000	49.56
	8	Trichlorofluoromethane	101	2.253	2.253	(0.390)	158094	50.0000	53.72
	38	Trichloroethene	130	6.816	6.816	(1.037)	107683	50.0000	50.04
	5	Vinyl Chloride	62	1.681	1.681	(0.291)	142954	50.0000	54.23
$	35	1,2-Dichloroethane-d4	65	6.058	6.058	(1.048)	119976	50.0000	49.18
*	36	1,4-Difluorobenzene	114	6.572	6.572	(1.000)	313090	50.0000	
*	70	1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	130533	50.0000	
*	1	Pentafluorobenzene	168	5.779	5.779	(1.000)	211607	50.0000	
*	47	Chlorobenzene-d5	117	9.524	9.524	(1.000)	279353	50.0000	
$	30	Dibromofluoromethane	113	5.683	5.683	(0.983)	91604	50.0000	43.79
$	48	Toluene-d8	98	8.093	8.093	(0.850)	351828	50.0000	50.91
$	69	4-Bromofluorobenzene	95	10.699	10.699	(1.123)	135525	50.0000	51.07
	82	p-Isopropyltoluene	119	11.818	11.818	(0.999)	325368	50.0000	44.52
	138	Freon TF	101	2.763	2.763	(0.478)	89337	50.0000	51.55



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171205.b\D120529.D
Date : 05-DEC-2017 20:33
Client ID: CCV_END
Sample Info: CCV_END;CCV_END;2;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Semivolatile Organics Raw Data

Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
ALS WO# HS17111408

FORM 2
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17111408

	CLIENT SAMPLE NO.	S1 (NBZ)#	S2 #	S3 (FBP)#	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	MBLK-122922	84	121	144D						0
02	LCS-122922	88	123	155D						0
03	HS17111408-03	71	73	106						0
04	HS17111408-05	66	96	111						0
05	HS17111408-06	67	76	143D						0
06										
07										
08										
09										
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11										
12										
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24										
25										
26										
27										
28										

	QC LIMITS
S1 (NBZ) = Nitrobenzene-d5	(41-120)
S2 = 4-Terphenyl-d14	(40-140)
S3 (FBP) = 2-Fluorobiphenyl	(40-140)

\# Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

FORM 2
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17111408

	CLIENT SAMPLE NO.	S1 (NBZ)#	S2 #	S3 (FBP)#	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	HS17111408-01	0D	0D	0D						0
02	HS17111408-02	0D	0D	0D						0
03	HS17111408-04	0D	0D	0D						0
04	HS17111408-07	0D	0D	0D						0
05										
06										
07										
08										
09										
10										
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	QC LIMITS
S1 (NBZ) = Nitrobenzene-d5	(41-120)
S2 = 4-Terphenyl-d14	(40-140)
S3 (FBP) = 2-Fluorobiphenyl	(40-140)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

SV05 -Logbook

Batch: 29699 **Analyst:** Andrew Neir

Date: 11-27-2017 **Reviewer:**

Method: 8270D(SIM) **Laboratory:** Houston

Comments: MSSV-003(SIM)

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
1	DFTPP	TUNE	11-27-2017 04:32 pm	1.00			01.D		Y	NA
2	DX-0.08	CAL	11-27-2017 04:47 pm	1.00			02.D		Y	NA
3	DX-0.01	CAL	11-27-2017 05:19 pm	1.00			03.D		Y	NA
4	DX-0.03	CAL	11-27-2017 05:40 pm	1.00			04.D		Y	NA
5	DX-0.05	CAL	11-27-2017 06:00 pm	1.00			05.D		Y	NA
6	DX-0.1	CAL	11-27-2017 06:21 pm	1.00			06.D		Y	NA
7	DX-0.15	CAL	11-27-2017 06:41 pm	1.00			07.D		Y	NA
8	DX-0.2	CAL	11-27-2017 07:01 pm	1.00			08.D		Y	NA
9	DX-0.5	CAL	11-27-2017 07:22 pm	1.00			09.D		Y	NA
10	DX-ICV	SAMP	11-27-2017 07:42 pm	1.00			10.D		Y	NA
11	CCB	SAMP	11-27-2017 08:03 pm	1.00			11.D		Y	NA
12	MBLK-122270	MBLK	11-27-2017 08:23 pm	1.00	1000.00 mL	1.00 mL	12.D	Liquid	Y	NA
13	LCS-122270	LCS	11-27-2017 08:44 pm	1.00	1000.00 mL	1.00 mL	13.D	Liquid	Y	NA
14	LCSD-122270	LCSD	11-27-2017 09:05 pm	1.00	1000.00 mL	1.00 mL	14.D	Liquid	Y	NA
15	HS17110800-01	SAMP	11-27-2017 09:25 pm	20.00	1000.00 mL	1.00 mL	15.D	Liquid	Y	NA
16	HS17110800-02	SAMP	11-27-2017 09:46 pm	10.00	1000.00 mL	1.00 mL	16.D	Liquid	Y	NA
17	HS17110800-03	SAMP	11-27-2017 10:06 pm	10.00	1000.00 mL	1.00 mL	17.D	Liquid	Y	NA
18	HS17110800-04	SAMP	11-27-2017 10:27 pm	4.00	1000.00 mL	1.00 mL	18.D	Liquid	Y	NA
19	HS17110800-05	SAMP	11-27-2017 10:47 pm	20.00	1000.00 mL	1.00 mL	19.D	Liquid	Y	NA
20	HS17110800-06	SAMP	11-27-2017 11:08 pm	20.00	1000.00 mL	1.00 mL	20.D	Liquid	Y	NA
21	HS17110731-01	SAMP	11-27-2017 11:28 pm	4.00	1000.00 mL	11.00 mL	21.D	Liquid	Y	NA
22	HS17110731-02	SAMP	11-27-2017 11:49 pm	100.0(	1000.00 mL	1.00 mL	22.D	Liquid	Y	NA
23	HS17110731-03	SAMP	11-28-2017 12:09 am	500.0(	1000.00 mL	1.00 mL	23.D	Liquid	Y	NA
24	HS17110732-01	SAMP	11-28-2017 12:30 am	20.00	1000.00 mL	1.00 mL	24.D	Liquid	Y	NA
25	HS17110732-02	SAMP	11-28-2017 12:50 am	500.0(	1000.00 mL	1.00 mL	25.D	Liquid	Y	NA
26	HS17110813-01	SAMP	11-28-2017 01:11 am	20.00	1000.00 mL	1.00 mL	26.D	Liquid	Y	NA
27	HS17110813-02	SAMP	11-28-2017 01:31 am	20.00	1000.00 mL	1.00 mL	27.D	Liquid	Y	NA
28	HS17110816-01	SAMP	11-28-2017 01:52 am	20.00	1000.00 mL	1.00 mL	28.D	Liquid	Y	NA
29	HS17110816-02	SAMP	11-28-2017 02:12 am	20.00	1000.00 mL	1.00 mL	29.D	Liquid	Y	NA
30	DX-0.08	SAMP	11-28-2017 11:28 am	1.00	1000.00 mL	1000.00 mL	30.D	Liquid	Y	NA

SV05 -Logbook

Chemical	Value
IS ID	3041118-01
CAL STD ID	3041117-04
DFTPP ID	29722-96-01
PCP Tailing	0.67
Benz. Tailing	0.86
STD-01	3041117-01
STD-02	3041117-02
STD-03	3041117-03
STD-04	3041117-05
STD-05	3041117-06
STD-06	3041117-07
ICV ID	3041117-08

FORM 3
WATER SEMIVOLATILE METHOD SPIKE RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17111408

Matrix Spike - Sample No.: DX-ICV

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	% REC #	QC. LIMITS REC.
1,4-Dioxane	0.08000	0.08408	105	75-125

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

_____

FORM III SV

FORM 5
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17111408

Lab File ID: 01 DFTPP Injection Date: 11/27/17

Instrument ID: SV5 DFTPP Injection Time: 1632

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	47.4
68	Less than 2.0% of mass 69	0.9 (1.6)1
69	Mass 69 relative abundance	58.7
70	Less than 2.0% of mass 69	0.4 (0.7)1
127	10.0 - 80.0% of mass 198	62.4
197	Less than 2.0% of mass 198	0.7
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	8.3
275	10.0 - 60.0% of mass 198	26.8
365	1.0 - 100.0% of mass 198	2.7
441	Present, but less than mass 443	9.7
442	50.0 - 150.0% of mass 198	63.2
443	15.0 - 24.0% of mass 442	13.5 (21.3)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	DX-0.08	DX-0.08	02	11/27/17	1647
02	DX-0.01	DX-0.01	03	11/27/17	1719
03	DX-0.03	DX-0.03	04	11/27/17	1740
04	DX-0.05	DX-0.05	05	11/27/17	1800
05	DX-0.1	DX-0.1	06	11/27/17	1821
06	DX-0.15	DX-0.15	07	11/27/17	1841
07	DX-0.2	DX-0.2	08	11/27/17	1901
08	DX-0.5	DX-0.5	09	11/27/17	1922
09	DX-ICV	DX-ICV	10	11/27/17	1942
10	CCB	CCB	11	11/27/17	2003
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17111408

Instrument ID: SV5 Calibration Date(s): 11/27/17 11/27/17

Column: RTX-5SIL MS ID: 0.28 (mm) Calibration Time(s): 1647 1922

LAB FILE ID: RF0.01: 03 RF0.025: 04 RF0.05: 05
RF0.08: 02 RF0.1: 06 RF0.15: 07

COMPOUND	RF0.01	RF0.025	RF0.05	RF0.08	RF0.1	RF0.15
1,4-Dioxane	0.082	0.080	0.075	0.082	0.082	0.084
Nitrobenzene-d5	0.654	0.579	0.439	0.385	0.438	0.456
4-Terphenyl-d14	1622	5762	17709	16179	39094	22443
2-Fluorobiphenyl	0.785	0.995	0.834	0.847	0.871	0.908

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1711140

Instrument ID: SV5 Calibration Date(s): 11/27/17 11/27/17

Column: RTX-5SIL MS ID: 0.28 (mm) Calibration Time(s): 1647 1922

LAB FILE ID: RF0.2: 08 RF0.5: 09

COMPOUND	RF0.2	RF0.5
1,4-Dioxane	0.086	0.091
Nitrobenzene-d5	0.455	0.408
4-Terphenyl-d14	31676	145184
2-Fluorobiphenyl	0.918	0.933

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1711140

Instrument ID: SV5 Calibration Date(s): 11/27/17 11/27/17

Column: RTX-5SIL MS ID: 0.28 (mm) Calibration Time(s): 1647 1922

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2	MAX %RSD OR R^2
1,4-Dioxane	AVRG		8.286e-002		5.457	20.000
Nitrobenzene-d5	AVRG		0.47670052		19.241	20.000
4-Terphenyl-d14	2ORDR	0.14589860	1.02412250	-3.79e-002	0.9949042	0.9900000
2-Fluorobiphenyl	AVRG		0.88628899		7.424	20.000

FORM VI SV

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\01.D

Date : 27-NOV-2017 16:32

Client ID: DFTPP

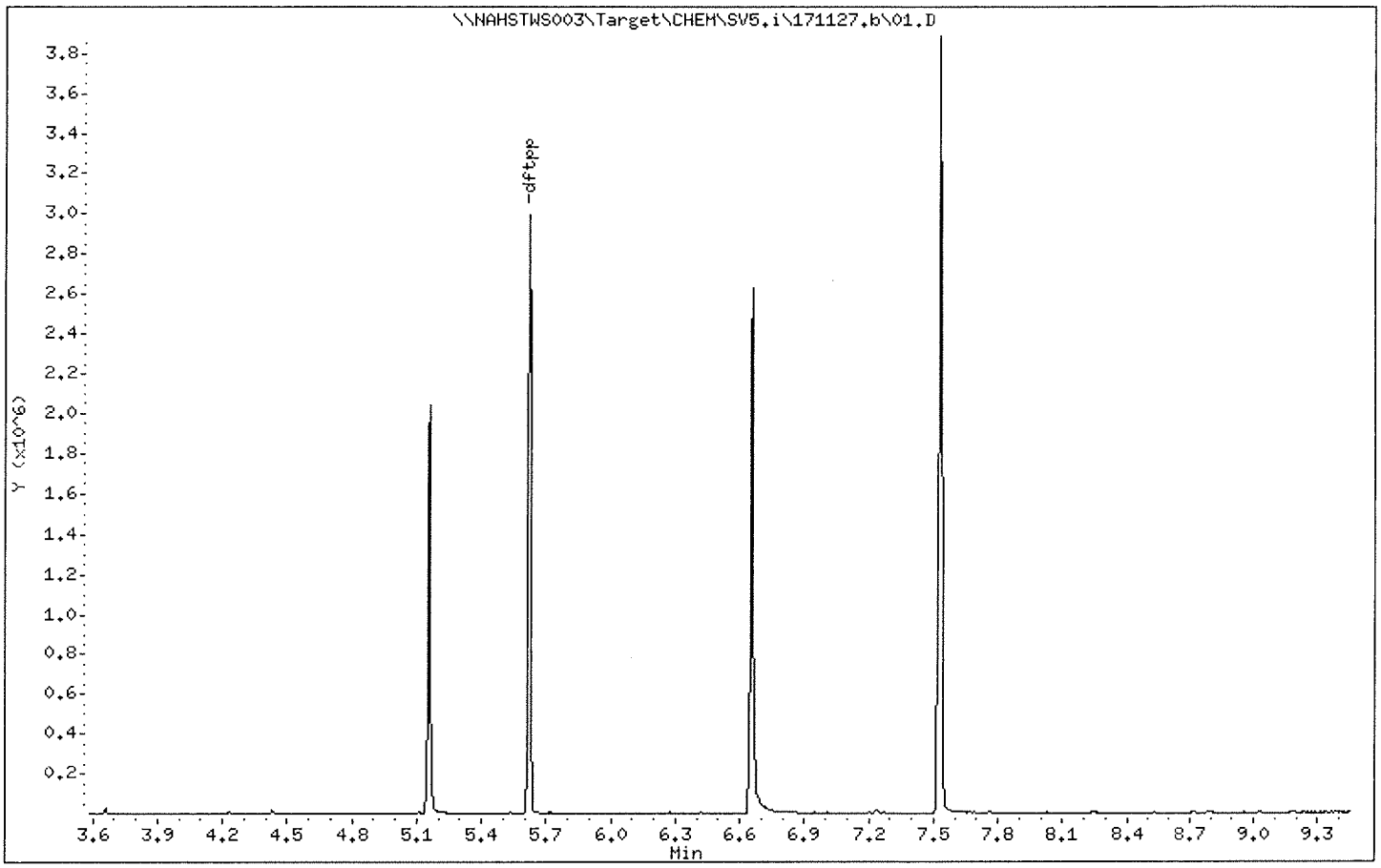
Instrument: SV5.i

Sample Info: DFTPP;DFTPP;3;;DFTPP

Operator: GY

Column phase: DB-5MS

Column diameter: 0.25



Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\01.D

Date : 27-NOV-2017 16:32

Client ID: DFTPP

Instrument: SV5.i

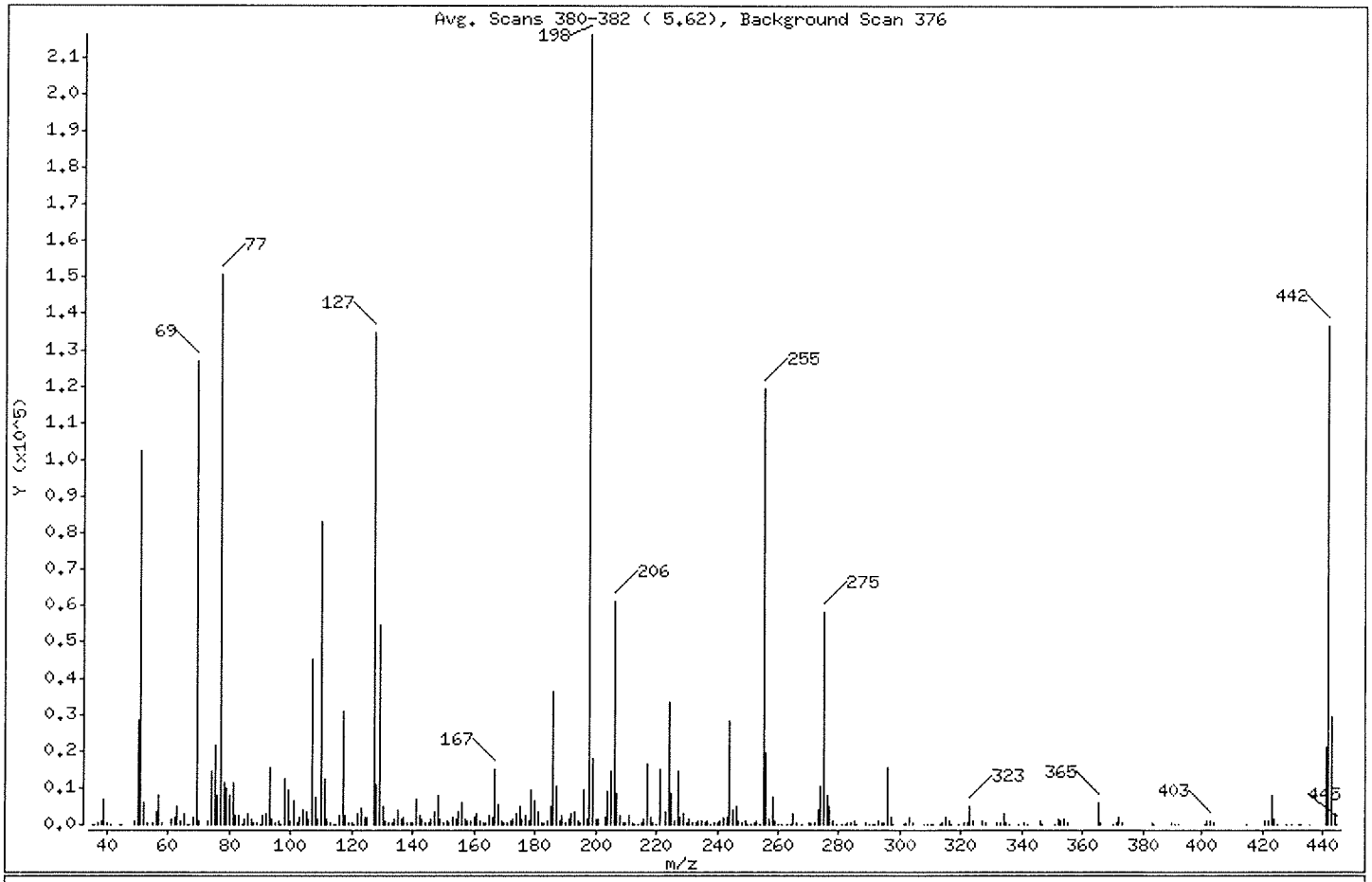
Sample Info: DFTPP;DFTPP;3;;DFTPP

Operator: GY

Column phase: DB-5MS

Column diameter: 0.25

1 dftpp



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
198	Base Peak, 100% relative abundance	100.00
51	10.00 - 80.00% of mass 198	47.36
68	Less than 2.00% of mass 69	0.92 (1.57)
69	Mass 69 relative abundance	58.68
70	Less than 2.00% of mass 69	0.43 (0.73)
127	10.00 - 80.00% of mass 198	62.40
197	Less than 2.00% of mass 198	0.70
199	5.00 - 9.00% of mass 198	8.31
275	10.00 - 60.00% of mass 198	26.85
365	1.00 - 100.00% of mass 198	2.68
441	Present, but less than mass 443	9.71
442	50.00 - 150.00% of mass 198	63.22
443	15.00 - 24.00% of mass 442	13.47 (21.30)

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\01.D

Date : 27-NOV-2017 16:32

Client ID: DFTPP

Instrument: SV5.i

Sample Info: DFTPP;DFTPP;3;;DFTPP

Operator: GY

Column phase: DB-5MS

Column diameter: 0.25

Data File: 01.D
Spectrum: Avg. Scans 380-382 (5.62), Background Scan 376
Location of Maximum: 198.00
Number of points: 311

m/z	Y	m/z	Y	m/z	Y	m/z	Y
35.00	64	123.00	4367	203.00	1836	286.00	163
36.00	179	124.00	1955	204.00	8877	289.00	252
37.00	524	125.00	1853	205.00	14549	290.00	180
38.00	1167	127.00	134976	206.00	61392	291.00	51
39.00	7068	128.00	10832	207.00	8276	292.00	164
40.00	376	129.00	54648	208.00	2239	293.00	1211
41.00	227	130.00	5039	209.00	641	294.00	331
44.00	62	131.00	760	210.00	737	295.00	305
45.00	158	132.00	443	211.00	2528	296.00	15231
49.00	855	133.00	285	212.00	478	297.00	2060
50.00	28200	134.00	1641	213.00	220	298.00	168
51.00	102448	135.00	4151	214.00	62	301.00	141
52.00	5837	136.00	1588	215.00	744	302.00	254
53.00	268	137.00	2001	216.00	1491	303.00	1992
55.00	442	138.00	436	217.00	16600	304.00	485
56.00	3389	139.00	385	218.00	2218	308.00	211
57.00	7803	140.00	693	219.00	297	309.00	59
58.00	295	141.00	6880	220.00	135	310.00	212
61.00	1446	142.00	2474	221.00	15007	311.00	79
62.00	1853	143.00	1584	223.00	3574	313.00	60
63.00	4945	144.00	424	224.00	33280	314.00	719
64.00	785	145.00	396	225.00	8598	315.00	1801
65.00	2792	146.00	1411	226.00	993	316.00	916
66.00	173	147.00	3551	227.00	14374	317.00	165
67.00	213	148.00	7951	228.00	1888	319.00	53
68.00	1993	149.00	1446	229.00	3181	321.00	590
69.00	126936	150.00	490	230.00	371	322.00	263
70.00	922	151.00	1135	231.00	1318	323.00	4734
73.00	1073	152.00	643	232.00	300	324.00	1033
74.00	14177	153.00	2120	233.00	393	327.00	1117
75.00	21464	154.00	1634	234.00	909	328.00	440
76.00	8028	155.00	3726	235.00	1155	332.00	342
77.00	150656	156.00	5846	236.00	600	333.00	530
78.00	11390	157.00	1245	237.00	1152	334.00	2964
79.00	9952	158.00	1237	238.00	68	335.00	698

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\01.D

Date : 27-NOV-2017 16:32

Client ID: DFTPP

Instrument: SV5.i

Sample Info: DFTPP;DFTPP;3;;DFTPP

Operator: GY

Column phase: DB-5MS

Column diameter: 0.25

Data File: 01.D
Spectrum: Avg. Scans 380-382 (5.62), Background Scan 376
Location of Maximum: 198.00
Number of points: 311

m/z	Y	m/z	Y	m/z	Y	m/z	Y
80.00	8009	159.00	919	239.00	624	336.00	83
81.00	11268	160.00	2200	240.00	319	339.00	127
82.00	2605	161.00	3181	241.00	801	341.00	498
83.00	2536	162.00	821	242.00	1868	342.00	197
84.00	91	163.00	316	243.00	1973	346.00	825
85.00	1564	164.00	494	244.00	28352	347.00	99
86.00	2774	165.00	2389	245.00	4068	351.00	55
87.00	1457	166.00	1859	246.00	5194	352.00	1396
88.00	640	167.00	14805	247.00	1109	353.00	1086
89.00	314	168.00	5607	248.00	377	354.00	1448
90.00	56	169.00	990	249.00	1137	355.00	310
91.00	2323	170.00	460	250.00	244	365.00	5793
92.00	3022	171.00	551	251.00	197	366.00	674
93.00	15440	172.00	1178	252.00	367	370.00	69
94.00	1256	173.00	1556	253.00	886	371.00	287
95.00	377	174.00	2888	254.00	194	372.00	2202
96.00	851	175.00	5089	255.00	119520	373.00	605
97.00	166	176.00	1670	256.00	19512	383.00	527
98.00	12622	177.00	2269	257.00	1635	384.00	134
99.00	9552	178.00	869	258.00	7227	390.00	306
100.00	846	179.00	9433	259.00	1170	391.00	166
101.00	6363	180.00	6527	260.00	227	392.00	111
102.00	355	181.00	3394	261.00	203	401.00	76
103.00	2141	182.00	578	263.00	63	402.00	864
104.00	4035	183.00	400	264.00	201	403.00	1064
105.00	3704	184.00	889	265.00	2960	404.00	544
106.00	1296	185.00	4909	266.00	674	415.00	52
107.00	45168	186.00	36312	268.00	69	421.00	1112
108.00	7315	187.00	10594	270.00	291	422.00	1216
109.00	1533	188.00	1161	271.00	280	423.00	8029
110.00	82920	189.00	2311	272.00	444	424.00	1632
111.00	12346	190.00	401	273.00	4022	425.00	182
112.00	1525	191.00	1280	274.00	10527	428.00	72
113.00	622	192.00	3160	275.00	58072	430.00	117
114.00	121	193.00	3303	276.00	8016	432.00	104

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\01.D

Date : 27-NOV-2017 16:32

Client ID: DFTPP Instrument: SV5.i

Sample Info: DFTPP;DFTPP;3;;DFTPP

Operator: GY

Column phase: DB-5MS Column diameter: 0.25

Data File: 01.D
Spectrum: Avg. Scans 380-382 (5.62), Background Scan 376
Location of Maximum: 198.00
Number of points: 311

m/z	Y	m/z	Y	m/z	Y	m/z	Y
115.00	211	194.00	802	277.00	4976	433.00	62
116.00	2538	195.00	631	278.00	778	436.00	56
117.00	30648	196.00	9545	279.00	222	441.00	21008
118.00	2305	197.00	1505	281.00	52	442.00	136768
119.00	288	198.00	216320	282.00	50	443.00	29136
120.00	476	199.00	17976	283.00	528	444.00	2817
121.00	231	200.00	1509	284.00	434	445.00	88
122.00	2773	201.00	1436	285.00	858		

ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\02.D
Lab Smp Id: DX-0.08 Client Smp ID: DX-0.08
Inj Date : 27-NOV-2017 16:47 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : DX-0.08;DX-0.08
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\DXSIM.m
Meth Date : 11-Jan-2018 15:47 aneir Quant Type: ISTD
Cal Date : 20-NOV-2017 15:12 Cal File: 010.D
Als bottle: 2 Calibration Sample, Level: 4
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (NG)	ON-COL (NG)	
* 45 Naphthalene-d8	136	4.800	4.800	(1.000)	80734	0.10000		(H)
$ 33 Nitrobenzene-d5	82	4.146	4.147	(0.864)	24870	0.08000	0.06456	(MH)
* 86 Acenaphthene-d10	164	6.480	6.479	(1.000)	53474	0.10000		(H)
$ 69 2-Fluorobiphenyl	172	5.821	5.825	(0.938)	36229	0.08000	0.07644	
* 126 Phenanthrene-d10	188	7.811	7.811	(1.000)	68006	0.10000		
* 182 Chrysene-d12	240	10.198	10.198	(1.000)	36826	0.10000		
$ 158 4-Terphenyl-d14	244	9.097	9.097	(0.892)	16179	0.08000	0.05060	(M)
* 198 Perylene-d12	264	12.114	12.120	(1.000)	19912	0.10000		(M)
1 1,4-Dioxane	58	1.978	2.032	(0.441)	5306	0.08000	0.07932	(aH)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\02.D

Date : 27-NOV-2017 16:47

Client ID: DX-0.08

Instrument: SV5.i

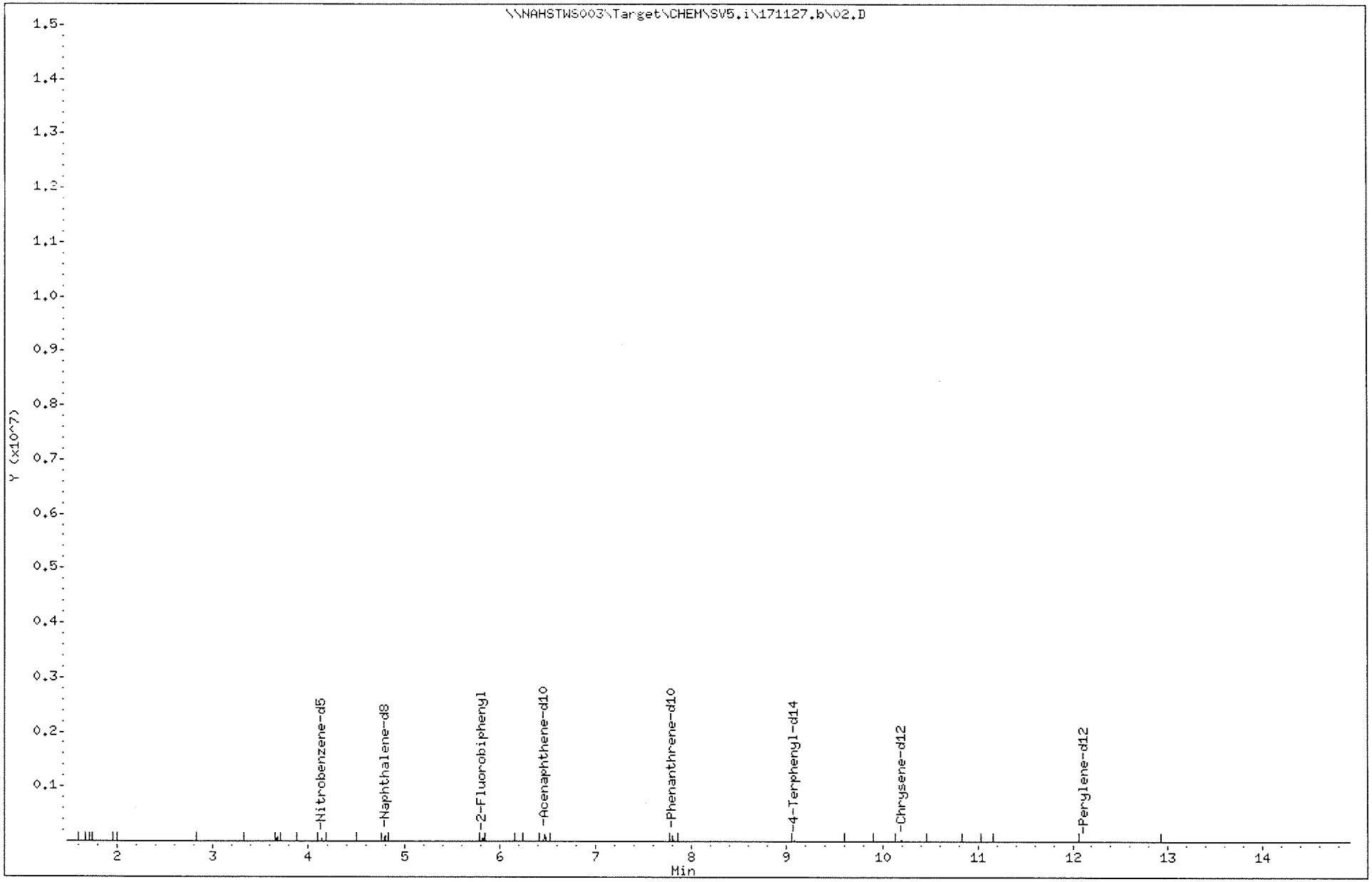
Sample Info: DX-0.08;DX-0.08

Purge Volume: 1000.0

Operator: GY

Column phase: RTX-5SIL MS

Column diameter: 0.28



ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\03.D
Lab Smp Id: DX-0.01 Client Smp ID: DX-0.01
Inj Date : 27-NOV-2017 17:19 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : DX-0.01;DX-0.01
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\DXSIM.m
Meth Date : 11-Jan-2018 15:47 aneir Quant Type: ISTD
Cal Date : 20-NOV-2017 15:12 Cal File: 010.D
Als bottle: 3 Calibration Sample, Level: 1
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (NG)	AMOUNTS ON-COL (NG)
* 45 Naphthalene-d8	136	4.800	4.800	(1.000)	67668	0.10000	
$ 33 Nitrobenzene-d5	82	4.146	4.147	(0.864)	2358	0.01000	0.008596 (M)
* 86 Acenaphthene-d10	164	6.480	6.479	(1.000)	44655	0.10000	
$ 69 2-Fluorobiphenyl	172	5.821	5.825	(0.898)	3504	0.01000	0.008854
* 126 Phenanthrene-d10	188	7.811	7.811	(1.000)	59120	0.10000	
* 182 Chrysene-d12	240	10.198	10.198	(1.000)	21732	0.10000	(M)
$ 158 4-Terphenyl-d14	244	9.097	9.097	(0.892)	1493	0.01000	0.008669 (M)
* 198 Perylene-d12	264	12.120	12.120	(1.000)	11157	0.10000	

QC Flag Legend

M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\03.D

Date : 27-NOV-2017 17:19

Client ID: DX-0.01

Sample Info: DX-0.01;DX-0.01

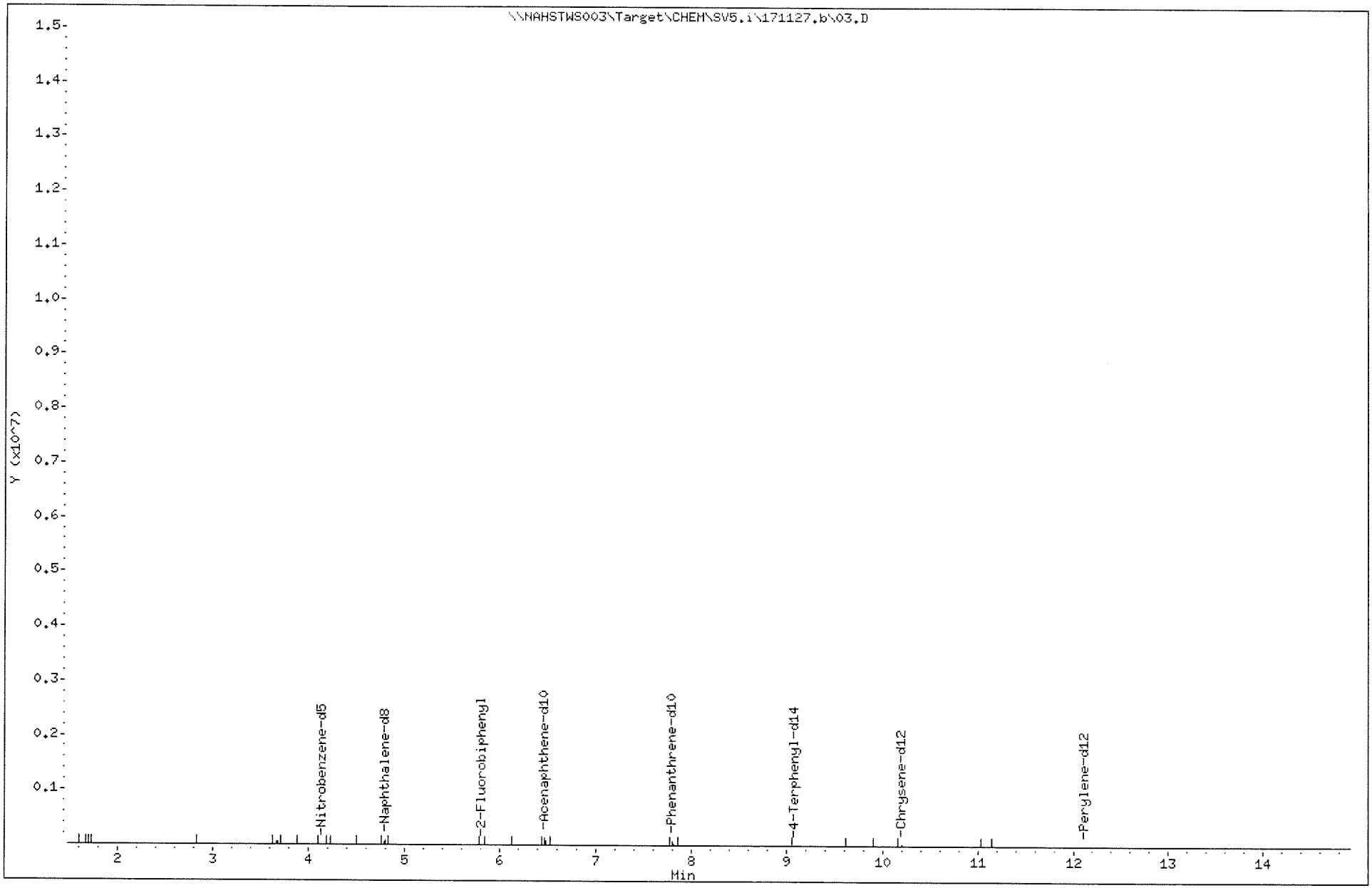
Purge Volume: 1000.0

Column phase: RTX-5SIL MS

Instrument: SV5.i

Operator: GY

Column diameter: 0.28



ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\04.D
Lab Smp Id: DX-0.03 Client Smp ID: DX-0.03
Inj Date : 27-NOV-2017 17:40 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : DX-0.03;DX-0.03
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\DXSIM.m
Meth Date : 11-Jan-2018 15:47 aneir Quant Type: ISTD
Cal Date : 20-NOV-2017 15:12 Cal File: 010.D
Als bottle: 4 Calibration Sample, Level: 2
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (NG)	ON-COL (NG)
* 45 Naphthalene-d8	136	4.800	4.800	(1.000)	71168	0.10000	
$ 33 Nitrobenzene-d5	82	4.146	4.147	(0.864)	8040	0.02500	0.02787(M)
* 86 Acenaphthene-d10	164	6.480	6.479	(1.000)	47659	0.10000	
$ 69 2-Fluorobiphenyl	172	5.821	5.825	(0.898)	11858	0.02500	0.02807
* 126 Phenanthrene-d10	188	7.811	7.811	(1.000)	64839	0.10000	
* 182 Chrysene-d12	240	10.213	10.198	(1.000)	26518	0.10000	(M)
$ 158 4-Terphenyl-d14	244	9.102	9.097	(0.891)	5050	0.02500	0.02381(M)
* 198 Perylene-d12	264	12.130	12.120	(1.000)	13137	0.10000	

QC Flag Legend

M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\04.D

Page 2

Date : 27-NOV-2017 17:40

Client ID: DX-0.03

Instrument: SV5.i

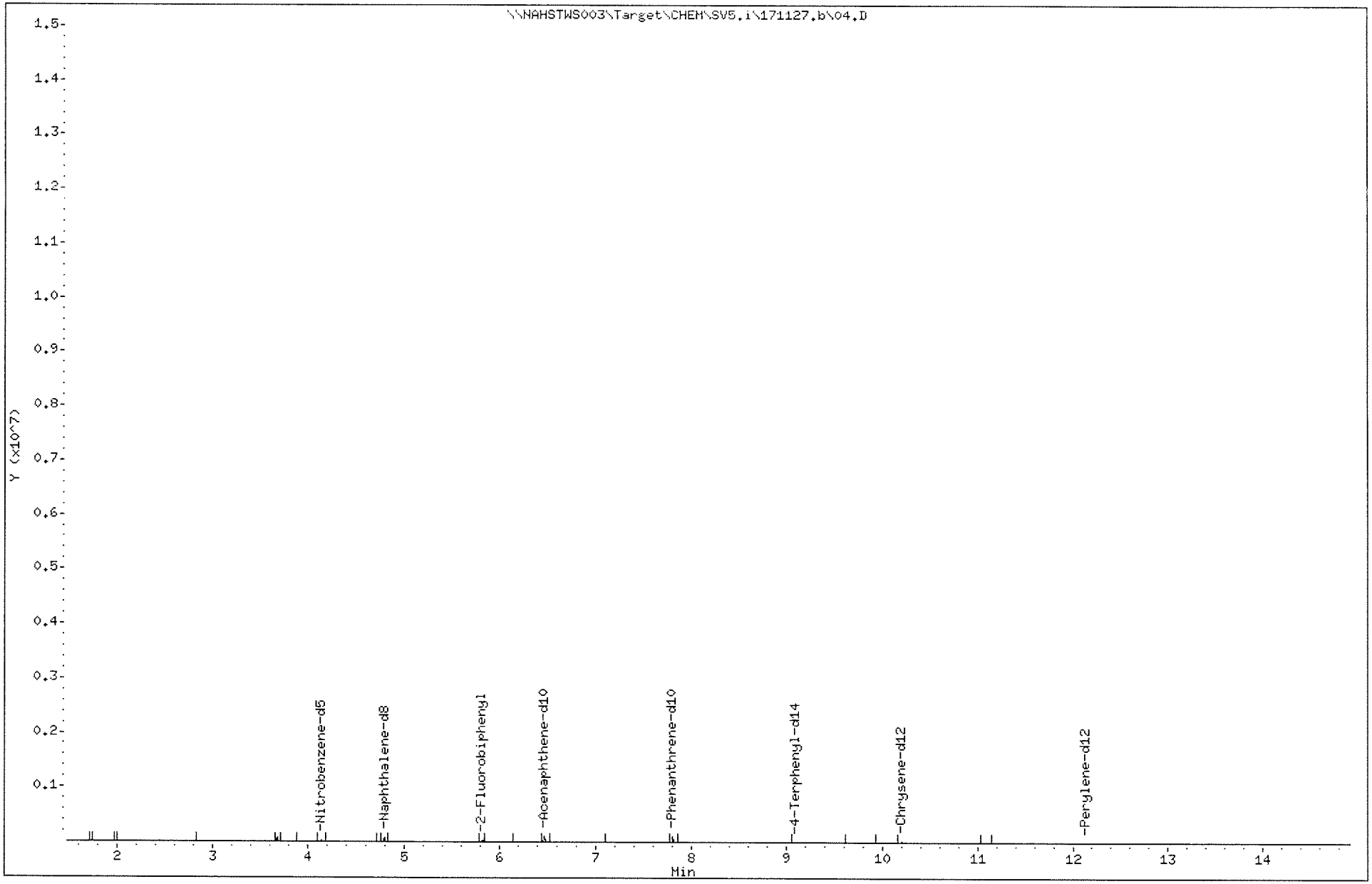
Sample Info: DX-0.03;DX-0.03

Purge Volume: 1000.0

Operator: CY

Column phase: RTX-5SIL MS

Column diameter: 0.28



Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\05.D Page 1
Report Date: 01-Feb-2018 14:50

ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\05.D
Lab Smp Id: DX-0.05 Client Smp ID: DX-0.05
Inj Date : 27-NOV-2017 18:00 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : DX-0.05;DX-0.05
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\DXSIM.m
Meth Date : 11-Jan-2018 15:47 aneir Quant Type: ISTD
Cal Date : 20-NOV-2017 15:12 Cal File: 010.D
Als bottle: 5 Calibration Sample, Level: 3
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (NG)	ON-COL (NG)
* 45 Naphthalene-d8	136	4.796	4.800	(1.000)	125682	0.10000	
$ 33 Nitrobenzene-d5	82	4.146	4.147	(0.865)	24393	0.05000	0.04788 (M)
* 86 Acenaphthene-d10	164	6.479	6.479	(1.000)	83458	0.10000	
$ 69 2-Fluorobiphenyl	172	5.821	5.825	(0.898)	34818	0.05000	0.04707
* 126 Phenanthrene-d10	188	7.806	7.811	(1.000)	111086	0.10000	
* 182 Chrysene-d12	240	10.191	10.198	(1.000)	52655	0.10000	(M)
$ 158 4-Terphenyl-d14	244	9.091	9.097	(0.892)	15896	0.05000	0.03712 (M)
* 198 Perylene-d12	264	12.114	12.120	(1.000)	31570	0.10000	

QC Flag Legend

M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\05.D

Date : 27-NOV-2017 18:00

Client ID: DX-0.05

Instrument: SV5.i

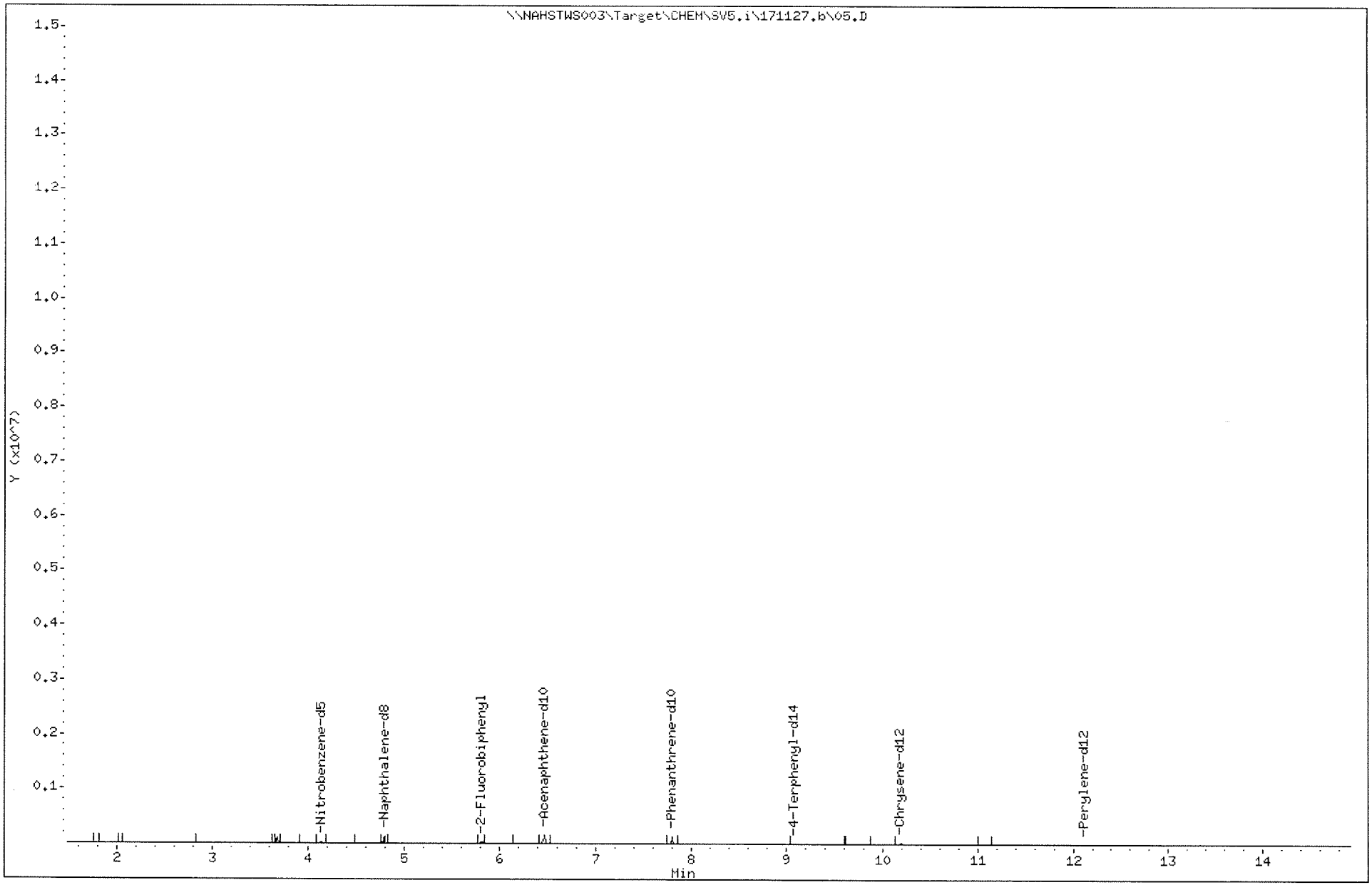
Sample Info: DX-0.05;DX-0.05

Purge Volume: 1000.0

Operator: GY

Column phase: RTX-5SIL MS

Column diameter: 0.28



ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\06.D
Lab Smp Id: DX-0.1 Client Smp ID: DX-0.1
Inj Date : 27-NOV-2017 18:21 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : DX-0.1;DX-0.1
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\DXSIM.m
Meth Date : 11-Jan-2018 15:47 aneir Quant Type: ISTD
Cal Date : 20-NOV-2017 15:12 Cal File: 010.D
Als bottle: 6 Calibration Sample, Level: 5
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (NG)	ON-COL (NG)
* 45 Naphthalene-d8	136	4.796	4.800	(1.000)	127490	0.10000	
$ 33 Nitrobenzene-d5	82	4.146	4.147	(0.865)	51947	0.10000	0.1005(M)
* 86 Acenaphthene-d10	164	6.474	6.479	(1.000)	84497	0.10000	
$ 69 2-Fluorobiphenyl	172	5.821	5.825	(0.899)	73571	0.10000	0.09824
* 126 Phenanthrene-d10	188	7.806	7.811	(1.000)	107687	0.10000	
* 182 Chrysene-d12	240	10.184	10.198	(1.000)	51138	0.10000	(M)
$ 158 4-Terphenyl-d14	244	9.086	9.097	(0.892)	36635	0.10000	0.08716(M)
* 198 Perylene-d12	264	12.093	12.120	(1.000)	28102	0.10000	
1 1,4-Dioxane	58	2.034	2.032	(0.424)	10469	0.10000	0.09910(aM)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\06.D

Date : 27-NOV-2017 18:21

Client ID: DX-0.1

Instrument: SV5.i

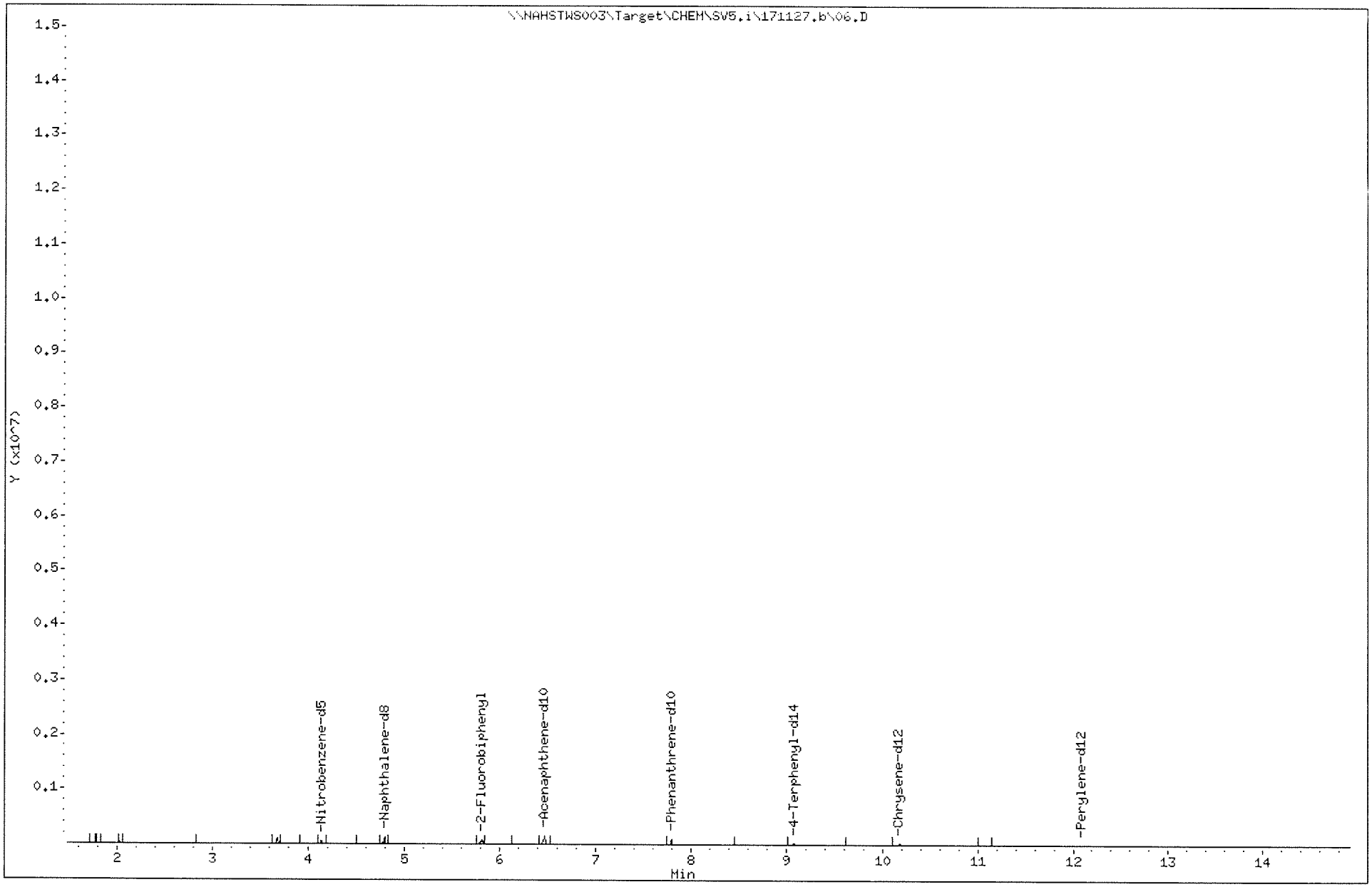
Sample Info: DX-0.1;DX-0.1

Purge Volume: 1000.0

Operator: GY

Column phase: RTX-5SIL MS

Column diameter: 0.28



ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\07.D
Lab Smp Id: DX-0.15 Client Smp ID: DX-0.15
Inj Date : 27-NOV-2017 18:41 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : DX-0.15;DX-0.15
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\DXSIM.m
Meth Date : 11-Jan-2018 15:47 aneir Quant Type: ISTD
Cal Date : 20-NOV-2017 15:12 Cal File: 010.D
Als bottle: 7 Calibration Sample, Level: 6
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (NG)	AMOUNTS ON-COL (NG)
* 45 Naphthalene-d8	136	4.800	4.800	(1.000)	53764	0.10000	
$ 33 Nitrobenzene-d5	82	4.146	4.147	(0.864)	34032	0.15000	0.1550(AM)
* 86 Acenaphthene-d10	164	6.479	6.479	(1.000)	35221	0.10000	
$ 69 2-Fluorobiphenyl	172	5.821	5.825	(0.898)	47953	0.15000	0.1536(A)
* 126 Phenanthrene-d10	188	7.811	7.811	(1.000)	46821	0.10000	
* 182 Chrysene-d12	240	10.198	10.198	(1.000)	16112	0.10000	(M)
$ 158 4-Terphenyl-d14	244	9.097	9.097	(0.892)	22443	0.15000	0.1604(AM)
* 198 Perylene-d12	264	12.114	12.120	(1.000)	8327	0.10000	
1 1,4-Dioxane	58	1.968	2.032	(0.410)	6762	0.15000	0.1518(aM)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
A - Target compound detected but, quantitated amount
exceeded maximum amount.
M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\07.D

Date : 27-NOV-2017 18:41

Client ID: DX-0.15

Instrument: SV5.i

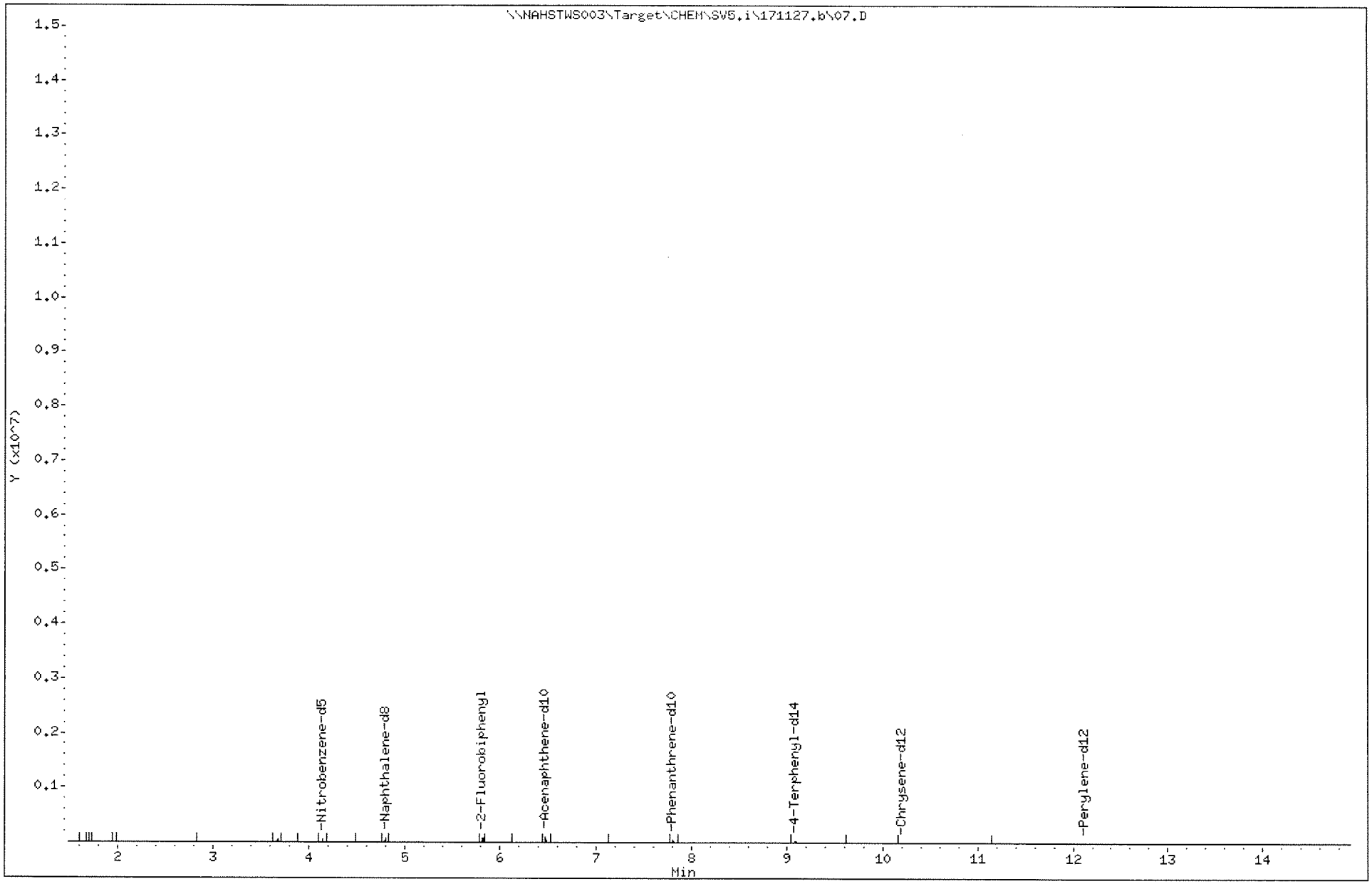
Sample Info: DX-0.15;DX-0.15

Purge Volume: 1000.0

Operator: GY

Column phase: RTX-5SIL MS

Column diameter: 0.28



ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\08.D
Lab Smp Id: DX-0.2 Client Smp ID: DX-0.2
Inj Date : 27-NOV-2017 19:01 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : DX-0.2;DX-0.2
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\DXSIM.m
Meth Date : 11-Jan-2018 15:47 aneir Quant Type: ISTD
Cal Date : 20-NOV-2017 15:12 Cal File: 010.D
Als bottle: 8 Calibration Sample, Level: 7
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (NG)	ON-COL (NG)
* 45 Naphthalene-d8	136	4.800	4.800	(1.000)	52772	0.10000	
$ 33 Nitrobenzene-d5	82	4.146	4.147	(0.864)	45367	0.20000	0.2121 (AM)
* 86 Acenaphthene-d10	164	6.480	6.479	(1.000)	34095	0.10000	
$ 69 2-Fluorobiphenyl	172	5.821	5.825	(0.898)	62591	0.20000	0.2071 (A)
* 126 Phenanthrene-d10	188	7.806	7.811	(1.000)	44633	0.10000	
* 182 Chrysene-d12	240	10.184	10.198	(1.000)	15430	0.10000	(M)
$ 158 4-Terphenyl-d14	244	9.086	9.097	(0.892)	28702	0.20000	0.2247 (AM)
* 198 Perylene-d12	264	12.093	12.120	(1.000)	7217	0.10000	(M)
1 1,4-Dioxane	58	1.960	2.032	(0.408)	9096	0.20000	0.2080 (M)

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\08.D

Date : 27-NOV-2017 19:01

Client ID: DX-0.2

Instrument: SV5.i

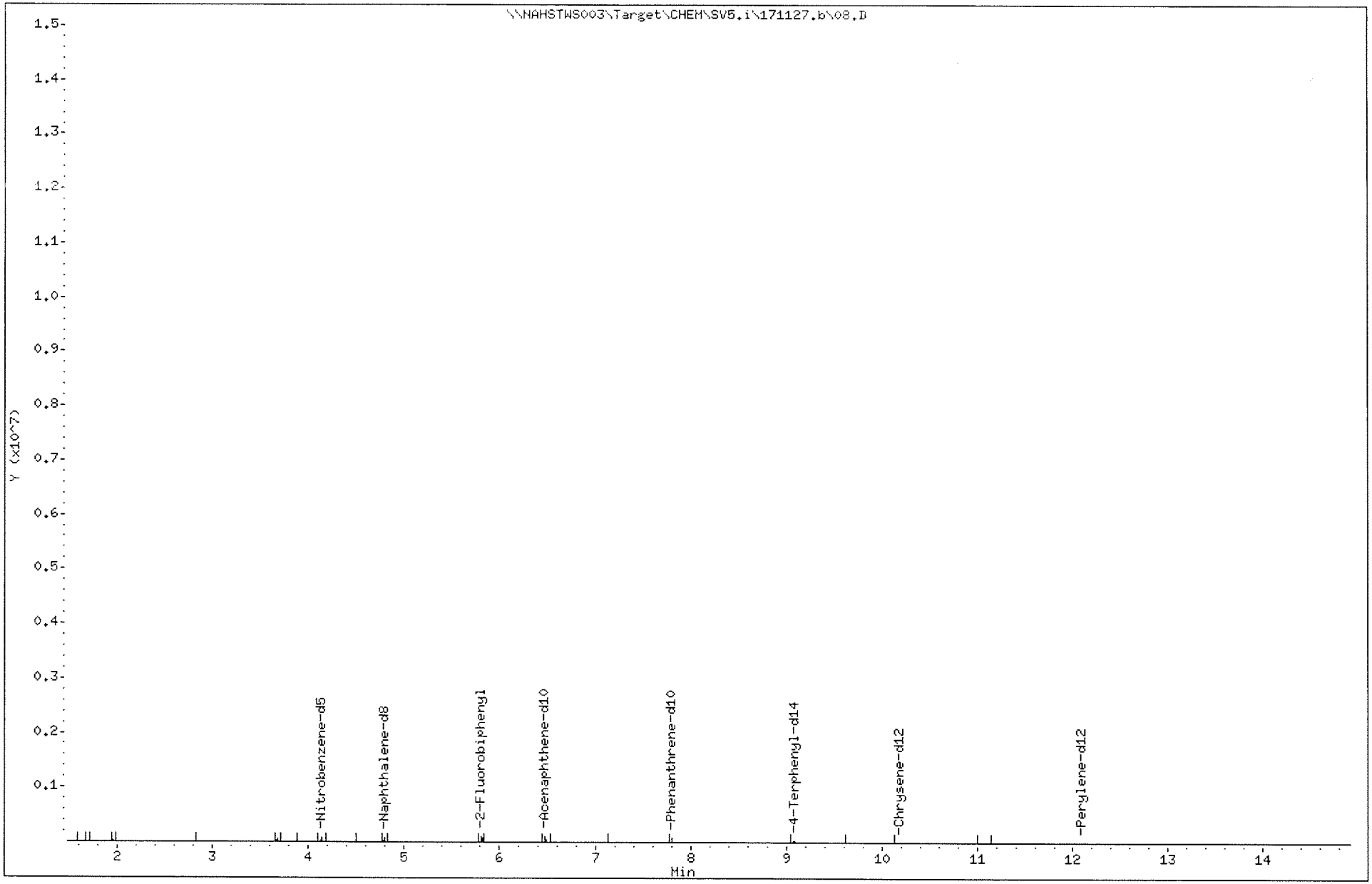
Sample Info: DX-0.2;DX-0.2

Purge Volume: 1000.0

Operator: GY

Column phase: RTX-5SIL MS

Column diameter: 0.28



ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\09.D
Lab Smp Id: DX-0.5 Client Smp ID: DX-0.5
Inj Date : 27-NOV-2017 19:22 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : DX-0.5;DX-0.5
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\DXSIM.m
Meth Date : 11-Jan-2018 15:47 aneir Quant Type: ISTD
Cal Date : 20-NOV-2017 15:12 Cal File: 010.D
Als bottle: 9 Calibration Sample, Level: 8
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (NG)	ON-COL (NG)
* 45 Naphthalene-d8	136	4.800	4.800	(1.000)	81886	0.10000	
$ 33 Nitrobenzene-d5	82	4.146	4.147	(0.864)	167850	0.50000	0.5057(AM)
* 86 Acenaphthene-d10	164	6.479	6.479	(1.000)	49217	0.10000	
$ 69 2-Fluorobiphenyl	172	5.821	5.825	(0.898)	229568	0.50000	0.5263(A)
* 126 Phenanthrene-d10	188	7.806	7.811	(1.000)	62795	0.10000	
* 182 Chrysene-d12	240	10.191	10.198	(1.000)	23734	0.10000	(M)
$ 158 4-Terphenyl-d14	244	9.097	9.097	(0.893)	135623	0.50000	0.6803(AM)
* 198 Perylene-d12	264	12.114	12.120	(1.000)	11478	0.10000	
1 1,4-Dioxane	58	2.006	2.032	(0.418)	37264	0.50000	0.5492(M)

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\09.D

Date : 27-NOV-2017 19:22

Client ID: DX-0.5

Sample Info: DX-0.5;DX-0.5

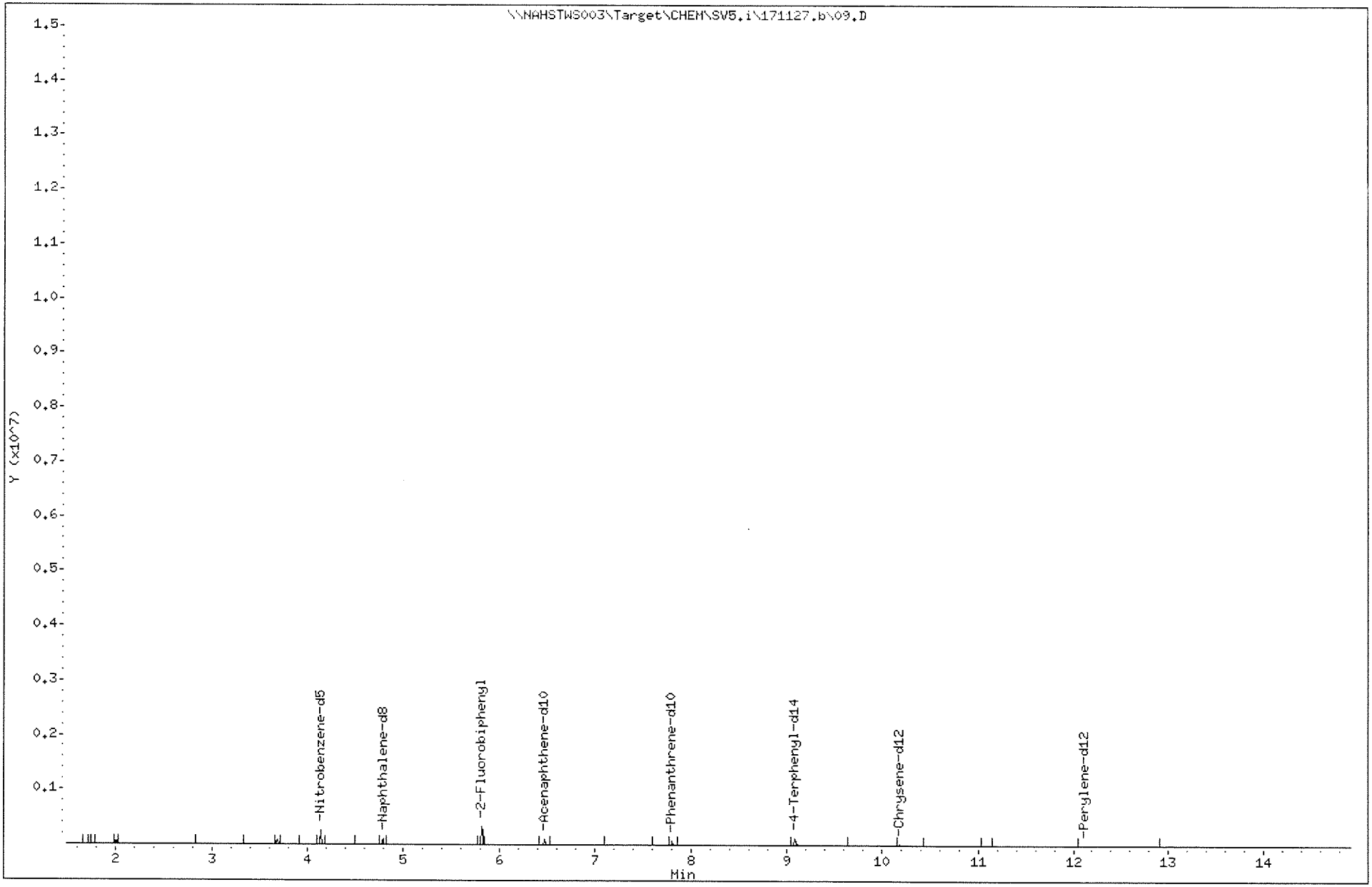
Purge Volume: 1000.0

Column phase: RTX-5SIL MS

Instrument: SV5.i

Operator: GY

Column diameter: 0.28



Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\10.D Page 1
Report Date: 01-Feb-2018 14:50

ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\10.D
Lab Smp Id: DX-ICV Client Smp ID: DX-ICV
Inj Date : 27-NOV-2017 19:42 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : DX-ICV;DX-ICV
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\DXSIM.m
Meth Date : 11-Jan-2018 15:47 aneir Quant Type: ISTD
Cal Date : 20-NOV-2017 15:12 Cal File: 010.D
Als bottle: 10 QC Sample: METHSPIKE
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

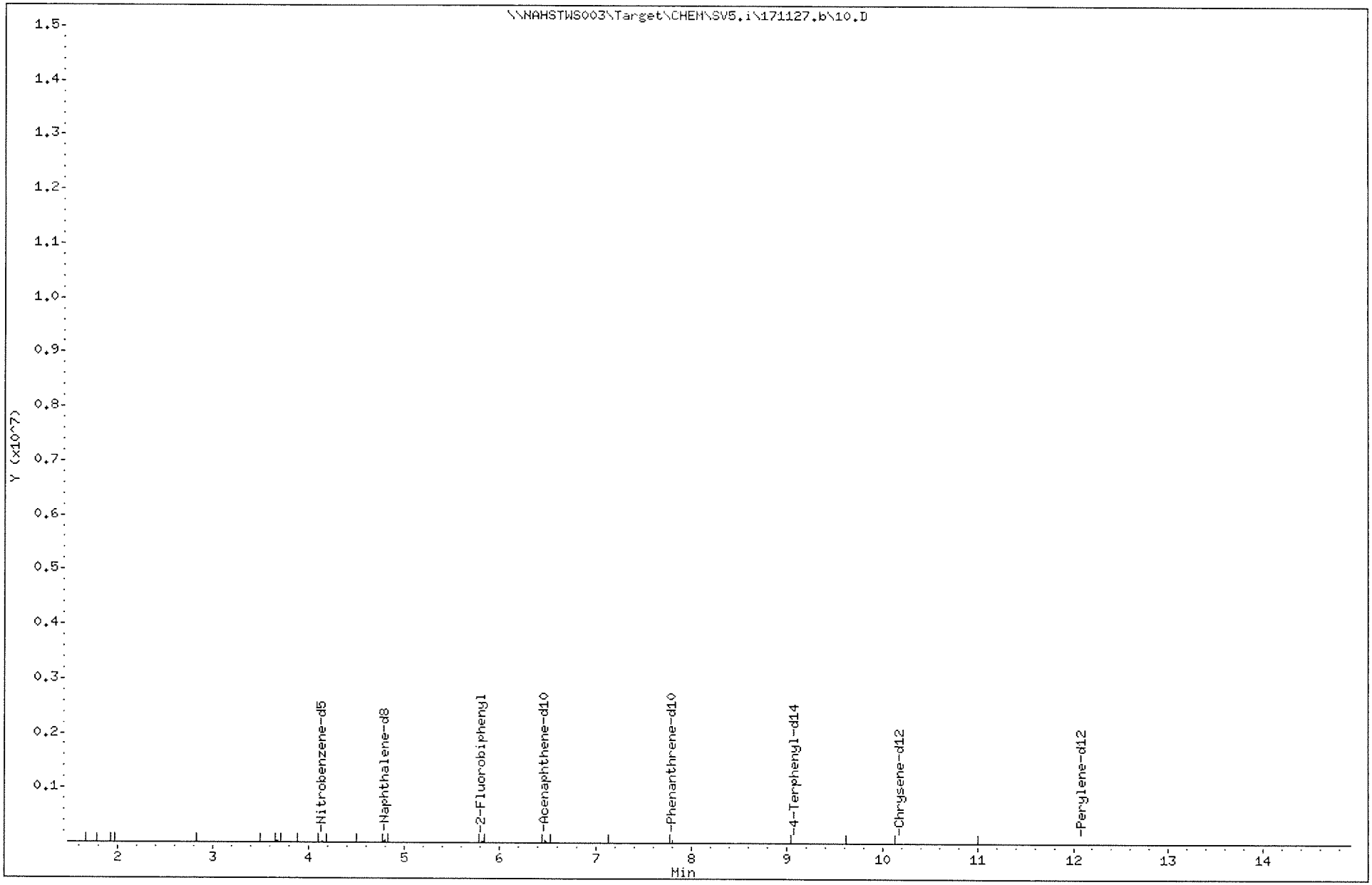
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (NG)	CONCENTRATIONS FINAL (ug/L)
* 45 Naphthalene-d8	136	4.800	4.800	(1.000)	39413	0.10000	
$ 33 Nitrobenzene-d5	82	4.146	4.147	(0.864)	13722	0.07304	0.07304(M)
* 86 Acenaphthene-d10	164	6.480	6.479	(1.000)	18308	0.10000	
$ 69 2-Fluorobiphenyl	172	5.825	5.825	(0.899)	19682	0.12130	0.1213(R)
* 126 Phenanthrene-d10	188	7.806	7.811	(1.000)	25287	0.10000	
* 182 Chrysene-d12	240	10.184	10.198	(1.000)	7225	0.10000	(M)
$ 158 4-Terphenyl-d14	244	9.086	9.097	(0.892)	5850	0.09553	0.09553(M)
* 198 Perylene-d12	264	12.098	12.120	(1.000)	3902	0.10000	
1 1,4-Dioxane	58	1.946	2.032	(0.406)	2746	0.08409	0.08408(aM)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
R - Spike/Surrogate failed recovery limits.
M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\10.D
Date : 27-NOV-2017 19:42
Client ID: DX-ICV
Sample Info: DX-ICV;DX-ICV
Purge Volume: 1000.0
Column phase: RTX-5SIL MS

Instrument: SV5.i
Operator: GY
Column diameter: 0.28



SV05 -Logbook

Batch: 29858
Date: 12-05-2017
Method: 8270D(SIM)
Comments: MSSV-003(SIM)

Analyst: Andrew Neir
Reviewer:
Laboratory: Houston

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
1	DFTPP	TUNE	12-05-2017 05:18 pm	1.00			01.D		Y	NA
2	DX-0.08	CCV	12-05-2017 05:34 pm	1.00			02.D		Y	NA
3	CCB	SAMP	12-05-2017 06:06 pm	1.00			03.D		Y	NA
4	MBLK-122811	MBLK	12-05-2017 06:27 pm	1.00	1000.00 mL	1.00 mL	04.D	Liquid	Y	NA
5	LCS-122811	LCS	12-05-2017 06:47 pm	1.00	1000.00 mL	1.00 mL	05.D	Liquid	Y	NA
6	MBLK-122922	MBLK	12-05-2017 07:08 pm	1.00	1000.00 mL	1.00 mL	06.D	Liquid	Y	NA
7	LCS-122922	LCS	12-05-2017 07:28 pm	1.00	1000.00 mL	1.00 mL	07.D	Liquid	Y	NA
8	LCSD-122922	LCSD	12-05-2017 07:49 pm	1.00	1000.00 mL	1.00 mL	08.D	Liquid	Y	NA
9	HS17111408-01	SAMP	12-05-2017 08:09 pm	10.00	1000.00 mL	1.00 mL	09.D	Liquid	Y	NA
10	HS17111408-02	SAMP	12-05-2017 08:30 pm	10.00	1000.00 mL	1.00 mL	10.D	Liquid	Y	NA
11	HS17111408-03	SAMP	12-05-2017 08:50 pm	10.00	1000.00 mL	1.00 mL	11.D	Liquid	Y	NA
12	HS17111408-04	SAMP	12-05-2017 09:11 pm	10.00	1000.00 mL	1.00 mL	12.D	Liquid	Y	NA
13	HS17111408-05	SAMP	12-05-2017 09:32 pm	10.00	1000.00 mL	1.00 mL	13.D	Liquid	Y	NA
14	HS17111408-06	SAMP	12-05-2017 09:52 pm	10.00	1000.00 mL	1.00 mL	14.D	Liquid	Y	NA
15	HS17111408-07	SAMP	12-05-2017 10:13 pm	10.00	1000.00 mL	1.00 mL	15.D	Liquid	Y	NA
16	HS17111395-01	SAMP	12-05-2017 10:33 pm	10.00	1000.00 mL	1.00 mL	16.D	Liquid	Y	NA
17	HS17111395-02	SAMP	12-05-2017 10:54 pm	10.00	1000.00 mL	1.00 mL	17.D	Liquid	Y	NA
18	HS17111395-03	SAMP	12-05-2017 11:14 pm	10.00	1000.00 mL	1.00 mL	18.D	Liquid	Y	NA
19	HS17111395-03MS	MS	12-05-2017 11:35 pm	10.00	1000.00 mL	1.00 mL	19.D	Liquid	Y	NA
20	HS17111395-03MSD	MSD	12-05-2017 11:55 pm	10.00	1000.00 mL	1.00 mL	20.D	Liquid	Y	NA
21	HS17120123-01	SAMP	12-06-2017 12:16 am	10.00	1000.00 mL	1.00 mL	21.D	Liquid	Y	NA
22	HS17120123-02	SAMP	12-06-2017 12:36 am	10.00	1000.00 mL	1.00 mL	22.D	Liquid	Y	NA
23	HS17120123-03	SAMP	12-06-2017 12:57 am	10.00	1000.00 mL	1.00 mL	23.D	Liquid	Y	NA
24	HS17120123-04	SAMP	12-06-2017 01:17 am	10.00	1000.00 mL	1.00 mL	24.D	Liquid	Y	NA
25	HS17120123-05	SAMP	12-06-2017 01:38 am	10.00	1000.00 mL	1.00 mL	25.D	Liquid	Y	NA
26	HS17120123-06	SAMP	12-06-2017 01:58 am	10.00	1000.00 mL	1.00 mL	26.D	Liquid	Y	NA
27	HS17120123-07	SAMP	12-06-2017 02:19 am	10.00	1000.00 mL	1.00 mL	27.D	Liquid	Y	NA
28	CCV	SAMP	12-06-2017 02:39 am	1.00	1000.00 mL	1.00 mL	28.D	Liquid	Y	NA

Chemical	Value
IS ID	3041118-01
CAL STD ID	3041117-04
DFTPP ID	29722-96-01
PCP Tailing	0.63
Benz. Tailing	0.84

FORM 5
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17111408

Lab File ID: 01 DFTPP Injection Date: 12/05/17

Instrument ID: SV5 DFTPP Injection Time: 1705

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	27.3
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	34.2
70	Less than 2.0% of mass 69	0.2 (0.4)1
127	10.0 - 80.0% of mass 198	50.0
197	Less than 2.0% of mass 198	0.9
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	7.2
275	10.0 - 60.0% of mass 198	35.2
365	1.0 - 100.0% of mass 198	5.2
441	Present, but less than mass 443	17.0
442	50.0 - 150.0% of mass 198	105.6
443	15.0 - 24.0% of mass 442	22.5 (21.4)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	DX-0.08	DX-0.08	02	12/05/17	1734
02	MBLK-122922	MBLK-122922	04	12/05/17	1827
03	LCS-122922	LCS-122922	05	12/05/17	1847
04	HS17111408-0	HS17111408-03	11	12/05/17	2050
05	HS17111408-0	HS17111408-05	13	12/05/17	2132
06	HS17111408-0	HS17111408-06	14	12/05/17	2152
07	CCV	CCV	28	12/06/17	0239
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V SV

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17111408

Instrument ID: SV5 Calibration Date: 12/05/17 Time: 1734

Lab File ID: 02 Init. Calib. Date(s): 11/27/17 11/27/17

Init. Calib. Times: 1647 1922

GC Column: RTX-5SIL MS ID: 0.28 (mm)

COMPOUND	RRF OR AMOUNT	RRF8e-002 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE	
1,4-Dioxane	8.3e-002	6.93e-002	0.01	-16.51	20.00	AVRG	
Nitrobenzene-d5	0.4770000	0.4615870	0.01	-3.23	20.00	AVRG	
4-Terphenyl-d14	0.8680000	0.9571811	0.01	10.27	20.00	AVRG	
2-Fluorobiphenyl	0.8860000	1.1235623	0.01	26.81	20.00	AVRG	<-

FORM VII SV

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17111408

Lab File ID (Standard): 02 Date Analyzed: 12/05/17

Instrument ID: SV5 Time Analyzed: 1734

		IS1(NPT) AREA #	RT #	IS2(ANT) AREA #	RT #	IS3(PHN) AREA #	RT #
	12 HOUR STD	103331	4.77	59298	6.44	59842	7.78
	UPPER LIMIT	206662	5.27	118596	6.94	119684	8.28
	LOWER LIMIT	51666	4.27	29649	5.94	29921	7.28
	CLIENT SAMPLE NO.						
01	MBLK-122922	111949	4.77	53643	6.44	67393	7.78
02	LCS-122922	100051	4.77	48052	6.44	62346	7.78
03	HS17111408-03	96523	4.77	53387	6.44	76790	7.78
04	HS17111408-05	110167	4.77	60915	6.44	88569	7.78
05	HS17111408-06	104998	4.77	57380	6.44	83235	7.78
06	CCV	75560	4.77	34387	6.44	44167	7.78
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

IS1 (NPT) = Naphthalene-d8
IS2 (ANT) = Acenaphthene-d10
IS3 (PHN) = Phenanthrene-d10

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17111408

Lab File ID (Standard): 02 Date Analyzed: 12/05/17

Instrument ID: SV5 Time Analyzed: 1734

		IS4(CRY) AREA	#	RT	#	IS5(PRY) AREA	#	RT	#	AREA	#	RT	#
	12 HOUR STD	24627		10.16		11531		12.06					
	UPPER LIMIT	49254		10.66		23062		12.56					
	LOWER LIMIT	12314		9.66		5766		11.56					
	CLIENT SAMPLE NO.												
01	MBLK-122922	31422		10.16		19452		12.06					
02	LCS-122922	30956		10.14		17879		12.04					
03	HS17111408-03	43720		10.16		22517		12.06					
04	HS17111408-05	43841		10.16		21800		12.06					
05	HS17111408-06	46755		10.16		22637		12.06					
06	CCV	17283		10.15		9865		12.06					
07													
08													
09													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

IS4 (CRY) = Chrysene-d12
IS5 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

FORM 3
WATER SEMIVOLATILE METHOD SPIKE RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17111408

Matrix Spike - Sample No.: CCV

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	% REC #	QC. LIMITS REC.
1,4-Dioxane	0.08000	0.08646	108	40-140

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM III SV

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\01.D

Date : 05-DEC-2017 17:05

Client ID: DFTPP

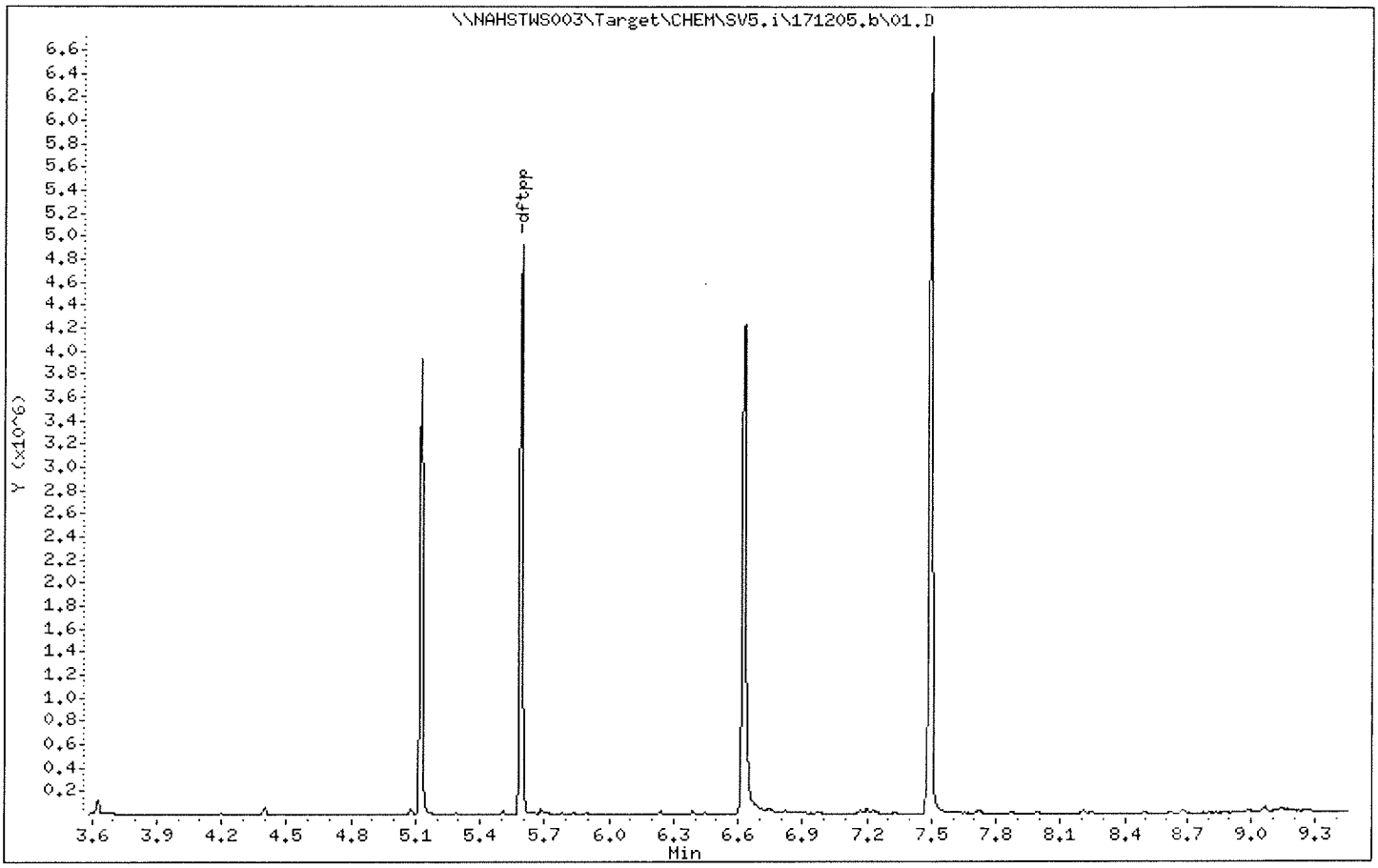
Instrument: SV5.i

Sample Info: DFTPP;DFTPP;3;;DFTPP

Operator: GY

Column phase: DB-5MS

Column diameter: 0.25



Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\01.D

Date : 05-DEC-2017 17:05

Client ID: DFTPP

Instrument: SV5.i

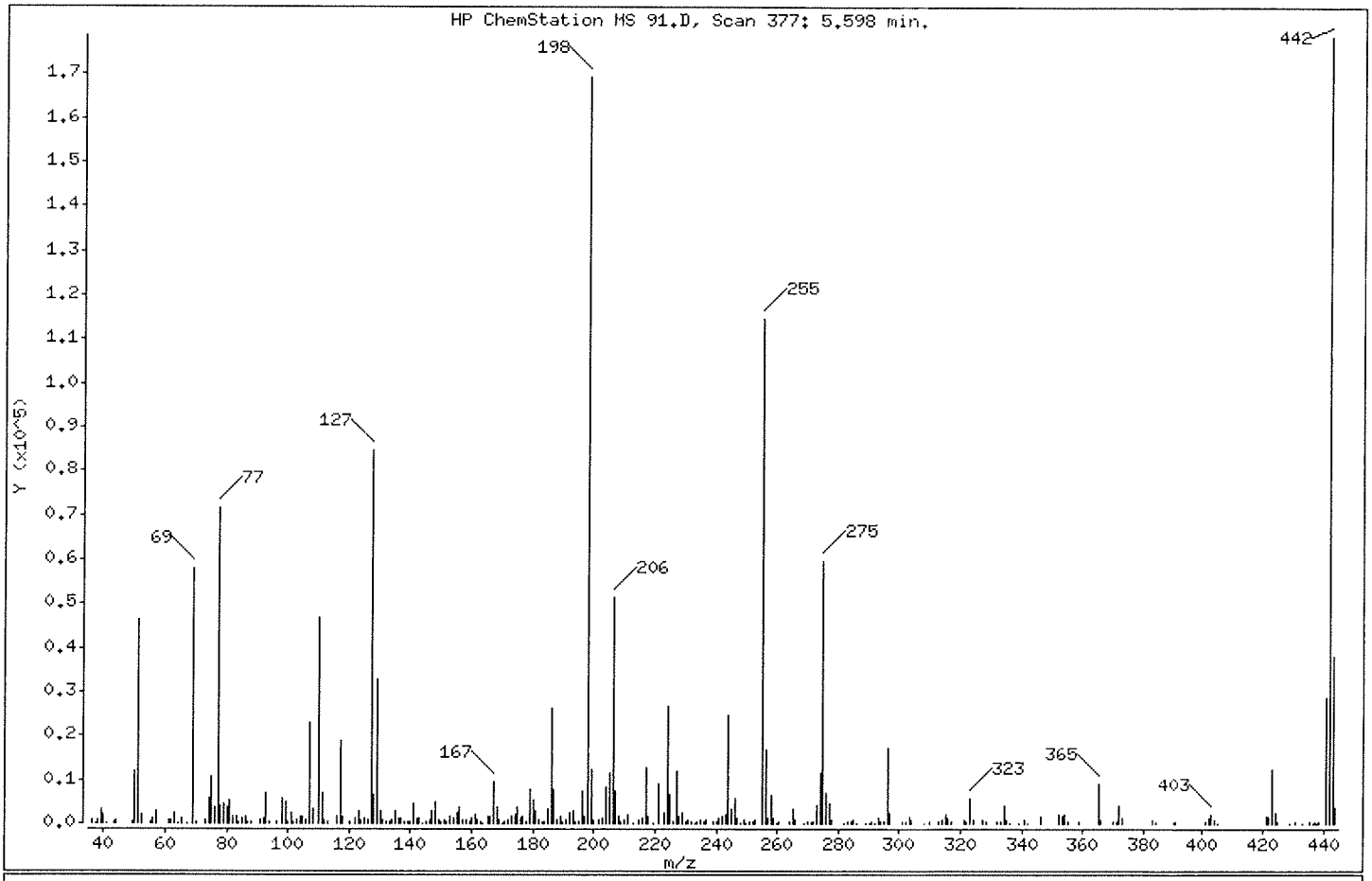
Sample Info: DFTPP;DFTPP;3;;DFTPP

Operator: GY

Column phase: DB-5MS

Column diameter: 0.25

1 dftpp



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
198	Base Peak, 100% relative abundance	100.00
51	10.00 - 80.00% of mass 198	27.34
68	Less than 2.00% of mass 69	0.00 (0.00)
69	Mass 69 relative abundance	34.23
70	Less than 2.00% of mass 69	0.15 (0.45)
127	10.00 - 80.00% of mass 198	50.04
197	Less than 2.00% of mass 198	0.93
199	5.00 - 9.00% of mass 198	7.19
275	10.00 - 60.00% of mass 198	35.21
365	1.00 - 100.00% of mass 198	5.23
441	Present, but less than mass 443	16.97
442	50.00 - 150.00% of mass 198	105.59
443	15.00 - 24.00% of mass 442	22.55 (21.35)

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\01.D

Date : 05-DEC-2017 17:05

Client ID: DFTPP

Instrument: SV5.i

Sample Info: DFTPP;DFTPP;3;;DFTPP

Operator: GY

Column phase: DB-5MS

Column diameter: 0.25

Data File: 01.D
Spectrum: HP ChemStation MS 91.D, Scan 377: 5.598 min.
Location of Maximum: 442.00
Number of points: 290

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	1017	132.00	350	204.10	8100	291.90	184
37.10	150	133.10	278	205.10	11333	293.00	1157
38.00	815	134.00	986	206.10	51584	294.10	461
39.10	3128	135.00	2897	207.10	7594	295.00	404
40.00	2192	136.10	1316	208.00	1714	296.10	17440
40.90	186	137.00	1118	209.00	424	297.00	2332
43.10	241	138.00	233	210.10	760	301.00	358
44.00	654	138.90	266	211.10	1993	301.90	416
49.00	492	139.90	484	212.90	195	303.10	1729
50.10	11746	141.00	4393	214.90	650	304.00	656
51.10	46304	142.00	1173	216.10	1077	308.10	184
52.10	2135	143.00	1304	216.90	12701	310.20	361
55.10	265	144.00	188	217.90	1570	313.00	273
56.00	1383	144.80	424	219.20	186	314.10	891
57.00	3004	146.00	937	221.00	9059	315.00	2117
61.00	891	147.00	2766	222.90	2599	316.00	1109
62.00	852	148.00	4964	224.00	26864	317.10	244
63.00	2512	149.00	839	225.00	6628	321.10	724
64.00	171	150.10	345	225.90	486	322.10	326
65.10	1378	151.20	754	227.00	11985	323.10	5615
67.10	151	151.80	442	228.00	1586	324.00	814
69.00	57968	153.00	1796	228.90	2397	326.90	887
70.00	258	154.00	1190	229.90	388	328.10	424
73.00	974	155.00	2545	230.90	686	332.00	554
74.10	5619	156.00	3809	232.00	361	333.10	537
75.00	10750	157.00	646	232.90	200	334.10	4256
76.10	3863	158.00	764	233.90	510	335.10	924
77.10	71416	159.10	514	235.00	741	336.00	205
78.10	4307	160.00	1293	236.00	547	339.10	197
79.10	4343	161.10	2034	236.90	689	341.10	780
80.00	3728	162.00	634	239.00	533	342.00	164
81.00	5139	162.90	345	240.10	391	346.10	1512
82.00	1484	163.80	179	241.10	1062	352.00	2075
83.00	1625	165.10	1834	242.10	1717	353.10	1439
83.90	266	166.10	1617	243.10	2088	354.10	2082

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\01.D

Date : 05-DEC-2017 17:05

Client ID: DFTPP Instrument: SV5.i

Sample Info: DFTPP;DFTPP;3;;DFTPP

Operator: GY

Column phase: DB-5MS Column diameter: 0.25

Data File: 01.D
Spectrum: HP ChemStation MS 91.D, Scan 377: 5.598 min.
Location of Maximum: 442.00
Number of points: 290

m/z	Y	m/z	Y	m/z	Y	m/z	Y
85.00	1169	167.00	9384	244.10	24616	355.00	338
85.90	1550	168.10	3575	245.10	3109	359.00	316
87.00	585	169.10	697	246.00	5944	365.00	8859
87.90	278	169.90	186	247.10	1137	366.00	763
91.00	895	170.90	412	248.00	201	370.10	324
92.00	1177	172.10	692	249.00	751	371.00	522
93.00	6991	173.00	1484	250.10	193	372.10	3913
93.90	600	174.10	1895	250.90	322	372.90	1036
96.20	401	175.10	3708	252.20	239	383.00	1020
98.00	5800	176.00	1192	252.90	660	384.20	312
99.00	4771	176.90	1607	255.10	114520	390.10	613
100.00	389	178.10	594	256.10	16696	390.70	185
100.90	2435	179.00	8012	257.00	1347	391.10	274
101.90	220	180.00	5141	258.00	6650	401.10	410
102.90	1011	181.00	2708	259.00	1219	402.10	1399
103.90	1462	182.00	622	260.00	182	403.00	1900
104.90	1551	182.90	223	260.80	275	403.90	780
106.00	657	183.10	225	264.00	267	405.10	157
107.00	22960	184.00	498	265.10	3338	421.10	1620
108.00	3112	185.00	3245	266.00	761	422.00	1550
110.00	46848	186.10	26504	268.90	166	423.10	12328
111.00	7120	187.00	7708	270.00	303	424.00	2308
111.90	740	188.10	788	271.10	448	424.90	428
112.90	437	189.00	1642	271.90	349	428.90	172
116.10	1560	189.80	299	273.00	4069	430.90	227
117.00	18744	190.80	715	274.10	11427	433.00	186
118.00	1573	191.10	634	275.10	59632	435.70	275
120.10	379	192.00	2657	276.10	7082	436.50	162
122.00	1404	193.00	2686	277.00	4537	436.80	187
123.00	2718	194.10	555	278.00	884	437.50	226
123.90	996	195.00	446	281.90	158	438.00	163
124.90	1265	196.10	7324	282.90	412	438.70	223
125.90	701	196.80	1582	284.10	592	441.00	28736
127.00	84736	198.00	169344	285.10	973	442.00	178816
128.00	6739	199.00	12181	286.10	152	443.00	38184

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\01.D

Date : 05-DEC-2017 17:05

Client ID: DFTPP

Instrument: SV5.i

Sample Info: DFTPP;DFTPP;3;;DFTPP

Operator: GY

Column phase: DB-5MS

Column diameter: 0.25

Data File: 01.D
Spectrum: HP ChemStation MS 91.D, Scan 377: 5.598 min.
Location of Maximum: 442.00
Number of points: 290

m/z	Y	m/z	Y	m/z	Y	m/z	Y
129.00	33040	200.00	927	289.00	200	444.00	3517
130.00	2928	201.50	918	290.00	188		
131.10	695	203.00	1361	290.90	228		

ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\02.D
Lab Smp Id: DX-0.08 Client Smp ID: DX-0.08
Inj Date : 05-DEC-2017 17:34 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : DX-0.08;DX-0.08
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\DXSIM.m
Meth Date : 01-Feb-2018 14:26 aneir Quant Type: ISTD
Cal Date : 27-NOV-2017 19:22 Cal File: 09.D
Als bottle: 2 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (NG)	ON-COL (NG)
* 45 Naphthalene-d8	136	4.767	4.767	(1.000)	103331	0.10000	
$ 33 Nitrobenzene-d5	82	4.114	4.114	(0.863)	38157	0.08000	0.07739
* 86 Acenaphthene-d10	164	6.442	6.442	(1.000)	59298	0.10000	(M)
$ 69 2-Fluorobiphenyl	172	5.788	5.788	(0.898)	53300	0.08000	0.1014(M)
* 126 Phenanthrene-d10	188	7.779	7.779	(1.000)	59842	0.10000	
* 182 Chrysene-d12	240	10.156	10.156	(1.000)	24627	0.10000	(M)
$ 158 4-Terphenyl-d14	244	9.065	9.065	(0.893)	18858	0.08000	0.08820(M)
* 198 Perylene-d12	264	12.055	12.055	(1.000)	11531	0.10000	
1 1,4-Dioxane	58	2.009	2.009	(0.421)	5728	0.08000	0.06690(aM)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\02.D

Date : 05-DEC-2017 17:34

Client ID: DX-0.08

Instrument: SV5.i

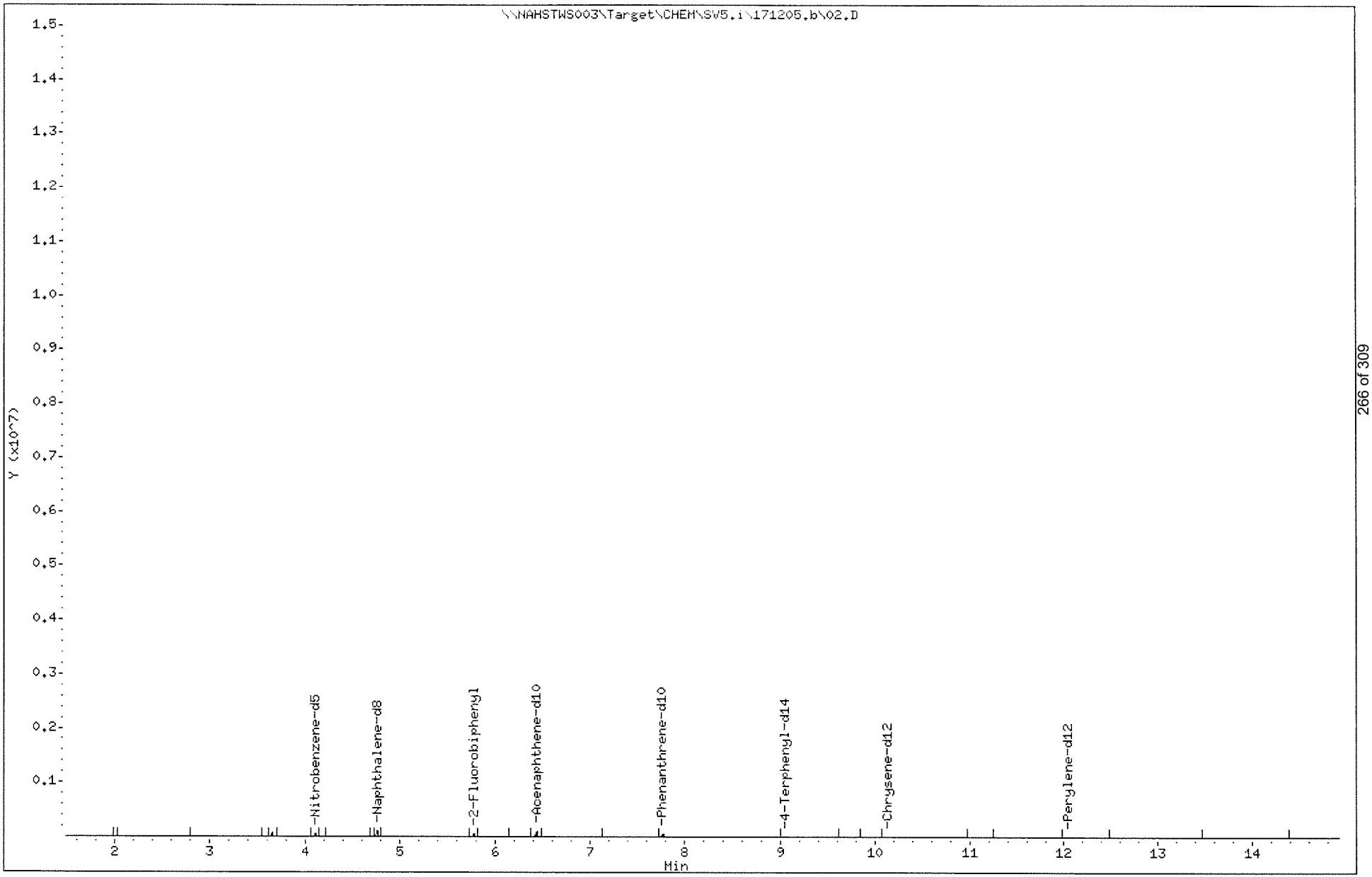
Sample Info: DX-0.08;DX-0.08

Purge Volume: 1000.0

Operator: GY

Column phase: RTX-5SIL MS

Column diameter: 0.28



ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\04.D
Lab Smp Id: MBLK-122922 Client Smp ID: MBLK-122922
Inj Date : 05-DEC-2017 18:27 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : MBLK-122922;MBLK-122922;3;;BLANK
Misc Info : HS17111408;1;0;1
Comment :
Method : \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\DXSIM.m
Meth Date : 01-Feb-2018 14:26 aneir Quant Type: ISTD
Cal Date : 27-NOV-2017 19:22 Cal File: 09.D
Als bottle: 4 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (NG)	FINAL (ug/L)	
* 45 Naphthalene-d8	136	4.767	4.767	(1.000)	111949	0.10000		
$ 33 Nitrobenzene-d5	82	4.114	4.114	(0.863)	35876	0.06716	0.06716	
* 86 Acenaphthene-d10	164	6.442	6.442	(1.000)	53643	0.10000		
$ 69 2-Fluorobiphenyl	172	5.788	5.788	(0.898)	54962	0.11560	0.1156	(RM)
* 126 Phenanthrene-d10	188	7.779	7.779	(1.000)	67393	0.10000		
* 182 Chrysene-d12	240	10.156	10.156	(1.000)	31422	0.10000		(M)
$ 158 4-Terphenyl-d14	244	9.059	9.065	(0.892)	26367	0.09665	0.09665	(M)
* 198 Perylene-d12	264	12.055	12.055	(1.000)	19452	0.10000		(M)

QC Flag Legend

R - Spike/Surrogate failed recovery limits.
M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\04.D

Date : 05-DEC-2017 18:27

Client ID: MBLK-122922

Instrument: SV5.i

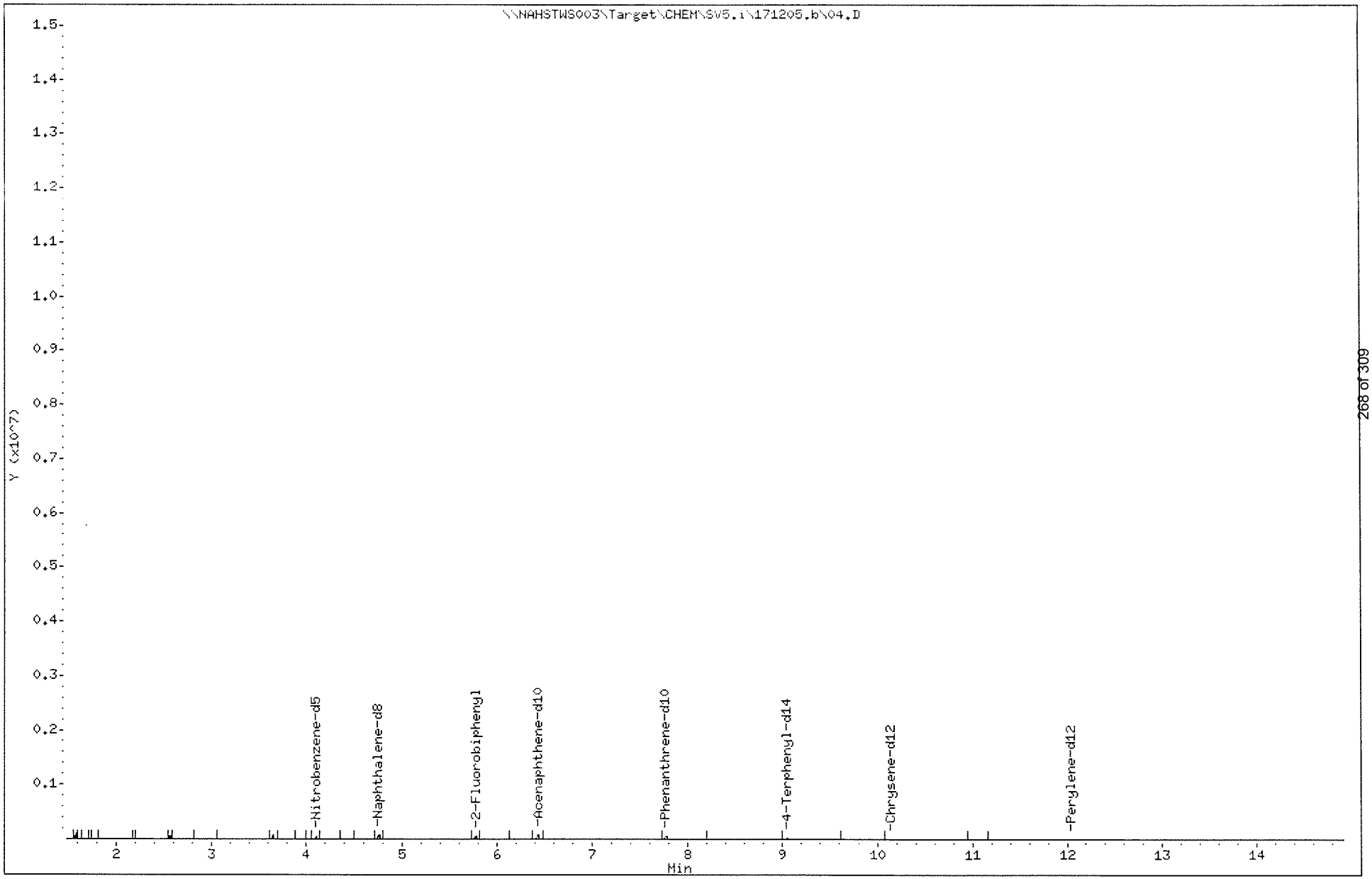
Sample Info: MBLK-122922;MBLK-122922;3;;BLANK

Purge Volume: 1000.0

Operator: GY

Column phase: RTX-5SIL MS

Column diameter: 0.28



Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\05.D Page 1
Report Date: 01-Feb-2018 15:25

ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\05.D
Lab Smp Id: LCS-122922 Client Smp ID: LCS-122922
Inj Date : 05-DEC-2017 18:47 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : LCS-122811;LCS-122811;3;;LCS
Misc Info : HS17111408;1;0;1
Comment :
Method : \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\DXSIM.m
Meth Date : 01-Feb-2018 14:26 aneir Quant Type: ISTD
Cal Date : 27-NOV-2017 19:22 Cal File: 09.D
Als bottle: 5 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (NG)	FINAL (ug/L)
* 45 Naphthalene-d8	136	4.767	4.767	(1.000)	100051	0.10000	
$ 33 Nitrobenzene-d5	82	4.114	4.114	(0.863)	33448	0.07006	0.07006
* 86 Acenaphthene-d10	164	6.442	6.442	(1.000)	48052	0.10000	
$ 69 2-Fluorobiphenyl	172	5.788	5.788	(0.898)	52706	0.12376	0.1238(R)
* 126 Phenanthrene-d10	188	7.779	7.779	(1.000)	62346	0.10000	
* 182 Chrysene-d12	240	10.142	10.156	(1.000)	30956	0.10000	(M)
$ 158 4-Terphenyl-d14	244	9.054	9.065	(0.893)	26458	0.09844	0.09844(M)
* 198 Perylene-d12	264	12.039	12.055	(1.000)	17879	0.10000	(M)
1 1,4-Dioxane	58	2.012	2.009	(0.422)	6852	0.08265	0.08265(a)

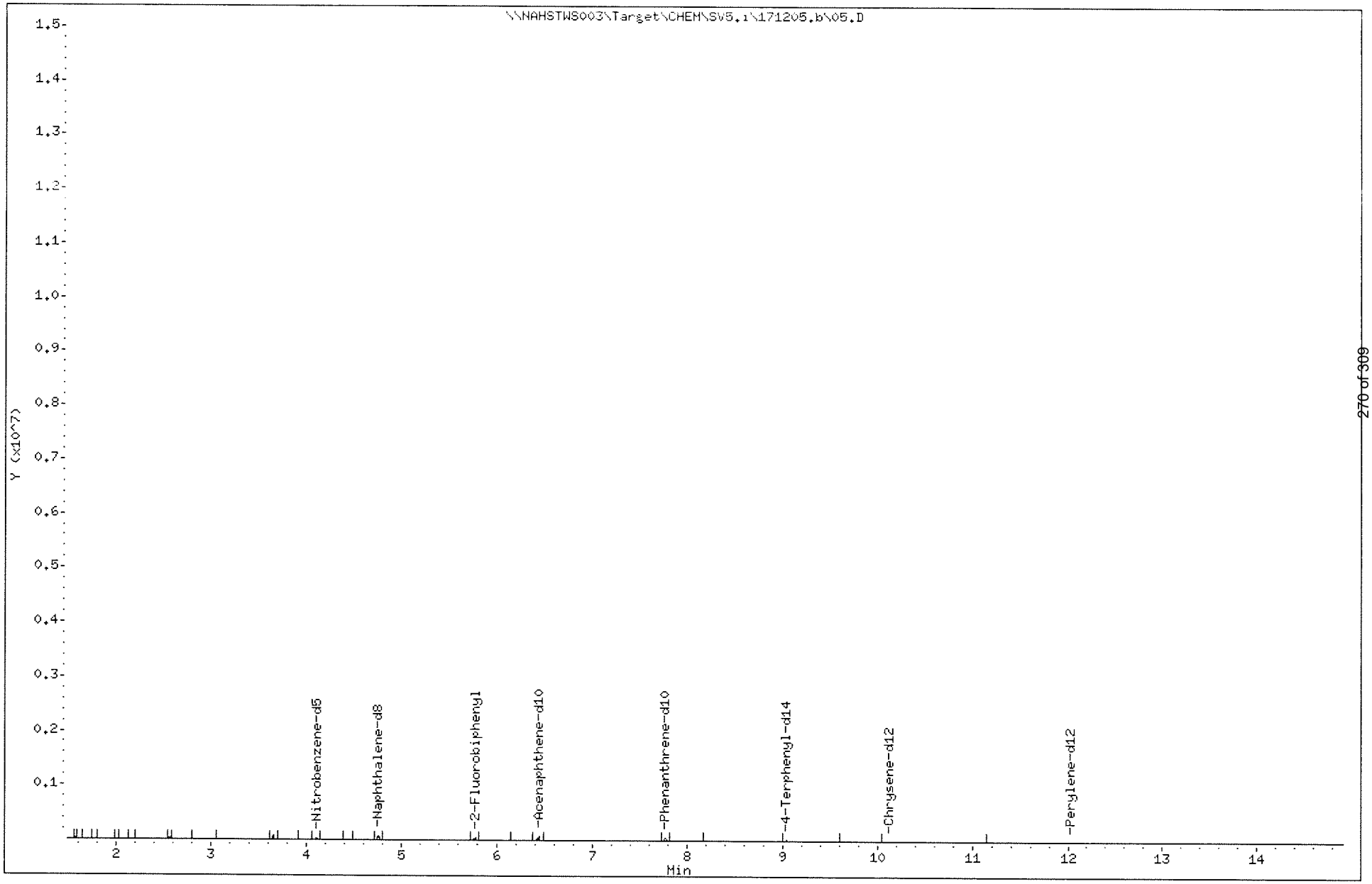
QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
R - Spike/Surrogate failed recovery limits.
M - Compound response manually integrated.

00911697

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\05.D
Date : 05-DEC-2017 18:47
Client ID: LCS-122922
Sample Info: LCS-122811;LCS-122811;3;;LCS
Purge Volume: 1000.0
Column phase: RTX-5SIL MS

Instrument: SV5.i
Operator: GY
Column diameter: 0.28



Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\11.D Page 1
Report Date: 01-Feb-2018 15:25

ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\11.D
Lab Smp Id: HS17111408-03 Client Smp ID: HS17111408-03
Inj Date : 05-DEC-2017 20:50 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : HS17111408-03;HS17111408-03
Misc Info : HS17111408;1;0;10
Comment :
Method : \\nahstws003\Target\chem\SV5.i\171205.b\DXSIM.m
Meth Date : 01-Feb-2018 14:26 aneir Quant Type: ISTD
Cal Date : 27-NOV-2017 19:22 Cal File: 09.D
Als bottle: 11
Dil Factor: 10.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14
Processing Host: NAHSTWS003

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	10.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (NG)	FINAL (ug/L)
* 45 Naphthalene-d8	136	4.767	4.767	(1.000)	96523	0.10000	
$ 33 Nitrobenzene-d5	82	4.114	4.114	(0.863)	2626	0.00570	0.05702(M)
* 86 Acenaphthene-d10	164	6.442	6.442	(1.000)	53387	0.10000	
$ 69 2-Fluorobiphenyl	172	5.788	5.788	(0.898)	4007	0.00847	0.08468(M)
* 126 Phenanthrene-d10	188	7.779	7.779	(1.000)	76790	0.10000	
* 182 Chrysene-d12	240	10.156	10.156	(1.000)	43720	0.10000	(M)
$ 158 4-Terphenyl-d14	244	9.059	9.065	(0.892)	2228	0.00587	0.05870(M)
* 198 Perylene-d12	264	12.061	12.055	(1.000)	22517	0.10000	(M)
1 1,4-Dioxane	58	2.008	2.009	(0.421)	9546	0.11936	1.194(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.

00911699

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\11.D

Date : 05-DEC-2017 20:50

Client ID: HS17111408-03

Instrument: SV5.i

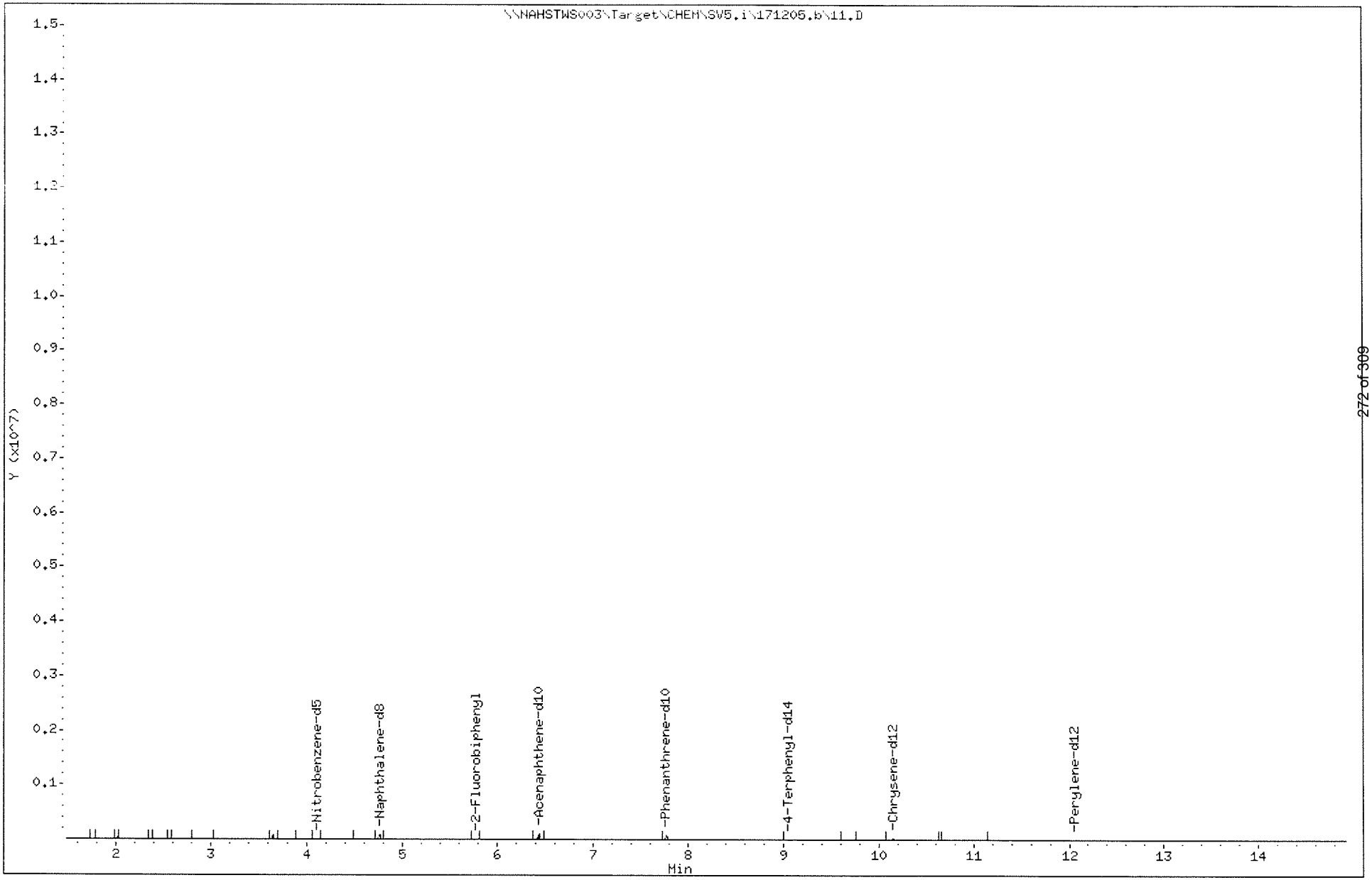
Sample Info: HS17111408-03;HS17111408-03

Purge Volume: 1000.0

Operator: GY

Column phase: RTX-5SIL MS

Column diameter: 0.28



Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\11.D

Date : 05-DEC-2017 20:50

Client ID: HS17111408-03

Instrument: SV5.i

Sample Info: HS17111408-03;HS17111408-03

Purge Volume: 1000.0

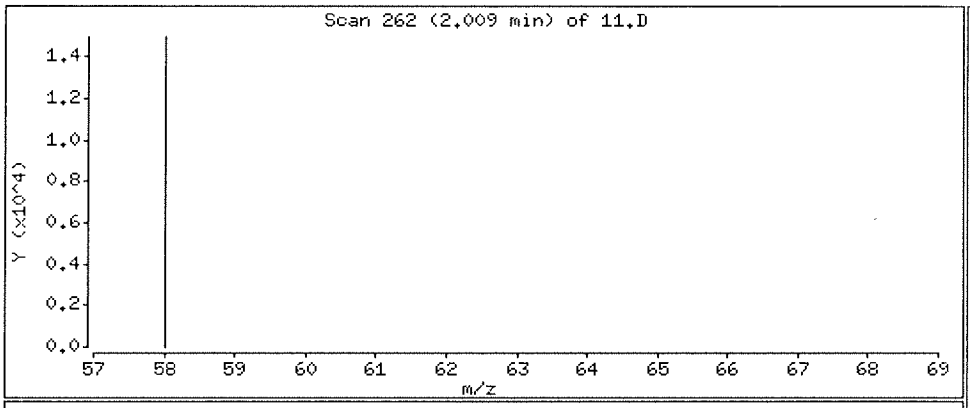
Operator: GY

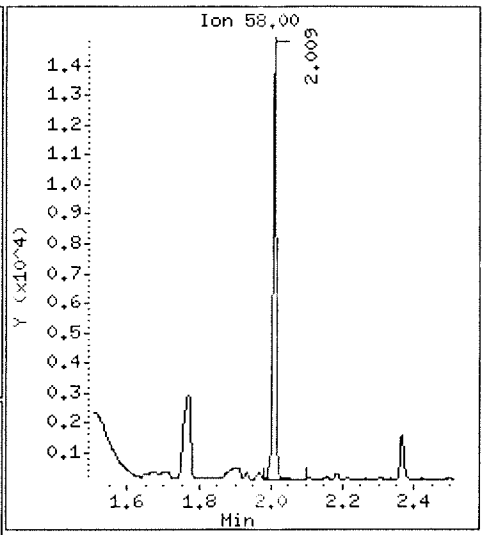
Column phase: RTX-5SIL MS

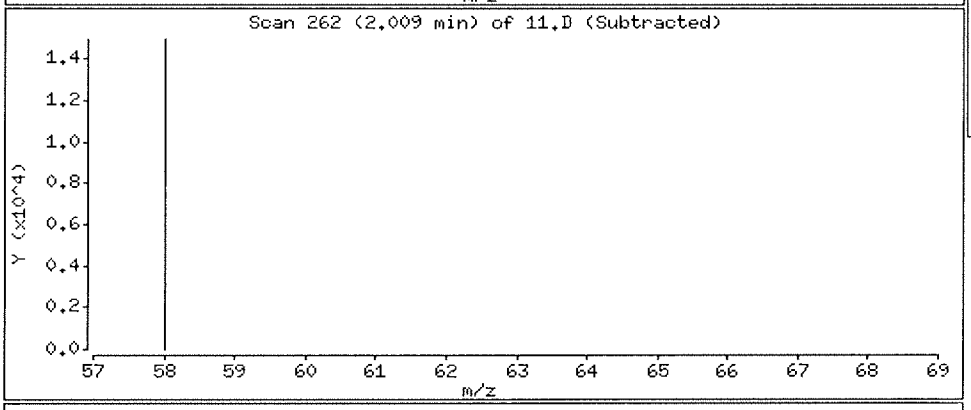
Column diameter: 0.28

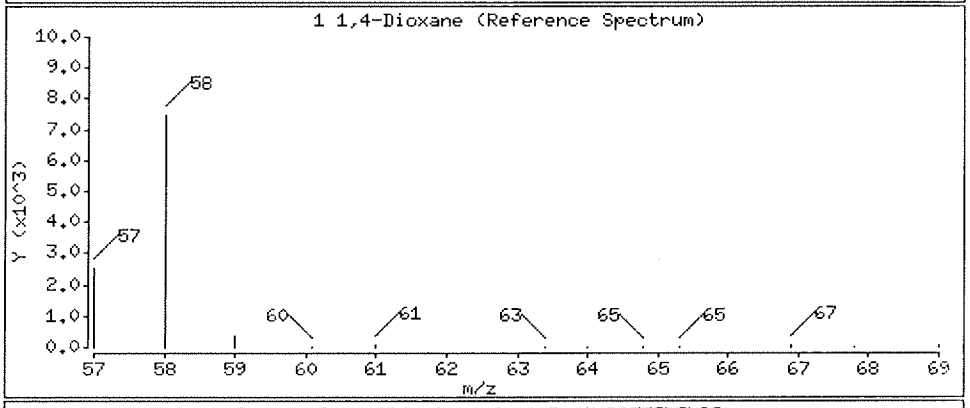
1 1,4-Dioxane

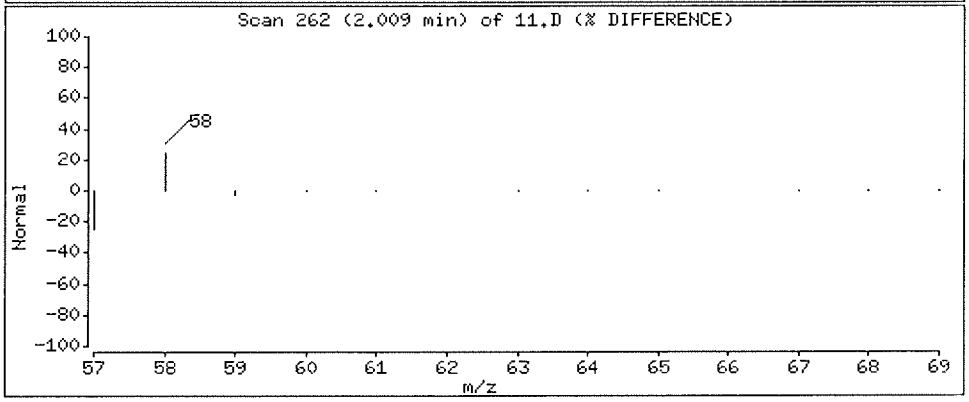
Concentration: 1.194 ug/L











ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\13.D
Lab Smp Id: HS17111408-05 Client Smp ID: HS17111408-05
Inj Date : 05-DEC-2017 21:32 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : HS17111408-05;HS17111408-05
Misc Info : HS17111408;1;0;10
Comment :
Method : \\nahstws003\Target\chem\SV5.i\171205.b\DXSIM.m
Meth Date : 01-Feb-2018 14:26 aneir Quant Type: ISTD
Cal Date : 27-NOV-2017 19:22 Cal File: 09.D
Als bottle: 13
Dil Factor: 10.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14
Processing Host: NAHSTWS003

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	10.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (NG)	FINAL (ug/L)
* 45 Naphthalene-d8	136	4.767	4.767	(1.000)	11016	0.10000	
$ 33 Nitrobenzene-d5	82	4.114	4.114	(0.863)	2771	0.00527	0.0527 (M)
* 86 Acenaphthene-d10	164	6.442	6.442	(1.000)	60915	0.10000	
$ 69 2-Fluorobiphenyl	172	5.788	5.788	(0.898)	4784	0.00886	0.0886
* 126 Phenanthrene-d10	188	7.779	7.779	(1.000)	88569	0.10000	
* 182 Chrysene-d12	240	10.156	10.156	(1.000)	43841	0.10000	(M)
$ 158 4-Terphenyl-d14	244	9.059	9.065	(0.892)	2911	0.00765	0.0764 (M)
* 198 Perylene-d12	264	12.061	12.055	(1.000)	21800	0.10000	(M)
1 1,4-Dioxane	58	1.917	2.009	(0.402)	4830	0.05291	0.529 (a)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\13.D

Date : 05-DEC-2017 21:32

Client ID: HS17111408-05

Instrument: SV5.i

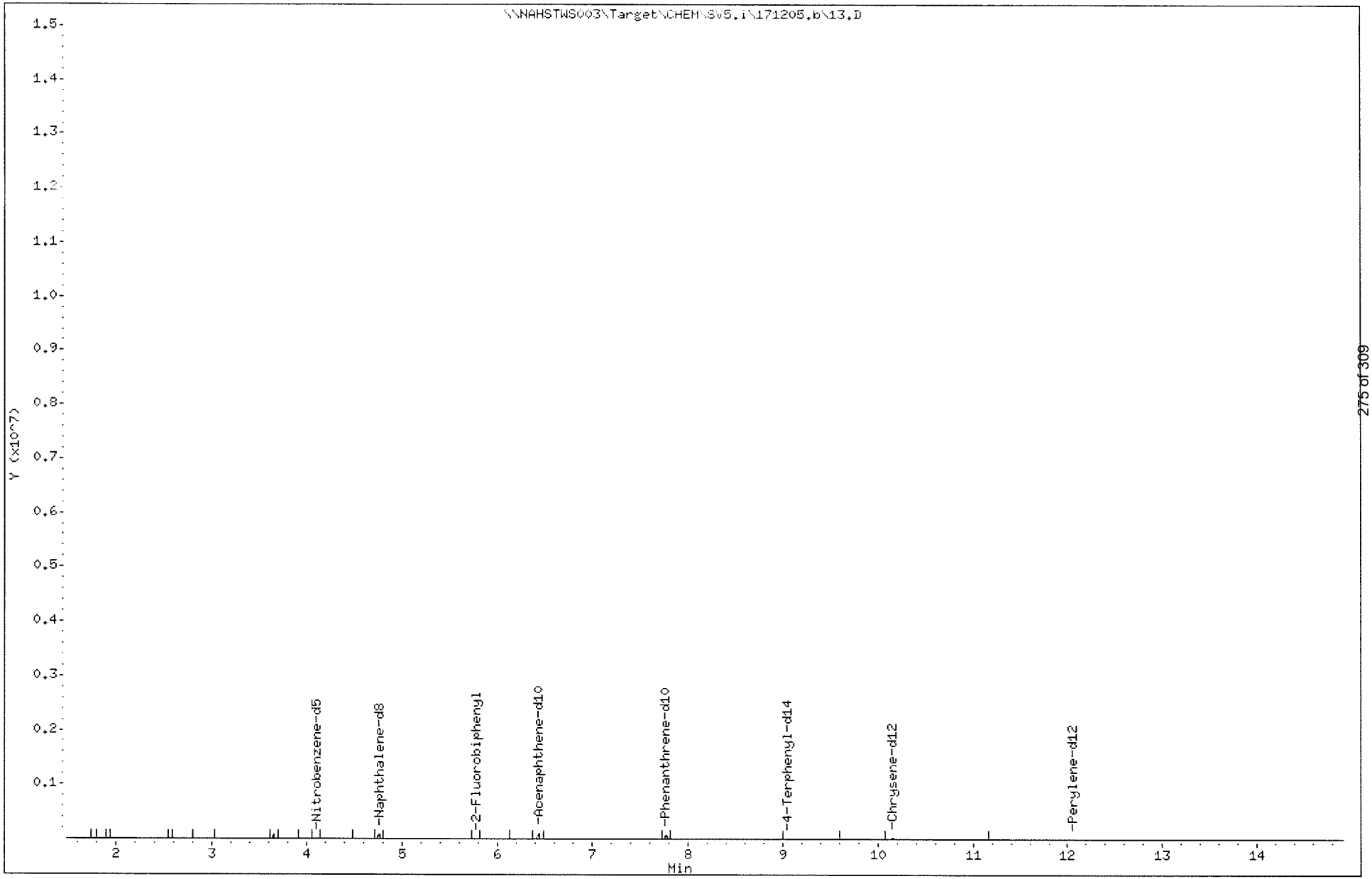
Sample Info: HS17111408-05;HS17111408-05

Purge Volume: 1000.0

Operator: CY

Column phase: RTX-5SIL MS

Column diameter: 0.28



Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\13.D

Date : 05-DEC-2017 21:32

Client ID: HS17111408-05

Instrument: SV5.i

Sample Info: HS17111408-05;HS17111408-05

Purge Volume: 1000.0

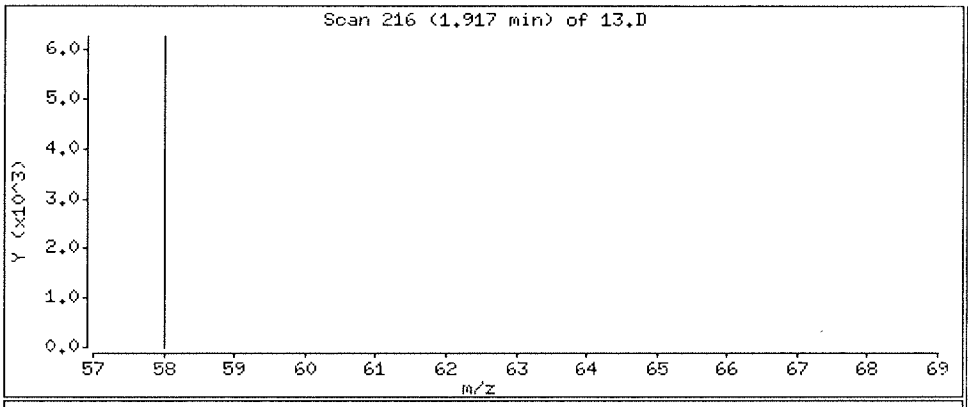
Operator: GY

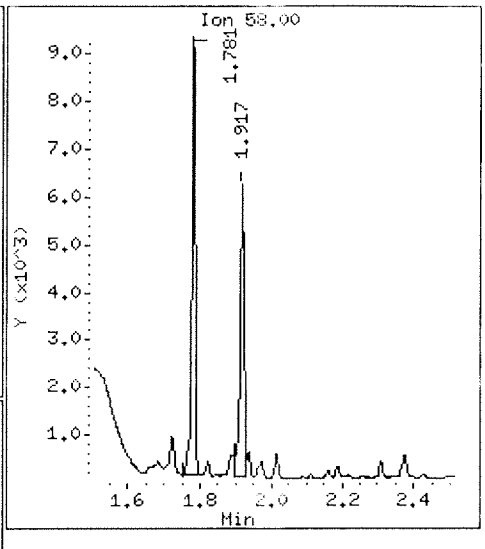
Column phase: RTX-5SIL MS

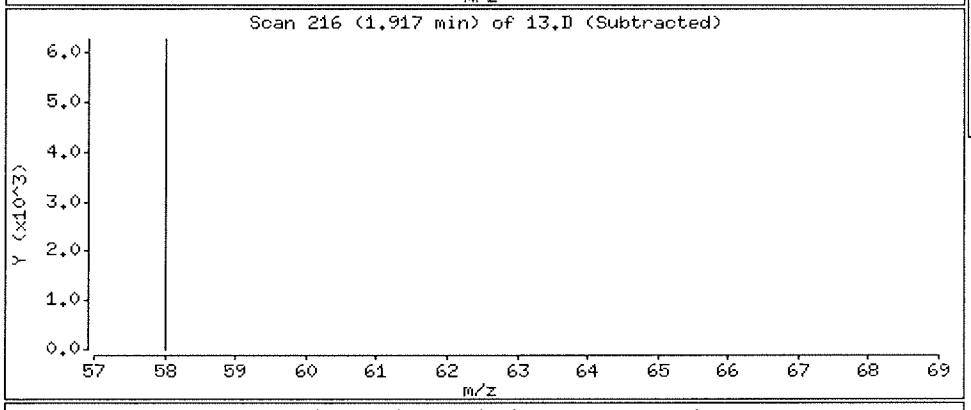
Column diameter: 0.28

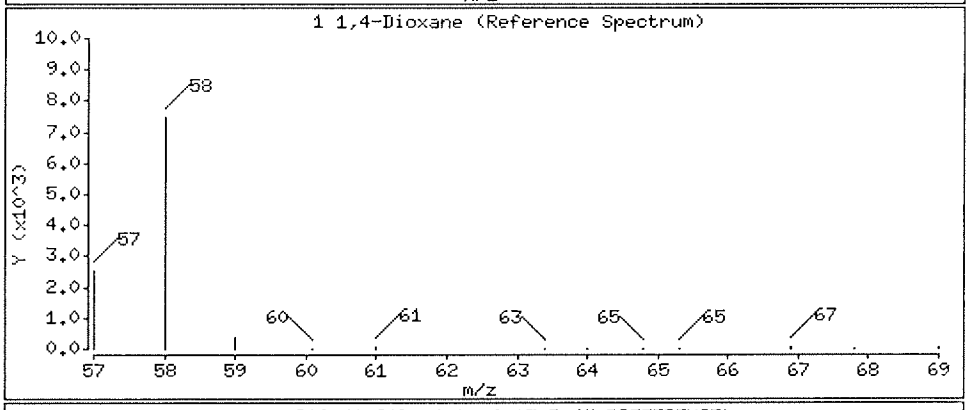
1 1,4-Dioxane

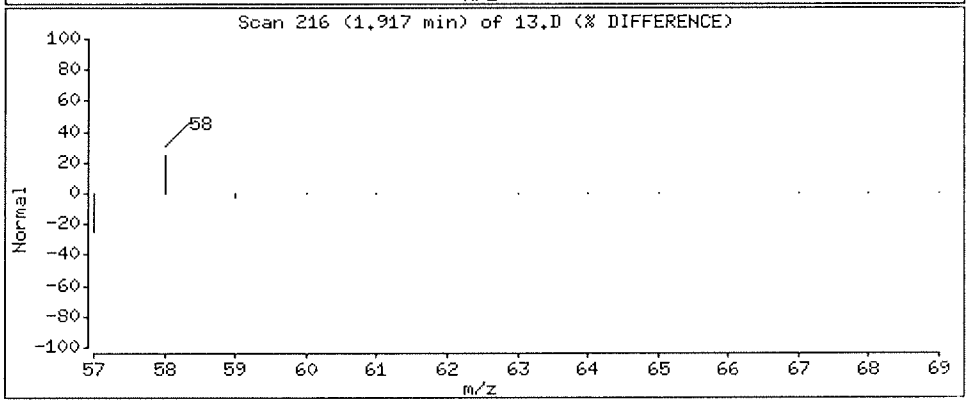
Concentration: 0.5291 ug/L











Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\14.D Page 1
Report Date: 01-Feb-2018 15:25

ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\14.D
Lab Smp Id: HS17111408-06 Client Smp ID: HS17111408-06
Inj Date : 05-DEC-2017 21:52 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : HS17111408-06;HS17111408-06
Misc Info : HS17111408;1;0;10
Comment :
Method : \\nahstws003\Target\chem\SV5.i\171205.b\DXSIM.m
Meth Date : 01-Feb-2018 14:26 aneir Quant Type: ISTD
Cal Date : 27-NOV-2017 19:22 Cal File: 09.D
Als bottle: 14
Dil Factor: 10.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14
Processing Host: NAHSTWS003

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	10.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (NG)	FINAL (ug/L)	
* 45 Naphthalene-d8	136	4.767	4.767	(1.000)	104[illegible]98	0.10000		(M)
$ 33 Nitrobenzene-d5	82	4.114	4.114	(0.863)	2[illegible]82	0.00535	0.053[illegible]3	(M)
* 86 Acenaphthene-d10	164	6.442	6.442	(1.000)	57[illegible]60	0.10000		
$ 69 2-Fluorobiphenyl	172	5.784	5.788	(0.898)	5816	0.01144	0.1144	(R)
* 126 Phenanthrene-d10	188	7.779	7.779	(1.000)	83[illegible]35	0.10000		
* 182 Chrysene-d12	240	10.156	10.156	(1.000)	46[illegible]56	0.10000		(M)
$ 158 4-Terphenyl-d14	244	9.059	9.065	(0.892)	2487	0.00613	0.061[illegible]6	(M)
* 198 Perylene-d12	264	12.061	12.055	(1.000)	22637	0.10000		(M)

QC Flag Legend

R - Spike/Surrogate failed recovery limits.
M - Compound response manually integrated.

00911705

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\14.D

Page 2

Date : 05-DEC-2017 21:52

Client ID: HS17111408-06

Instrument: SV5.i

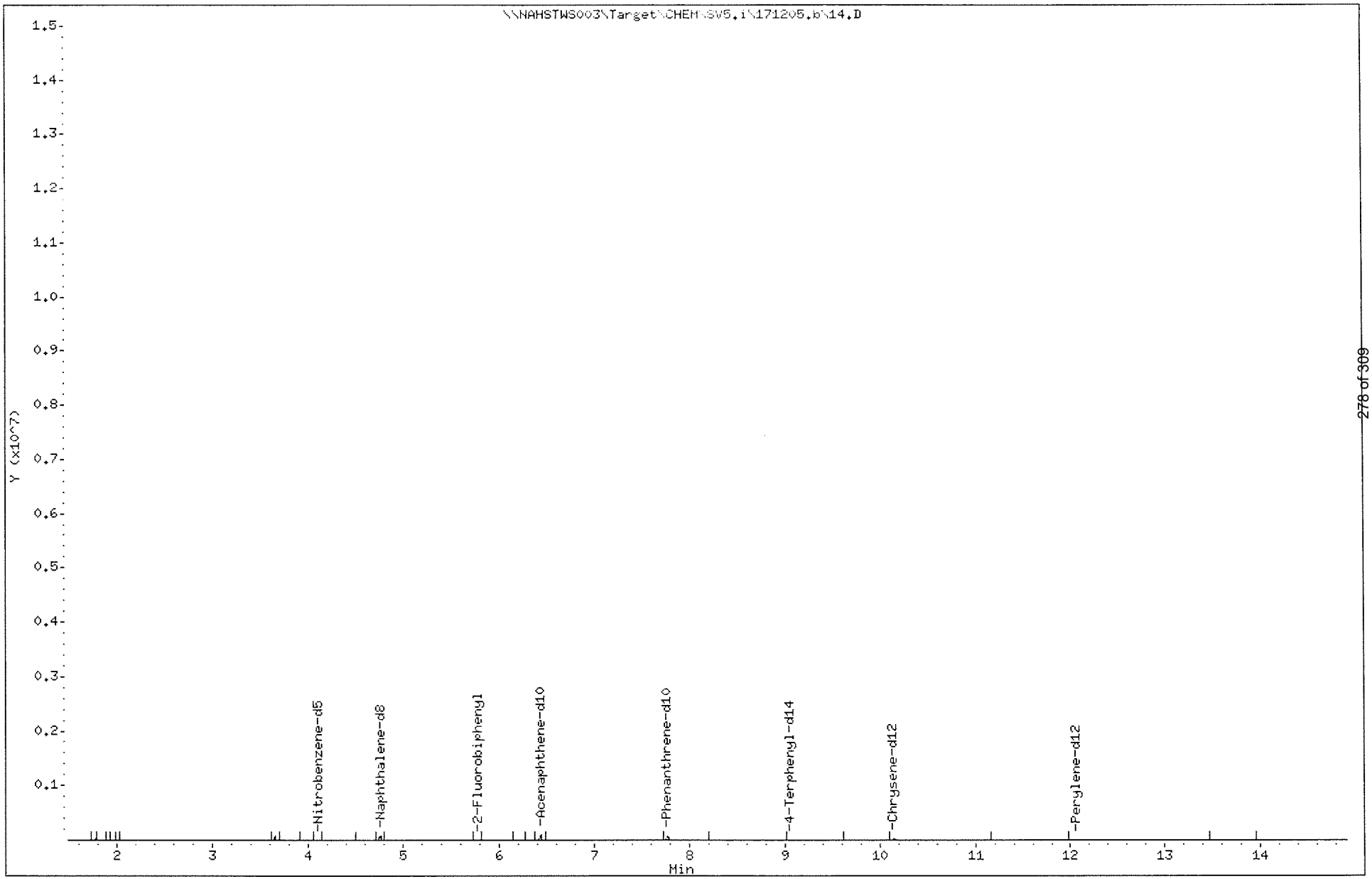
Sample Info: HS17111408-06;HS17111408-06

Purge Volume: 1000.0

Operator: GY

Column phase: RTX-5SIL MS

Column diameter: 0.28



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Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\14.D

Date : 05-DEC-2017 21:52

Client ID: HS17111408-06

Instrument: SV5.i

Sample Info: HS17111408-06;HS17111408-06

Purge Volume: 1000.0

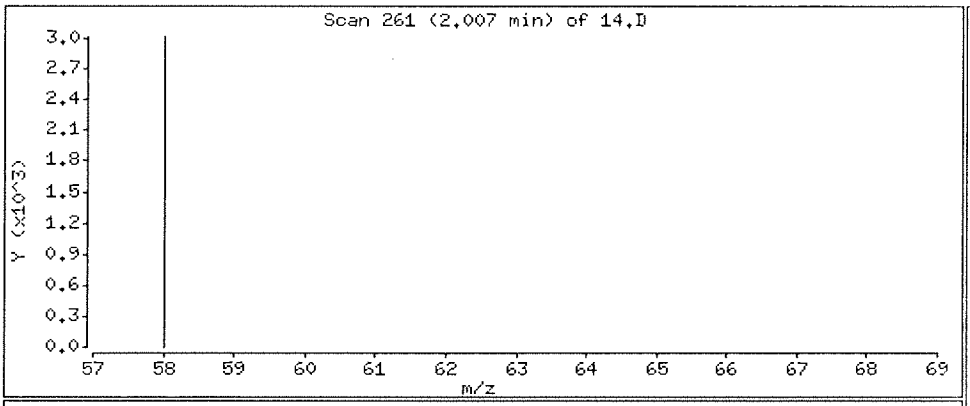
Operator: GY

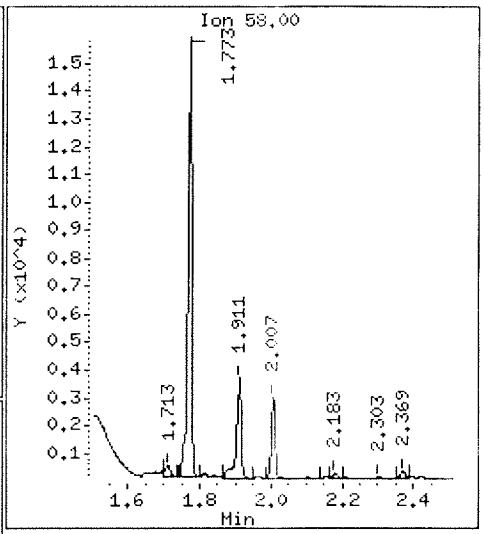
Column phase: RTX-5SIL MS

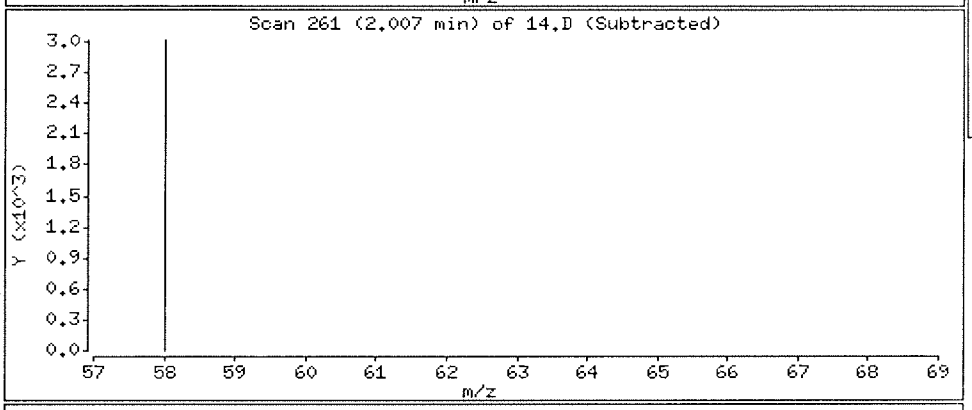
Column diameter: 0.28

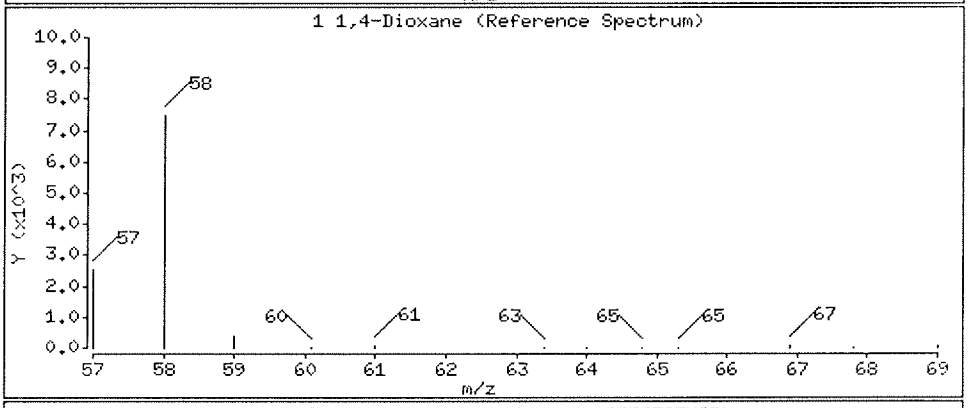
1 1,4-Dioxane

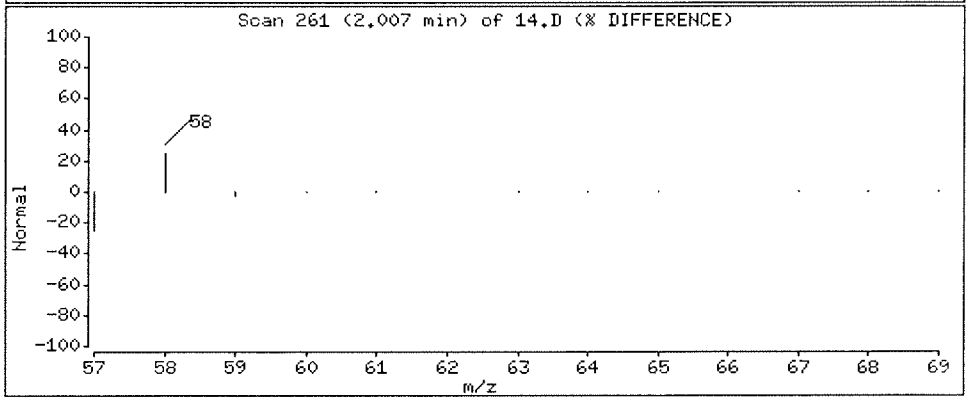
Concentration: 0.2647 ug/L











Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\28.D Page 1
Report Date: 01-Feb-2018 15:25

ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\28.D
Lab Smp Id: CCV Client Smp ID: CCV
Inj Date : 06-DEC-2017 02:39 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : CCV;CCV
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\DXSIM.m
Meth Date : 01-Feb-2018 14:26 aneir Quant Type: ISTD
Cal Date : 27-NOV-2017 19:22 Cal File: 09.D
Als bottle: 28 QC Sample: METHSPIKE
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (NG)	FINAL (ug/L)
* 45 Naphthalene-d8	136	4.767	4.767	(1.000)	75560	0.10000	(M)
$ 33 Nitrobenzene-d5	82	4.114	4.114	(0.863)	25054	0.06949	0.06949(M)
* 86 Acenaphthene-d10	164	6.442	6.442	(1.000)	34487	0.10000	
$ 69 2-Fluorobiphenyl	172	5.788	5.788	(0.898)	32895	0.10793	0.1079(M)
* 126 Phenanthrene-d10	188	7.779	7.779	(1.000)	44167	0.10000	
* 182 Chrysene-d12	240	10.149	10.156	(1.000)	17283	0.10000	(M)
$ 158 4-Terphenyl-d14	244	9.059	9.065	(0.893)	16038	0.10688	0.1069(M)
* 198 Perylene-d12	264	12.055	12.055	(1.000)	9865	0.10000	
1 1,4-Dioxane	58	1.993	2.009	(0.432)	5413	0.08646	0.08646(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\28.D

Date : 06-DEC-2017 02:39

Client ID: CCV

Instrument: SV5.i

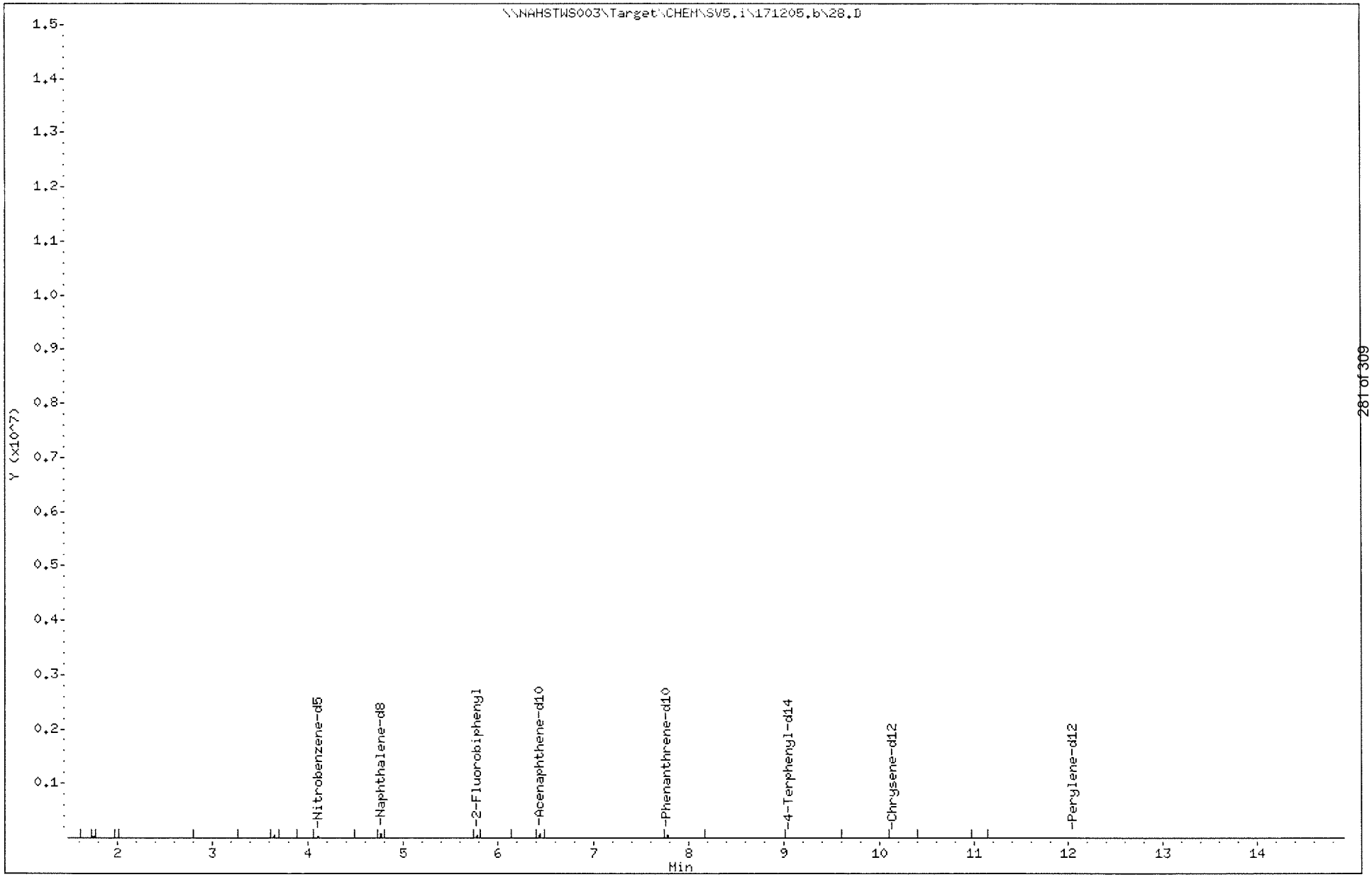
Sample Info: CCV;CCV

Purge Volume: 1000.0

Operator: GY

Column phase: RTX-5SIL MS

Column diameter: 0.28



SV05 -Logbook

Batch: 29876
Date: 12-07-2017
Method: 8270(SIM)
Comments: MSSV-003(SIM)

Analyst: Andrew Neir
Reviewer:
Laboratory: Houston

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
1	DFTPP	TUNE	12-07-2017 11:52 am	1.00			01.D		Y	NA
2	DX-0.08	CCV	12-07-2017 12:09 pm	1.00			02.D		Y	NA
3	DX-0.08	CCV	12-07-2017 12:31 pm	1.00			03.D		Y	NA
4	CCB	SAMP	12-07-2017 01:19 pm	1.00			04.D		Y	NA
5	HS17111408-01	SAMP	12-07-2017 01:39 pm	1.00	1000.00 mL	1.00 mL	05.D	Liquid	Y	NA
6	HS17111408-02	SAMP	12-07-2017 01:59 pm	1.00	1000.00 mL	1.00 mL	06.D	Liquid	Y	NA
7	HS17111408-04	SAMP	12-07-2017 02:19 pm	100.0(	1000.00 mL	1.00 mL	07.D	Liquid	Y	NA
8	HS17111408-07	SAMP	12-07-2017 02:40 pm	100.0(	1000.00 mL	1.00 mL	08.D	Liquid	Y	NA
9	HS17111395-01	SAMP	12-07-2017 03:00 pm	100.0(	1000.00 mL	1.00 mL	09.D	Liquid	Y	NA
10	HS17111395-02	SAMP	12-07-2017 03:21 pm	100.0(	1000.00 mL	1.00 mL	10.D	Liquid	Y	NA
11	HS17111395-03	SAMP	12-07-2017 03:41 pm	100.0(	1000.00 mL	1.00 mL	11.D	Liquid	Y	NA
12	HS17111395-03MS	MS	12-07-2017 04:02 pm	100.0(	1000.00 mL	1.00 mL	12.D	Liquid	Y	NA
13	HS17111395-03MSD	MSD	12-07-2017 04:22 pm	100.0(	1000.00 mL	1.00 mL	13.D	Liquid	Y	NA
14	CCV	SAMP	12-07-2017 05:02 pm	100.0(			14.D		Y	NA

Chemical	Value
IS ID	3041118-01
CAL STD ID	3041117-04
DFTPP ID	299722-96-01
PCP Tailing	0.65
Benz. Tailing	0.54

FORM 3
WATER SEMIVOLATILE METHOD SPIKE RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17111408

Matrix Spike - Sample No.: CCV

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	% REC #	QC. LIMITS REC.
1,4-Dioxane	0.08000	0.08457	106	40-140

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

_____

FORM III SV

FORM 5
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17111408

Lab File ID: 01 DFTPP Injection Date: 12/07/17

Instrument ID: SV5 DFTPP Injection Time: 1152

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	46.6
68	Less than 2.0% of mass 69	1.0 (1.7)1
69	Mass 69 relative abundance	54.7
70	Less than 2.0% of mass 69	0.4 (0.6)1
127	10.0 - 80.0% of mass 198	59.5
197	Less than 2.0% of mass 198	1.2
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	8.0
275	10.0 - 60.0% of mass 198	28.4
365	1.0 - 100.0% of mass 198	3.5
441	Present, but less than mass 443	13.9
442	50.0 - 150.0% of mass 198	83.9
443	15.0 - 24.0% of mass 442	18.5 (22.0)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	DX-0.08	DX-0.08	03	12/07/17	1231
02	HS17111408-0	HS17111408-01	05	12/07/17	1339
03	HS17111408-0	HS17111408-02	06	12/07/17	1359
04	HS17111408-0	HS17111408-04	07	12/07/17	1419
05	HS17111408-0	HS17111408-07	08	12/07/17	1440
06	CCV	CCV	14	12/07/17	1702
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17111408

Instrument ID: SV5 Calibration Date: 12/07/17 Time: 1231

Lab File ID: 03 Init. Calib. Date(s): 11/27/17 11/27/17

Init. Calib. Times: 1647 1922

GC Column: RTX-5SIL MS ID: 0.28 (mm)

COMPOUND	RRF OR AMOUNT	RRF8e-002 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE
1,4-Dioxane	8.3e-002	8.16e-002	0.01	-1.69	20.00	AVRG
Nitrobenzene-d5	0.4770000	0.4403717	0.01	-7.68	20.00	AVRG
4-Terphenyl-d14	0.8680000	0.8048598	0.01	-7.27	20.00	AVRG
2-Fluorobiphenyl	0.8860000	1.0326288	0.01	16.55	20.00	AVRG

FORM VII SV

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17111408

Lab File ID (Standard): 03 Date Analyzed: 12/07/17

Instrument ID: SV5 Time Analyzed: 1231

		IS1(NPT) AREA #	RT #	IS2(ANT) AREA #	RT #	IS3(PHN) AREA #	RT #
	12 HOUR STD	27684	4.76	13485	6.44	18810	7.77
	UPPER LIMIT	55368	5.26	26970	6.94	37620	8.27
	LOWER LIMIT	13842	4.26	6743	5.94	9405	7.27
	CLIENT SAMPLE NO.						
01	HS17111408-01	53843	4.76	26421	6.44	37003	7.77
02	HS17111408-02	34337	4.76	16855	6.44	23703	7.77
03	HS17111408-04	44238	4.76	22703	6.44	30601	7.77
04	HS17111408-07	34247	4.76	17136	6.44	23038	7.77
05	CCV	36962	4.76	18712	6.44	23835	7.77
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

IS1 (NPT) = Naphthalene-d8
IS2 (ANT) = Acenaphthene-d10
IS3 (PHN) = Phenanthrene-d10

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17111408

Lab File ID (Standard): 03 Date Analyzed: 12/07/17

Instrument ID: SV5 Time Analyzed: 1231

		IS4 (CRY) AREA #	RT #	IS5 (PRY) AREA #	RT #	AREA #	RT #
	12 HOUR STD	11019	10.13	5202	12.02		
	UPPER LIMIT	22038	10.63	10404	12.52		
	LOWER LIMIT	5510	9.63	2601	11.52		
	CLIENT SAMPLE NO.						
01	HS17111408-01	14065	10.13	8710	12.02		
02	HS17111408-02	9186	10.13	5250	12.02		
03	HS17111408-04	12056	10.13	6565	12.02		
04	HS17111408-07	9310	10.13	4894	12.02		
05	CCV	8498	10.13	5005	12.03		
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

IS4 (CRY) = Chrysene-d12
IS5 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171207.b\01.D

Date : 07-DEC-2017 11:52

Client ID: DFTPP

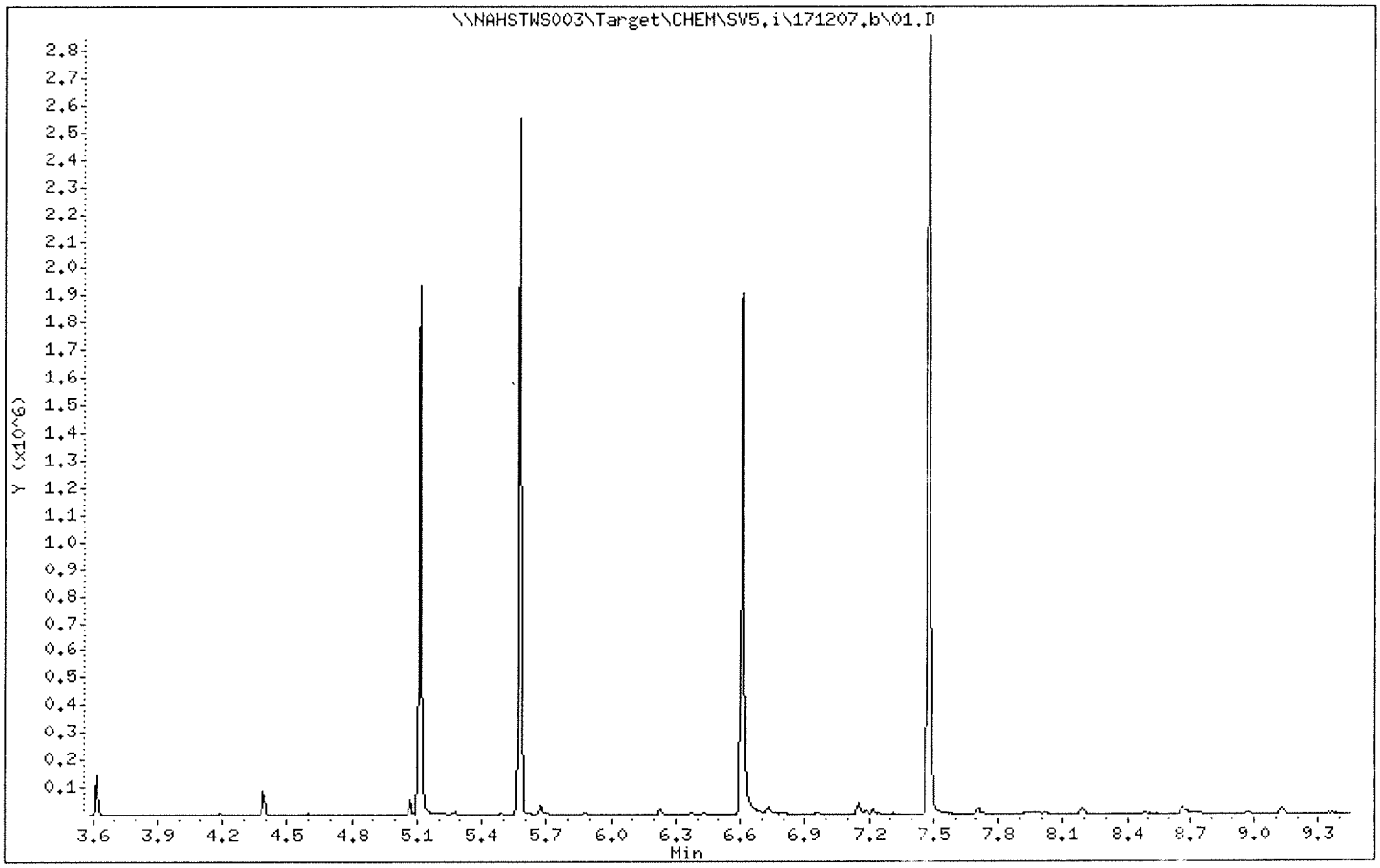
Instrument: SV5.i

Sample Info: DFTPP;DFTPP;3;;DFTPP

Operator: CY

Column phase: DB-5MS

Column diameter: 0.25



Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171207.b\01.D

Date : 07-DEC-2017 11:52

Client ID: DFTPP

Instrument: SV5.i

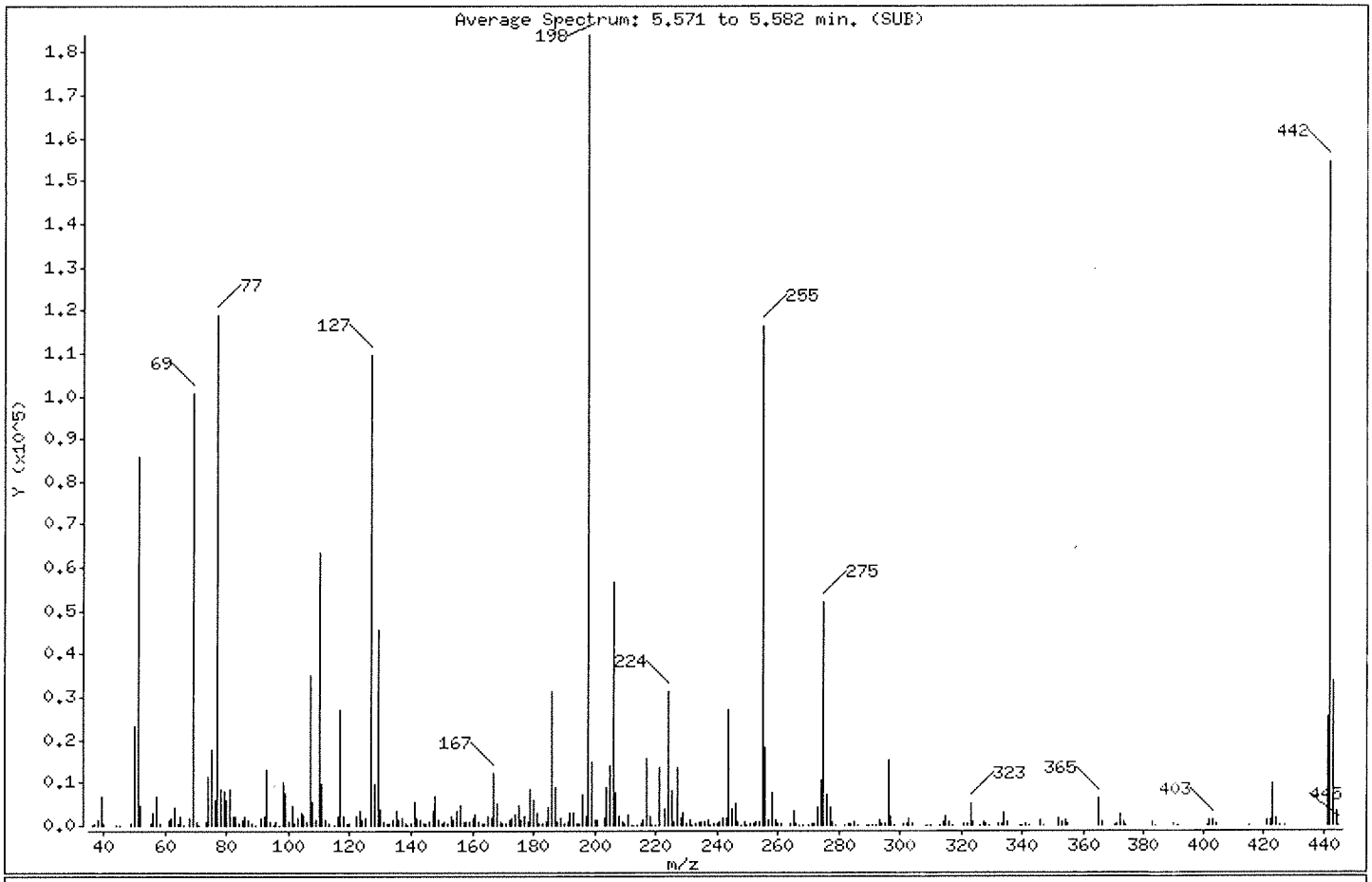
Sample Info: DFTPP;DFTPP;3;;DFTPP

Operator: GY

Column phase: DB-5MS

Column diameter: 0.25

1 dftpp



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
198	Base Peak, 100% relative abundance	100.00
51	10.00 - 80.00% of mass 198	46.59
68	Less than 2.00% of mass 69	0.95 (1.74)
69	Mass 69 relative abundance	54.69
70	Less than 2.00% of mass 69	0.35 (0.64)
127	10.00 - 80.00% of mass 198	59.47
197	Less than 2.00% of mass 198	1.16
199	5.00 - 9.00% of mass 198	7.97
275	10.00 - 60.00% of mass 198	28.35
365	1.00 - 100.00% of mass 198	3.54
441	Present, but less than mass 443	13.89
442	50.00 - 150.00% of mass 198	83.92
443	15.00 - 24.00% of mass 442	18.48 (22.02)

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171207.b\01.D

Date : 07-DEC-2017 11:52

Client ID: DFTPP

Instrument: SV5.i

Sample Info: DFTPP;DFTPP;3;;DFTPP

Operator: GY

Column phase: DB-5MS

Column diameter: 0.25

Data File: 01.D
Spectrum: Average Spectrum: 5.571 to 5.582 min. (SUB)
Location of Maximum: 198.00
Number of points: 300

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	73	128.00	9532	205.00	13812	289.00	179
37.00	320	129.00	45816	206.00	56680	290.00	66
38.00	1269	130.00	3814	207.00	7581	291.00	73
39.00	6924	131.00	713	208.00	1963	292.00	200
40.00	314	132.00	359	209.00	646	293.00	1059
44.00	55	133.00	221	210.00	608	294.00	302
45.00	114	134.00	1253	211.00	2409	295.00	334
49.00	492	135.00	3523	212.00	159	296.00	15084
50.00	23448	136.00	1341	213.00	91	297.00	2224
51.00	85728	137.00	1604	214.00	67	298.00	56
52.00	4681	138.00	329	215.00	605	301.00	263
55.00	389	139.00	130	216.00	1403	302.00	237
56.00	3009	140.00	570	217.00	15815	303.00	1735
57.00	6706	141.00	5510	218.00	1959	304.00	535
58.00	234	142.00	1756	219.00	198	308.00	148
61.00	1230	143.00	1237	220.00	201	309.00	117
62.00	1566	144.00	275	221.00	13346	310.00	208
63.00	4309	145.00	315	223.00	3772	313.00	146
64.00	631	146.00	994	224.00	31152	314.00	717
65.00	2147	147.00	3226	225.00	8120	315.00	1920
66.00	54	148.00	6563	226.00	915	316.00	870
68.00	1750	149.00	1103	227.00	13403	317.00	88
69.00	100624	150.00	335	228.00	1801	321.00	568
70.00	649	151.00	788	229.00	2888	322.00	237
71.00	55	152.00	323	230.00	441	323.00	4889
73.00	925	153.00	1930	231.00	1309	324.00	988
74.00	11355	154.00	1377	232.00	196	326.00	87
75.00	17824	155.00	3276	233.00	360	327.00	820
76.00	6092	156.00	4440	234.00	960	328.00	510
77.00	118816	157.00	989	235.00	1048	329.00	58
78.00	8364	158.00	1034	236.00	690	332.00	325
79.00	7947	159.00	888	237.00	1096	333.00	397
80.00	5865	160.00	1793	238.00	131	334.00	2828
81.00	8345	161.00	2466	239.00	608	335.00	753
82.00	2085	162.00	792	240.00	465	339.00	57

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171207.b\01.D

Date : 07-DEC-2017 11:52

Client ID: DFTPP

Instrument: SV5.i

Sample Info: DFTPP;DFTPP;3;;DFTPP

Operator: GY

Column phase: DB-5MS

Column diameter: 0.25

Data File: 01.D
Spectrum: Average Spectrum: 5.571 to 5.582 min. (SUB)
Location of Maximum: 198.00
Number of points: 300

m/z	Y	m/z	Y	m/z	Y	m/z	Y
83.00	1938	163.00	233	241.00	787	340.00	62
84.00	309	164.00	424	242.00	1872	341.00	598
85.00	1345	165.00	2215	243.00	1779	342.00	133
86.00	2289	166.00	1867	244.00	26920	346.00	1126
87.00	1058	167.00	12077	245.00	3689	347.00	175
88.00	431	168.00	5143	246.00	4911	352.00	1592
89.00	179	169.00	941	247.00	912	353.00	986
91.00	1800	170.00	346	248.00	189	354.00	1339
92.00	1930	171.00	578	249.00	1031	355.00	330
93.00	13307	172.00	1165	250.00	148	365.00	6520
94.00	876	173.00	1532	251.00	226	366.00	893
95.00	188	174.00	2539	252.00	263	370.00	158
96.00	677	175.00	4667	253.00	668	371.00	376
97.00	205	176.00	1479	254.00	782	372.00	2432
98.00	10235	177.00	2249	255.00	116448	373.00	711
99.00	7502	178.00	664	256.00	18168	374.00	53
100.00	681	179.00	8438	257.00	1430	383.00	659
101.00	4596	180.00	5913	258.00	7539	384.00	120
102.00	232	181.00	2878	259.00	1168	390.00	429
103.00	1574	182.00	454	260.00	226	391.00	144
104.00	2975	183.00	249	261.00	288	392.00	85
105.00	2654	184.00	663	264.00	258	401.00	140
106.00	1049	185.00	4082	265.00	3235	402.00	1091
107.00	35000	186.00	31176	266.00	573	403.00	1409
108.00	5411	187.00	8945	267.00	67	404.00	586
109.00	1132	188.00	997	268.00	59	415.00	70
110.00	63320	189.00	1875	270.00	146	421.00	1310
111.00	9710	190.00	265	271.00	230	422.00	1188
112.00	1183	191.00	959	272.00	473	423.00	9613
113.00	362	192.00	3085	273.00	4281	424.00	1828
115.00	114	193.00	3073	274.00	10491	425.00	196
116.00	1908	194.00	627	275.00	52160	427.00	64
117.00	27176	195.00	534	276.00	7054	441.00	25552
118.00	1967	196.00	7363	277.00	4349	442.00	154368
119.00	274	197.00	2135	278.00	662	443.00	34000

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171207.b\01.D

Date : 07-DEC-2017 11:52

Client ID: DFTPP

Instrument: SV5.i

Sample Info: DFTPP;DFTPP;3;;DFTPP

Operator: GY

Column phase: DB-5MS

Column diameter: 0.25

Data File: 01.D
Spectrum: Average Spectrum: 5.571 to 5.582 min. (SUB)
Location of Maximum: 198.00
Number of points: 300

m/z	Y	m/z	Y	m/z	Y	m/z	Y
120.00	477	198.00	183936	279.00	182	444.00	3191
122.00	2151	199.00	14658	282.00	146	445.00	74
123.00	3343	200.00	1242	283.00	588		
124.00	1440	201.00	1235	284.00	389		
125.00	1558	203.00	1837	285.00	751		
127.00	109408	204.00	8937	286.00	123		

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171207.b\03.D Page 1
Report Date: 01-Feb-2018 15:26

ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171207.b\03.D
Lab Smp Id: DX-0.08 Client Smp ID: DX-0.08
Inj Date : 07-DEC-2017 12:31 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : DX-0.08;DX-0.08
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS003\Target\CHEM\SV5.i\171207.b\DXSIM.m
Meth Date : 01-Feb-2018 15:13 aneir Quant Type: ISTD
Cal Date : 27-NOV-2017 19:22 Cal File: 09.D
Als bottle: 3 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (NG)	ON-COL (NG)	
* 45 Naphthalene-d8	136	4.759	4.759	(1.000)	27684	0.10000		(M)
$ 33 Nitrobenzene-d5	82	4.109	4.109	(0.863)	9753	0.08000	0.07383	(M)
* 86 Acenaphthene-d10	164	6.437	6.437	(1.000)	13485	0.10000		(M)
$ 69 2-Fluorobiphenyl	172	5.780	5.780	(0.898)	11140	0.08000	0.09321	(M)
* 126 Phenanthrene-d10	188	7.773	7.773	(1.000)	18810	0.10000		(M)
* 182 Chrysene-d12	240	10.128	10.128	(1.000)	11019	0.10000		(M)
$ 158 4-Terphenyl-d14	244	9.043	9.043	(0.893)	7095	0.08000	0.07416	(M)
* 198 Perylene-d12	264	12.023	12.023	(1.000)	5202	0.10000		(M)
1 1,4-Dioxane	58	1.882	1.882	(0.396)	1808	0.08000	0.07882	(aM)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.

00911721

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171207.b\03.D

Page 2

Date : 07-DEC-2017 12:31

Client ID: DX-0.08

Instrument: SV5.i

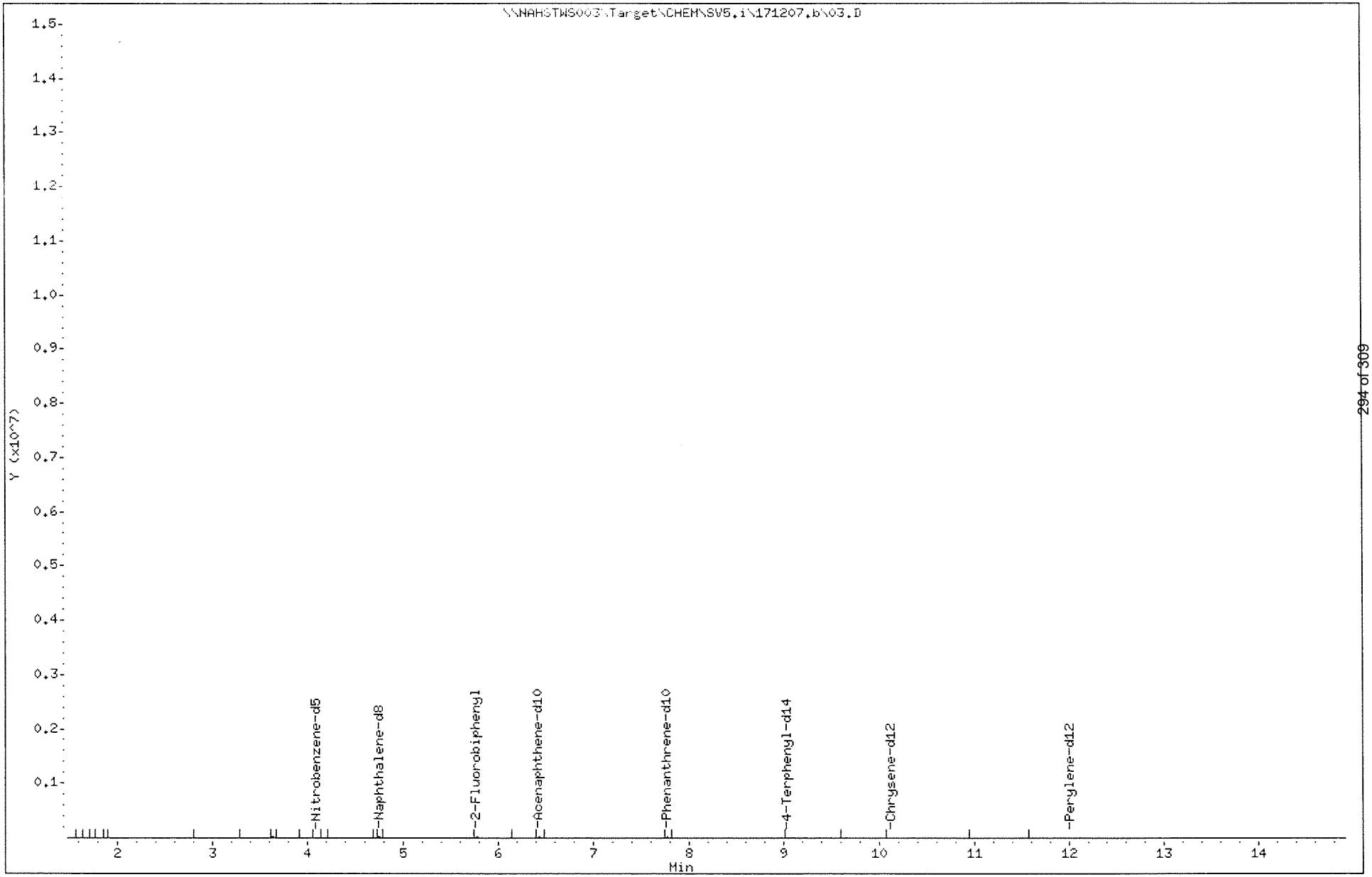
Sample Info: DX-0.08;DX-0.08

Purge Volume: 1000.0

Operator: GY

Column phase: RTX-5SIL MS

Column diameter: 0.28



294 of 309

ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171207.b\05.D
Lab Smp Id: HS17111408-01 Client Smp ID: HS17111408-01
Inj Date : 07-DEC-2017 13:39 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : HS17111408-01;HS17111408-01
Misc Info : HS17111408;1;0;1
Comment :
Method : \\NAHSTWS003\Target\CHEM\SV5.i\171207.b\DXSIM.m
Meth Date : 01-Feb-2018 15:13 aneir Quant Type: ISTD
Cal Date : 27-NOV-2017 19:22 Cal File: 09.D
Als bottle: 5
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (NG)	FINAL (ug/L)	
* 45 Naphthalene-d8	136	4.759	4.759	(1.000)	53843	0.10000		
* 86 Acenaphthene-d10	164	6.437	6.437	(1.000)	26421	0.10000		(M)
* 126 Phenanthrene-d10	188	7.774	7.773	(1.000)	37903	0.10000		
* 182 Chrysene-d12	240	10.128	10.128	(1.000)	14166	0.10000		(M)
* 198 Perylene-d12	264	12.023	12.023	(1.000)	8710	0.10000		
1 1,4-Dioxane	58	1.950	1.882	(0.410)	7593	0.17019	0.1702	(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.

00911723

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171207.b\05.D

Page 2

Date : 07-DEC-2017 13:39

Client ID: HS17111408-01

Instrument: SV5.i

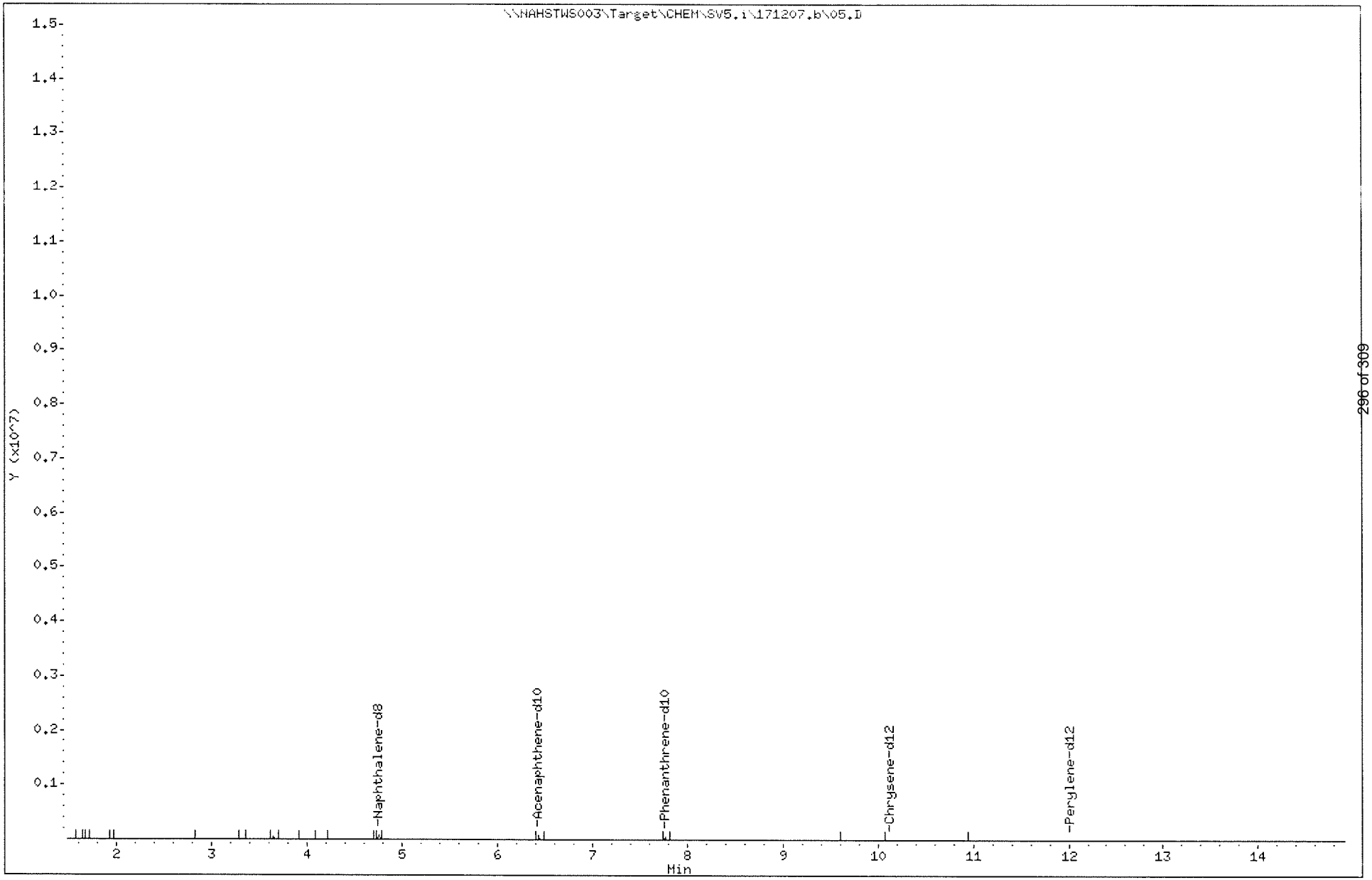
Sample Info: HS17111408-01;HS17111408-01

Purge Volume: 1000.0

Operator: GY

Column phase: RTX-5SIL MS

Column diameter: 0.28



Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171207.b\05.D

Date : 07-DEC-2017 13:39

Client ID: HS17111408-01

Instrument: SV5.i

Sample Info: HS17111408-01;HS17111408-01

Purge Volume: 1000.0

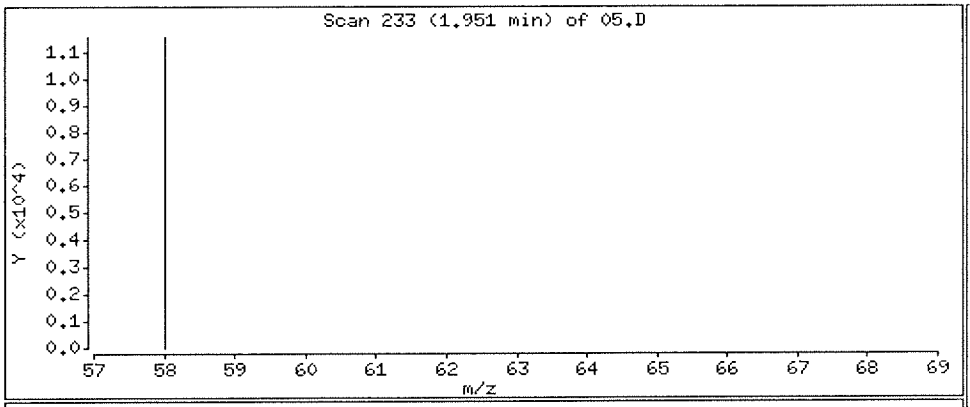
Operator: GY

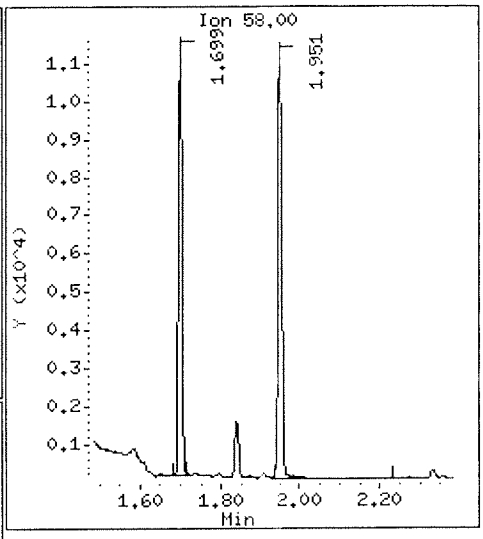
Column phase: RTX-5SIL MS

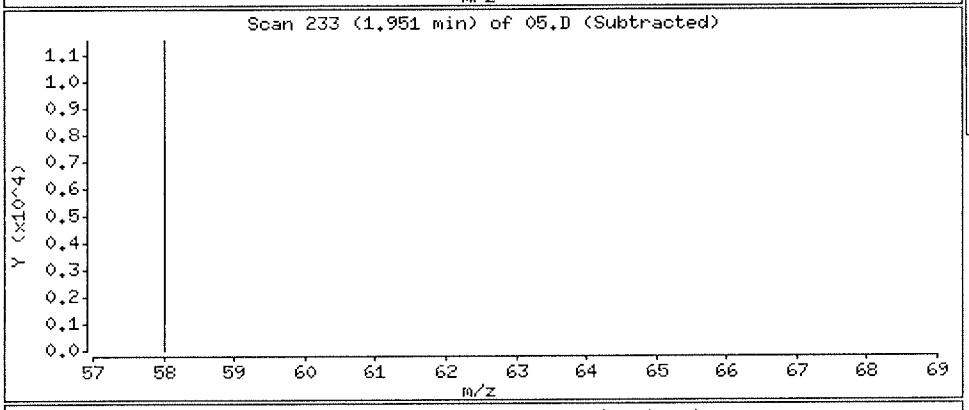
Column diameter: 0.28

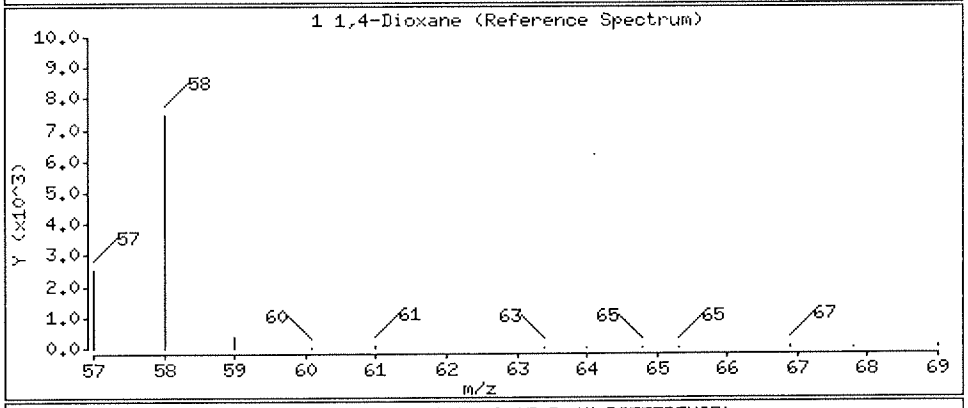
1 1,4-Dioxane

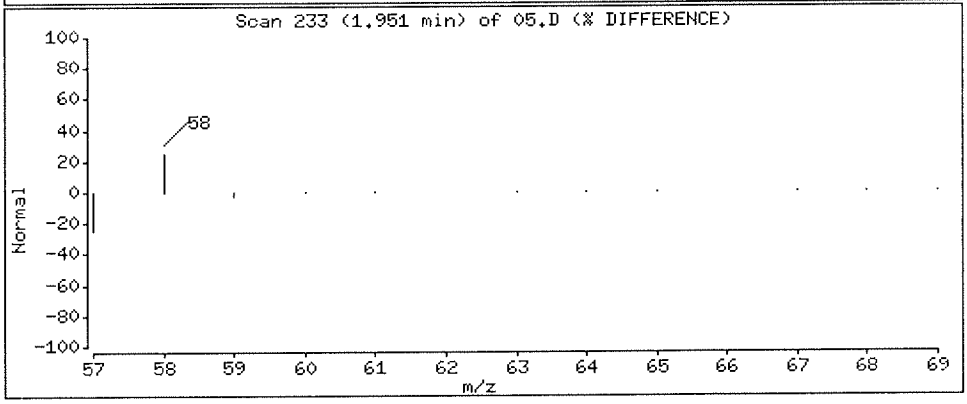
Concentration: 0.1702 ug/L











Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171207.b\06.D Page 1
Report Date: 01-Feb-2018 15:26

ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171207.b\06.D
Lab Smp Id: HS17111408-02 Client Smp ID: HS17111408-02
Inj Date : 07-DEC-2017 13:59 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : HS17111408-02;HS17111408-02
Misc Info : HS17111408;1;0;1
Comment :
Method : \\NAHSTWS003\Target\CHEM\SV5.i\171207.b\DXSIM.m
Meth Date : 01-Feb-2018 15:13 aneir Quant Type: ISTD
Cal Date : 27-NOV-2017 19:22 Cal File: 09.D
Als bottle: 6
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (NG)	FINAL (ug/L)
* 45 Naphthalene-d8	136	4.759	4.759	(1.000)	34337	0.10000	
* 86 Acenaphthene-d10	164	6.437	6.437	(1.000)	16855	0.10000	(M)
* 126 Phenanthrene-d10	188	7.774	7.773	(1.000)	23703	0.10000	
* 182 Chrysene-d12	240	10.128	10.128	(1.000)	9786	0.10000	(M)
* 198 Perylene-d12	264	12.023	12.023	(1.000)	5250	0.10000	
1 1,4-Dioxane	58	1.928	1.882	(0.405)	3487	0.12256	0.12[illegible] a)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.

00911726

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171207.b\06.D

Page 2

Date : 07-DEC-2017 13:59

Client ID: HS17111408-02

Instrument: SV5.i

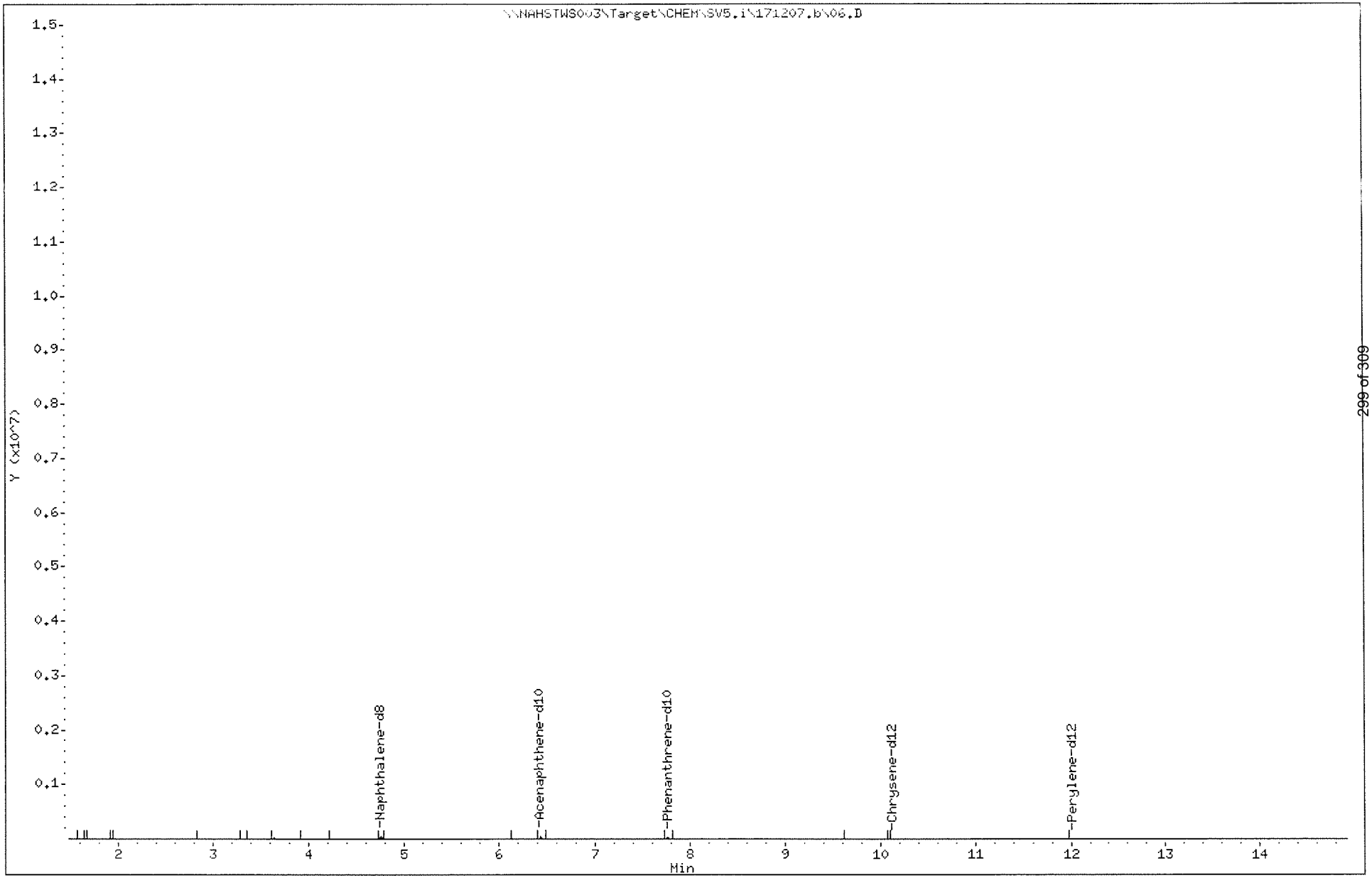
Sample Info: HS17111408-02;HS17111408-02

Purge Volume: 1000.0

Operator: GY

Column phase: RTX-5SIL MS

Column diameter: 0.28



Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171207.b\06.D

Date : 07-DEC-2017 13:59

Client ID: HS17111408-02

Instrument: SV5.i

Sample Info: HS17111408-02;HS17111408-02

Purge Volume: 1000.0

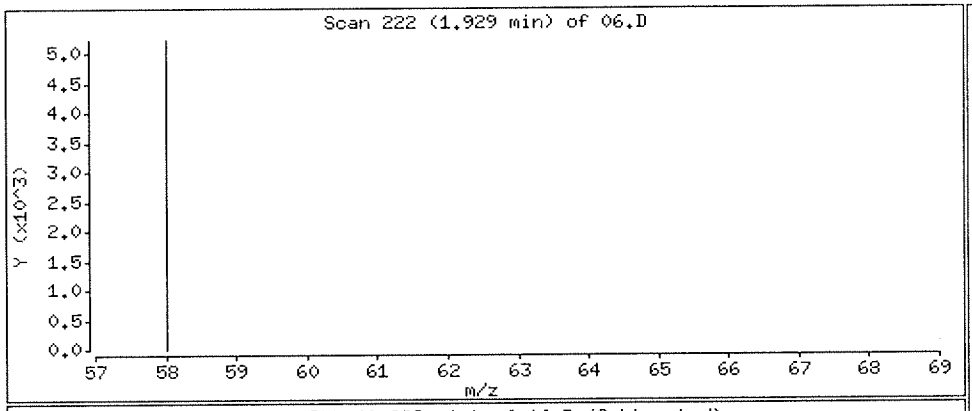
Operator: GY

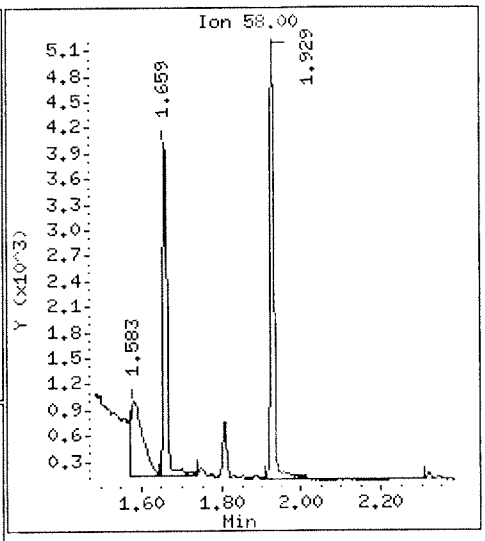
Column phase: RTX-5SIL MS

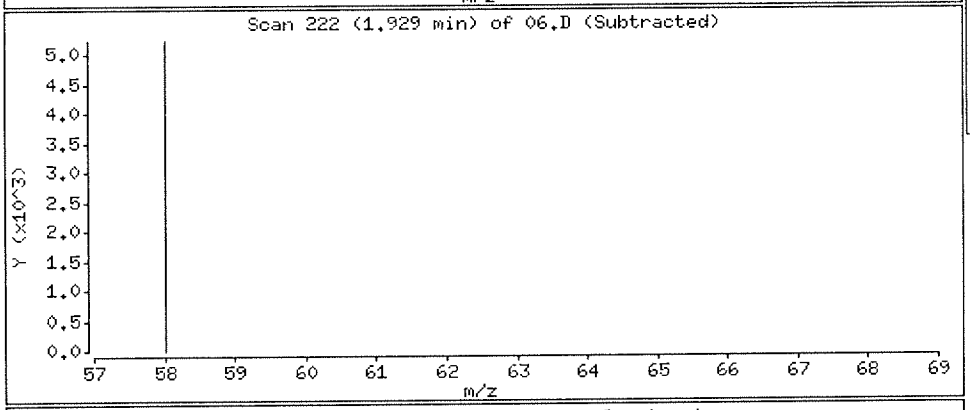
Column diameter: 0.28

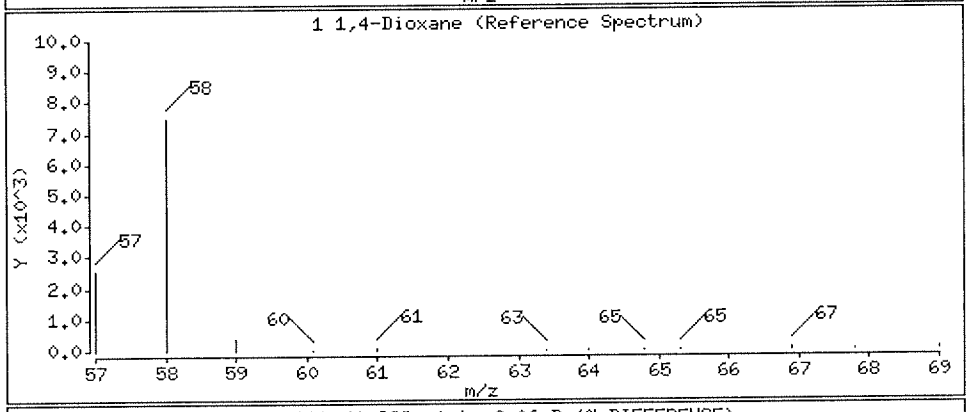
1 1,4-Dioxane

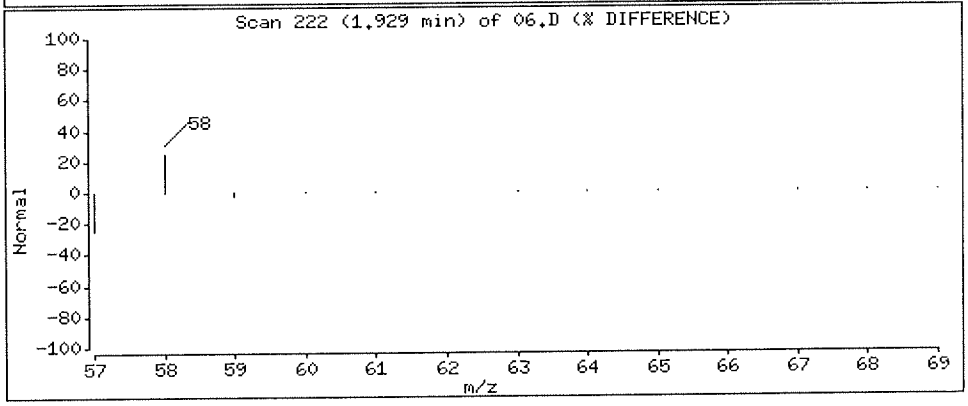
Concentration: 0.1226 ug/L











Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171207.b\07.D Page 1
Report Date: 01-Feb-2018 15:26

ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171207.b\07.D
Lab Smp Id: HS17111408-04 Client Smp ID: HS17111408-04
Inj Date : 07-DEC-2017 14:19 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : HS17111408-04;HS17111408-04
Misc Info : HS17111408;1;0;100
Comment :
Method : \\NAHSTWS003\Target\CHEM\SV5.i\171207.b\DXSIM.m
Meth Date : 01-Feb-2018 15:13 aneir Quant Type: ISTD
Cal Date : 27-NOV-2017 19:22 Cal File: 09.D
Als bottle: 7
Dil Factor: 100.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	100.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (NG)	CONCENTRATIONS FINAL (ug/L)
* 45 Naphthalene-d8	136	4.759	4.759	(1.000)	44238	0.10000	
* 86 Acenaphthene-d10	164	6.437	6.437	(1.000)	22703	0.10000	
* 126 Phenanthrene-d10	188	7.774	7.773	(1.000)	30601	0.10000	
* 182 Chrysene-d12	240	10.128	10.128	(1.000)	12056	0.10000	(M)
* 198 Perylene-d12	264	12.023	12.023	(1.000)	6565	0.10000	
1 1,4-Dioxane	58	1.938	1.882	(0.407)	6071	0.18199	18.20(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.

00911729

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171207.b\07.D

Page 2

Date : 07-DEC-2017 14:19

Client ID: HS17111408-04

Instrument: SV5.i

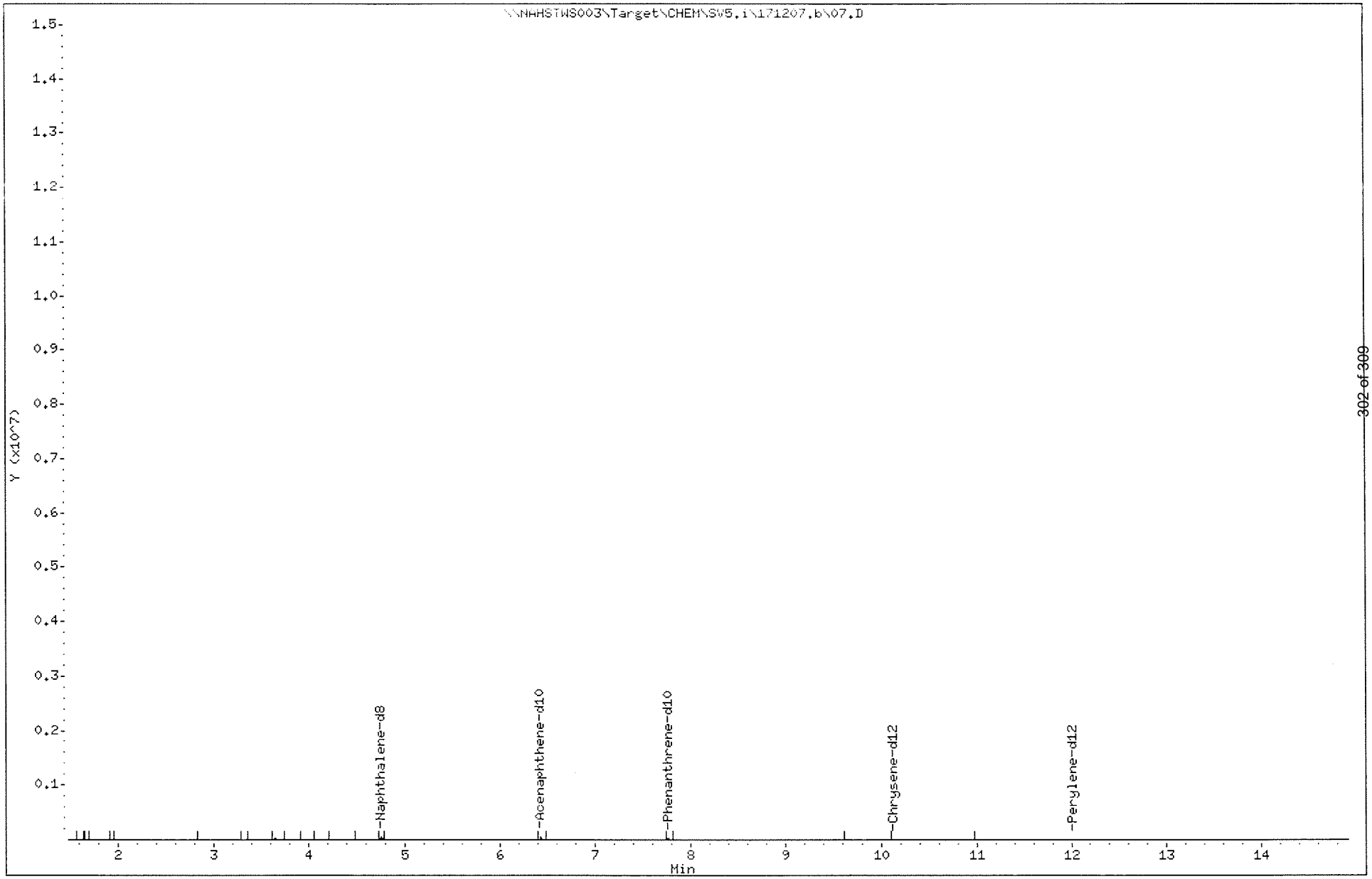
Sample Info: HS17111408-04;HS17111408-04

Purge Volume: 1000.0

Operator: CY

Column phase: RTX-5SIL MS

Column diameter: 0.28



Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171207.b\07.D

Date : 07-DEC-2017 14:19

Client ID: HS17111408-04

Instrument: SV5.i

Sample Info: HS17111408-04;HS17111408-04

Purge Volume: 1000.0

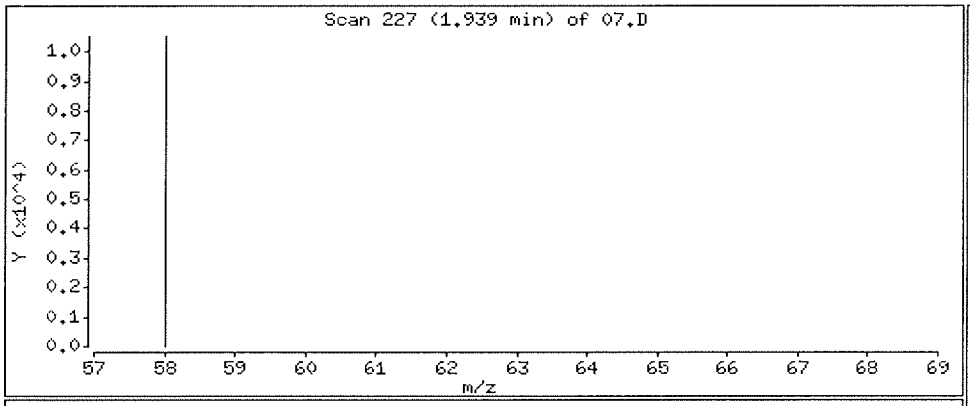
Operator: GY

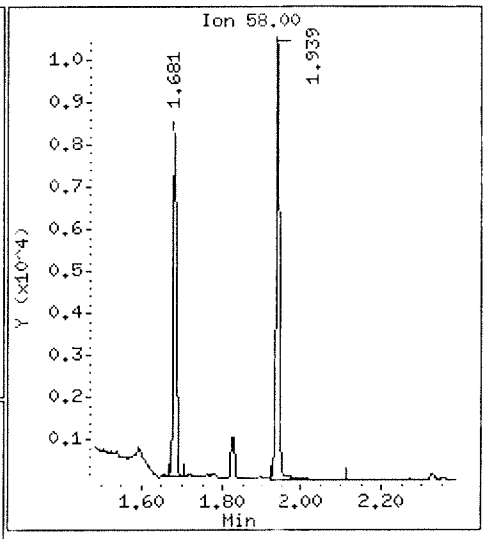
Column phase: RTX-5SIL MS

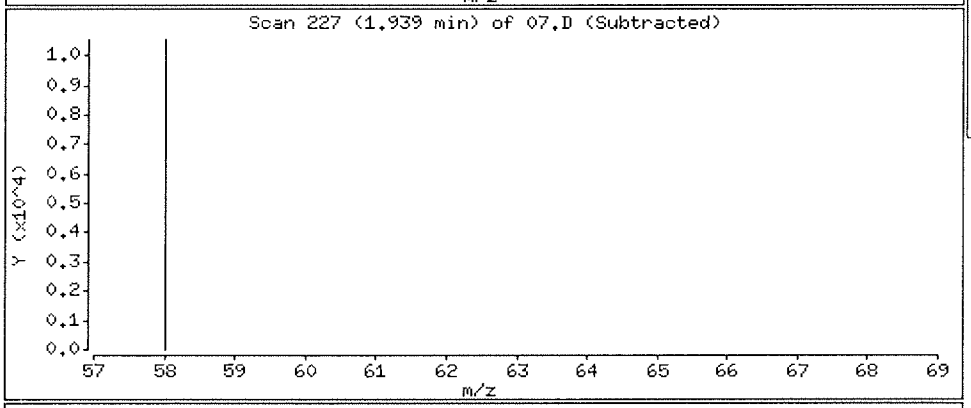
Column diameter: 0.28

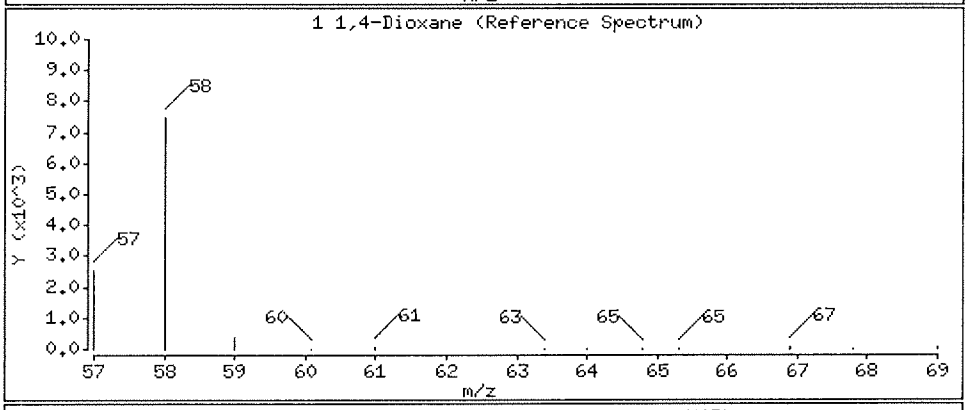
1 1,4-Dioxane

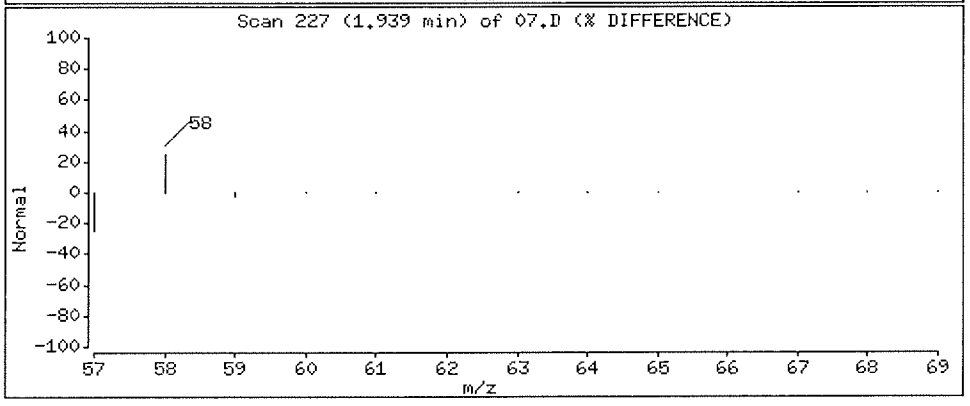
Concentration: 18.20 ug/L











Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171207.b\08.D Page 1
Report Date: 01-Feb-2018 15:26

ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171207.b\08.D
Lab Smp Id: HS17111408-07 Client Smp ID: HS17111408-07
Inj Date : 07-DEC-2017 14:40 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : HS17111408-07;HS17111408-07
Misc Info : HS17111408;1;0;100
Comment :
Method : \\NAHSTWS003\Target\CHEM\SV5.i\171207.b\DXSIM.m
Meth Date : 01-Feb-2018 15:13 aneir Quant Type: ISTD
Cal Date : 27-NOV-2017 19:22 Cal File: 09.D
Als bottle: 8
Dil Factor: 100.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	100.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (NG)	FINAL (ug/L)	
* 45 Naphthalene-d8	136	4.759	4.759	(1.000)	34247	0.10000		
* 86 Acenaphthene-d10	164	6.437	6.437	(1.000)	17136	0.10000		
* 126 Phenanthrene-d10	188	7.774	7.773	(1.000)	23038	0.10000		
* 182 Chrysene-d12	240	10.128	10.128	(1.000)	9310	0.10000		(M)
* 198 Perylene-d12	264	12.023	12.023	(1.000)	4894	0.10000		
1 1,4-Dioxane	58	1.912	1.882	(0.402)	4740	0.16704	16.70	(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.

00911732

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171207.b\08.D

Date : 07-DEC-2017 14:40

Client ID: HS17111408-07

Instrument: SV5.i

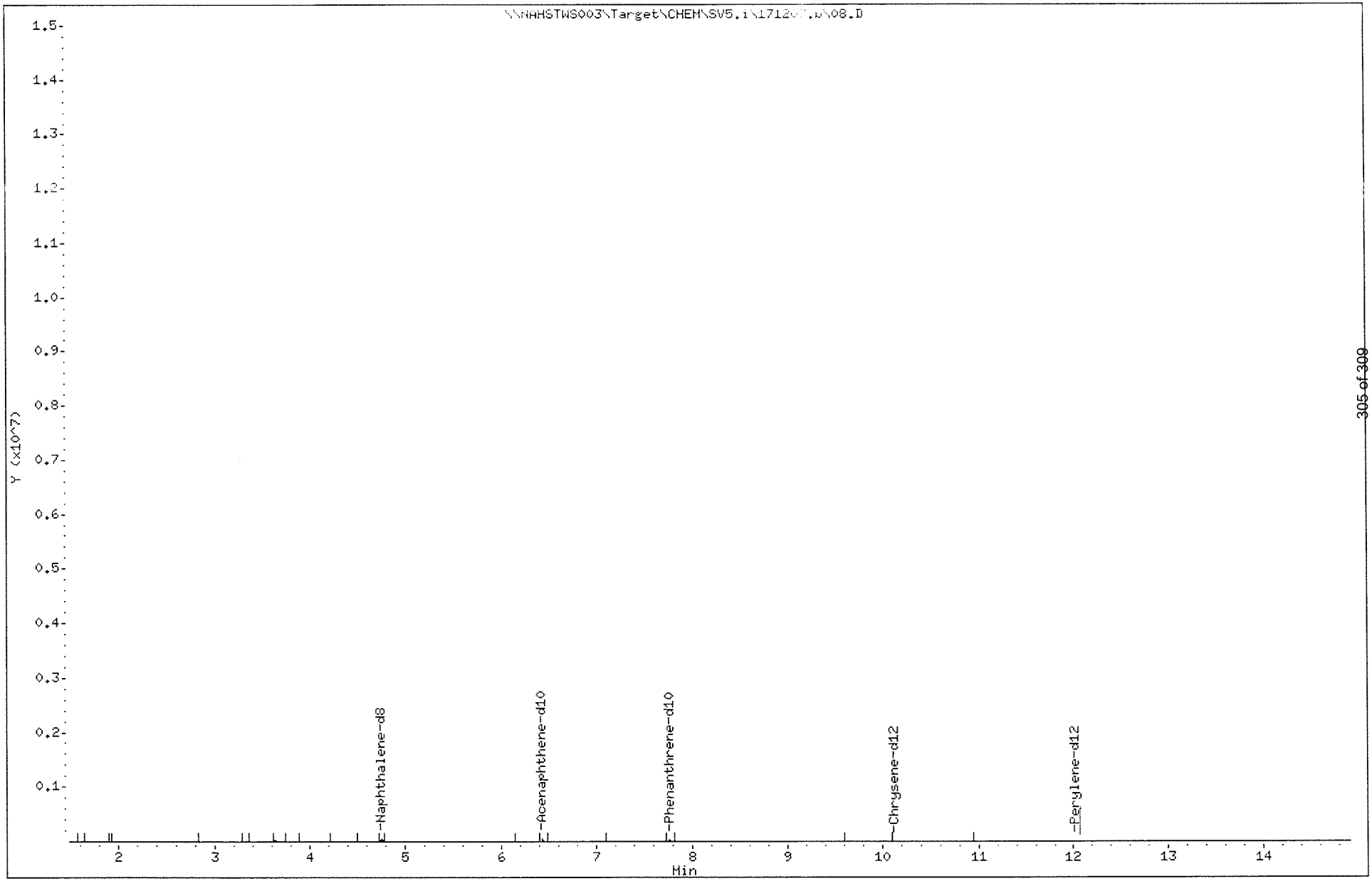
Sample Info: HS17111408-07;HS17111408-07

Purge Volume: 1000.0

Operator: CY

Column phase: RTX-5SIL MS

Column diameter: 0.28



Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171207.b\08.D

Date : 07-DEC-2017 14:40

Client ID: HS17111408-07

Instrument: SV5.i

Sample Info: HS17111408-07;HS17111408-07

Purge Volume: 1000.0

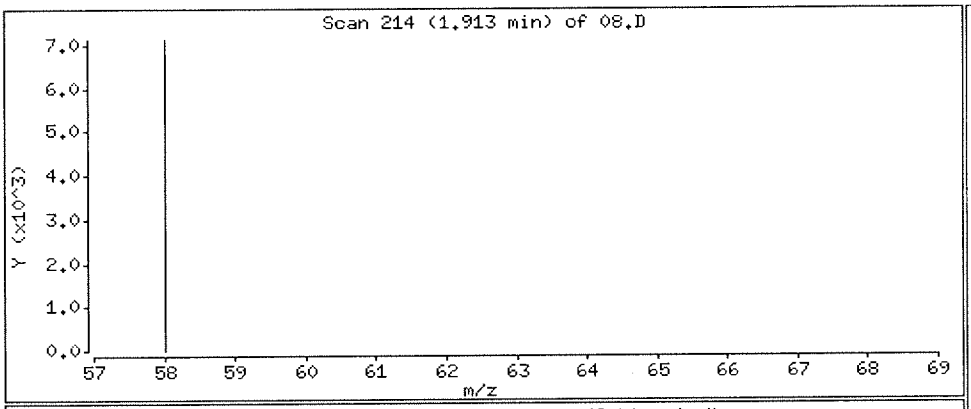
Operator: GY

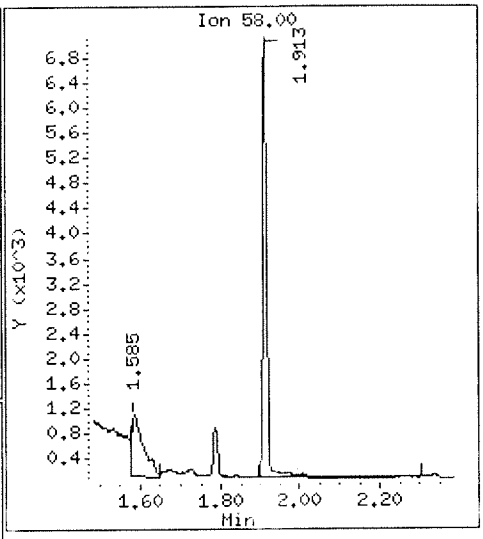
Column phase: RTX-5SIL MS

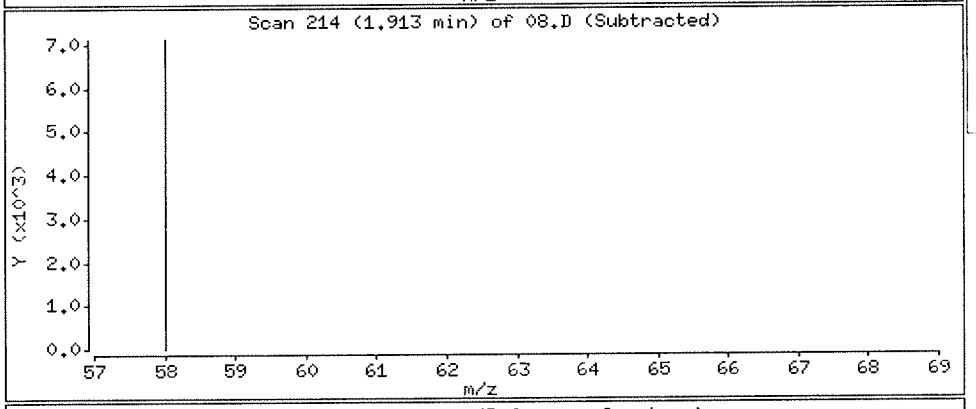
Column diameter: 0.28

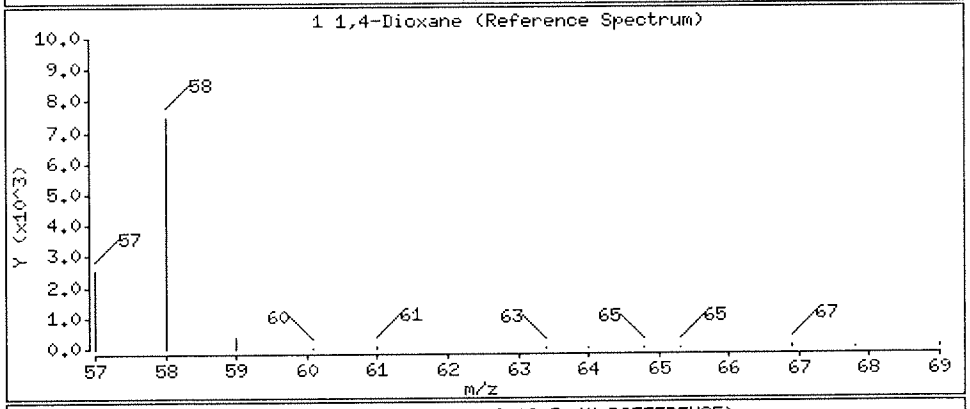
1 1,4-Dioxane

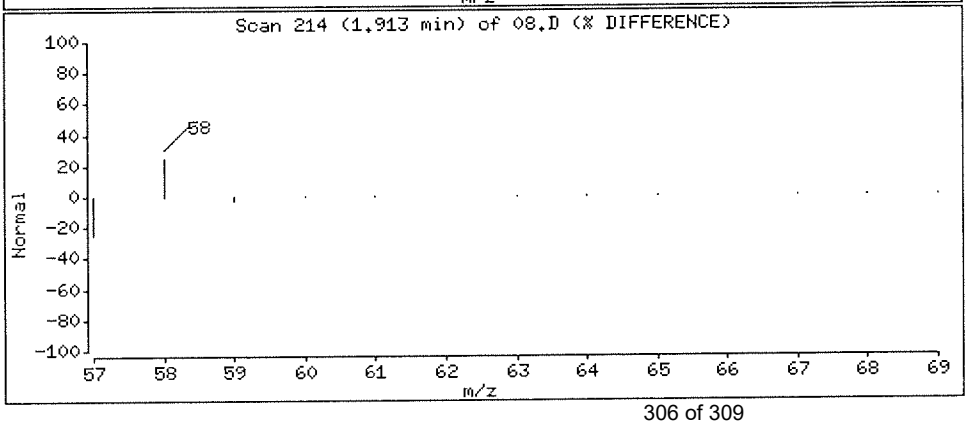
Concentration: 16.70 ug/L











Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171207.b\14.D Page 1
Report Date: 01-Feb-2018 15:26

ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171207.b\14.D
Lab Smp Id: CCV Client Smp ID: CCV
Inj Date : 07-DEC-2017 17:02 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : CCV;CCV
Misc Info : HS17111395;1;0;100
Comment :
Method : \\NAHSTWS003\Target\CHEM\SV5.i\171207.b\DXSIM.m
Meth Date : 01-Feb-2018 15:13 aneir Quant Type: ISTD
Cal Date : 27-NOV-2017 19:22 Cal File: 09.D
Als bottle: 14 QC Sample: METHSPIKE
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (NG)	FINAL (ug/L)
* 45 Naphthalene-d8	136	4.759	4.759	(1.000)	36962	0.10000	
$ 33 Nitrobenzene-d5	82	4.109	4.109	(0.863)	11451	0.06493	0.06493 (M)
* 86 Acenaphthene-d10	164	6.437	6.437	(1.000)	18712	0.10000	
$ 69 2-Fluorobiphenyl	172	5.781	5.780	(0.898)	19417	0.11708	0.1171 (RM)
* 126 Phenanthrene-d10	188	7.774	7.773	(1.000)	23835	0.10000	
* 182 Chrysene-d12	240	10.128	10.128	(1.000)	8498	0.10000	(M)
$ 158 4-Terphenyl-d14	244	9.048	9.043	(0.893)	8161	0.11061	0.1106 (M)
* 198 Perylene-d12	264	12.029	12.023	(1.000)	5005	0.10000	
1 1,4-Dioxane	58	1.923	1.882	(0.404)	2690	0.08457	0.0845 (aM)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
R - Spike/Surrogate failed recovery limits.
M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171207.b\14.D

Page 2

Date : 07-DEC-2017 17:02

Client ID: CCV

Instrument: SV5.i

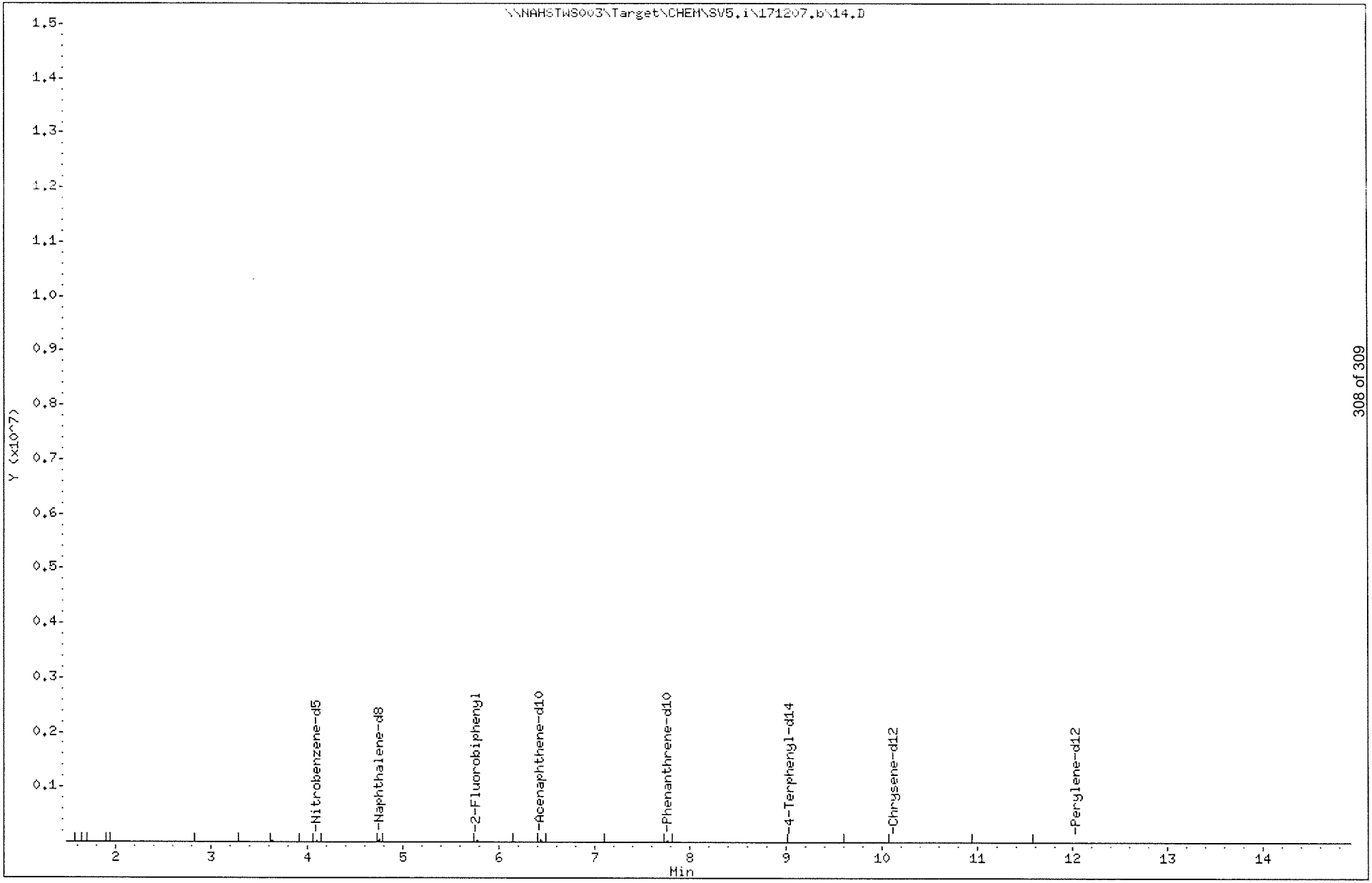
Sample Info: CCV;CCV

Purge Volume: 1000.0

Operator: GY

Column phase: RTX-5SIL MS

Column diameter: 0.28



PREP BATCH REPORT

Batch ID: **122811**
Prep Code: **3510_B_SIM**
InitSampWt/Vol 0
FinSampVol: 1
Start Date: **01-Dec-17 11:32 am**
End Date: **01-Dec-17 03:24 pm**
OriginalFac: 0.001
Technician: **Todi Lala**
PrepUnitFac: 1

SampID	Frac	Matrix	pH	Init Wt/Vol	FinalVol (mL)	PrepFac	SpkFac	Failsafe	TestDueDate	Comments
HS17111408-01	B	Groundwa	7	1000	1	0.001	1	12-05-17	12-07-17	PH ADJ 1/13
HS17111408-02	B	Groundwa	7	1000	1	0.001	1	12-05-17	12-07-17	PH ADJ 1/13
HS17111408-03	B	Groundwa	7	1000	1	0.001	1	12-05-17	12-07-17	PH ADJ 1/13
HS17111408-04	B	Groundwa	7	1000	1	0.001	1	12-05-17	12-07-17	PH ADJ 1/13
HS17111395-01	H	Water	7	1000	1	0.001	1	12-05-17	12-07-17	PH ADJ 1/13
HS17111395-02	H	Water	7	1000	1	0.001	1	12-05-17	12-07-17	PH ADJ 1/13
HS17111395-03	H	Water	7	1000	1	0.001	1	12-05-17	12-07-17	PH ADJ 1/13
HS17111408-05	B	Groundwa	7	1000	1	0.001	1	12-05-17	12-07-17	PH ADJ 1/13
HS17111408-06	B	Groundwa	7	1000	1	0.001	1	12-05-17	12-07-17	PH ADJ 1/13
HS17111408-07	B	Groundwa	7	1000	1	0.001	1	12-05-17	12-07-17	PH ADJ 1/13
HS17111395-03MS	A		7	1000	1	0.001	1			PH ADJ 1/13
HS17111395-03MSD	A		7	1000	1	0.001	1			PH ADJ 1/13
MBLK-122811	A		5	1000	1	0.001	1			PH ADJ 1/13
LCS-122811	A		5	1000	1	0.001	1			PH ADJ 1/13

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

December 07, 2017

Jennifer Hoang
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS17111408**

Laboratory Results for: **LHAAP-67**

Dear Jennifer,

ALS Environmental received 8 sample(s) on Nov 29, 2017 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Sonia West

Generated By: Jumoke.Lawal
Sonia West
Project Manager

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-67
Work Order: HS17111408

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS17111408-01	67WW14-112717	Groundwater		27-Nov-2017 08:30	29-Nov-2017 09:00	☐
HS17111408-02	67WW15-112717	Groundwater		27-Nov-2017 09:50	29-Nov-2017 09:00	☐
HS17111408-03	67WW09-112717	Groundwater		27-Nov-2017 10:40	29-Nov-2017 09:00	☐
HS17111408-04	67WW11-112717	Groundwater		27-Nov-2017 11:35	29-Nov-2017 09:00	☐
HS17111408-05	67WW05-112817	Groundwater		28-Nov-2017 07:55	29-Nov-2017 09:00	☐
HS17111408-06	67WW02-112817	Groundwater		28-Nov-2017 08:25	29-Nov-2017 09:00	☐
HS17111408-07	67WW01-112817	Groundwater		28-Nov-2017 08:45	29-Nov-2017 09:00	☐
HS17111408-08	Trip Blank	Water	ALS 110717-41	28-Nov-2017 00:01	29-Nov-2017 09:00	☐

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: LHAAP-67
Work Order: HS17111408

GCMS Semivolatiles by Method SW8270SIM

Batch ID: 122811

Sample ID: 67WW01-112817 (HS17111408-07)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.
- The surrogate recoveries could not be determined due to dilution below the calibration range.

Sample ID: 67WW02-112817 (HS17111408-06)

- High %R for surrogated 2-Fluorobiphenyl, it is not associated with target compound.
- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: 67WW05-112817 (HS17111408-05)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: 67WW09-112717 (HS17111408-03)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: 67WW11-112717 (HS17111408-04)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.
- The surrogate recoveries could not be determined due to dilution below the calibration range.

Sample ID: 67WW14-112717 (HS17111408-01)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.
- The surrogate recoveries could not be determined due to dilution below the calibration range.

Sample ID: 67WW15-112717 (HS17111408-02)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.
- The surrogate recoveries could not be determined due to dilution below the calibration range.

Sample ID: HS17111395-03MS

- MS and MSD are for an unrelated sample

Sample ID: LCS-122811

- High %R for surrogate 2-Fluorobiphenyl, it is not associated with target compound.

Sample ID: MBLK-122811

- High %R for surrogate 2-Fluorobiphenyl, it is not associated with target compound.

GCMS Volatiles by Method SW8260

Batch ID: R306484

Sample ID: HS17120056-01MSD

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: LHAAP-67
Work Order: HS17111408

GCMS Volatiles by Method SW8260

Batch ID: R306484

- MSD is for an unrelated sample

Batch ID: R306626

Sample ID: VLCSW-171205

- Acetone exceeded %recovery limits on LCS. Samples ND.

Sample ID: HS17111395-03MS

- MS and MSD are for an unrelated sample.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 WorkOrder:HS17111408
Sample ID: 67WW14-112717 Lab ID:HS17111408-01
Collection Date: 27-Nov-2017 08:30 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:52
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 05:52
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 05:52
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:52
1,1-Dichloroethene	**5.6**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Dec-2017 05:52
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 05:52
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 05:52
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 05:52
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	03-Dec-2017 05:52
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:52
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 05:52
1,2-Dichloroethane	**3.1**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Dec-2017 05:52
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 05:52
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 05:52
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 05:52
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:52
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	03-Dec-2017 05:52
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	03-Dec-2017 05:52
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 05:52
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	03-Dec-2017 05:52
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	03-Dec-2017 05:52
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	03-Dec-2017 05:52
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastructure, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 WorkOrder:HS17111408
Sample ID: 67WW14-112717 Lab ID:HS17111408-01
Collection Date: 27-Nov-2017 08:30 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:52
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:52
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	03-Dec-2017 05:52
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	03-Dec-2017 05:52
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 05:52
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:52
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:52
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:52
Surr: 1,2-Dichloroethane-d4	*95.4*			**0**	*70-126*	*%REC*	*1*	*03-Dec-2017 05:52*
Surr: 4-Bromofluorobenzene	*99.0*			**0**	*81-113*	*%REC*	*1*	*03-Dec-2017 05:52*
Surr: Dibromofluoromethane	*90.0*			**0**	*77-123*	*%REC*	*1*	*03-Dec-2017 05:52*
Surr: Toluene-d8	*103*			**0**	*82-127*	*%REC*	*1*	*03-Dec-2017 05:52*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 01-Dec-2017		Analyst: ACN
1,4-Dioxane	**17**		**1.0**	**1.0**	**1.0**	**ug/L**	100	07-Dec-2017 13:39
Surr: 2-Fluorobiphenyl	*0*	*S*		0	*40-140*	*%REC*	*100*	*07-Dec-2017 13:39*
Surr: 4-Terphenyl-d14	*0*	*S*		0	*40-140*	*%REC*	*100*	*07-Dec-2017 13:39*
Surr: Nitrobenzene-d5	*0*	*S*		0	*40-140*	*%REC*	*100*	*07-Dec-2017 13:39*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 WorkOrder:HS17111408
Sample ID: 67WW15-112717 Lab ID:HS17111408-02
Collection Date: 27-Nov-2017 09:50 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:00
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 18:00
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 18:00
1,1,2-Trichloroethane	**5.6**		**0.30**	**0.50**	**1.0**	**ug/L**	1	05-Dec-2017 18:00
1,1-Dichloroethane	**11**		**0.20**	**0.50**	**1.0**	**ug/L**	1	05-Dec-2017 18:00
1,1-Dichloroethene	**510**		**1.0**	**2.5**	**5.0**	**ug/L**	5	05-Dec-2017 18:28
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 18:00
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 18:00
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 18:00
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	05-Dec-2017 18:00
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:00
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 18:00
1,2-Dichloroethane	**27**		**0.20**	**0.50**	**1.0**	**ug/L**	1	05-Dec-2017 18:00
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 18:00
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 18:00
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 18:00
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:00
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	05-Dec-2017 18:00
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	05-Dec-2017 18:00
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 18:00
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	05-Dec-2017 18:00
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	05-Dec-2017 18:00
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	05-Dec-2017 18:00
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 WorkOrder:HS17111408
Sample ID: 67WW15-112717 Lab ID:HS17111408-02
Collection Date: 27-Nov-2017 09:50 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:00
cis-1,2-Dichloroethene	**1.5**		**0.20**	**0.50**	**1.0**	**ug/L**	1	05-Dec-2017 18:00
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	05-Dec-2017 18:00
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	05-Dec-2017 18:00
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 18:00
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:00
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:00
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:00
Surr: 1,2-Dichloroethane-d4	*97.0*			**0**	*70-126*	*%REC*	*1*	*05-Dec-2017 18:00*
Surr: 1,2-Dichloroethane-d4	*97.0*			**0**	*70-126*	*%REC*	*5*	*05-Dec-2017 18:28*
Surr: 4-Bromofluorobenzene	*99.5*			**0**	*81-113*	*%REC*	*5*	*05-Dec-2017 18:28*
Surr: 4-Bromofluorobenzene	*98.4*			**0**	*81-113*	*%REC*	*1*	*05-Dec-2017 18:00*
Surr: Dibromofluoromethane	*90.8*			**0**	*77-123*	*%REC*	*1*	*05-Dec-2017 18:00*
Surr: Dibromofluoromethane	*91.8*			**0**	*77-123*	*%REC*	*5*	*05-Dec-2017 18:28*
Surr: Toluene-d8	*105*			**0**	*82-127*	*%REC*	*5*	*05-Dec-2017 18:28*
Surr: Toluene-d8	*104*			**0**	*82-127*	*%REC*	*1*	*05-Dec-2017 18:00*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
Sample ID: 67WW15-112717
Collection Date: 27-Nov-2017 09:50

ANALYTICAL REPORT
WorkOrder:HS17111408
Lab ID:HS17111408-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES SIM	**Method:SW8270SIM**					Prep:SW3510 / 01-Dec-2017		Analyst: ACN
1,4-Dioxane	**12**		**1.0**	**1.0**	**1.0**	**ug/L**	100	07-Dec-2017 13:59
Surr: 2-Fluorobiphenyl	*0*	*S*		0	*40-140*	*%REC*	*100*	*07-Dec-2017 13:59*
Surr: 4-Terphenyl-d14	*0*	*S*		0	*40-140*	*%REC*	*100*	*07-Dec-2017 13:59*
Surr: Nitrobenzene-d5	*0*	*S*		0	*40-140*	*%REC*	*100*	*07-Dec-2017 13:59*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 WorkOrder:HS17111408
Sample ID: 67WW09-112717 Lab ID:HS17111408-03
Collection Date: 27-Nov-2017 10:40 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 06:17
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:17
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	03-Dec-2017 06:17
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	03-Dec-2017 06:17
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 06:17
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	03-Dec-2017 06:17
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	03-Dec-2017 06:17
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	03-Dec-2017 06:17
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 WorkOrder:HS17111408
Sample ID: 67WW09-112717 Lab ID:HS17111408-03
Collection Date: 27-Nov-2017 10:40 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:17
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:17
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	03-Dec-2017 06:17
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	03-Dec-2017 06:17
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 06:17
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:17
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:17
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:17
Surr: 1,2-Dichloroethane-d4	*97.3*			**0**	*70-126*	*%REC*	*1*	*03-Dec-2017 06:17*
Surr: 4-Bromofluorobenzene	*100*			**0**	*81-113*	*%REC*	*1*	*03-Dec-2017 06:17*
Surr: Dibromofluoromethane	*91.3*			**0**	*77-123*	*%REC*	*1*	*03-Dec-2017 06:17*
Surr: Toluene-d8	*103*			**0**	*82-127*	*%REC*	*1*	*03-Dec-2017 06:17*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 01-Dec-2017		Analyst: ACN
1,4-Dioxane	**1.2**		**0.10**	**0.10**	**0.10**	**ug/L**	10	05-Dec-2017 20:50
Surr: 2-Fluorobiphenyl	*106*			**0**	*40-140*	*%REC*	*10*	*05-Dec-2017 20:50*
Surr: 4-Terphenyl-d14	*73.4*			**0**	*40-140*	*%REC*	*10*	*05-Dec-2017 20:50*
Surr: Nitrobenzene-d5	*71.3*			**0**	*40-140*	*%REC*	*10*	*05-Dec-2017 20:50*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 WorkOrder:HS17111408
Sample ID: 67WW11-112717 Lab ID:HS17111408-04
Collection Date: 27-Nov-2017 11:35 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:41
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 06:41
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 06:41
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
1,1-Dichloroethane	**3.6**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Dec-2017 06:41
1,1-Dichloroethene	**5.2**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-Dec-2017 06:41
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 06:41
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 06:41
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 06:41
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	03-Dec-2017 06:41
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:41
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 06:41
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:41
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 06:41
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 06:41
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 06:41
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:41
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	03-Dec-2017 06:41
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	03-Dec-2017 06:41
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 06:41
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	03-Dec-2017 06:41
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	03-Dec-2017 06:41
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	03-Dec-2017 06:41
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastructure, Inc.
Project: LHAAP-67
Sample ID: 67WW11-112717
Collection Date: 27-Nov-2017 11:35

ANALYTICAL REPORT
WorkOrder:HS17111408
Lab ID:HS17111408-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:41
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:41
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	03-Dec-2017 06:41
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	03-Dec-2017 06:41
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 06:41
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:41
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:41
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 06:41
Surr: 1,2-Dichloroethane-d4	*97.9*			**0**	*70-126*	*%REC*	*1*	*03-Dec-2017 06:41*
Surr: 4-Bromofluorobenzene	*100*			**0**	*81-113*	*%REC*	*1*	*03-Dec-2017 06:41*
Surr: Dibromofluoromethane	*93.0*			**0**	*77-123*	*%REC*	*1*	*03-Dec-2017 06:41*
Surr: Toluene-d8	*103*			**0**	*82-127*	*%REC*	*1*	*03-Dec-2017 06:41*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 01-Dec-2017		Analyst: ACN
1,4-Dioxane	**18**		**1.0**	**1.0**	**1.0**	**ug/L**	100	07-Dec-2017 14:19
Surr: 2-Fluorobiphenyl	*0*	*S*		0	*40-140*	*%REC*	*100*	*07-Dec-2017 14:19*
Surr: 4-Terphenyl-d14	*0*	*S*		0	*40-140*	*%REC*	*100*	*07-Dec-2017 14:19*
Surr: Nitrobenzene-d5	*0*	*S*		0	*40-140*	*%REC*	*100*	*07-Dec-2017 14:19*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 WorkOrder:HS17111408
Sample ID: 67WW05-112817 Lab ID:HS17111408-05
Collection Date: 28-Nov-2017 07:55 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 07:06
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:06
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	03-Dec-2017 07:06
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	03-Dec-2017 07:06
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 07:06
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	03-Dec-2017 07:06
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	03-Dec-2017 07:06
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	03-Dec-2017 07:06
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 WorkOrder:HS17111408
Sample ID: 67WW05-112817 Lab ID:HS17111408-05
Collection Date: 28-Nov-2017 07:55 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:06
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:06
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	03-Dec-2017 07:06
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	03-Dec-2017 07:06
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 07:06
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:06
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:06
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:06
Surr: 1,2-Dichloroethane-d4	*96.4*			**0**	*70-126*	*%REC*	*1*	*03-Dec-2017 07:06*
Surr: 4-Bromofluorobenzene	*97.9*			**0**	*81-113*	*%REC*	*1*	*03-Dec-2017 07:06*
Surr: Dibromofluoromethane	*89.4*			**0**	*77-123*	*%REC*	*1*	*03-Dec-2017 07:06*
Surr: Toluene-d8	*103*			**0**	*82-127*	*%REC*	*1*	*03-Dec-2017 07:06*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 01-Dec-2017		Analyst: ACN
1,4-Dioxane	**0.53**		**0.10**	**0.10**	**0.10**	**ug/L**	10	05-Dec-2017 21:32
Surr: 2-Fluorobiphenyl	*111*			**0**	*40-140*	*%REC*	*10*	*05-Dec-2017 21:32*
Surr: 4-Terphenyl-d14	*95.6*			**0**	*40-140*	*%REC*	*10*	*05-Dec-2017 21:32*
Surr: Nitrobenzene-d5	*65.9*			**0**	*40-140*	*%REC*	*10*	*05-Dec-2017 21:32*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 WorkOrder:HS17111408
Sample ID: 67WW02-112817 Lab ID:HS17111408-06
Collection Date: 28-Nov-2017 08:25 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 07:30
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:30
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	03-Dec-2017 07:30
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	03-Dec-2017 07:30
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 07:30
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	03-Dec-2017 07:30
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	03-Dec-2017 07:30
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	03-Dec-2017 07:30
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastructure, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 WorkOrder:HS17111408
Sample ID: 67WW02-112817 Lab ID:HS17111408-06
Collection Date: 28-Nov-2017 08:25 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:30
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:30
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	03-Dec-2017 07:30
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	03-Dec-2017 07:30
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 07:30
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:30
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:30
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 07:30
Surr: 1,2-Dichloroethane-d4	*94.5*			**0**	*70-126*	*%REC*	*1*	*03-Dec-2017 07:30*
Surr: 4-Bromofluorobenzene	*99.0*			**0**	*81-113*	*%REC*	*1*	*03-Dec-2017 07:30*
Surr: Dibromofluoromethane	*89.8*			**0**	*77-123*	*%REC*	*1*	*03-Dec-2017 07:30*
Surr: Toluene-d8	*104*			**0**	*82-127*	*%REC*	*1*	*03-Dec-2017 07:30*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 01-Dec-2017		Analyst: ACN
1,4-Dioxane	**0.26**		**0.10**	**0.10**	**0.10**	**ug/L**	10	05-Dec-2017 21:52
Surr: 2-Fluorobiphenyl	*143*	*S*		**0**	*40-140*	*%REC*	*10*	*05-Dec-2017 21:52*
Surr: 4-Terphenyl-d14	*76.6*			**0**	*40-140*	*%REC*	*10*	*05-Dec-2017 21:52*
Surr: Nitrobenzene-d5	*66.9*			**0**	*40-140*	*%REC*	*10*	*05-Dec-2017 21:52*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 WorkOrder:HS17111408
Sample ID: 67WW01-112817 Lab ID:HS17111408-07
Collection Date: 28-Nov-2017 08:45 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:52
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 18:52
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 18:52
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
1,1-Dichloroethane	**22**		**0.20**	**0.50**	**1.0**	**ug/L**	1	05-Dec-2017 18:52
1,1-Dichloroethene	**250**		**1.0**	**2.5**	**5.0**	**ug/L**	5	05-Dec-2017 19:19
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 18:52
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 18:52
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 18:52
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	05-Dec-2017 18:52
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:52
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 18:52
1,2-Dichloroethane	**28**		**0.20**	**0.50**	**1.0**	**ug/L**	1	05-Dec-2017 18:52
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 18:52
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 18:52
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 18:52
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:52
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	05-Dec-2017 18:52
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	05-Dec-2017 18:52
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 18:52
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	05-Dec-2017 18:52
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	05-Dec-2017 18:52
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	05-Dec-2017 18:52
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 WorkOrder:HS17111408
Sample ID: 67WW01-112817 Lab ID:HS17111408-07
Collection Date: 28-Nov-2017 08:45 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:52
cis-1,2-Dichloroethene	**1.3**		**0.20**	**0.50**	**1.0**	**ug/L**	1	05-Dec-2017 18:52
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	05-Dec-2017 18:52
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	05-Dec-2017 18:52
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	05-Dec-2017 18:52
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:52
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:52
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Trichloroethene	**2.1**		**0.20**	**0.50**	**1.0**	**ug/L**	1	05-Dec-2017 18:52
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	05-Dec-2017 18:52
Surr: 1,2-Dichloroethane-d4	*96.0*			**0**	*70-126*	*%REC*	*1*	*05-Dec-2017 18:52*
Surr: 1,2-Dichloroethane-d4	*94.5*			**0**	*70-126*	*%REC*	*5*	*05-Dec-2017 19:19*
Surr: 4-Bromofluorobenzene	*98.4*			**0**	*81-113*	*%REC*	*5*	*05-Dec-2017 19:19*
Surr: 4-Bromofluorobenzene	*100*			**0**	*81-113*	*%REC*	*1*	*05-Dec-2017 18:52*
Surr: Dibromofluoromethane	*87.7*			**0**	*77-123*	*%REC*	*5*	*05-Dec-2017 19:19*
Surr: Dibromofluoromethane	*90.1*			**0**	*77-123*	*%REC*	*1*	*05-Dec-2017 18:52*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*05-Dec-2017 18:52*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*5*	*05-Dec-2017 19:19*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 WorkOrder:HS17111408
Sample ID: 67WW01-112817 Lab ID:HS17111408-07
Collection Date: 28-Nov-2017 08:45 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
SEMIVOLATILES SIM	**Method:SW8270SIM**					Prep:SW3510 / 01-Dec-2017		Analyst: ACN
1,4-Dioxane	**17**		**1.0**	**1.0**	**1.0**	**ug/L**	100	07-Dec-2017 14:40
Surr: 2-Fluorobiphenyl	*0*	*S*	0	*40-140*		*%REC*	*100*	*07-Dec-2017 14:40*
Surr: 4-Terphenyl-d14	*0*	*S*	0	*40-140*		*%REC*	*100*	*07-Dec-2017 14:40*
Surr: Nitrobenzene-d5	*0*	*S*	0	*40-140*		*%REC*	*100*	*07-Dec-2017 14:40*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 WorkOrder:HS17111408
Sample ID: Trip Blank Lab ID:HS17111408-08
Collection Date: 28-Nov-2017 00:01 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 05:27
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:27
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	03-Dec-2017 05:27
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	03-Dec-2017 05:27
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 05:27
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	03-Dec-2017 05:27
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	03-Dec-2017 05:27
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	03-Dec-2017 05:27
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 WorkOrder:HS17111408
Sample ID: Trip Blank Lab ID:HS17111408-08
Collection Date: 28-Nov-2017 00:01 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:27
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:27
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	03-Dec-2017 05:27
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	03-Dec-2017 05:27
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-Dec-2017 05:27
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:27
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:27
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	03-Dec-2017 05:27
Surr: 1,2-Dichloroethane-d4	*96.7*			**0**	*70-126*	*%REC*	*1*	*03-Dec-2017 05:27*
Surr: 4-Bromofluorobenzene	*100*			**0**	*81-113*	*%REC*	*1*	*03-Dec-2017 05:27*
Surr: Dibromofluoromethane	*92.0*			**0**	*77-123*	*%REC*	*1*	*03-Dec-2017 05:27*
Surr: Toluene-d8	*103*			**0**	*82-127*	*%REC*	*1*	*03-Dec-2017 05:27*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp

Date: 07-Dec-17

WEIGHT LOG

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

Batch ID: 122811 **Method:** SEMIVOLATILES SIM **Prep:** 3510_B_SIM

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS17111408-01	1	1000	1 (mL)	0.001
HS17111408-02	1	1000	1 (mL)	0.001
HS17111408-03	1	1000	1 (mL)	0.001
HS17111408-04	1	1000	1 (mL)	0.001
HS17111408-05	1	1000	1 (mL)	0.001
HS17111408-06	1	1000	1 (mL)	0.001
HS17111408-07	1	1000	1 (mL)	0.001

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 122811	**Test Name :** SEMIVOLATILES SIM			**Matrix:** Groundwater		
HS17111408-01	67WW14-112717	27 Nov 2017 08:30		01 Dec 2017 11:32	07 Dec 2017 13:39	100
HS17111408-02	67WW15-112717	27 Nov 2017 09:50		01 Dec 2017 11:32	07 Dec 2017 13:59	100
HS17111408-03	67WW09-112717	27 Nov 2017 10:40		01 Dec 2017 11:32	05 Dec 2017 20:50	10
HS17111408-04	67WW11-112717	27 Nov 2017 11:35		01 Dec 2017 11:32	07 Dec 2017 14:19	100
HS17111408-05	67WW05-112817	28 Nov 2017 07:55		01 Dec 2017 11:32	05 Dec 2017 21:32	10
HS17111408-06	67WW02-112817	28 Nov 2017 08:25		01 Dec 2017 11:32	05 Dec 2017 21:52	10
HS17111408-07	67WW01-112817	28 Nov 2017 08:45		01 Dec 2017 11:32	07 Dec 2017 14:40	100
Batch ID R306484	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS17111408-08	Trip Blank	28 Nov 2017 00:01			03 Dec 2017 05:27	1
Batch ID R306484	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Groundwater		
HS17111408-01	67WW14-112717	27 Nov 2017 08:30			03 Dec 2017 05:52	1
HS17111408-03	67WW09-112717	27 Nov 2017 10:40			03 Dec 2017 06:17	1
HS17111408-04	67WW11-112717	27 Nov 2017 11:35			03 Dec 2017 06:41	1
HS17111408-05	67WW05-112817	28 Nov 2017 07:55			03 Dec 2017 07:06	1
HS17111408-06	67WW02-112817	28 Nov 2017 08:25			03 Dec 2017 07:30	1
Batch ID R306626	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Groundwater		
HS17111408-02	67WW15-112717	27 Nov 2017 09:50			05 Dec 2017 18:28	5
HS17111408-02	67WW15-112717	27 Nov 2017 09:50			05 Dec 2017 18:00	1
HS17111408-07	67WW01-112817	28 Nov 2017 08:45			05 Dec 2017 19:19	5
HS17111408-07	67WW01-112817	28 Nov 2017 08:45			05 Dec 2017 18:52	1

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: 122811 **Instrument: SV-5** **Method: SW8270SIM**

MBLK Sample ID: **MBLK-122811** Units: **ug/L** Analysis Date: **05-Dec-2017 18:27**
Client ID: Run ID: **SV-5_306756** SeqNo: **4340996** PrepDate: **01-Dec-2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.010	0.010								U
Surr: 2-Fluorobiphenyl	*0.1156*	*0*	*0.08*	*0*	*145*	*40 - 140*				S
Surr: 4-Terphenyl-d14	*0.09665*	*0*	*0.08*	*0*	*121*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.06716*	*0*	*0.08*	*0*	*84.0*	*40 - 140*				

LCS Sample ID: **LCS-122811** Units: **ug/L** Analysis Date: **05-Dec-2017 18:47**
Client ID: Run ID: **SV-5_306756** SeqNo: **4340997** PrepDate: **01-Dec-2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.08265	0.010	0.08	0	103	40 - 140				
Surr: 2-Fluorobiphenyl	*0.1238*	*0*	*0.08*	*0*	*155*	*40 - 140*				S
Surr: 4-Terphenyl-d14	*0.09844*	*0*	*0.08*	*0*	*123*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.07006*	*0*	*0.08*	*0*	*87.6*	*40 - 140*				

MS Sample ID: **HS17111395-03MS** Units: **ug/L** Analysis Date: **07-Dec-2017 16:02**
Client ID: Run ID: **SV-5_306756** SeqNo: **4341066** PrepDate: **01-Dec-2017** DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	33.52	1.0	0.08	35.66	-2670	40 - 140				SO
Surr: 2-Fluorobiphenyl	*0*	*0*	*0.08*	*0*	*0*	*40 - 140*				S
Surr: 4-Terphenyl-d14	*0*	*0*	*0.08*	*0*	*0*	*40 - 140*				S
Surr: Nitrobenzene-d5	*0*	*0*	*0.08*	*0*	*0*	*40 - 140*				S

MSD Sample ID: **HS17111395-03MSD** Units: **ug/L** Analysis Date: **07-Dec-2017 16:22**
Client ID: Run ID: **SV-5_306756** SeqNo: **4341067** PrepDate: **01-Dec-2017** DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	34.58	1.0	0.08	35.66	-1350	40 - 140	33.52	3.1	20	SO
Surr: 2-Fluorobiphenyl	*0*	*0*	*0.08*	*0*	*0*	*40 - 140*	*0*	*0*	*20*	S
Surr: 4-Terphenyl-d14	*0*	*0*	*0.08*	*0*	*0*	*40 - 140*	*0*	*0*	*20*	S
Surr: Nitrobenzene-d5	*0*	*0*	*0.08*	*0*	*0*	*40 - 140*	*0*	*0*	*20*	S

The following samples were analyzed in this batch: HS17111408-01, HS17111408-02, HS17111408-03, HS17111408-04, HS17111408-05, HS17111408-06, HS17111408-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306484 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-171202** Units: **ug/L** Analysis Date: **02-Dec-2017 23:44**
Client ID: Run ID: **VOA2_306484** SeqNo: **4333913** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306484 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-171202** Units: **ug/L** Analysis Date: **02-Dec-2017 23:44**
Client ID: Run ID: **VOA2_306484** SeqNo: **4333913** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	0.50	1.0								U
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	0.50	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*45.81*	*1.0*	*50*	*0*	*91.6*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*49.7*	*1.0*	*50*	*0*	*99.4*	*82 - 115*				
Surr: Dibromofluoromethane	*44.47*	*1.0*	*50*	*0*	*88.9*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306484 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-171202** Units: **ug/L** Analysis Date: **02-Dec-2017 23:44**
Client ID: Run ID: **VOA2_306484** SeqNo: **4333913** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*51.47*	*1.0*	*50*	*0*	*103*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306484 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-171202** Units: **ug/L** Analysis Date: **02-Dec-2017 22:31**
Client ID: Run ID: **VOA2_306484** SeqNo: **4333910** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	50.79	1.0	50	0	102	77 - 118				
1,1,1-Trichloroethane	53.16	1.0	50	0	106	70 - 130				
1,1,2,2-Tetrachloroethane	46.46	1.0	50	0	92.9	70 - 120				
1,1,2-Trichlor-1,2,2-trifluoroethane	53.67	1.0	50	0	107	70 - 130				
1,1,2-Trichloroethane	47.54	1.0	50	0	95.1	77 - 113				
1,1-Dichloroethane	50.17	1.0	50	0	100	71 - 122				
1,1-Dichloroethene	51.65	1.0	50	0	103	70 - 130				
1,1-Dichloropropene	46.88	1.0	50	0	93.8	78 - 118				
1,2,3-Trichlorobenzene	55.24	1.0	50	0	110	70 - 130				
1,2,3-Trichloropropane	47.41	1.0	50	0	94.8	70 - 127				
1,2,4-Trichlorobenzene	56.27	1.0	50	0	113	77 - 126				
1,2,4-Trimethylbenzene	55.17	1.0	50	0	110	73 - 121				
1,2-Dibromo-3-chloropropane	55.67	1.0	50	0	111	70 - 130				
1,2-Dibromoethane	46.84	1.0	50	0	93.7	76 - 123				
1,2-Dichlorobenzene	47.81	1.0	50	0	95.6	77 - 113				
1,2-Dichloroethane	49.69	1.0	50	0	99.4	70 - 124				
1,2-Dichloropropane	48.69	1.0	50	0	97.4	72 - 119				
1,3,5-Trimethylbenzene	55.72	1.0	50	0	111	75 - 118				
1,3-Dichlorobenzene	47.65	1.0	50	0	95.3	78 - 118				
1,3-Dichloropropane	48.15	1.0	50	0	96.3	75 - 116				
1,4-Dichlorobenzene	46.82	1.0	50	0	93.6	79 - 113				
2,2-Dichloropropane	51.02	1.0	50	0	102	70 - 130				
2-Butanone	102.9	2.0	100	0	103	70 - 130				
2-Chlorotoluene	45.34	1.0	50	0	90.7	70 - 128				
2-Hexanone	104.1	2.0	100	0	104	70 - 130				
4-Chlorotoluene	54.54	1.0	50	0	109	74 - 126				
4-Isopropyltoluene	46.18	1.0	50	0	92.4	74 - 126				
4-Methyl-2-pentanone	96.48	2.0	100	0	96.5	70 - 130				
Acetone	119.3	2.0	100	0	119	70 - 130				
Benzene	48.85	1.0	50	0	97.7	74 - 120				
Bromobenzene	47.23	1.0	50	0	94.5	78 - 113				
Bromochloromethane	54.65	1.0	50	0	109	76 - 124				
Bromodichloromethane	54.33	1.0	50	0	109	74 - 122				
Bromoform	54.53	1.0	50	0	109	73 - 128				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306484 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-171202** Units: **ug/L** Analysis Date: **02-Dec-2017 22:31**
Client ID: Run ID: **VOA2_306484** SeqNo: **4333910** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	49.91	1.0	50	0	99.8	70 - 130				
Carbon disulfide	96.75	2.0	100	0	96.8	70 - 130				
Carbon tetrachloride	49.92	1.0	50	0	99.8	71 - 125				
Chlorobenzene	48.37	1.0	50	0	96.7	76 - 113				
Chloroethane	52.84	1.0	50	0	106	70 - 130				
Chloroform	48.23	1.0	50	0	96.5	71 - 121				
Chloromethane	58.52	1.0	50	0	117	70 - 129				
cis-1,2-Dichloroethene	50.29	1.0	50	0	101	75 - 122				
cis-1,3-Dichloropropene	54.22	1.0	50	0	108	73 - 127				
Dibromochloromethane	52.72	1.0	50	0	105	77 - 122				
Dibromomethane	53.03	1.0	50	0	106	78 - 121				
Dichlorodifluoromethane	59.53	1.0	50	0	119	70 - 130				
Ethylbenzene	49.04	1.0	50	0	98.1	77 - 117				
Hexachlorobutadiene	57.36	1.0	50	0	115	70 - 130				
Isopropylbenzene	51.78	1.0	50	0	104	73 - 127				
m,p-Xylene	93.82	2.0	100	0	93.8	77 - 122				
Methylene chloride	47.45	2.0	50	0	94.9	70 - 127				
Naphthalene	59.78	1.0	50	0	120	70 - 130				
n-Butylbenzene	48.47	1.0	50	0	96.9	72 - 130				
n-Propylbenzene	55.29	1.0	50	0	111	73 - 124				
o-Xylene	48.36	1.0	50	0	96.7	75 - 119				
sec-Butylbenzene	55.67	1.0	50	0	111	73 - 128				
Styrene	49.09	1.0	50	0	98.2	72 - 126				
tert-Butylbenzene	56.28	1.0	50	0	113	73 - 124				
Tetrachloroethene	49.4	1.0	50	0	98.8	76 - 119				
Toluene	46.62	1.0	50	0	93.2	77 - 118				
trans-1,2-Dichloroethene	51.8	1.0	50	0	104	72 - 127				
trans-1,3-Dichloropropene	56.22	1.0	50	0	112	77 - 119				
Trichloroethene	52.17	1.0	50	0	104	77 - 121				
Trichlorofluoromethane	53.88	1.0	50	0	108	70 - 130				
Vinyl chloride	62.45	1.0	50	0	125	70 - 130				
Surr: 1,2-Dichloroethane-d4	*48.36*	*1.0*	*50*	*0*	*96.7*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*51.18*	*1.0*	*50*	*0*	*102*	*82 - 115*				
Surr: Dibromofluoromethane	*43.39*	*1.0*	*50*	*0*	*86.8*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306484 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-171202** Units: **ug/L** Analysis Date: **02-Dec-2017 22:31**
Client ID: Run ID: **VOA2_306484** SeqNo: **4333910** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*50.63*	*1.0*	*50*	*0*	*101*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306484 **Instrument: VOA2** **Method: SW8260**

LCSD Sample ID: **VLCSDW-171202** Units: **ug/L** Analysis Date: **02-Dec-2017 22:55**
Client ID: Run ID: **VOA2_306484** SeqNo: **4333911** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	48.29	1.0	50	0	96.6	77 - 118	50.79	5.05	20	
1,1,1-Trichloroethane	50.28	1.0	50	0	101	70 - 130	53.16	5.58	20	
1,1,2,2-Tetrachloroethane	45.76	1.0	50	0	91.5	70 - 120	46.46	1.52	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	53.26	1.0	50	0	107	70 - 130	53.67	0.752	20	
1,1,2-Trichloroethane	46.58	1.0	50	0	93.2	77 - 113	47.54	2.05	20	
1,1-Dichloroethane	48.06	1.0	50	0	96.1	71 - 122	50.17	4.28	20	
1,1-Dichloroethene	48.7	1.0	50	0	97.4	70 - 130	51.65	5.89	20	
1,1-Dichloropropene	44.68	1.0	50	0	89.4	78 - 118	46.88	4.8	20	
1,2,3-Trichlorobenzene	53.59	1.0	50	0	107	70 - 130	55.24	3.04	20	
1,2,3-Trichloropropane	46.59	1.0	50	0	93.2	70 - 127	47.41	1.74	20	
1,2,4-Trichlorobenzene	54.48	1.0	50	0	109	77 - 126	56.27	3.22	20	
1,2,4-Trimethylbenzene	51.38	1.0	50	0	103	73 - 121	55.17	7.11	20	
1,2-Dibromo-3-chloropropane	52.83	1.0	50	0	106	70 - 130	55.67	5.24	20	
1,2-Dibromoethane	46.59	1.0	50	0	93.2	76 - 123	46.84	0.526	20	
1,2-Dichlorobenzene	45.47	1.0	50	0	90.9	77 - 113	47.81	5	20	
1,2-Dichloroethane	48.3	1.0	50	0	96.6	70 - 124	49.69	2.85	20	
1,2-Dichloropropane	47.69	1.0	50	0	95.4	72 - 119	48.69	2.09	20	
1,3,5-Trimethylbenzene	52.06	1.0	50	0	104	75 - 118	55.72	6.79	20	
1,3-Dichlorobenzene	44.39	1.0	50	0	88.8	78 - 118	47.65	7.09	20	
1,3-Dichloropropane	47.01	1.0	50	0	94.0	75 - 116	48.15	2.4	20	
1,4-Dichlorobenzene	43.6	1.0	50	0	87.2	79 - 113	46.82	7.11	20	
2,2-Dichloropropane	48.15	1.0	50	0	96.3	70 - 130	51.02	5.79	20	
2-Butanone	102.1	2.0	100	0	102	70 - 130	102.9	0.75	20	
2-Chlorotoluene	42.79	1.0	50	0	85.6	70 - 128	45.34	5.79	20	
2-Hexanone	102.3	2.0	100	0	102	70 - 130	104.1	1.7	20	
4-Chlorotoluene	51.44	1.0	50	0	103	74 - 126	54.54	5.86	20	
4-Isopropyltoluene	42.97	1.0	50	0	85.9	74 - 126	46.18	7.21	20	
4-Methyl-2-pentanone	95.73	2.0	100	0	95.7	70 - 130	96.48	0.777	20	
Acetone	118.5	2.0	100	0	118	70 - 130	119.3	0.742	20	
Benzene	47.22	1.0	50	0	94.4	74 - 120	48.85	3.39	20	
Bromobenzene	44.66	1.0	50	0	89.3	78 - 113	47.23	5.59	20	
Bromochloromethane	54.31	1.0	50	0	109	76 - 124	54.65	0.633	20	
Bromodichloromethane	52.95	1.0	50	0	106	74 - 122	54.33	2.57	20	
Bromoform	60.81	1.0	50	0	122	73 - 128	54.53	10.9	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306484 **Instrument: VOA2** **Method: SW8260**

LCSD Sample ID: **VLCSDW-171202** Units: **ug/L** Analysis Date: **02-Dec-2017 22:55**
Client ID: Run ID: **VOA2_306484** SeqNo: **4333911** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	49.83	1.0	50	0	99.7	70 - 130	49.91	0.175	20	
Carbon disulfide	93.85	2.0	100	0	93.9	70 - 130	96.75	3.04	20	
Carbon tetrachloride	46.72	1.0	50	0	93.4	71 - 125	49.92	6.64	20	
Chlorobenzene	45.56	1.0	50	0	91.1	76 - 113	48.37	5.99	20	
Chloroethane	49.49	1.0	50	0	99.0	70 - 130	52.84	6.55	20	
Chloroform	46.81	1.0	50	0	93.6	71 - 121	48.23	2.99	20	
Chloromethane	57.57	1.0	50	0	115	70 - 129	58.52	1.63	20	
cis-1,2-Dichloroethene	49.32	1.0	50	0	98.6	75 - 122	50.29	1.94	20	
cis-1,3-Dichloropropene	53	1.0	50	0	106	73 - 127	54.22	2.27	20	
Dibromochloromethane	51	1.0	50	0	102	77 - 122	52.72	3.31	20	
Dibromomethane	53.3	1.0	50	0	107	78 - 121	53.03	0.513	20	
Dichlorodifluoromethane	56.24	1.0	50	0	112	70 - 130	59.53	5.68	20	
Ethylbenzene	45.84	1.0	50	0	91.7	77 - 117	49.04	6.74	20	
Hexachlorobutadiene	55.09	1.0	50	0	110	70 - 130	57.36	4.03	20	
Isopropylbenzene	53.55	1.0	50	0	107	73 - 127	51.78	3.36	20	
m,p-Xylene	88.61	2.0	100	0	88.6	77 - 122	93.82	5.71	20	
Methylene chloride	47.17	2.0	50	0	94.3	70 - 127	47.45	0.589	20	
Naphthalene	57.86	1.0	50	0	116	70 - 130	59.78	3.26	20	
n-Butylbenzene	45.22	1.0	50	0	90.4	72 - 130	48.47	6.93	20	
n-Propylbenzene	51.45	1.0	50	0	103	73 - 124	55.29	7.19	20	
o-Xylene	45.5	1.0	50	0	91.0	75 - 119	48.36	6.08	20	
sec-Butylbenzene	52.04	1.0	50	0	104	73 - 128	55.67	6.74	20	
Styrene	46.93	1.0	50	0	93.9	72 - 126	49.09	4.5	20	
tert-Butylbenzene	51.8	1.0	50	0	104	73 - 124	56.28	8.3	20	
Tetrachloroethene	46.03	1.0	50	0	92.1	76 - 119	49.4	7.06	20	
Toluene	43.94	1.0	50	0	87.9	77 - 118	46.62	5.93	20	
trans-1,2-Dichloroethene	50.43	1.0	50	0	101	72 - 127	51.8	2.68	20	
trans-1,3-Dichloropropene	54.79	1.0	50	0	110	77 - 119	56.22	2.57	20	
Trichloroethene	48.93	1.0	50	0	97.9	77 - 121	52.17	6.41	20	
Trichlorofluoromethane	49.63	1.0	50	0	99.3	70 - 130	53.88	8.2	20	
Vinyl chloride	57.77	1.0	50	0	116	70 - 130	62.45	7.78	20	
Surr: 1,2-Dichloroethane-d4	*48.22*	*1.0*	*50*	*0*	*96.4*	*70 - 130*	*48.36*	*0.285*	*20*	
Surr: 4-Bromofluorobenzene	*54.47*	*1.0*	*50*	*0*	*109*	*82 - 115*	*51.18*	*6.24*	*20*	
Surr: Dibromofluoromethane	*43.61*	*1.0*	*50*	*0*	*87.2*	*73 - 126*	*43.39*	*0.508*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306484 **Instrument: VOA2** **Method: SW8260**

LCSD Sample ID: **VLCSDW-171202** Units: **ug/L** Analysis Date: **02-Dec-2017 22:55**
Client ID: Run ID: **VOA2_306484** SeqNo: **4333911** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*50.34*	*1.0*	*50*	*0*	*101*	*81 - 120*	*50.63*	*0.57*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306484 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS17120056-01MS** Units: **ug/L** Analysis Date: **03-Dec-2017 08:22**
Client ID: Run ID: **VOA2_306484** SeqNo: **4333934** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	48.57	1.0	50	0	97.1	70 - 120				
1,1,1-Trichloroethane	53.96	1.0	50	0	108	70 - 130				
1,1,2,2-Tetrachloroethane	41.23	1.0	50	0	82.5	70 - 123				
1,1,2-Trichlor-1,2,2-trifluoroethane	47.32	1.0	50	0	94.6	70 - 130				
1,1,2-Trichloroethane	45.34	1.0	50	0	90.7	70 - 117				
1,1-Dichloroethane	47.95	1.0	50	0	95.9	70 - 127				
1,1-Dichloroethene	44.71	1.0	50	0	89.4	70 - 130				
1,1-Dichloropropene	47.42	1.0	50	0	94.8	70 - 129				
1,2,3-Trichlorobenzene	50.05	1.0	50	0	100	70 - 130				
1,2,3-Trichloropropane	44.33	1.0	50	0	88.7	70 - 130				
1,2,4-Trichlorobenzene	51.1	1.0	50	0	102	70 - 125				
1,2,4-Trimethylbenzene	52.52	1.0	50	0	105	70 - 125				
1,2-Dibromo-3-chloropropane	52.29	1.0	50	0	105	70 - 130				
1,2-Dibromoethane	45.26	1.0	50	0	90.5	70 - 124				
1,2-Dichlorobenzene	44.33	1.0	50	0	88.7	70 - 115				
1,2-Dichloroethane	46.64	1.0	50	0	93.3	70 - 127				
1,2-Dichloropropane	46.56	1.0	50	0	93.1	70 - 122				
1,3,5-Trimethylbenzene	53.65	1.0	50	0	107	70 - 126				
1,3-Dichlorobenzene	44.08	1.0	50	0	88.2	70 - 119				
1,3-Dichloropropane	44.82	1.0	50	0	89.6	70 - 121				
1,4-Dichlorobenzene	42.82	1.0	50	0	85.6	70 - 114				
2,2-Dichloropropane	43.69	1.0	50	0	87.4	70 - 130				
2-Butanone	96.17	2.0	100	0	96.2	70 - 130				
2-Chlorotoluene	43.77	1.0	50	0	87.5	70 - 130				
2-Hexanone	96.71	2.0	100	0	96.7	70 - 130				
4-Chlorotoluene	51.76	1.0	50	0	104	70 - 130				
4-Isopropyltoluene	43.89	1.0	50	0	87.8	70 - 130				
4-Methyl-2-pentanone	92.86	2.0	100	0	92.9	70 - 130				
Acetone	105.6	2.0	100	0	106	70 - 130				
Benzene	47.07	1.0	50	0	94.1	70 - 127				
Bromobenzene	44.82	1.0	50	0	89.6	70 - 115				
Bromochloromethane	52.33	1.0	50	0	105	70 - 127				
Bromodichloromethane	51.9	1.0	50	0	104	70 - 124				
Bromoform	52.55	1.0	50	0	105	70 - 129				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306484 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS17120056-01MS** Units: **ug/L** Analysis Date: **03-Dec-2017 08:22**
Client ID: Run ID: **VOA2_306484** SeqNo: **4333934** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	39.12	1.0	50	0	78.2	70 - 130				
Carbon disulfide	95.61	2.0	100	0	95.6	70 - 130				
Carbon tetrachloride	50.83	1.0	50	0	102	70 - 130				
Chlorobenzene	46.33	1.0	50	0	92.7	70 - 114				
Chloroethane	48	1.0	50	0	96.0	70 - 130				
Chloroform	47.02	1.0	50	0	94.0	70 - 125				
Chloromethane	45.9	1.0	50	0	91.8	70 - 130				
cis-1,2-Dichloroethene	49.01	1.0	50	0	98.0	70 - 128				
cis-1,3-Dichloropropene	50.56	1.0	50	0	101	70 - 125				
Dibromochloromethane	49.68	1.0	50	0	99.4	70 - 124				
Dibromomethane	49.76	1.0	50	0	99.5	70 - 124				
Dichlorodifluoromethane	56.78	1.0	50	0	114	70 - 130				
Ethylbenzene	47.39	1.0	50	0	94.8	70 - 124				
Hexachlorobutadiene	52.62	1.0	50	0	105	70 - 130				
Isopropylbenzene	50.92	1.0	50	0	102	70 - 130				
m,p-Xylene	91.35	2.0	100	0	91.3	70 - 130				
Methylene chloride	45.22	2.0	50	0	90.4	70 - 128				
Naphthalene	56.38	1.0	50	0	113	70 - 130				
n-Butylbenzene	45.8	1.0	50	0	91.6	70 - 130				
n-Propylbenzene	52.89	1.0	50	0	106	70 - 130				
o-Xylene	46.42	1.0	50	0	92.8	70 - 124				
sec-Butylbenzene	54.24	1.0	50	0	108	70 - 130				
Styrene	46.36	1.0	50	0	92.7	70 - 130				
tert-Butylbenzene	54.03	1.0	50	0	108	70 - 130				
Tetrachloroethene	49.5	1.0	50	0	99.0	70 - 130				
Toluene	45.25	1.0	50	0	90.5	70 - 123				
trans-1,2-Dichloroethene	50.24	1.0	50	0	100	70 - 130				
trans-1,3-Dichloropropene	51.14	1.0	50	0	102	70 - 121				
Trichloroethene	52.69	1.0	50	0	105	70 - 129				
Trichlorofluoromethane	50.79	1.0	50	0	102	70 - 130				
Vinyl chloride	53.32	1.0	50	0	107	70 - 130				
Surr: 1,2-Dichloroethane-d4	*48.6*	*1.0*	*50*	*0*	*97.2*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*50.6*	*1.0*	*50*	*0*	*101*	*81 - 113*				
Surr: Dibromofluoromethane	*44.27*	*1.0*	*50*	*0*	*88.5*	*77 - 123*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306484 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS17120056-01MS** Units: **ug/L** Analysis Date: **03-Dec-2017 08:22**
Client ID: Run ID: **VOA2_306484** SeqNo: **4333934** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*50.38*	*1.0*	*50*	*0*	*101*	*82 - 127*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306484 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS17120056-01MSD** Units: **ug/L** Analysis Date: **03-Dec-2017 08:47**
Client ID: Run ID: **VOA2_306484** SeqNo: **4333935** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	48.2	1.0	50	0	96.4	70 - 120	48.57	0.764	20	
1,1,1-Trichloroethane	51.78	1.0	50	0	104	70 - 130	53.96	4.14	20	
1,1,2,2-Tetrachloroethane	41.69	1.0	50	0	83.4	70 - 123	41.23	1.11	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	59.29	1.0	50	0	119	70 - 130	47.32	22.4	20	R
1,1,2-Trichloroethane	44.46	1.0	50	0	88.9	70 - 117	45.34	1.94	20	
1,1-Dichloroethane	46.72	1.0	50	0	93.4	70 - 127	47.95	2.59	20	
1,1-Dichloroethene	55.28	1.0	50	0	111	70 - 130	44.71	21.1	20	R
1,1-Dichloropropene	46.01	1.0	50	0	92.0	70 - 129	47.42	3.01	20	
1,2,3-Trichlorobenzene	50.27	1.0	50	0	101	70 - 130	50.05	0.429	20	
1,2,3-Trichloropropane	44.1	1.0	50	0	88.2	70 - 130	44.33	0.525	20	
1,2,4-Trichlorobenzene	50.52	1.0	50	0	101	70 - 125	51.1	1.13	20	
1,2,4-Trimethylbenzene	51.02	1.0	50	0	102	70 - 125	52.52	2.9	20	
1,2-Dibromo-3-chloropropane	50.3	1.0	50	0	101	70 - 130	52.29	3.88	20	
1,2-Dibromoethane	44.87	1.0	50	0	89.7	70 - 124	45.26	0.862	20	
1,2-Dichlorobenzene	43.69	1.0	50	0	87.4	70 - 115	44.33	1.45	20	
1,2-Dichloroethane	47.99	1.0	50	0	96.0	70 - 127	46.64	2.83	20	
1,2-Dichloropropane	45.55	1.0	50	0	91.1	70 - 122	46.56	2.2	20	
1,3,5-Trimethylbenzene	52.33	1.0	50	0	105	70 - 126	53.65	2.5	20	
1,3-Dichlorobenzene	42.8	1.0	50	0	85.6	70 - 119	44.08	2.96	20	
1,3-Dichloropropane	45.14	1.0	50	0	90.3	70 - 121	44.82	0.698	20	
1,4-Dichlorobenzene	41.74	1.0	50	0	83.5	70 - 114	42.82	2.53	20	
2,2-Dichloropropane	42.39	1.0	50	0	84.8	70 - 130	43.69	3.03	20	
2-Butanone	97.42	2.0	100	0	97.4	70 - 130	96.17	1.29	20	
2-Chlorotoluene	42.06	1.0	50	0	84.1	70 - 130	43.77	3.98	20	
2-Hexanone	96.97	2.0	100	0	97.0	70 - 130	96.71	0.265	20	
4-Chlorotoluene	50.29	1.0	50	0	101	70 - 130	51.76	2.88	20	
4-Isopropyltoluene	42.9	1.0	50	0	85.8	70 - 130	43.89	2.29	20	
4-Methyl-2-pentanone	92.92	2.0	100	0	92.9	70 - 130	92.86	0.0647	20	
Acetone	134.2	2.0	100	0	134	70 - 130	105.6	23.9	20	SR
Benzene	45.83	1.0	50	0	91.7	70 - 127	47.07	2.66	20	
Bromobenzene	43.31	1.0	50	0	86.6	70 - 115	44.82	3.42	20	
Bromochloromethane	50.84	1.0	50	0	102	70 - 127	52.33	2.89	20	
Bromodichloromethane	50.92	1.0	50	0	102	70 - 124	51.9	1.91	20	
Bromoform	51.62	1.0	50	0	103	70 - 129	52.55	1.78	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306484 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS17120056-01MSD** Units: **ug/L** Analysis Date: **03-Dec-2017 08:47**
Client ID: Run ID: **VOA2_306484** SeqNo: **4333935** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	41.07	1.0	50	0	82.1	70 - 130	39.12	4.85	20	
Carbon disulfide	108.6	2.0	100	0	109	70 - 130	95.61	12.7	20	
Carbon tetrachloride	49.78	1.0	50	0	99.6	70 - 130	50.83	2.1	20	
Chlorobenzene	44.9	1.0	50	0	89.8	70 - 114	46.33	3.13	20	
Chloroethane	48.9	1.0	50	0	97.8	70 - 130	48	1.88	20	
Chloroform	45.61	1.0	50	0	91.2	70 - 125	47.02	3.04	20	
Chloromethane	47.47	1.0	50	0	94.9	70 - 130	45.9	3.37	20	
cis-1,2-Dichloroethene	47.11	1.0	50	0	94.2	70 - 128	49.01	3.95	20	
cis-1,3-Dichloropropene	49.41	1.0	50	0	98.8	70 - 125	50.56	2.29	20	
Dibromochloromethane	49.58	1.0	50	0	99.2	70 - 124	49.68	0.212	20	
Dibromomethane	49.65	1.0	50	0	99.3	70 - 124	49.76	0.233	20	
Dichlorodifluoromethane	53.89	1.0	50	0	108	70 - 130	56.78	5.22	20	
Ethylbenzene	45.67	1.0	50	0	91.3	70 - 124	47.39	3.68	20	
Hexachlorobutadiene	52.2	1.0	50	0	104	70 - 130	52.62	0.805	20	
Isopropylbenzene	49.22	1.0	50	0	98.4	70 - 130	50.92	3.39	20	
m,p-Xylene	88.67	2.0	100	0	88.7	70 - 130	91.35	2.97	20	
Methylene chloride	44.24	2.0	50	0	88.5	70 - 128	45.22	2.19	20	
Naphthalene	56.33	1.0	50	0	113	70 - 130	56.38	0.0754	20	
n-Butylbenzene	44.16	1.0	50	0	88.3	70 - 130	45.8	3.66	20	
n-Propylbenzene	51.25	1.0	50	0	103	70 - 130	52.89	3.15	20	
o-Xylene	45.4	1.0	50	0	90.8	70 - 124	46.42	2.24	20	
sec-Butylbenzene	52.86	1.0	50	0	106	70 - 130	54.24	2.58	20	
Styrene	45.07	1.0	50	0	90.1	70 - 130	46.36	2.82	20	
tert-Butylbenzene	53.17	1.0	50	0	106	70 - 130	54.03	1.61	20	
Tetrachloroethene	48	1.0	50	0	96.0	70 - 130	49.5	3.07	20	
Toluene	44	1.0	50	0	88.0	70 - 123	45.25	2.8	20	
trans-1,2-Dichloroethene	48.77	1.0	50	0	97.5	70 - 130	50.24	2.96	20	
trans-1,3-Dichloropropene	50.21	1.0	50	0	100	70 - 121	51.14	1.83	20	
Trichloroethene	51.58	1.0	50	0	103	70 - 129	52.69	2.12	20	
Trichlorofluoromethane	51.4	1.0	50	0	103	70 - 130	50.79	1.18	20	
Vinyl chloride	53.77	1.0	50	0	108	70 - 130	53.32	0.837	20	
Surr: 1,2-Dichloroethane-d4	*48.69*	*1.0*	*50*	*0*	*97.4*	*70 - 126*	*48.6*	*0.194*	*20*	
Surr: 4-Bromofluorobenzene	*50.56*	*1.0*	*50*	*0*	*101*	*81 - 113*	*50.6*	*0.0868*	*20*	
Surr: Dibromofluoromethane	*43.48*	*1.0*	*50*	*0*	*87.0*	*77 - 123*	*44.27*	*1.81*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306484 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS17120056-01MSD** Units: **ug/L** Analysis Date: **03-Dec-2017 08:47**
Client ID: Run ID: **VOA2_306484** SeqNo: **4333935** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*50.57*	*1.0*	*50*	*0*	*101*	*82 - 127*	*50.38*	*0.388*	*20*	

The following samples were analyzed in this batch: HS17111408-01 HS17111408-03 HS17111408-04 HS17111408-05 HS17111408-06 HS17111408-08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306626 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-171205** Units: **ug/L** Analysis Date: **05-Dec-2017 11:18**
Client ID: Run ID: **VOA2_306626** SeqNo: **4337298** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306626 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-171205** Units: **ug/L** Analysis Date: **05-Dec-2017 11:18**
Client ID: Run ID: **VOA2_306626** SeqNo: **4337298** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	0.50	1.0								U
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	0.50	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*47.29*	*1.0*	*50*	*0*	*94.6*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*49.54*	*1.0*	*50*	*0*	*99.1*	*82 - 115*				
Surr: Dibromofluoromethane	*45.4*	*1.0*	*50*	*0*	*90.8*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306626 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-171205** Units: **ug/L** Analysis Date: **05-Dec-2017 11:18**
Client ID: Run ID: **VOA2_306626** SeqNo: **4337298** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*52.11*	*1.0*	*50*	*0*	*104*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306626 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-171205** Units: **ug/L** Analysis Date: **05-Dec-2017 10:29**
Client ID: Run ID: **VOA2_306626** SeqNo: **4337297** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	47.21	1.0	50	0	94.4	77 - 118				
1,1,1-Trichloroethane	46.38	1.0	50	0	92.8	70 - 130				
1,1,2,2-Tetrachloroethane	45.74	1.0	50	0	91.5	70 - 120				
1,1,2-Trichlor-1,2,2-trifluoroethane	46.17	1.0	50	0	92.3	70 - 130				
1,1,2-Trichloroethane	45.15	1.0	50	0	90.3	77 - 113				
1,1-Dichloroethane	46.74	1.0	50	0	93.5	71 - 122				
1,1-Dichloroethene	47.92	1.0	50	0	95.8	70 - 130				
1,1-Dichloropropene	41.26	1.0	50	0	82.5	78 - 118				
1,2,3-Trichlorobenzene	51.71	1.0	50	0	103	70 - 130				
1,2,3-Trichloropropane	47.16	1.0	50	0	94.3	70 - 127				
1,2,4-Trichlorobenzene	50.66	1.0	50	0	101	77 - 126				
1,2,4-Trimethylbenzene	48.71	1.0	50	0	97.4	73 - 121				
1,2-Dibromo-3-chloropropane	55.49	1.0	50	0	111	70 - 130				
1,2-Dibromoethane	46.56	1.0	50	0	93.1	76 - 123				
1,2-Dichlorobenzene	44.01	1.0	50	0	88.0	77 - 113				
1,2-Dichloroethane	49.26	1.0	50	0	98.5	70 - 124				
1,2-Dichloropropane	46.54	1.0	50	0	93.1	72 - 119				
1,3,5-Trimethylbenzene	48.95	1.0	50	0	97.9	75 - 118				
1,3-Dichlorobenzene	42.62	1.0	50	0	85.2	78 - 118				
1,3-Dichloropropane	46.39	1.0	50	0	92.8	75 - 116				
1,4-Dichlorobenzene	41.83	1.0	50	0	83.7	79 - 113				
2,2-Dichloropropane	47.52	1.0	50	0	95.0	70 - 130				
2-Butanone	102.3	2.0	100	0	102	70 - 130				
2-Chlorotoluene	39.91	1.0	50	0	79.8	70 - 128				
2-Hexanone	102.6	2.0	100	0	103	70 - 130				
4-Chlorotoluene	50.68	1.0	50	0	101	74 - 126				
4-Isopropyltoluene	38.72	1.0	50	0	77.4	74 - 126				
4-Methyl-2-pentanone	96.66	2.0	100	0	96.7	70 - 130				
Acetone	146	2.0	100	0	146	70 - 130				S
Benzene	44.86	1.0	50	0	89.7	74 - 120				
Bromobenzene	43.63	1.0	50	0	87.3	78 - 113				
Bromochloromethane	52.61	1.0	50	0	105	76 - 124				
Bromodichloromethane	54.48	1.0	50	0	109	74 - 122				
Bromoform	54.46	1.0	50	0	109	73 - 128				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306626 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-171205** Units: **ug/L** Analysis Date: **05-Dec-2017 10:29**
Client ID: Run ID: **VOA2_306626** SeqNo: **4337297** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	40.71	1.0	50	0	81.4	70 - 130				
Carbon disulfide	114.2	2.0	100	0	114	70 - 130				
Carbon tetrachloride	43.27	1.0	50	0	86.5	71 - 125				
Chlorobenzene	44.92	1.0	50	0	89.8	76 - 113				
Chloroethane	45.71	1.0	50	0	91.4	70 - 130				
Chloroform	45.27	1.0	50	0	90.5	71 - 121				
Chloromethane	41.14	1.0	50	0	82.3	70 - 129				
cis-1,2-Dichloroethene	47	1.0	50	0	94.0	75 - 122				
cis-1,3-Dichloropropene	52.44	1.0	50	0	105	73 - 127				
Dibromochloromethane	49.77	1.0	50	0	99.5	77 - 122				
Dibromomethane	52.76	1.0	50	0	106	78 - 121				
Dichlorodifluoromethane	43.26	1.0	50	0	86.5	70 - 130				
Ethylbenzene	42.73	1.0	50	0	85.5	77 - 117				
Hexachlorobutadiene	44.45	1.0	50	0	88.9	70 - 130				
Isopropylbenzene	43.33	1.0	50	0	86.7	73 - 127				
m,p-Xylene	81.4	2.0	100	0	81.4	77 - 122				
Methylene chloride	60.03	2.0	50	0	120	70 - 127				
Naphthalene	59.19	1.0	50	0	118	70 - 130				
n-Butylbenzene	39.93	1.0	50	0	79.9	72 - 130				
n-Propylbenzene	46.55	1.0	50	0	93.1	73 - 124				
o-Xylene	43.16	1.0	50	0	86.3	75 - 119				
sec-Butylbenzene	45.02	1.0	50	0	90.0	73 - 128				
Styrene	44.43	1.0	50	0	88.9	72 - 126				
tert-Butylbenzene	46.07	1.0	50	0	92.1	73 - 124				
Tetrachloroethene	41.28	1.0	50	0	82.6	76 - 119				
Toluene	41.67	1.0	50	0	83.3	77 - 118				
trans-1,2-Dichloroethene	55.25	1.0	50	0	111	72 - 127				
trans-1,3-Dichloropropene	54.58	1.0	50	0	109	77 - 119				
Trichloroethene	47.35	1.0	50	0	94.7	77 - 121				
Trichlorofluoromethane	45.06	1.0	50	0	90.1	70 - 130				
Vinyl chloride	44.37	1.0	50	0	88.7	70 - 130				
Surr: 1,2-Dichloroethane-d4	*48.24*	*1.0*	*50*	*0*	*96.5*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*50.52*	*1.0*	*50*	*0*	*101*	*82 - 115*				
Surr: Dibromofluoromethane	*42.6*	*1.0*	*50*	*0*	*85.2*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306626 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-171205** Units: **ug/L** Analysis Date: **05-Dec-2017 10:29**
Client ID: Run ID: **VOA2_306626** SeqNo: **4337297** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*49.96*	*1.0*	*50*	*0*	*99.9*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306626 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS17111395-03MS** Units: **ug/L** Analysis Date: **05-Dec-2017 15:01**
Client ID: Run ID: **VOA2_306626** SeqNo: **4337307** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	47.9	1.0	50	0	95.8	70 - 120				
1,1,1-Trichloroethane	50.96	1.0	50	0	102	70 - 130				
1,1,2,2-Tetrachloroethane	42.48	1.0	50	0	85.0	70 - 123				
1,1,2-Trichlor-1,2,2-trifluoroethane	53.98	1.0	50	0	108	70 - 130				
1,1,2-Trichloroethane	48.11	1.0	50	5.088	86.0	70 - 117				
1,1-Dichloroethane	78.64	1.0	50	19.35	119	70 - 127				
1,1-Dichloroethene	322.9	1.0	50	326.1	-6.36	70 - 130				SEO
1,1-Dichloropropene	46.77	1.0	50	0	93.5	70 - 129				
1,2,3-Trichlorobenzene	48.54	1.0	50	0	97.1	70 - 130				
1,2,3-Trichloropropane	43.51	1.0	50	0	87.0	70 - 130				
1,2,4-Trichlorobenzene	48.69	1.0	50	0	97.4	70 - 125				
1,2,4-Trimethylbenzene	50.57	1.0	50	0	101	70 - 125				
1,2-Dibromo-3-chloropropane	50.27	1.0	50	0	101	70 - 130				
1,2-Dibromoethane	43.63	1.0	50	0	87.3	70 - 124				
1,2-Dichlorobenzene	42.66	1.0	50	0	85.3	70 - 115				
1,2-Dichloroethane	73.34	1.0	50	31.85	83.0	70 - 127				
1,2-Dichloropropane	45.71	1.0	50	0	91.4	70 - 122				
1,3,5-Trimethylbenzene	51.82	1.0	50	0	104	70 - 126				
1,3-Dichlorobenzene	42.76	1.0	50	0	85.5	70 - 119				
1,3-Dichloropropane	45.36	1.0	50	0	90.7	70 - 121				
1,4-Dichlorobenzene	41.25	1.0	50	0	82.5	70 - 114				
2,2-Dichloropropane	54.82	1.0	50	0	110	70 - 130				
2-Butanone	101	2.0	100	0	101	70 - 130				
2-Chlorotoluene	41.94	1.0	50	0	83.9	70 - 130				
2-Hexanone	96.39	2.0	100	0	96.4	70 - 130				
4-Chlorotoluene	50.16	1.0	50	0	100	70 - 130				
4-Isopropyltoluene	42.3	1.0	50	0	84.6	70 - 130				
4-Methyl-2-pentanone	91.9	2.0	100	0	91.9	70 - 130				
Acetone	116	2.0	100	0	116	70 - 130				
Benzene	45.31	1.0	50	0	90.6	70 - 127				
Bromobenzene	43.64	1.0	50	0	87.3	70 - 115				
Bromochloromethane	52.6	1.0	50	0	105	70 - 127				
Bromodichloromethane	50.86	1.0	50	0	102	70 - 124				
Bromoform	50.36	1.0	50	0	101	70 - 129				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306626 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS17111395-03MS** Units: **ug/L** Analysis Date: **05-Dec-2017 15:01**
Client ID: Run ID: **VOA2_306626** SeqNo: **4337307** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	32.23	1.0	50	0	64.5	70 - 130				S
Carbon disulfide	116.2	2.0	100	0	116	70 - 130				
Carbon tetrachloride	49.85	1.0	50	0	99.7	70 - 130				
Chlorobenzene	44.78	1.0	50	0	89.6	70 - 114				
Chloroethane	47.3	1.0	50	0	94.6	70 - 130				
Chloroform	45.49	1.0	50	0	91.0	70 - 125				
Chloromethane	36.52	1.0	50	0	73.0	70 - 130				
cis-1,2-Dichloroethene	52.96	1.0	50	0	106	70 - 128				
cis-1,3-Dichloropropene	50.31	1.0	50	0	101	70 - 125				
Dibromochloromethane	48.53	1.0	50	0	97.1	70 - 124				
Dibromomethane	47.93	1.0	50	0	95.9	70 - 124				
Dichlorodifluoromethane	45.3	1.0	50	0	90.6	70 - 130				
Ethylbenzene	45.64	1.0	50	0	91.3	70 - 124				
Hexachlorobutadiene	49.4	1.0	50	0	98.8	70 - 130				
Isopropylbenzene	48.32	1.0	50	0	96.6	70 - 130				
m,p-Xylene	87.22	2.0	100	0	87.2	70 - 130				
Methylene chloride	60.06	2.0	50	0	120	70 - 128				
Naphthalene	53.24	1.0	50	0	106	70 - 130				
n-Butylbenzene	43.69	1.0	50	0	87.4	70 - 130				
n-Propylbenzene	51.2	1.0	50	0	102	70 - 130				
o-Xylene	44.45	1.0	50	0	88.9	70 - 124				
sec-Butylbenzene	50.85	1.0	50	0	102	70 - 130				
Styrene	44.3	1.0	50	0	88.6	70 - 130				
tert-Butylbenzene	51.45	1.0	50	0	103	70 - 130				
Tetrachloroethene	47.74	1.0	50	0	95.5	70 - 130				
Toluene	44.05	1.0	50	0	88.1	70 - 123				
trans-1,2-Dichloroethene	66.15	1.0	50	0	132	70 - 130				S
trans-1,3-Dichloropropene	50.18	1.0	50	0	100	70 - 121				
Trichloroethene	50.19	1.0	50	0	100	70 - 129				
Trichlorofluoromethane	53.26	1.0	50	0	107	70 - 130				
Vinyl chloride	49.49	1.0	50	0	99.0	70 - 130				
Surr: 1,2-Dichloroethane-d4	*48.78*	*1.0*	*50*	*0*	*97.6*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*51*	*1.0*	*50*	*0*	*102*	*81 - 113*				
Surr: Dibromofluoromethane	*42.96*	*1.0*	*50*	*0*	*85.9*	*77 - 123*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306626 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS17111395-03MS** Units: **ug/L** Analysis Date: **05-Dec-2017 15:01**
Client ID: Run ID: **VOA2_306626** SeqNo: **4337307** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*50.54*	*1.0*	*50*	*0*	*101*	*82 - 127*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306626 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS17111395-03MSD** Units: **ug/L** Analysis Date: **05-Dec-2017 15:25**
Client ID: Run ID: **VOA2_306626** SeqNo: **4337308** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	47.9	1.0	50	0	95.8	70 - 120	47.9	0.00138	20	
1,1,1-Trichloroethane	51.29	1.0	50	0	103	70 - 130	50.96	0.657	20	
1,1,2,2-Tetrachloroethane	43.57	1.0	50	0	87.1	70 - 123	42.48	2.54	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	51.71	1.0	50	0	103	70 - 130	53.98	4.28	20	
1,1,2-Trichloroethane	53.52	1.0	50	5.088	96.9	70 - 117	48.11	10.6	20	
1,1-Dichloroethane	63.42	1.0	50	19.35	88.1	70 - 127	78.64	21.4	20	R
1,1-Dichloroethene	308.6	1.0	50	326.1	-35.1	70 - 130	322.9	4.55	20	SEO
1,1-Dichloropropene	45.5	1.0	50	0	91.0	70 - 129	46.77	2.76	20	
1,2,3-Trichlorobenzene	49.96	1.0	50	0	99.9	70 - 130	48.54	2.89	20	
1,2,3-Trichloropropane	44.7	1.0	50	0	89.4	70 - 130	43.51	2.71	20	
1,2,4-Trichlorobenzene	50.35	1.0	50	0	101	70 - 125	48.69	3.34	20	
1,2,4-Trimethylbenzene	50.17	1.0	50	0	100	70 - 125	50.57	0.793	20	
1,2-Dibromo-3-chloropropane	52.67	1.0	50	0	105	70 - 130	50.27	4.66	20	
1,2-Dibromoethane	44.78	1.0	50	0	89.6	70 - 124	43.63	2.61	20	
1,2-Dichlorobenzene	42.84	1.0	50	0	85.7	70 - 115	42.66	0.424	20	
1,2-Dichloroethane	80.73	1.0	50	31.85	97.7	70 - 127	73.34	9.59	20	
1,2-Dichloropropane	44.68	1.0	50	0	89.4	70 - 122	45.71	2.27	20	
1,3,5-Trimethylbenzene	51.86	1.0	50	0	104	70 - 126	51.82	0.0728	20	
1,3-Dichlorobenzene	42.82	1.0	50	0	85.6	70 - 119	42.76	0.148	20	
1,3-Dichloropropane	48.25	1.0	50	0	96.5	70 - 121	45.36	6.16	20	
1,4-Dichlorobenzene	41.29	1.0	50	0	82.6	70 - 114	41.25	0.0919	20	
2,2-Dichloropropane	50.57	1.0	50	0	101	70 - 130	54.82	8.07	20	
2-Butanone	96.44	2.0	100	0	96.4	70 - 130	101	4.58	20	
2-Chlorotoluene	41.8	1.0	50	0	83.6	70 - 130	41.94	0.332	20	
2-Hexanone	99.84	2.0	100	0	99.8	70 - 130	96.39	3.51	20	
4-Chlorotoluene	50.28	1.0	50	0	101	70 - 130	50.16	0.225	20	
4-Isopropyltoluene	42.25	1.0	50	0	84.5	70 - 130	42.3	0.118	20	
4-Methyl-2-pentanone	97.64	2.0	100	0	97.6	70 - 130	91.9	6.06	20	
Acetone	121.4	2.0	100	0	121	70 - 130	116	4.57	20	
Benzene	47.17	1.0	50	0	94.3	70 - 127	45.31	4.02	20	
Bromobenzene	43.15	1.0	50	0	86.3	70 - 115	43.64	1.13	20	
Bromochloromethane	50.33	1.0	50	0	101	70 - 127	52.6	4.41	20	
Bromodichloromethane	51.41	1.0	50	0	103	70 - 124	50.86	1.09	20	
Bromoform	54.07	1.0	50	0	108	70 - 129	50.36	7.12	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306626 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS17111395-03MSD** Units: **ug/L** Analysis Date: **05-Dec-2017 15:25**
Client ID: Run ID: **VOA2_306626** SeqNo: **4337308** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	35.03	1.0	50	0	70.1	70 - 130	32.23	8.32	20	
Carbon disulfide	114.2	2.0	100	0	114	70 - 130	116.2	1.75	20	
Carbon tetrachloride	50.57	1.0	50	0	101	70 - 130	49.85	1.44	20	
Chlorobenzene	43.97	1.0	50	0	87.9	70 - 114	44.78	1.83	20	
Chloroethane	47.16	1.0	50	0	94.3	70 - 130	47.3	0.294	20	
Chloroform	46.62	1.0	50	0	93.2	70 - 125	45.49	2.45	20	
Chloromethane	38.81	1.0	50	0	77.6	70 - 130	36.52	6.09	20	
cis-1,2-Dichloroethene	47.5	1.0	50	0	95.0	70 - 128	52.96	10.9	20	
cis-1,3-Dichloropropene	51.26	1.0	50	0	103	70 - 125	50.31	1.86	20	
Dibromochloromethane	48.89	1.0	50	0	97.8	70 - 124	48.53	0.749	20	
Dibromomethane	49.24	1.0	50	0	98.5	70 - 124	47.93	2.7	20	
Dichlorodifluoromethane	45.9	1.0	50	0	91.8	70 - 130	45.3	1.31	20	
Ethylbenzene	45.49	1.0	50	0	91.0	70 - 124	45.64	0.317	20	
Hexachlorobutadiene	51.79	1.0	50	0	104	70 - 130	49.4	4.73	20	
Isopropylbenzene	47.89	1.0	50	0	95.8	70 - 130	48.32	0.894	20	
m,p-Xylene	90.99	2.0	100	0	91.0	70 - 130	87.22	4.23	20	
Methylene chloride	43.74	2.0	50	0	87.5	70 - 128	60.06	31.4	20	R
Naphthalene	56.34	1.0	50	0	113	70 - 130	53.24	5.65	20	
n-Butylbenzene	43.73	1.0	50	0	87.5	70 - 130	43.69	0.0967	20	
n-Propylbenzene	50.66	1.0	50	0	101	70 - 130	51.2	1.06	20	
o-Xylene	45.31	1.0	50	0	90.6	70 - 124	44.45	1.91	20	
sec-Butylbenzene	51.09	1.0	50	0	102	70 - 130	50.85	0.486	20	
Styrene	45.57	1.0	50	0	91.1	70 - 130	44.3	2.82	20	
tert-Butylbenzene	51.63	1.0	50	0	103	70 - 130	51.45	0.347	20	
Tetrachloroethene	50.95	1.0	50	0	102	70 - 130	47.74	6.5	20	
Toluene	44.3	1.0	50	0	88.6	70 - 123	44.05	0.56	20	
trans-1,2-Dichloroethene	47.21	1.0	50	0	94.4	70 - 130	66.15	33.4	20	R
trans-1,3-Dichloropropene	52.21	1.0	50	0	104	70 - 121	50.18	3.98	20	
Trichloroethene	49.39	1.0	50	0	98.8	70 - 129	50.19	1.6	20	
Trichlorofluoromethane	52.79	1.0	50	0	106	70 - 130	53.26	0.886	20	
Vinyl chloride	50.25	1.0	50	0	101	70 - 130	49.49	1.52	20	
Surr: 1,2-Dichloroethane-d4	*49.97*	*1.0*	*50*	*0*	*99.9*	*70 - 126*	*48.78*	*2.4*	*20*	
Surr: 4-Bromofluorobenzene	*50.41*	*1.0*	*50*	*0*	*101*	*81 - 113*	*51*	*1.17*	*20*	
Surr: Dibromofluoromethane	*44.23*	*1.0*	*50*	*0*	*88.5*	*77 - 123*	*42.96*	*2.9*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: HS17111408

QC BATCH REPORT

Batch ID: R306626 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS17111395-03MSD** Units: **ug/L** Analysis Date: **05-Dec-2017 15:25**
Client ID: Run ID: **VOA2_306626** SeqNo: **4337308** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*51.48*	*1.0*	*50*	*0*	*103*	*82 - 127*	*50.54*	*1.84*	*20*	

The following samples were analyzed in this batch: HS17111408-02 HS17111408-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 07-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67
WorkOrder: **HS17111408**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	17-027-0	27-Mar-2018
California	2919 2016-2018	31-Jul-2018
Illinois	004112	09-May-2018
Kentucky	123043	30-Apr-2018
Louisiana	03087 2017-2017	30-Jun-2018
North Carolina	624-2017	31-Dec-2017
North Dakota	R193 2017-2017	30-Apr-2018
Oklahoma	2017-088	31-Aug-2018
Texas	T104704231-17-19	30-Apr-2018

ALS Group USA, Corp Date: 07-Dec-17

Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS17111408
Date/Time Received: **29-Nov-2017 09:00**
Received by: **JRM**

Checklist completed by: *Jared R. Makan* eSignature 29-Nov-2017 Date
Reviewed by: *Sonia West* eSignature 5-Dec-2017 Date

Matrices: **Water**
Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.1c/2.4c UC/C	IR11	
Cooler(s)/Kit(s):	Blue		
Date/Time sample(s) sent to storage:	11/29/017 18:10		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

APTIM

Page 1 of 1

COC ID: 67-NOV2017-GW-ALSHT- | TURNAROUND TIME: normal | RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name	Longhorn AAP			Lab Name	ALS Laboratories			Email Invoice To	FedInvoices@CBIFederalServices.com		
Project Number	501032			Lab Contact	Sonia West						
	LHAAP-67			Email	Sonia.West@alsglobal.com			Email Report To	Sharon.Pennington@CBIFederalServices.com		
Address	1203-B East Grand Avenue			Address	10450 Stancliff Rd., Suite 210			Mail Reports To	Sharon Pennington		
	PMB 202							Address	2410 Cherahala Blvd.		
City	Marshall	State	TX	City	Houston	State	TX	City	Knoxville	State	TN
Postal Code	75670	Country	USA	Postal Code	77099	Country	USA	Postal Code	37932	Country	USA
Phone Number	713.243.7264			Phone Number	281.575.2132 or 281.530.5656						
Project Manager	Praveen Srivastav							Shipping Company			

SAMPLE DETAILS / ANALYSIS REQUESTED

Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	ANALYSIS	VOCs in Water by 8260B	Dissolved Gases in Water by RSK175	Anions in Water by E300.0	TOC in Water by E415.1	TIC in Water by E415.1	Sulfide in Water by E376.1	1,4-Dioxane in Water by 8270DSIM			
67WW14-112717	LHAAP-67	20.51	20.75		WG	11/27/17	0830	4		X						X			
67WW15-112717	LHAAP-67	23.85	24.09		WG	11/27/17	0950	4		X						X			
67WW09-112717	LHAAP-67	22.06	22.29		WG	11/27/17	1040	4		X						X			
67WW11-112717	LHAAP-67	23.53	23.77		WG	11/27/17	1135	4		X						X			
67WW05-112817	LHAAP-67	25.60	25.60		WG	11/28/17	0755	4		X						X			
67WW02-112817	LHAAP-67	23.95	23.97		WG	11/28/17	0825	4		X						X			
67WW01-112817	LHAAP-67	25.95	25.99		WG	11/28/17	0845	4		X						X			
Trip Blank						11/28/17		2		X									

HS17111408

Aptim Environmental & Infrastucture, Inc.

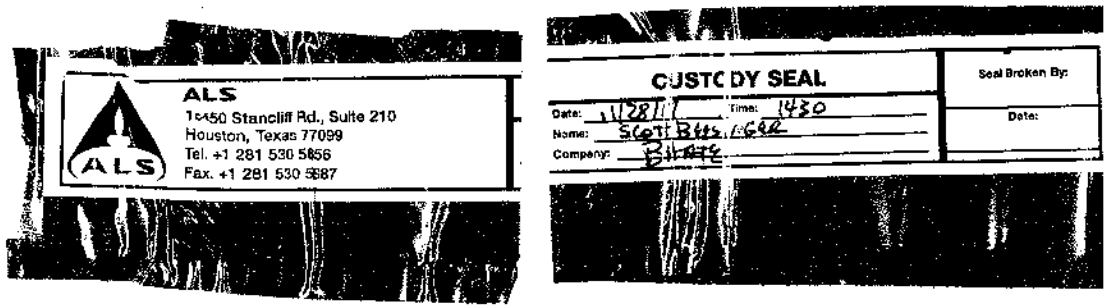
LHAAP-67

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Dissolved Gases should include Carbon dioxide, Ethane, Ethene, and Methane. Anions should include chloride, nitrate, nitrite, and sulfate.	Scott Blessinger / Battle	11/28/17 1430	RS	11/29/17 09:30

Cooler – Blue Temp 2.1 IR11 CF 0.2

00911792


FedEx
0221 7376 9749 9929
WED - 29 NOV 10:30A
PRIORITY OVERNIGHT
AB SGRA
77099
TX-US
IAH


ALS
1450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5856
Fax. +1 281 530 5887
CUSTODY SEAL
Seal Broken By:
Date: 11/28/11
Time: 1430
Name: SCOTT BLISS/GSR
Company: BLISS
Date:

00911793

ADR Data Validation Checklist
Semivolatile Organics by SW846 8270D

Project Name:	Longhorn AAP (LHAAP-12)	SDG/Report No.:	HS17111408
Project No.:	501032	Lab ID:	Empirical Labs
No. of Samples:	7 Originals & 0 FD	Matrix:	GW
1ST ADR / 2ND BY	SP		

Automated Data Review (ADR) was performed for all areas evaluate except Internal Standards. 2nd Review of these areas and retention times was performed manually and the results of the validation findings are identified in this report. It should also be noted that the ADR produces "Outlier Reports" for areas where anomalies are noted. If all QC criterions are met, no "Outlier Reports" are generated.

ADR Generated Reports:

EDD Nonconformance Report
Field QC and Associated Sample Report*
Outlier Reports
Sample Qualification Report with Reason Codes

SHAWVIEW Generated Reports:

QC Checkprint (QCVALDNT) Report

* Note: If field QC samples (i.e. ER, FB, etc.) are reported in another SDG, the SDG, blanks, detected contaminants, and associated samples are identified in the comment/discussion section provided below

All areas evaluated by **DoD_5.0** and/or SW846-8270 methods and the identification as to whether qualification is necessary is identified below:

Area Evaluated	ADR Outlier Reports	Qualification Necessary (ADR and Manual Validation)	
		YES	NO
1. Hold Time/Preservation.			X
2. DFTPP Tune			X
3. ICAL (RRF and/or 15%RSD)			X
4. CCAL opening (RRF and/or 20%D)			X
5. CCAL closing (%D<±50%)			X
6. Blanks (Method and/or Field QC)			X
7. LCS			X
8. Surrogates			X
9. MS/MSD			X
10. Field Duplicate			X
11. Internal Standards			X
12. Form1 vs Database/ADR			X

The following section is intended to specify areas evaluated and to provide an explanation (as applicable) for those areas where changes in ADR qualifiers were identified during the manual review and to provide an explanation (as applicable) for the need of additional qualifiers identified during the manual review.

Comments/Discussion:

ADR Data Validation Checklist
Semivolatile Organics by SW846 8270D

Associated samples (7): 67WW14-112717, 67WW15-112717, 67WW09-112717, 67WW11-112717, 67WW05-112817, 67WW02-112817, and 67WW01-112817
1. Hold Time/Preservation (QAPP - Worksheet#19/SW846/ASTM methods & EPA/600/R-05/124) .
No Qualifications Necessary
Rec'd <6°C; collected 11/27,28/2017; prepped 12/01/2017; analyzed 12/07/2017
2. DFTPP Tune (instr. performance criteria).
No Qualifications Necessary
3. ICAL (DoD_5.0≤15%RSD or R^2>0.99 and/ SW846 8270 RRF's: J/UJ < recommended criteria)
No Qualifications Necessary
4. ICV (20%D only) / CCAL opening (DoD_5.0/SW846 8270 %D≤20% and SW846 8270 RRF's; J/UJ < recommended criteria)
No Qualifications Necessary
5. Closing CCV (DoD_5.0: %D<±50%) (if applicable by lab)
No Qualification Necessary
6. Blanks "UB" 5X/10X (EPA Region 3&4: Method and/or Field QC)
No Qualifications Necessary
MB MBLK-122811 – Result was nondetect.
7. LCS (QAPP – Worksheet#12/#28)
No Qualification Necessary
LCS LCS-122811 – Criteria was met.
8. Surrogates (QAPP – Worksheet#12/#28);; (note: for water analysis, surrogate phenol-d6 is not listed in 5.0 and listed as advisory in 4.2)
No Qualifications Necessary
67WW02-112817 – 2-fluorobiphenyl (143%) slightly high %R but other 2 surrogates met criteria. No qualification.
9. MS/MSD (QAPP – Worksheet#12/#28; parent sample only)
No Qualifications Necessary
A client-specified MS/MSD was not included on this COC.
10. Field Duplicate (QAPP – Worksheet#35 - WATERS ≤20% / SOILS ≤50%)
(non-detect & result <RL or both <RL no qualifiers / non-detect & result >RL "J/UJ" qualifiers)

ADR Data Validation Checklist
Semivolatile Organics by SW846 8270D

No Qualifications Necessary
A client-specified FD was not included on this COC.
11.Internal Standards (DoD/QAPP – Worksheet#12/#28; -50% to +100% and RT ±0.5sec)
No Qualifications Necessary
12. Form 1 vs Database/ADR
Check laboratory's Form1 against Database; one sample per SDG per fraction; list sample number:
13. Multiple Results
No Qualifications Necessary

ADR Data Validation Checklist
Volatile Organics by SW846 8260C

Project Name:	LHAAP-67	SDG/Report No.:	HS17111408
Project No.:		Lab ID:	ALS-Houston
No. of Samples:	7 Originals & 0 FD	Matrix:	GW
1ST ADR / 2nd by	SP		

Automated Data Review (ADR) was performed for all areas evaluate except internal standards. 2ND Review of these areas was performed manually and the results of the validation findings are identified in this report. It should also be noted that the ADR produces "Outlier Reports" for areas where anomalies are noted. If all QC criterions are met, no "Outlier Reports" are generated.

ADR Generated Reports

EDD Nonconformance Report
Field QC and Associated Sample Report*
Outlier Reports
Sample Qualification Report with Reason Codes

EQUiS Generated Reports (Copies Attached):

QC Checkprint (QCVALDNT) Report

* Note: If field QC samples (i.e. TB, ER, FB, etc.) are reported in another SDG, the SDG, blanks, detected contaminants, and associated samples are identified in the comment/discussion section provided below

All areas evaluated by **DoD_5.0** and/or SW846 8260 methods and the identification as to whether qualification is necessary are identified below:

Area Evaluated	ADR Outlier Reports	Qualification Necessary (ADR and Manual Validation)	
		YES	NO
1. Hold Time/Preservation.			X
2. BFB Tune.			X
3. ICAL (RRF and/or %RSD)			X
4. CCAL opening (RRF and/or 20% D)			X
5. CCAL closing (%D<±50%)			X
6. Blanks (Method and/or Field QC)			X
7. LCS			X
8. Surrogates			X
9. MS/MSD			X
10. Field Duplicate			X
11. Internal Standards			X
12. Form1 vs Database/ADR			X

The following section is intended to specify areas evaluated and to provide an explanation (as applicable) for those areas where changes in ADR qualifiers were identified during the manual review and to provide an explanation (as applicable) for the need of additional qualifiers identified during the manual review.

Comments/Discussion:

Associated samples (7): 67WW14-112717, 67WW15-112717, 67WW09-112717, 67WW11-112717, 67WW05-112817, 67WW02-112817, and 67WW01-112817

ADR Data Validation Checklist
Volatile Organics by SW846 8260C

1. Hold Time/Preservation (QAPP - Worksheet#19/SW846/ASTM methods).
No Qualification Necessary
Rec'd <6°C; collected 11/27/2017; analyzed 12/3,5/2017
2. BFB Tune (instr. performance criteria)
No Qualification Necessary
3. ICAL (DoD: RSD≤15% or linear R^2≥0.99 and Avg RRF's; 2-butanone & acetone >0.05; J/UJ < recommended criteria)
No Qualification Necessary
4. ICV (20%D only) /CCAL opening (DoD: %D≤20% and/or SW846 8260 Table 4 Avg RRF's: J/UJ < recommended criteria)
No Qualification Necessary
5. Closing CCV (DoD_5.0: %D<±50%) (if applicable by lab)
No Qualification Necessary
6. Blanks "UB" 5X/10X (EPA Region 3&4: Method and/or Field QC)
No Qualification Necessary
TB 67TB01-112817 – Results are nondetect.
VBLKW-171202 – Results are nondetect.
VBLKW-171205 – Results are nondetect.
7. LCS (QAPP – Worksheet#12/#28)
No Qualification Necessary
VLCSW/LCSDW-171202 – Criteria were met.
VLCSW-171205 – Acetone (146%); Sample results were nondetect; Therefore, due to high bias, no qualification required.
8. Surrogates (QAPP - Worksheet#12/#28)
No Qualification Necessary – All recoveries were within acceptance criteria.
9. MS/MSD (DoD/QAPP – Worksheet#12/#28; parent sample only)
No Qualification Necessary
An MS/MSD was not included with these samples.

ADR Data Validation Checklist
Volatile Organics by SW846 8260C

Batch MS/MSD – %Rs: 1,1-Dichloroethene (-6.36%/-35.1%), Bromomethane (64.5%/ok), trans-1,2-Dichloroethene (132%/ok); RPDs: 1,1-Dichloroethane (21.4), Methylene chloride (31.4), trans-1,2-Dichloroethene (33.4%); Batch MS/MSD is not a sample in the COC; therefore no qualification required.

10. Field Duplicate (QAPP – Worksheet#12 - WATERS ≤20% / SOILS ≤50%)

(non-detect & result <RL or both <RL no qualifiers / non-detect & result >RL "J/UJ" qualifiers)

No Qualification Necessary – Criteria were met.

An FD was not included with these samples.

VOCs	Method	Units		LQ	FD	LQ	%RPD
	8260B	ug/kg					
	8260B	ug/kg					
	8260B	ug/kg					

11.Internal Standards (DoD/QAPP – Worksheet#12/#28; -50% to +100% and RT ±0.5sec)

No Qualification Necessary

12. Form 1 vs Database/ADR

Check laboratory's Form1 against Database; one sample per SDG per fraction; list sample number:

13. Multiple Results

No Qualification Necessary

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

WorkOrder: HS17120123

LHAAP-67 501032

Aptim Environmental & Infrastucture, Inc.

Jennifer Hoang
2500 City West Blvd., Suite 1700
Houston TX 77042

06-Feb-2018

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

December 11, 2017

Jennifer Hoang
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS17120123**

Laboratory Results for: **LHAAP-67 501032**

Dear Jennifer,

ALS Environmental received 8 sample(s) on Dec 01, 2017 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Sonia West

Generated By: Jumoke.Lawal
Sonia West
Project Manager

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
Work Order: HS17120123

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS17120123-01	67WW07-112917	Groundwater		29-Nov-2017 07:55	01-Dec-2017 08:50	☐
HS17120123-02	67WW06-112917	Groundwater		29-Nov-2017 08:50	01-Dec-2017 08:50	☐
HS17120123-03	67WW10-112917	Groundwater		29-Nov-2017 09:40	01-Dec-2017 08:50	☐
HS17120123-04	67WW09A-112917	Groundwater		29-Nov-2017 10:35	01-Dec-2017 08:50	☐
HS17120123-05	67WW12-112917	Groundwater		29-Nov-2017 11:25	01-Dec-2017 08:50	☐
HS17120123-06	67WW12-112917 FD	Groundwater		29-Nov-2017 11:25	01-Dec-2017 08:50	☐
HS17120123-07	67WW16-112917	Groundwater		29-Nov-2017 12:25	01-Dec-2017 08:50	☐
HS17120123-08	Trip Blank	Water		29-Nov-2017 00:00	01-Dec-2017 08:50	☐

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: LHAAP-67 501032
Work Order: HS17120123

Work Order Comments

- Sample 67WW13-112817-MS/MSD was received but not listed on the chain of custody. This sample was added to HS17111395-03 with the parent sample.

GCMS Semivolatiles by Method SW8270SIM

Batch ID: 122922

Sample ID: 67WW06-112917 (HS17120123-02)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: 67WW07-112917 (HS17120123-01)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: 67WW09A-112917 (HS17120123-04)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: 67WW10-112917 (HS17120123-03)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: 67WW12-112917 (HS17120123-05)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: 67WW12-112917 FD (HS17120123-06)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: 67WW16-112917 (HS17120123-07)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: LCS-122922

- High %R for surrogate 2-Fluorobiphenyl, it is not associated with target compound.

Sample ID: MBLK-122922

- High %R for surrogate 2-Fluorobiphenyl, it is not associated with target compound.

GCMS Volatiles by Method SW8260

Batch ID: R306828

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
Sample ID: 67WW07-112917
Collection Date: 29-Nov-2017 07:55

ANALYTICAL REPORT
WorkOrder:HS17120123
Lab ID:HS17120123-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 17:47
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:47
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	08-Dec-2017 17:47
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	08-Dec-2017 17:47
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 17:47
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	08-Dec-2017 17:47
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	08-Dec-2017 17:47
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	08-Dec-2017 17:47
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
Sample ID: 67WW07-112917
Collection Date: 29-Nov-2017 07:55

ANALYTICAL REPORT
WorkOrder:HS17120123
Lab ID:HS17120123-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:47
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:47
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	08-Dec-2017 17:47
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	08-Dec-2017 17:47
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 17:47
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:47
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:47
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Surr: 1,2-Dichloroethane-d4	*91.6*			**0**	*70-126*	*%REC*	*1*	*08-Dec-2017 17:47*
Surr: 4-Bromofluorobenzene	*101*			**0**	*81-113*	*%REC*	*1*	*08-Dec-2017 17:47*
Surr: Dibromofluoromethane	*90.3*			**0**	*77-123*	*%REC*	*1*	*08-Dec-2017 17:47*
Surr: Toluene-d8	*104*			**0**	*82-127*	*%REC*	*1*	*08-Dec-2017 17:47*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 05-Dec-2017		Analyst: ACN
1,4-Dioxane	**0.53**		**0.10**	**0.10**	**0.10**	**ug/L**	10	06-Dec-2017 00:16
Surr: 2-Fluorobiphenyl	*124*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 00:16*
Surr: 4-Terphenyl-d14	*90.0*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 00:16*
Surr: Nitrobenzene-d5	*74.3*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 00:16*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
Sample ID: 67WW06-112917
Collection Date: 29-Nov-2017 08:50

ANALYTICAL REPORT
WorkOrder:HS17120123
Lab ID:HS17120123-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:12
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 18:12
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 18:12
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:12
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:12
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 18:12
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 18:12
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 18:12
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	08-Dec-2017 18:12
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:12
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 18:12
1,2-Dichloroethane	**1.00**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	08-Dec-2017 18:12
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 18:12
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 18:12
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 18:12
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:12
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	08-Dec-2017 18:12
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	08-Dec-2017 18:12
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 18:12
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	08-Dec-2017 18:12
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	08-Dec-2017 18:12
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	08-Dec-2017 18:12
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
Sample ID: 67WW06-112917
Collection Date: 29-Nov-2017 08:50

ANALYTICAL REPORT
WorkOrder:HS17120123
Lab ID:HS17120123-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:12
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:12
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	08-Dec-2017 18:12
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	08-Dec-2017 18:12
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 18:12
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:12
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:12
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Surr: 1,2-Dichloroethane-d4	*91.2*			**0**	*70-126*	*%REC*	*1*	*08-Dec-2017 18:12*
Surr: 4-Bromofluorobenzene	*98.9*			**0**	*81-113*	*%REC*	*1*	*08-Dec-2017 18:12*
Surr: Dibromofluoromethane	*91.5*			**0**	*77-123*	*%REC*	*1*	*08-Dec-2017 18:12*
Surr: Toluene-d8	*104*			**0**	*82-127*	*%REC*	*1*	*08-Dec-2017 18:12*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 05-Dec-2017		Analyst: ACN
1,4-Dioxane	**1.7**		**0.10**	**0.10**	**0.10**	**ug/L**	10	06-Dec-2017 00:36
Surr: 2-Fluorobiphenyl	*124*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 00:36*
Surr: 4-Terphenyl-d14	*99.0*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 00:36*
Surr: Nitrobenzene-d5	*76.3*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 00:36*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
Sample ID: 67WW10-112917
Collection Date: 29-Nov-2017 09:40

ANALYTICAL REPORT
WorkOrder:HS17120123
Lab ID:HS17120123-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 18:36
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:36
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	08-Dec-2017 18:36
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	08-Dec-2017 18:36
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 18:36
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	08-Dec-2017 18:36
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	08-Dec-2017 18:36
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	08-Dec-2017 18:36
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
Sample ID: 67WW10-112917
Collection Date: 29-Nov-2017 09:40

ANALYTICAL REPORT
WorkOrder:HS17120123
Lab ID:HS17120123-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:36
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:36
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	08-Dec-2017 18:36
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	08-Dec-2017 18:36
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 18:36
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:36
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:36
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Surr: 1,2-Dichloroethane-d4	*92.1*			**0**	*70-126*	*%REC*	*1*	*08-Dec-2017 18:36*
Surr: 4-Bromofluorobenzene	*100*			**0**	*81-113*	*%REC*	*1*	*08-Dec-2017 18:36*
Surr: Dibromofluoromethane	*90.4*			**0**	*77-123*	*%REC*	*1*	*08-Dec-2017 18:36*
Surr: Toluene-d8	*104*			**0**	*82-127*	*%REC*	*1*	*08-Dec-2017 18:36*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 05-Dec-2017		Analyst: ACN
1,4-Dioxane	**0.23**		**0.10**	**0.10**	**0.10**	**ug/L**	10	06-Dec-2017 00:57
Surr: 2-Fluorobiphenyl	*117*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 00:57*
Surr: 4-Terphenyl-d14	*77.4*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 00:57*
Surr: Nitrobenzene-d5	*69.5*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 00:57*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
Sample ID: 67WW09A-112917
Collection Date: 29-Nov-2017 10:35

ANALYTICAL REPORT
WorkOrder:HS17120123
Lab ID:HS17120123-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:01
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:01
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	08-Dec-2017 19:01
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	08-Dec-2017 19:01
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:01
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	08-Dec-2017 19:01
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	08-Dec-2017 19:01
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	08-Dec-2017 19:01
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
Sample ID: 67WW09A-112917
Collection Date: 29-Nov-2017 10:35

ANALYTICAL REPORT
WorkOrder:HS17120123
Lab ID:HS17120123-04
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:01
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:01
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	08-Dec-2017 19:01
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	08-Dec-2017 19:01
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:01
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:01
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:01
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Surr: 1,2-Dichloroethane-d4	*90.7*			**0**	*70-126*	*%REC*	*1*	*08-Dec-2017 19:01*
Surr: 4-Bromofluorobenzene	*101*			**0**	*81-113*	*%REC*	*1*	*08-Dec-2017 19:01*
Surr: Dibromofluoromethane	*89.3*			**0**	*77-123*	*%REC*	*1*	*08-Dec-2017 19:01*
Surr: Toluene-d8	*103*			**0**	*82-127*	*%REC*	*1*	*08-Dec-2017 19:01*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 05-Dec-2017		Analyst: ACN
1,4-Dioxane	**3.6**		**0.10**	**0.10**	**0.10**	**ug/L**	10	06-Dec-2017 01:17
Surr: 2-Fluorobiphenyl	*106*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 01:17*
Surr: 4-Terphenyl-d14	*78.5*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 01:17*
Surr: Nitrobenzene-d5	*68.4*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 01:17*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
Sample ID: 67WW12-112917
Collection Date: 29-Nov-2017 11:25

ANALYTICAL REPORT
WorkOrder:HS17120123
Lab ID:HS17120123-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:25
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:25
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:25
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:25
1,1-Dichloroethene	**2.2**		**0.20**	**0.50**	**1.0**	**ug/L**	1	08-Dec-2017 19:25
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:25
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:25
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:25
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	08-Dec-2017 19:25
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:25
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:25
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:25
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:25
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:25
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:25
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:25
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	08-Dec-2017 19:25
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	08-Dec-2017 19:25
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:25
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	08-Dec-2017 19:25
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	08-Dec-2017 19:25
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	08-Dec-2017 19:25
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
Sample ID: 67WW12-112917
Collection Date: 29-Nov-2017 11:25

ANALYTICAL REPORT
WorkOrder:HS17120123
Lab ID:HS17120123-05
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:25
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:25
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	08-Dec-2017 19:25
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	08-Dec-2017 19:25
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:25
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:25
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:25
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Surr: 1,2-Dichloroethane-d4	*91.1*			**0**	*70-126*	*%REC*	*1*	*08-Dec-2017 19:25*
Surr: 4-Bromofluorobenzene	*98.8*			**0**	*81-113*	*%REC*	*1*	*08-Dec-2017 19:25*
Surr: Dibromofluoromethane	*91.6*			**0**	*77-123*	*%REC*	*1*	*08-Dec-2017 19:25*
Surr: Toluene-d8	*103*			**0**	*82-127*	*%REC*	*1*	*08-Dec-2017 19:25*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 05-Dec-2017		Analyst: ACN
1,4-Dioxane	**0.60**		**0.10**	**0.10**	**0.10**	**ug/L**	10	06-Dec-2017 01:38
Surr: 2-Fluorobiphenyl	*125*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 01:38*
Surr: 4-Terphenyl-d14	*70.8*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 01:38*
Surr: Nitrobenzene-d5	*71.2*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 01:38*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
Sample ID: 67WW12-112917 FD
Collection Date: 29-Nov-2017 11:25

ANALYTICAL REPORT
WorkOrder:HS17120123
Lab ID:HS17120123-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:50
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:50
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:50
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:50
1,1-Dichloroethene	**1.8**		**0.20**	**0.50**	**1.0**	**ug/L**	1	08-Dec-2017 19:50
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:50
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:50
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:50
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	08-Dec-2017 19:50
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:50
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:50
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:50
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:50
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:50
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:50
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:50
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	08-Dec-2017 19:50
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	08-Dec-2017 19:50
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:50
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	08-Dec-2017 19:50
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	08-Dec-2017 19:50
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	08-Dec-2017 19:50
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
Sample ID: 67WW12-112917 FD
Collection Date: 29-Nov-2017 11:25

ANALYTICAL REPORT
WorkOrder:HS17120123
Lab ID:HS17120123-06
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:50
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:50
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	08-Dec-2017 19:50
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	08-Dec-2017 19:50
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:50
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:50
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:50
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Surr: 1,2-Dichloroethane-d4	*90.6*			**0**	*70-126*	*%REC*	*1*	*08-Dec-2017 19:50*
Surr: 4-Bromofluorobenzene	*98.6*			**0**	*81-113*	*%REC*	*1*	*08-Dec-2017 19:50*
Surr: Dibromofluoromethane	*89.4*			**0**	*77-123*	*%REC*	*1*	*08-Dec-2017 19:50*
Surr: Toluene-d8	*103*			**0**	*82-127*	*%REC*	*1*	*08-Dec-2017 19:50*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 05-Dec-2017		Analyst: ACN
1,4-Dioxane	**0.48**		**0.10**	**0.10**	**0.10**	**ug/L**	10	06-Dec-2017 01:58
Surr: 2-Fluorobiphenyl	*113*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 01:58*
Surr: 4-Terphenyl-d14	*86.0*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 01:58*
Surr: Nitrobenzene-d5	*69.7*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 01:58*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
Sample ID: 67WW16-112917
Collection Date: 29-Nov-2017 12:25

ANALYTICAL REPORT
WorkOrder:HS17120123
Lab ID:HS17120123-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 20:15
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 20:15
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	08-Dec-2017 20:15
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	08-Dec-2017 20:15
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 20:15
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	08-Dec-2017 20:15
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	08-Dec-2017 20:15
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	08-Dec-2017 20:15
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
Sample ID: 67WW16-112917
Collection Date: 29-Nov-2017 12:25

ANALYTICAL REPORT
WorkOrder:HS17120123
Lab ID:HS17120123-07
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 20:15
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 20:15
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	08-Dec-2017 20:15
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	08-Dec-2017 20:15
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 20:15
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 20:15
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 20:15
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Surr: 1,2-Dichloroethane-d4	*90.6*			**0**	*70-126*	*%REC*	*1*	*08-Dec-2017 20:15*
Surr: 4-Bromofluorobenzene	*99.8*			**0**	*81-113*	*%REC*	*1*	*08-Dec-2017 20:15*
Surr: Dibromofluoromethane	*90.2*			**0**	*77-123*	*%REC*	*1*	*08-Dec-2017 20:15*
Surr: Toluene-d8	*103*			**0**	*82-127*	*%REC*	*1*	*08-Dec-2017 20:15*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 05-Dec-2017		Analyst: ACN
1,4-Dioxane	**0.33**		**0.10**	**0.10**	**0.10**	**ug/L**	10	06-Dec-2017 02:19
Surr: 2-Fluorobiphenyl	*112*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 02:19*
Surr: 4-Terphenyl-d14	*102*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 02:19*
Surr: Nitrobenzene-d5	*59.4*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 02:19*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
Sample ID: Trip Blank
Collection Date: 29-Nov-2017 00:00

ANALYTICAL REPORT
WorkOrder:HS17120123
Lab ID:HS17120123-08
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 17:22
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:22
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	08-Dec-2017 17:22
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	08-Dec-2017 17:22
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 17:22
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	08-Dec-2017 17:22
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	08-Dec-2017 17:22
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	08-Dec-2017 17:22
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
Sample ID: Trip Blank
Collection Date: 29-Nov-2017 00:00

ANALYTICAL REPORT
WorkOrder:HS17120123
Lab ID:HS17120123-08
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:22
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:22
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	08-Dec-2017 17:22
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	08-Dec-2017 17:22
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 17:22
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:22
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:22
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Surr: 1,2-Dichloroethane-d4	*91.5*			**0**	*70-126*	*%REC*	*1*	*08-Dec-2017 17:22*
Surr: 4-Bromofluorobenzene	*98.8*			**0**	*81-113*	*%REC*	*1*	*08-Dec-2017 17:22*
Surr: Dibromofluoromethane	*88.2*			**0**	*77-123*	*%REC*	*1*	*08-Dec-2017 17:22*
Surr: Toluene-d8	*104*			**0**	*82-127*	*%REC*	*1*	*08-Dec-2017 17:22*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp

Date: 11-Dec-17

WEIGHT LOG

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
WorkOrder: HS17120123

Batch ID: 122922 **Method:** SEMIVOLATILES SIM **Prep:** 3510_B_SIM

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS17120123-01	1	1000	1 (mL)	0.001
HS17120123-02	1	990	1 (mL)	0.00101
HS17120123-03	1	1000	1 (mL)	0.001
HS17120123-04	1	1000	1 (mL)	0.001
HS17120123-05	1	1000	1 (mL)	0.001
HS17120123-06	1	1000	1 (mL)	0.001
HS17120123-07	1	1000	1 (mL)	0.001

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
WorkOrder: HS17120123

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 122922	**Test Name :** SEMIVOLATILES SIM			**Matrix:** Groundwater		
HS17120123-01	67WW07-112917	29 Nov 2017 07:55		05 Dec 2017 08:32	06 Dec 2017 00:16	10
HS17120123-02	67WW06-112917	29 Nov 2017 08:50		05 Dec 2017 08:32	06 Dec 2017 00:36	10
HS17120123-03	67WW10-112917	29 Nov 2017 09:40		05 Dec 2017 08:32	06 Dec 2017 00:57	10
HS17120123-04	67WW09A-112917	29 Nov 2017 10:35		05 Dec 2017 08:32	06 Dec 2017 01:17	10
HS17120123-05	67WW12-112917	29 Nov 2017 11:25		05 Dec 2017 08:32	06 Dec 2017 01:38	10
HS17120123-06	67WW12-112917 FD	29 Nov 2017 11:25		05 Dec 2017 08:32	06 Dec 2017 01:58	10
HS17120123-07	67WW16-112917	29 Nov 2017 12:25		05 Dec 2017 08:32	06 Dec 2017 02:19	10
Batch ID R306828	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS17120123-08	Trip Blank	29 Nov 2017 00:00			08 Dec 2017 17:22	1
Batch ID R306828	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Groundwater		
HS17120123-01	67WW07-112917	29 Nov 2017 07:55			08 Dec 2017 17:47	1
HS17120123-02	67WW06-112917	29 Nov 2017 08:50			08 Dec 2017 18:12	1
HS17120123-03	67WW10-112917	29 Nov 2017 09:40			08 Dec 2017 18:36	1
HS17120123-04	67WW09A-112917	29 Nov 2017 10:35			08 Dec 2017 19:01	1
HS17120123-05	67WW12-112917	29 Nov 2017 11:25			08 Dec 2017 19:25	1
HS17120123-06	67WW12-112917 FD	29 Nov 2017 11:25			08 Dec 2017 19:50	1
HS17120123-07	67WW16-112917	29 Nov 2017 12:25			08 Dec 2017 20:15	1

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
WorkOrder: HS17120123

QC BATCH REPORT

Batch ID: 122922 **Instrument: SV-5** **Method: SW8270SIM**

MBLK Sample ID: **MBLK-122922** Units: **ug/L** Analysis Date: **05-Dec-2017 18:27**
Client ID: Run ID: **SV-5_306676** SeqNo: **4339057** PrepDate: **05-Dec-2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.010	0.010								U
Surr: 2-Fluorobiphenyl	*0.1156*	*0*	*0.08*	*0*	*145*	*40 - 140*				S
Surr: 4-Terphenyl-d14	*0.09665*	*0*	*0.08*	*0*	*121*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.06716*	*0*	*0.08*	*0*	*84.0*	*40 - 140*				

LCS Sample ID: **LCS-122922** Units: **ug/L** Analysis Date: **05-Dec-2017 18:47**
Client ID: Run ID: **SV-5_306676** SeqNo: **4339058** PrepDate: **05-Dec-2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.08265	0.010	0.08	0	103	40 - 140				
Surr: 2-Fluorobiphenyl	*0.1238*	*0*	*0.08*	*0*	*155*	*40 - 140*				S
Surr: 4-Terphenyl-d14	*0.09844*	*0*	*0.08*	*0*	*123*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.07006*	*0*	*0.08*	*0*	*87.6*	*40 - 140*				

LCSD Sample ID: **LCSD-122922** Units: **ug/L** Analysis Date: **05-Dec-2017 19:08**
Client ID: Run ID: **SV-5_306676** SeqNo: **4339059** PrepDate: **05-Dec-2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.0875	0.010	0.08	0	109	40 - 140	0.08265	5.7	20	
Surr: 2-Fluorobiphenyl	*0.1027*	*0*	*0.08*	*0*	*128*	*40 - 140*	*0.1238*	*18.6*	*20*	
Surr: 4-Terphenyl-d14	*0.108*	*0*	*0.08*	*0*	*135*	*40 - 140*	*0.09844*	*9.23*	*20*	
Surr: Nitrobenzene-d5	*0.0718*	*0*	*0.08*	*0*	*89.8*	*40 - 140*	*0.07006*	*2.46*	*20*	

The following samples were analyzed in this batch: HS17120123-01 HS17120123-02 HS17120123-03 HS17120123-04 HS17120123-05 HS17120123-06 HS17120123-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
WorkOrder: HS17120123

QC BATCH REPORT

Batch ID: R306828 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-171208** Units: **ug/L** Analysis Date: **08-Dec-2017 12:25**
Client ID: Run ID: **VOA2_306828** SeqNo: **4342590** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
WorkOrder: HS17120123

QC BATCH REPORT

Batch ID: R306828 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-171208** Units: **ug/L** Analysis Date: **08-Dec-2017 12:25**
Client ID: Run ID: **VOA2_306828** SeqNo: **4342590** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	0.50	1.0								U
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	0.50	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*44.8*	*1.0*	*50*	*0*	*89.6*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*49.31*	*1.0*	*50*	*0*	*98.6*	*82 - 115*				
Surr: Dibromofluoromethane	*45.2*	*1.0*	*50*	*0*	*90.4*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
WorkOrder: HS17120123

QC BATCH REPORT

Batch ID: R306828 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-171208** Units: **ug/L** Analysis Date: **08-Dec-2017 12:25**
Client ID: Run ID: **VOA2_306828** SeqNo: **4342590** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*51.16*	*1.0*	*50*	*0*	*102*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
WorkOrder: HS17120123

QC BATCH REPORT

Batch ID: R306828 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-171208** Units: **ug/L** Analysis Date: **08-Dec-2017 11:11**
Client ID: Run ID: **VOA2_306828** SeqNo: **4342587** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	49.41	1.0	50	0	98.8	77 - 118				
1,1,1-Trichloroethane	48.7	1.0	50	0	97.4	70 - 130				
1,1,2,2-Tetrachloroethane	49.52	1.0	50	0	99.0	70 - 120				
1,1,2-Trichlor-1,2,2-trifluoroethane	46.65	1.0	50	0	93.3	70 - 130				
1,1,2-Trichloroethane	48.52	1.0	50	0	97.0	77 - 113				
1,1-Dichloroethane	48.58	1.0	50	0	97.2	71 - 122				
1,1-Dichloroethene	43.31	1.0	50	0	86.6	70 - 130				
1,1-Dichloropropene	46.28	1.0	50	0	92.6	78 - 118				
1,2,3-Trichlorobenzene	57.06	1.0	50	0	114	70 - 130				
1,2,3-Trichloropropane	50.15	1.0	50	0	100	70 - 127				
1,2,4-Trichlorobenzene	57.88	1.0	50	0	116	77 - 126				
1,2,4-Trimethylbenzene	55.49	1.0	50	0	111	73 - 121				
1,2-Dibromo-3-chloropropane	58.01	1.0	50	0	116	70 - 130				
1,2-Dibromoethane	49.06	1.0	50	0	98.1	76 - 123				
1,2-Dichlorobenzene	47.28	1.0	50	0	94.6	77 - 113				
1,2-Dichloroethane	47.34	1.0	50	0	94.7	70 - 124				
1,2-Dichloropropane	48.66	1.0	50	0	97.3	72 - 119				
1,3,5-Trimethylbenzene	55.57	1.0	50	0	111	75 - 118				
1,3-Dichlorobenzene	46.79	1.0	50	0	93.6	78 - 118				
1,3-Dichloropropane	48.53	1.0	50	0	97.1	75 - 116				
1,4-Dichlorobenzene	45.38	1.0	50	0	90.8	79 - 113				
2,2-Dichloropropane	51.94	1.0	50	0	104	70 - 130				
2-Butanone	113.7	2.0	100	0	114	70 - 130				
2-Chlorotoluene	45.07	1.0	50	0	90.1	70 - 128				
2-Hexanone	109.5	2.0	100	0	110	70 - 130				
4-Chlorotoluene	54.15	1.0	50	0	108	74 - 126				
4-Isopropyltoluene	45.8	1.0	50	0	91.6	74 - 126				
4-Methyl-2-pentanone	102.7	2.0	100	0	103	70 - 130				
Acetone	114.1	2.0	100	0	114	70 - 130				
Benzene	47.64	1.0	50	0	95.3	74 - 120				
Bromobenzene	46.62	1.0	50	0	93.2	78 - 113				
Bromochloromethane	54.24	1.0	50	0	108	76 - 124				
Bromodichloromethane	52.07	1.0	50	0	104	74 - 122				
Bromoform	56.5	1.0	50	0	113	73 - 128				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
WorkOrder: HS17120123

QC BATCH REPORT

Batch ID: R306828 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-171208** Units: **ug/L** Analysis Date: **08-Dec-2017 11:11**
Client ID: Run ID: **VOA2_306828** SeqNo: **4342587** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	41.1	1.0	50	0	82.2	70 - 130				
Carbon disulfide	94.07	2.0	100	0	94.1	70 - 130				
Carbon tetrachloride	45.64	1.0	50	0	91.3	71 - 125				
Chlorobenzene	47.38	1.0	50	0	94.8	76 - 113				
Chloroethane	40.12	1.0	50	0	80.2	70 - 130				
Chloroform	47.57	1.0	50	0	95.1	71 - 121				
Chloromethane	42.03	1.0	50	0	84.1	70 - 129				
cis-1,2-Dichloroethene	50.03	1.0	50	0	100	75 - 122				
cis-1,3-Dichloropropene	53.99	1.0	50	0	108	73 - 127				
Dibromochloromethane	51.69	1.0	50	0	103	77 - 122				
Dibromomethane	52.66	1.0	50	0	105	78 - 121				
Dichlorodifluoromethane	41.36	1.0	50	0	82.7	70 - 130				
Ethylbenzene	48.07	1.0	50	0	96.1	77 - 117				
Hexachlorobutadiene	54.3	1.0	50	0	109	70 - 130				
Isopropylbenzene	50.56	1.0	50	0	101	73 - 127				
m,p-Xylene	92.75	2.0	100	0	92.7	77 - 122				
Methylene chloride	47.93	2.0	50	0	95.9	70 - 127				
Naphthalene	61.51	1.0	50	0	123	70 - 130				
n-Butylbenzene	49.6	1.0	50	0	99.2	72 - 130				
n-Propylbenzene	54.17	1.0	50	0	108	73 - 124				
o-Xylene	48.11	1.0	50	0	96.2	75 - 119				
sec-Butylbenzene	54.73	1.0	50	0	109	73 - 128				
Styrene	48.16	1.0	50	0	96.3	72 - 126				
tert-Butylbenzene	54.83	1.0	50	0	110	73 - 124				
Tetrachloroethene	48.24	1.0	50	0	96.5	76 - 119				
Toluene	45.96	1.0	50	0	91.9	77 - 118				
trans-1,2-Dichloroethene	50.27	1.0	50	0	101	72 - 127				
trans-1,3-Dichloropropene	55.23	1.0	50	0	110	77 - 119				
Trichloroethene	49.82	1.0	50	0	99.6	77 - 121				
Trichlorofluoromethane	42.95	1.0	50	0	85.9	70 - 130				
Vinyl chloride	44.98	1.0	50	0	90.0	70 - 130				
Surr: 1,2-Dichloroethane-d4	*46.57*	*1.0*	*50*	*0*	*93.1*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*50.9*	*1.0*	*50*	*0*	*102*	*82 - 115*				
Surr: Dibromofluoromethane	*43.17*	*1.0*	*50*	*0*	*86.3*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
WorkOrder: HS17120123

QC BATCH REPORT

Batch ID: R306828 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-171208** Units: **ug/L** Analysis Date: **08-Dec-2017 11:11**
Client ID: Run ID: **VOA2_306828** SeqNo: **4342587** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*49.83*	*1.0*	*50*	*0*	*99.7*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
WorkOrder: HS17120123

QC BATCH REPORT

Batch ID: R306828 **Instrument: VOA2** **Method: SW8260**

LCSD Sample ID: **VLCSDW-171208** Units: **ug/L** Analysis Date: **08-Dec-2017 11:36**
Client ID: Run ID: **VOA2_306828** SeqNo: **4342588** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	48.4	1.0	50	0	96.8	77 - 118	49.41	2.07	20	
1,1,1-Trichloroethane	48.71	1.0	50	0	97.4	70 - 130	48.7	0.0157	20	
1,1,2,2-Tetrachloroethane	48.38	1.0	50	0	96.8	70 - 120	49.52	2.33	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	45.52	1.0	50	0	91.0	70 - 130	46.65	2.46	20	
1,1,2-Trichloroethane	47.08	1.0	50	0	94.2	77 - 113	48.52	3.01	20	
1,1-Dichloroethane	47.38	1.0	50	0	94.8	71 - 122	48.58	2.5	20	
1,1-Dichloroethene	41.04	1.0	50	0	82.1	70 - 130	43.31	5.38	20	
1,1-Dichloropropene	44.93	1.0	50	0	89.9	78 - 118	46.28	2.96	20	
1,2,3-Trichlorobenzene	57.25	1.0	50	0	114	70 - 130	57.06	0.334	20	
1,2,3-Trichloropropane	49.65	1.0	50	0	99.3	70 - 127	50.15	1.02	20	
1,2,4-Trichlorobenzene	56.7	1.0	50	0	113	77 - 126	57.88	2.06	20	
1,2,4-Trimethylbenzene	54.25	1.0	50	0	109	73 - 121	55.49	2.25	20	
1,2-Dibromo-3-chloropropane	55.82	1.0	50	0	112	70 - 130	58.01	3.85	20	
1,2-Dibromoethane	48.2	1.0	50	0	96.4	76 - 123	49.06	1.77	20	
1,2-Dichlorobenzene	46.64	1.0	50	0	93.3	77 - 113	47.28	1.36	20	
1,2-Dichloroethane	48.32	1.0	50	0	96.6	70 - 124	47.34	2.03	20	
1,2-Dichloropropane	48.1	1.0	50	0	96.2	72 - 119	48.66	1.15	20	
1,3,5-Trimethylbenzene	53.92	1.0	50	0	108	75 - 118	55.57	3.01	20	
1,3-Dichlorobenzene	45.77	1.0	50	0	91.5	78 - 118	46.79	2.21	20	
1,3-Dichloropropane	48.01	1.0	50	0	96.0	75 - 116	48.53	1.09	20	
1,4-Dichlorobenzene	44.84	1.0	50	0	89.7	79 - 113	45.38	1.22	20	
2,2-Dichloropropane	49.75	1.0	50	0	99.5	70 - 130	51.94	4.3	20	
2-Butanone	106.7	2.0	100	0	107	70 - 130	113.7	6.38	20	
2-Chlorotoluene	43.59	1.0	50	0	87.2	70 - 128	45.07	3.34	20	
2-Hexanone	106	2.0	100	0	106	70 - 130	109.5	3.29	20	
4-Chlorotoluene	51.86	1.0	50	0	104	74 - 126	54.15	4.33	20	
4-Isopropyltoluene	44.37	1.0	50	0	88.7	74 - 126	45.8	3.16	20	
4-Methyl-2-pentanone	101	2.0	100	0	101	70 - 130	102.7	1.61	20	
Acetone	109	2.0	100	0	109	70 - 130	114.1	4.53	20	
Benzene	47.31	1.0	50	0	94.6	74 - 120	47.64	0.708	20	
Bromobenzene	45.39	1.0	50	0	90.8	78 - 113	46.62	2.68	20	
Bromochloromethane	53.29	1.0	50	0	107	76 - 124	54.24	1.78	20	
Bromodichloromethane	52.47	1.0	50	0	105	74 - 122	52.07	0.761	20	
Bromoform	54.37	1.0	50	0	109	73 - 128	56.5	3.85	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
WorkOrder: HS17120123

QC BATCH REPORT

Batch ID: R306828 **Instrument: VOA2** **Method: SW8260**

LCSD Sample ID: **VLCSDW-171208** Units: **ug/L** Analysis Date: **08-Dec-2017 11:36**
Client ID: Run ID: **VOA2_306828** SeqNo: **4342588** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	39.66	1.0	50	0	79.3	70 - 130	41.1	3.56	20	
Carbon disulfide	90.14	2.0	100	0	90.1	70 - 130	94.07	4.27	20	
Carbon tetrachloride	44.47	1.0	50	0	88.9	71 - 125	45.64	2.6	20	
Chlorobenzene	45.51	1.0	50	0	91.0	76 - 113	47.38	4.02	20	
Chloroethane	38.42	1.0	50	0	76.8	70 - 130	40.12	4.33	20	
Chloroform	45.89	1.0	50	0	91.8	71 - 121	47.57	3.59	20	
Chloromethane	40.8	1.0	50	0	81.6	70 - 129	42.03	2.98	20	
cis-1,2-Dichloroethene	48.29	1.0	50	0	96.6	75 - 122	50.03	3.53	20	
cis-1,3-Dichloropropene	53.81	1.0	50	0	108	73 - 127	53.99	0.335	20	
Dibromochloromethane	50.68	1.0	50	0	101	77 - 122	51.69	1.97	20	
Dibromomethane	52.42	1.0	50	0	105	78 - 121	52.66	0.468	20	
Dichlorodifluoromethane	38.58	1.0	50	0	77.2	70 - 130	41.36	6.97	20	
Ethylbenzene	46.78	1.0	50	0	93.6	77 - 117	48.07	2.74	20	
Hexachlorobutadiene	54.06	1.0	50	0	108	70 - 130	54.3	0.442	20	
Isopropylbenzene	48.86	1.0	50	0	97.7	73 - 127	50.56	3.41	20	
m,p-Xylene	90.06	2.0	100	0	90.1	77 - 122	92.75	2.94	20	
Methylene chloride	47.28	2.0	50	0	94.6	70 - 127	47.93	1.36	20	
Naphthalene	60.65	1.0	50	0	121	70 - 130	61.51	1.4	20	
n-Butylbenzene	48.16	1.0	50	0	96.3	72 - 130	49.6	2.95	20	
n-Propylbenzene	52.67	1.0	50	0	105	73 - 124	54.17	2.81	20	
o-Xylene	46.24	1.0	50	0	92.5	75 - 119	48.11	3.96	20	
sec-Butylbenzene	53.02	1.0	50	0	106	73 - 128	54.73	3.16	20	
Styrene	47.05	1.0	50	0	94.1	72 - 126	48.16	2.34	20	
tert-Butylbenzene	52.86	1.0	50	0	106	73 - 124	54.83	3.65	20	
Tetrachloroethene	46.26	1.0	50	0	92.5	76 - 119	48.24	4.18	20	
Toluene	44.46	1.0	50	0	88.9	77 - 118	45.96	3.31	20	
trans-1,2-Dichloroethene	48.74	1.0	50	0	97.5	72 - 127	50.27	3.09	20	
trans-1,3-Dichloropropene	54.67	1.0	50	0	109	77 - 119	55.23	1.02	20	
Trichloroethene	49.81	1.0	50	0	99.6	77 - 121	49.82	0.00972	20	
Trichlorofluoromethane	41.17	1.0	50	0	82.3	70 - 130	42.95	4.22	20	
Vinyl chloride	42.61	1.0	50	0	85.2	70 - 130	44.98	5.42	20	
Surr: 1,2-Dichloroethane-d4	*46.3*	*1.0*	*50*	*0*	*92.6*	*70 - 130*	*46.57*	*0.574*	*20*	
Surr: 4-Bromofluorobenzene	*50.7*	*1.0*	*50*	*0*	*101*	*82 - 115*	*50.9*	*0.389*	*20*	
Surr: Dibromofluoromethane	*43.26*	*1.0*	*50*	*0*	*86.5*	*73 - 126*	*43.17*	*0.192*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
WorkOrder: HS17120123

QC BATCH REPORT

Batch ID: R306828 **Instrument: VOA2** **Method: SW8260**

LCSD Sample ID: **VLCSDW-171208** Units: **ug/L** Analysis Date: **08-Dec-2017 11:36**
Client ID: Run ID: **VOA2_306828** SeqNo: **4342588** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*49.99*	*1.0*	*50*	*0*	*100.0*	*81 - 120*	*49.83*	*0.324*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
WorkOrder: HS17120123

QC BATCH REPORT

Batch ID: R306828 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS17120220-02MS** Units: **ug/L** Analysis Date: **08-Dec-2017 15:42**
Client ID: Run ID: **VOA2_306828** SeqNo: **4343750** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	48.98	1.0	50	0	98.0	70 - 120				
1,1,1-Trichloroethane	51.66	1.0	50	0	103	70 - 130				
1,1,2,2-Tetrachloroethane	47.3	1.0	50	0	94.6	70 - 123				
1,1,2-Trichlor-1,2,2-trifluoroethane	50.97	1.0	50	0	102	70 - 130				
1,1,2-Trichloroethane	46.84	1.0	50	0	93.7	70 - 117				
1,1-Dichloroethane	47.77	1.0	50	0	95.5	70 - 127				
1,1-Dichloroethene	45.75	1.0	50	0	91.5	70 - 130				
1,1-Dichloropropene	46.97	1.0	50	0	93.9	70 - 129				
1,2,3-Trichlorobenzene	54.52	1.0	50	0	109	70 - 130				
1,2,3-Trichloropropane	48.49	1.0	50	0	97.0	70 - 130				
1,2,4-Trichlorobenzene	55.35	1.0	50	0	111	70 - 125				
1,2,4-Trimethylbenzene	54.27	1.0	50	0	109	70 - 125				
1,2-Dibromo-3-chloropropane	55.3	1.0	50	0	111	70 - 130				
1,2-Dibromoethane	46.65	1.0	50	0	93.3	70 - 124				
1,2-Dichlorobenzene	45.12	1.0	50	0	90.2	70 - 115				
1,2-Dichloroethane	45.89	1.0	50	0	91.8	70 - 127				
1,2-Dichloropropane	47.47	1.0	50	0	94.9	70 - 122				
1,3,5-Trimethylbenzene	55.62	1.0	50	0	111	70 - 126				
1,3-Dichlorobenzene	44.7	1.0	50	0	89.4	70 - 119				
1,3-Dichloropropane	47.34	1.0	50	0	94.7	70 - 121				
1,4-Dichlorobenzene	44.07	1.0	50	0	88.1	70 - 114				
2,2-Dichloropropane	50.71	1.0	50	0	101	70 - 130				
2-Butanone	109.2	2.0	100	0	109	70 - 130				
2-Chlorotoluene	44.47	1.0	50	0	88.9	70 - 130				
2-Hexanone	107.9	2.0	100	0	108	70 - 130				
4-Chlorotoluene	52.85	1.0	50	0	106	70 - 130				
4-Isopropyltoluene	46.52	1.0	50	0	93.0	70 - 130				
4-Methyl-2-pentanone	103.9	2.0	100	0	104	70 - 130				
Acetone	113.4	2.0	100	0	113	70 - 130				
Benzene	48.21	1.0	50	0	96.4	70 - 127				
Bromobenzene	44.59	1.0	50	0	89.2	70 - 115				
Bromochloromethane	51.54	1.0	50	0	103	70 - 127				
Bromodichloromethane	50.93	1.0	50	0	102	70 - 124				
Bromoform	53.39	1.0	50	0	107	70 - 129				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
WorkOrder: HS17120123

QC BATCH REPORT

Batch ID: R306828 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS17120220-02MS** Units: **ug/L** Analysis Date: **08-Dec-2017 15:42**
Client ID: Run ID: **VOA2_306828** SeqNo: **4343750** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	41.49	1.0	50	0	83.0	70 - 130				
Carbon disulfide	96.57	2.0	100	0	96.6	70 - 130				
Carbon tetrachloride	48.78	1.0	50	0	97.6	70 - 130				
Chlorobenzene	46.6	1.0	50	0	93.2	70 - 114				
Chloroethane	41.03	1.0	50	0	82.1	70 - 130				
Chloroform	45.88	1.0	50	0	91.8	70 - 125				
Chloromethane	41.03	1.0	50	0	82.1	70 - 130				
cis-1,2-Dichloroethene	48.54	1.0	50	0	97.1	70 - 128				
cis-1,3-Dichloropropene	52.73	1.0	50	0	105	70 - 125				
Dibromochloromethane	49.49	1.0	50	0	99.0	70 - 124				
Dibromomethane	50.86	1.0	50	0	102	70 - 124				
Dichlorodifluoromethane	46.75	1.0	50	0	93.5	70 - 130				
Ethylbenzene	48.66	1.0	50	0	97.3	70 - 124				
Hexachlorobutadiene	55.43	1.0	50	0	111	70 - 130				
Isopropylbenzene	51.82	1.0	50	0	104	70 - 130				
m,p-Xylene	93.48	2.0	100	0	93.5	70 - 130				
Methylene chloride	46.05	2.0	50	0	92.1	70 - 128				
Naphthalene	57.32	1.0	50	0	115	70 - 130				
n-Butylbenzene	49.73	1.0	50	0	99.5	70 - 130				
n-Propylbenzene	55.26	1.0	50	0	111	70 - 130				
o-Xylene	47.64	1.0	50	0	95.3	70 - 124				
sec-Butylbenzene	56.23	1.0	50	0	112	70 - 130				
Styrene	46.74	1.0	50	0	93.5	70 - 130				
tert-Butylbenzene	55.76	1.0	50	0	112	70 - 130				
Tetrachloroethene	49.7	1.0	50	0	99.4	70 - 130				
Toluene	46.03	1.0	50	0	92.1	70 - 123				
trans-1,2-Dichloroethene	48.86	1.0	50	0	97.7	70 - 130				
trans-1,3-Dichloropropene	52.56	1.0	50	0	105	70 - 121				
Trichloroethene	50.93	1.0	50	0	102	70 - 129				
Trichlorofluoromethane	46.26	1.0	50	0	92.5	70 - 130				
Vinyl chloride	47.9	1.0	50	0	95.8	70 - 130				
Surr: 1,2-Dichloroethane-d4	*47.14*	*1.0*	*50*	*0*	*94.3*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*51.01*	*1.0*	*50*	*0*	*102*	*81 - 113*				
Surr: Dibromofluoromethane	*41.93*	*1.0*	*50*	*0*	*83.9*	*77 - 123*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
WorkOrder: HS17120123

QC BATCH REPORT

Batch ID: R306828 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS17120220-02MS** Units: **ug/L** Analysis Date: **08-Dec-2017 15:42**
Client ID: Run ID: **VOA2_306828** SeqNo: **4343750** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*50.59*	*1.0*	*50*	*0*	*101*	*82 - 127*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
WorkOrder: HS17120123

QC BATCH REPORT

Batch ID: R306828 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS17120220-02MSD** Units: **ug/L** Analysis Date: **08-Dec-2017 16:06**
Client ID: Run ID: **VOA2_306828** SeqNo: **4343751** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	47.42	1.0	50	0	94.8	70 - 120	48.98	3.24	20	
1,1,1-Trichloroethane	51.09	1.0	50	0	102	70 - 130	51.66	1.11	20	
1,1,2,2-Tetrachloroethane	47.71	1.0	50	0	95.4	70 - 123	47.3	0.852	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	48.77	1.0	50	0	97.5	70 - 130	50.97	4.41	20	
1,1,2-Trichloroethane	45.25	1.0	50	0	90.5	70 - 117	46.84	3.44	20	
1,1-Dichloroethane	47.36	1.0	50	0	94.7	70 - 127	47.77	0.865	20	
1,1-Dichloroethene	43.93	1.0	50	0	87.9	70 - 130	45.75	4.06	20	
1,1-Dichloropropene	47.34	1.0	50	0	94.7	70 - 129	46.97	0.773	20	
1,2,3-Trichlorobenzene	56.72	1.0	50	0	113	70 - 130	54.52	3.95	20	
1,2,3-Trichloropropane	48.53	1.0	50	0	97.1	70 - 130	48.49	0.0891	20	
1,2,4-Trichlorobenzene	54.84	1.0	50	0	110	70 - 125	55.35	0.91	20	
1,2,4-Trimethylbenzene	53.72	1.0	50	0	107	70 - 125	54.27	1.03	20	
1,2-Dibromo-3-chloropropane	55.33	1.0	50	0	111	70 - 130	55.3	0.064	20	
1,2-Dibromoethane	46.63	1.0	50	0	93.3	70 - 124	46.65	0.0443	20	
1,2-Dichlorobenzene	44.62	1.0	50	0	89.2	70 - 115	45.12	1.12	20	
1,2-Dichloroethane	44.76	1.0	50	0	89.5	70 - 127	45.89	2.47	20	
1,2-Dichloropropane	45.28	1.0	50	0	90.6	70 - 122	47.47	4.73	20	
1,3,5-Trimethylbenzene	55.24	1.0	50	0	110	70 - 126	55.62	0.673	20	
1,3-Dichlorobenzene	44.65	1.0	50	0	89.3	70 - 119	44.7	0.101	20	
1,3-Dichloropropane	46.29	1.0	50	0	92.6	70 - 121	47.34	2.25	20	
1,4-Dichlorobenzene	43.29	1.0	50	0	86.6	70 - 114	44.07	1.78	20	
2,2-Dichloropropane	50.7	1.0	50	0	101	70 - 130	50.71	0.00886	20	
2-Butanone	109.1	2.0	100	0	109	70 - 130	109.2	0.0387	20	
2-Chlorotoluene	43.28	1.0	50	0	86.6	70 - 130	44.47	2.71	20	
2-Hexanone	107.3	2.0	100	0	107	70 - 130	107.9	0.541	20	
4-Chlorotoluene	51.89	1.0	50	0	104	70 - 130	52.85	1.82	20	
4-Isopropyltoluene	45.5	1.0	50	0	91.0	70 - 130	46.52	2.22	20	
4-Methyl-2-pentanone	99.83	2.0	100	0	99.8	70 - 130	103.9	4	20	
Acetone	114.3	2.0	100	0	114	70 - 130	113.4	0.779	20	
Benzene	46.62	1.0	50	0	93.2	70 - 127	48.21	3.34	20	
Bromobenzene	44.07	1.0	50	0	88.1	70 - 115	44.59	1.19	20	
Bromochloromethane	50.82	1.0	50	0	102	70 - 127	51.54	1.42	20	
Bromodichloromethane	50.04	1.0	50	0	100	70 - 124	50.93	1.77	20	
Bromoform	52.55	1.0	50	0	105	70 - 129	53.39	1.59	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
WorkOrder: HS17120123

QC BATCH REPORT

Batch ID: R306828 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS17120220-02MSD** Units: **ug/L** Analysis Date: **08-Dec-2017 16:06**
Client ID: Run ID: **VOA2_306828** SeqNo: **4343751** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	40.47	1.0	50	0	80.9	70 - 130	41.49	2.5	20	
Carbon disulfide	95.65	2.0	100	0	95.7	70 - 130	96.57	0.958	20	
Carbon tetrachloride	46.46	1.0	50	0	92.9	70 - 130	48.78	4.86	20	
Chlorobenzene	45.42	1.0	50	0	90.8	70 - 114	46.6	2.58	20	
Chloroethane	41.05	1.0	50	0	82.1	70 - 130	41.03	0.0488	20	
Chloroform	45.77	1.0	50	0	91.5	70 - 125	45.88	0.236	20	
Chloromethane	41.05	1.0	50	0	82.1	70 - 130	41.03	0.0341	20	
cis-1,2-Dichloroethene	47.75	1.0	50	0	95.5	70 - 128	48.54	1.63	20	
cis-1,3-Dichloropropene	51.59	1.0	50	0	103	70 - 125	52.73	2.2	20	
Dibromochloromethane	48.35	1.0	50	0	96.7	70 - 124	49.49	2.33	20	
Dibromomethane	50.42	1.0	50	0	101	70 - 124	50.86	0.878	20	
Dichlorodifluoromethane	43.37	1.0	50	0	86.7	70 - 130	46.75	7.5	20	
Ethylbenzene	46.81	1.0	50	0	93.6	70 - 124	48.66	3.88	20	
Hexachlorobutadiene	56.27	1.0	50	0	113	70 - 130	55.43	1.49	20	
Isopropylbenzene	49.94	1.0	50	0	99.9	70 - 130	51.82	3.7	20	
m,p-Xylene	90.71	2.0	100	0	90.7	70 - 130	93.48	3.01	20	
Methylene chloride	44.71	2.0	50	0	89.4	70 - 128	46.05	2.96	20	
Naphthalene	58.01	1.0	50	0	116	70 - 130	57.32	1.21	20	
n-Butylbenzene	48.93	1.0	50	0	97.9	70 - 130	49.73	1.62	20	
n-Propylbenzene	54.01	1.0	50	0	108	70 - 130	55.26	2.28	20	
o-Xylene	46.12	1.0	50	0	92.2	70 - 124	47.64	3.23	20	
sec-Butylbenzene	55.24	1.0	50	0	110	70 - 130	56.23	1.77	20	
Styrene	46.18	1.0	50	0	92.4	70 - 130	46.74	1.22	20	
tert-Butylbenzene	54.53	1.0	50	0	109	70 - 130	55.76	2.22	20	
Tetrachloroethene	48.9	1.0	50	0	97.8	70 - 130	49.7	1.61	20	
Toluene	44.51	1.0	50	0	89.0	70 - 123	46.03	3.36	20	
trans-1,2-Dichloroethene	49.46	1.0	50	0	98.9	70 - 130	48.86	1.23	20	
trans-1,3-Dichloropropene	51.68	1.0	50	0	103	70 - 121	52.56	1.7	20	
Trichloroethene	49.05	1.0	50	0	98.1	70 - 129	50.93	3.77	20	
Trichlorofluoromethane	45.23	1.0	50	0	90.5	70 - 130	46.26	2.24	20	
Vinyl chloride	46.14	1.0	50	0	92.3	70 - 130	47.9	3.74	20	
Surr: 1,2-Dichloroethane-d4	*47.47*	*1.0*	*50*	*0*	*94.9*	*70 - 126*	*47.14*	*0.693*	*20*	
Surr: 4-Bromofluorobenzene	*50.22*	*1.0*	*50*	*0*	*100*	*81 - 113*	*51.01*	*1.57*	*20*	
Surr: Dibromofluoromethane	*43.93*	*1.0*	*50*	*0*	*87.9*	*77 - 123*	*41.93*	*4.67*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
WorkOrder: HS17120123

QC BATCH REPORT

Batch ID: R306828 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS17120220-02MSD** Units: **ug/L** Analysis Date: **08-Dec-2017 16:06**
Client ID: Run ID: **VOA2_306828** SeqNo: **4343751** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*50.03*	*1.0*	*50*	*0*	*100*	*82 - 127*	*50.59*	*1.12*	*20*	

The following samples were analyzed in this batch:

HS17120123-01	HS17120123-02	HS17120123-03	HS17120123-04
HS17120123-05	HS17120123-06	HS17120123-07	HS17120123-08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
WorkOrder: **HS17120123**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	17-027-0	27-Mar-2018
California	2919 2016-2018	31-Jul-2018
Illinois	004112	09-May-2018
Kentucky	123043	30-Apr-2018
Louisiana	03087 2017-2017	30-Jun-2018
North Carolina	624-2017	31-Dec-2017
North Dakota	R193 2017-2017	30-Apr-2018
Oklahoma	2017-088	31-Aug-2018
Texas	T104704231-17-19	30-Apr-2018

ALS Group USA, Corp Date: 11-Dec-17

Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS17120123
Date/Time Received: **01-Dec-2017 08:50**
Received by: **JRM**

Checklist completed by: *Raegen Giga* eSignature 4-Dec-2017 Date
Reviewed by: *Sonia West* eSignature 5-Dec-2017 Date

Matrices: **GW**
Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.9c/2.6c uc/c	IR 30	
Cooler(s)/Kit(s):	5962		
Date/Time sample(s) sent to storage:	12/01/2017 08:50		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes: Sample 67WW13-112817-MS/MSD was received but not listed on the chain of custody. This sample was added to HS17111395-03 with the parent sample.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

APTIM

Page 1 of 1

COC ID: 67-NOV2017-GW-ALSHT- | TURNAROUND TIME: normal | RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name	Longhorn AAP			Lab Name	ALS Laboratories			Email Invoice To	FedInvoices@CBIFederalServices.com		
Project Number	501032			Lab Contact	Sonia West						
	LHAAP-67			Email	Sonia.West@alsglobal.com			Email Report To	Sharon.Pennington@CBIFederalServices.com		
Address	1203-B East Grand Avenue			Address	10450 Stancliff Rd., Suite 210			Mail Reports To	Sharon Pennington		
	PMB 202							Address	2410 Cherahala Blvd.		
City	Marshall	State	TX	City	Houston	State	TX	City	Knoxville	State	TN
Postal Code	75670	Country	USA	Postal Code	77099	Country	USA	Postal Code	37932	Country	USA
Phone Number	713.243.7264			Phone Number	281.575.2132 or 281.530.5656						
Project Manager	Praveen Srivastav							Shipping Company			

SAMPLE DETAILS / ANALYSIS REQUESTED

Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	ANALYSIS	VOCs in Water by 8260B	Dissolved Gases in Water by RSK175	Anions in Water by E300.0	TOC in Water by E415.1	TIC in Water by E415.1	Sulfide in Water by E376.1	1,4-Dioxane in Water by 8270DSIM			
67WW07-112917	LHAAP-67	24.65	24.70		WG	11/29/17	0755	4		X						X			
67WW06-112917	LHAAP-67	24.66	24.87		WG	11/29/17	0850	4		X						X			
67WW10-112917	LHAAP-67	25.35	25.60		WG	11/29/17	0940	4		X						X			
67WW09A-112917	LHAAP-67	26.81	27.00		WG	11/29/17	1035	4		X						X			
67WW12-112917	LHAAP-67	26.03	26.26		WG	11/29/17	1125	4		X						X			
67WW12-112917FD	LHAAP-67	26.03	26.26		WG	11/29/17	1125	4		X						X			
67WW16-112917	LHAAP-67	24.81	25.00		WG	11/29/17	1225	4		X						X			
TRIP BLANK						11/29/17		2		X									

HS17120123

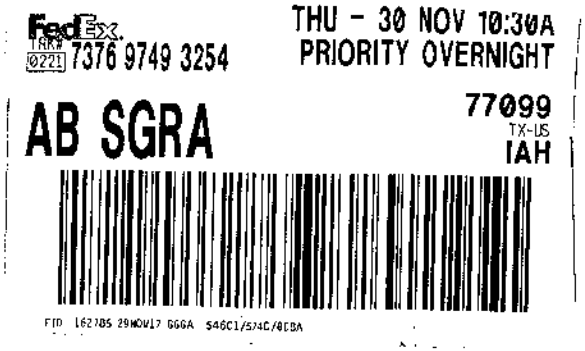
Aptim Environmental & Infrastucture, Inc.

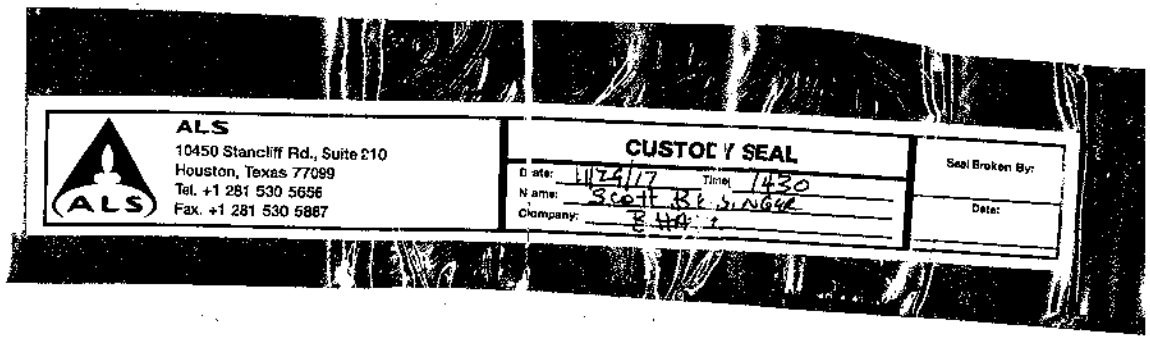
LHAAP-67 501032

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Dissolved Gases should include Carbon dioxide, Ethane, Ethene, and Methane. Anions should include chloride, nitrate, nitrite, and sulfate.	[illegible]/BHATT	11/29/17 1430	JM ALS/KC	12-1-17 0755

Cooler: 5962 2.9c 11-30 CF-0.3c

00911841


FedEx.
TRK# 0221 7376 9749 3254
THU - 30 NOV 10:30A
PRIORITY OVERNIGHT
AB SGRA
77099
TX-US
IAH
FID 162785 29NOV17 GGGA 546C1/574C/4EBA


ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887
CUSTODY SEAL
Date: 11/29/17
Time: 1430
Name: Scott Rk SINGH
Company: EHA
Seal Broken By:
Date:

00911842

Volatile Organics Raw Data

Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
ALS WO# HS17120123

FORM 2
WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17120123

	CLIENT SAMPLE NO.	SMC1 #	SMC2 (TOL) #	SMC3 #	OTHER (DCE) #	TOT OUT
01	VLCSW-171208	102	100	86	93	0
02	VLCSDW-171208	101	100	86	93	0
03	VBLKW-171208	99	102	90	90	0
04	HS17120220-02	102	101	84	94	0
05	HS17120220-02	100	100	88	95	0
06	HS17120123-08	99	104	88	91	0
07	HS17120123-01	101	104	90	92	0
08	HS17120123-02	99	104	91	91	0
09	HS17120123-03	100	104	90	92	0
10	HS17120123-04	101	103	89	91	0
11	HS17120123-05	99	103	92	91	0
12	HS17120123-06	99	103	89	91	0
13	HS17120123-07	100	103	90	91	0
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						

		QC LIMITS
SMC1	= 4-Bromofluorobenzene	(70-130)
SMC2 (TOL)	= Toluene-d8	(70-130)
SMC3	= Dibromofluoromethane	(70-130)
OTHER(DCE)	= 1,2-Dichloroethane-d4	(70-130)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

FORM 3
WATER VOLATILE METHOD SPIKE RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17120123

Matrix Spike - Sample No.: VSTD-ICV

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT ()	% REC #	QC. LIMITS REC.
1,1,1-Trichloroethane	50.00	45.95	92	80-120
1,1,1,2-Tetrachloroetha	50.00	49.11	98	80-120
1,1,2,2-Tetrachloroetha	50.00	45.11	90	80-120
1,1,2-Trichloroethane	50.00	43.60	87	80-120
1,1-Dichloropropene	50.00	40.07	80	80-120
1,1-Dichloroethane	50.00	46.53	93	80-120
1,1-Dichloroethene	50.00	42.20	84	80-120
1,2,3-Trichloropropane	50.00	45.85	92	80-120
1,2,4-Trimethylbenzene	50.00	50.22	100	80-120
1,2,3-Trichlorobenzene	50.00	50.57	101	80-120
1,2,4-Trichlorobenzene	50.00	50.47	101	80-120
1,2-Dibromo-3-Chloropro	50.00	50.98	102	80-120
1,2-Dichloroethane	50.00	46.72	93	80-120
1,2-Dichloropropane	50.00	45.25	90	80-120
1,2-Dibromoethane	50.00	42.41	85	80-120
1,2-Dichlorobenzene	50.00	44.10	88	80-120
1,3,5-Trimethylbenzene	50.00	49.31	99	80-120
1,3-Dichloropropane	50.00	44.28	88	80-120
1,3-Dichlorobenzene	50.00	43.08	86	80-120
1,4-Dichlorobenzene	50.00	42.35	85	80-120
2,2-Dichloropropane	50.00	46.35	93	80-120
2-Butanone	100.00	98.16	98	80-120
2-Hexanone	100.00	94.25	94	80-120
2-Chlorotoluene	50.00	42.55	85	80-120
4-Chlorotoluene	50.00	49.75	100	80-120
p-Isopropyltoluene	50.00	40.00	80	80-120
Acetone	100.00	105.16	105	80-120
Benzene	50.00	43.86	88	80-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

_____

FORM III VOA

FORM 3
WATER VOLATILE METHOD SPIKE RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17120123

Matrix Spike - Sample No.: VSTD-ICV

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT ()	% REC #	QC. LIMITS REC.
Bromodichloromethane	50.00	49.39	99	80-120
Bromobenzene	50.00	44.18	88	80-120
Bromochloromethane	50.00	53.06	106	80-120
Bromomethane	50.00	49.29	98	80-120
Carbon Disulfide	100.00	86.54	86	80-120
Bromoform	50.00	53.18	106	80-120
Chloroethane	50.00	48.46	97	80-120
Carbon Tetrachloride	50.00	41.09	82	80-120
Chloromethane	50.00	55.10	110	80-120
Chloroform	50.00	45.69	91	80-120
Chlorobenzene	50.00	45.26	90	80-120
cis-1,2-Dichloroethene	50.00	47.89	96	80-120
cis-1,3-Dichloropropene	50.00	50.58	101	80-120
Dichlorodifluoromethane	50.00	47.49	95	80-120
Dibromochloromethane	50.00	47.89	96	80-120
Dibromomethane	50.00	48.85	98	80-120
Ethylbenzene	50.00	46.09	92	80-120
Hexachlorobutadiene	50.00	48.50	97	80-120
m,p-Xylenes	100.00	81.82	82	80-120
o-Xylene	50.00	41.77	84	80-120
Isopropylbenzene	50.00	41.58	83	80-120
Methylene Chloride	50.00	45.72	91	80-120
n-Propylbenzene	50.00	47.71	95	80-120
n-Butylbenzene	50.00	41.95	84	80-120
Naphthalene	50.00	54.91	110	80-120
Styrene	50.00	43.27	86	80-120
sec-Butylbenzene	50.00	47.33	95	80-120
tert-Butylbenzene	50.00	47.71	95	80-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

_____

FORM 3
WATER VOLATILE METHOD SPIKE RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17120123

Matrix Spike - Sample No.: VSTD-ICV

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT ()	% REC #	QC. LIMITS REC.
trans-1,2-Dichloroethen	50.00	48.43	97	80-120
Toluene	50.00	40.57	81	80-120
trans-1,3-Dichloroprope	50.00	50.10	100	80-120
Tetrachloroethene	50.00	40.70	81	80-120
Trichlorofluoromethane	50.00	47.20	94	80-120
Trichloroethene	50.00	44.48	89	80-120
Vinyl Chloride	50.00	55.19	110	80-120
Freon TF	50.00	40.54	81	80-120
4-Methyl-2-Pentanone	100.00	89.35	89	80-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

_____

FORM III VOA

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17120123

Lab File ID: D120201 BFB Injection Date: 12/02/17

Instrument ID: VOA2 BFB Injection Time: 0953

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	18.4
75	30.0 - 60.0% of mass 95	43.9
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	0.7 (0.8)1
174	Greater than 50.0% of mass 95	88.6
175	5.0 - 9.0% of mass 174	6.3 (7.1)1
176	95.0 - 101.0% of mass 174	84.7 (95.6)1
177	5.0 - 9.0% of mass 176	6.7 (7.9)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD00.5	VSTD00.5	D120202	12/02/17	1018
02	VSTD001	VSTD001	D120203	12/02/17	1042
03	VSTD002	VSTD002	D120204	12/02/17	1106
04	VSTD005	VSTD005	D120205	12/02/17	1131
05	VSTD010	VSTD010	D120206	12/02/17	1155
06	VSTD020	VSTD020	D120207	12/02/17	1219
07	VSTD050	VSTD050	D120208	12/02/17	1244
08	VSTD100	VSTD100	D120209	12/02/17	1308
09	VSTD200	VSTD200	D120210	12/02/17	1332
10	VSTD-ICV	VSTD-ICV	D120212	12/02/17	1421
11					
12					
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15					
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FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17120123

Instrument ID: VOA2 Calibration Date(s): 12/02/17 12/02/17

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1018 1332

LAB FILE ID: RF0.5: D120202 RF1: D120203 RF2: D120204
RF5: D120205 RF10: D120206 RF20: D120207

COMPOUND	RF0.5	RF1	RF2	RF5	RF10	RF20
1,1,1-Trichloroethane	0.782	0.704	0.739	0.735	0.789	0.771
1,1,1,2-Tetrachloroethane	0.408	0.414	0.371	0.361	0.411	0.386
1,1,2,2-Tetrachloroethane	1.207	1.067	1.055	1.001	1.062	0.939
1,1,2-Trichloroethane	0.363	0.289	0.270	0.286	0.333	0.273
1,1-Dichloropropene	2954	4305	9416	15983	33728	61656
1,1-Dichloroethane	1.032	1.014	0.910	1.016	1.046	0.967
1,1-Dichloroethene	0.529	0.444	0.407	0.491	0.530	0.480
1,2,3-Trichloropropane	1.194	1.139	1.105	1.004	1.135	1.012
1,2,4-Trimethylbenzene	5680	9594	19532	42815	89960	171277
1,2,3-Trichlorobenzene	0.559	0.698	0.753	0.755	0.897	0.807
1,2,4-Trichlorobenzene	0.775	0.770	0.810	0.891	1.030	0.978
1,2-Dibromo-3-Chloropropane	139	361	841	1939	4853	9234
1,2-Dichloroethane	0.538	0.483	0.477	0.455	0.510	0.464
1,2-Dichloropropane	0.410	0.444	0.365	0.347	0.395	0.373
1,2-Dibromoethane	0.466	0.374	0.362	0.350	0.360	0.332
1,2-Dichlorobenzene	2.113	1.651	1.735	1.638	1.698	1.630
1,3,5-Trimethylbenzene	5170	9046	18401	43015	89656	173995
1,3-Dichloropropane	0.646	0.607	0.577	0.563	0.616	0.543
1,3-Dichlorobenzene	2.067	1.878	1.767	1.675	1.845	1.685
1,4-Dichlorobenzene	2.028	1.809	1.746	1.584	1.762	1.590
2,2-Dichloropropane	0.740	0.682	0.636	0.682	0.807	0.736
2-Butanone	0.275	0.252	0.192	0.204	0.220	0.208
2-Hexanone	0.261	0.250	0.239	0.239	0.254	0.233
2-Chlorotoluene	3.143	2.766	2.830	2.598	2.734	2.446
4-Chlorotoluene	5053	8809	18244	40733	84596	162892
p-Isopropyltoluene	3.580	2.751	3.072	2.849	3.022	2.832
Acetone	3198	3976	5385	8530	17731	30163
Benzene	1.443	1.321	1.234	1.123	1.288	1.229
Bromodichloromethane	0.413	0.419	0.419	0.382	0.464	0.444
Bromobenzene	1.216	1.048	1.079	1.014	1.070	0.995
Bromochloromethane	0.201	0.204	0.234	0.272	0.274	0.267
Bromomethane	1733	3575	6157	12514	24891	45961
Carbon Disulfide	1.164	0.800	0.860	0.908	1.042	0.886
Bromoform	0.260	0.244	0.243	0.248	0.285	0.280
Chloroethane	2385	3477	6678	13201	24915	48945
Carbon Tetrachloride	5043	4445	8585	17467	35037	63681
Chloromethane	3868	6636	12476	30205	61364	113999
Chloroform	0.996	1.002	0.989	0.866	0.923	0.888
Chlorobenzene	1.196	1.069	1.030	0.974	1.025	0.947
cis-1,2-Dichloroethene	0.582	0.583	0.485	0.519	0.586	0.540
cis-1,3-Dichloropropene	0.540	0.446	0.490	0.440	0.542	0.524
Dichlorodifluoromethane	0.475	0.423	0.402	0.466	0.544	0.521
Dibromochloromethane	0.435	0.372	0.374	0.383	0.432	0.408
Dibromomethane	0.183	0.212	0.184	0.178	0.206	0.198

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1712012

Instrument ID: VOA2 Calibration Date(s): 12/02/17 12/02/17

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1018 1332

LAB FILE ID: RF0.5: D120202 RF1: D120203 RF2: D120204
RF5: D120205 RF10: D120206 RF20: D120207

COMPOUND	RF0.5	RF1	RF2	RF5	RF10	RF20
Ethylbenzene	0.573	0.528	0.544	0.505	0.555	0.497
Hexachlorobutadiene	961	1063	2817	6657	13235	28697
m,p-Xylenes	0.767	0.682	0.658	0.632	0.672	0.616
o-Xylene	0.778	0.690	0.664	0.652	0.705	0.641
Isopropylbenzene	6499	10686	25343	52377	112745	215740
Methylene Chloride	0.598	0.542	0.465	0.507	0.523	0.482
n-Propylbenzene	6638	11530	24532	55879	116424	225099
n-Butylbenzene	2.408	1.762	2.272	2.129	2.316	2.216
Naphthalene	1044	3027	7991	26337	67775	132373
Styrene	1.270	1.142	1.060	1.071	1.128	1.052
sec-Butylbenzene	5811	9365	21030	47554	101826	198179
tert-Butylbenzene	4266	7196	16119	34766	76128	146542
trans-1,2-Dichloroethene	0.440	0.406	0.401	0.444	0.485	0.450
Toluene	1.922	1.693	1.615	1.525	1.621	1.493
trans-1,3-Dichloropropene	0.370	0.419	0.395	0.385	0.532	0.454
Tetrachloroethene	0.321	0.339	0.338	0.320	0.354	0.328
Trichlorofluoromethane	0.740	0.595	0.672	0.748	0.813	0.839
Trichloroethene	0.413	0.360	0.352	0.314	0.371	0.342
Vinyl Chloride	2461	3763	7543	17987	39831	76312
Freon TF	0.402	0.344	0.404	0.466	0.496	0.462
4-Methyl-2-Pentanone	0.470	0.474	0.399	0.392	0.397	0.364
4-Bromofluorobenzene		0.590	0.499	0.474	0.497	0.453
Toluene-d8		1.507	1.373	1.292	1.372	1.210
Dibromofluoromethane	0.599	0.462	0.561	0.494	0.508	0.446
1,2-Dichloroethane-d4	0.759	0.604	0.549	0.554	0.616	0.566

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1712012

Instrument ID: VOA2 Calibration Date(s): 12/02/17 12/02/17

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1018 1332

LAB FILE ID: RF50: D120208 RF100: D120209 RF200: D120210

COMPOUND	RF50	RF100	RF200
1,1,1-Trichloroethane	0.637	0.601	0.664
1,1,1,2-Tetrachloroethane	0.365	0.372	0.332
1,1,2,2-Tetrachloroethane	0.935	0.823	0.843
1,1,2-Trichloroethane	0.271	0.263	0.235
1,1-Dichloropropene	139865	338565	651586
1,1-Dichloroethane	0.861	0.819	1.004
1,1-Dichloroethene	0.408	0.350	0.436
1,2,3-Trichloropropane	0.994	0.914	0.918
1,2,4-Trimethylbenzene	379867	756966	1613252
1,2,3-Trichlorobenzene	0.790	0.750	0.715
1,2,4-Trichlorobenzene	0.919	0.883	0.837
1,2-Dibromo-3-Chloropropane	24398	50559	100759
1,2-Dichloroethane	0.434	0.453	0.458
1,2-Dichloropropane	0.336	0.309	0.306
1,2-Dibromoethane	0.321	0.339	0.344
1,2-Dichlorobenzene	1.506	1.338	1.309
1,3,5-Trimethylbenzene	370899	751645	1554608
1,3-Dichloropropane	0.523	0.533	0.500
1,3-Dichlorobenzene	1.557	1.421	1.460
1,4-Dichlorobenzene	1.483	1.593	1.413
2,2-Dichloropropane	0.621	0.578	0.638
2-Butanone	0.199	0.182	0.214
2-Hexanone	0.234	0.245	0.234
2-Chlorotoluene	2.403	2.069	2.143
4-Chlorotoluene	363295	735701	1535880
p-Isopropyltoluene	2.340	2.494	2.253
Acetone	81222	145831	353245
Benzene	1.126	1.268	1.224
Bromodichloromethane	0.426	0.401	0.394
Bromobenzene	0.932	0.855	0.883
Bromochloromethane	0.240	0.212	0.248
Bromomethane	102347	189031	294913
Carbon Disulfide	0.887	0.731	0.996
Bromoform	0.282	0.329	0.270
Chloroethane	104074	204381	357211
Carbon Tetrachloride	144188	351661	676893
Chloromethane	256514	476675	979134
Chloroform	0.761	0.669	0.751
Chlorobenzene	0.881	0.897	0.773
cis-1,2-Dichloroethene	0.468	0.410	0.469
cis-1,3-Dichloropropene	0.501	0.496	0.463
Dichlorodifluoromethane	0.431	0.392	0.417
Dibromochloromethane	0.408	0.420	0.439
Dibromomethane	0.187	0.177	0.174

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1712012

Instrument ID: VOA2 Calibration Date(s): 12/02/17 12/02/17

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1018 1332

LAB FILE ID: RF50: D120208 RF100: D120209 RF200: D120210

COMPOUND	RF50	RF100	RF200
Ethylbenzene	0.442	0.466	0.415
Hexachlorobutadiene	53304	124014	240075
m,p-Xylenes	0.544	0.684	0.514
o-Xylene	0.586	0.693	0.524
Isopropylbenzene	460822	933730	1757586
Methylene Chloride	0.435	0.394	0.532
n-Propylbenzene	547102	1002145	2016642
n-Butylbenzene	1.766	1.730	1.748
Naphthalene	319306	619282	1192359
Styrene	0.962	1.136	0.854
sec-Butylbenzene	400095	855674	1765667
tert-Butylbenzene	305835	634473	1328519
trans-1,2-Dichloroethene	0.386	0.366	0.490
Toluene	1.334	1.417	1.280
trans-1,3-Dichloropropene	0.447	0.434	0.429
Tetrachloroethene	0.277	0.296	0.267
Trichlorofluoromethane	0.622	0.594	0.635
Trichloroethene	0.321	0.316	0.303
Vinyl Chloride	176982	338527	673091
Freon TF	0.350	0.339	0.420
4-Methyl-2-Pentanone	0.360	0.366	0.329
4-Bromofluorobenzene	0.422	0.430	0.434
Toluene-d8	1.086	1.094	0.961
Dibromofluoromethane	0.391		
1,2-Dichloroethane-d4	0.496	0.522	0.521

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1712012

Instrument ID: VOA2 Calibration Date(s): 12/02/17 12/02/17

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1018 1332

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2	MAX %RSD OR R^2
1,1,1-Trichloroethane	AVRG		0.71370609		9.372	15.000
1,1,1,2-Tetrachloroethane	AVRG		0.38013432		7.148	15.000
1,1,2,2-Tetrachloroethane	AVRG		0.99258528		12.222	15.000
1,1,2-Trichloroethane	AVRG		0.28705532		13.475	15.000
1,1-Dichloropropene	LINR	-4.26e-003	2.44307664		0.9987249	0.9900000
1,1-Dichloroethane	AVRG		0.96326118		8.419	15.000
1,1-Dichloroethene	AVRG		0.45263056		13.273	15.000
1,2,3-Trichloropropane	AVRG		1.04606070		9.660	15.000
1,2,4-Trimethylbenzene	LINR	-3.01e-002	0.41633885		0.9989979	0.9900000
1,2,3-Trichlorobenzene	AVRG		0.74733987		12.222	15.000
1,2,4-Trichlorobenzene	AVRG		0.87705944		10.167	15.000
1,2-Dibromo-3-Chloropropane	LINR	-1.31e-002	6.54660953		0.9994380	0.9900000
1,2-Dichloroethane	AVRG		0.47456733		6.777	15.000
1,2-Dichloropropane	AVRG		0.36515734		12.659	15.000
1,2-Dibromoethane	AVRG		0.36081745		11.836	15.000
1,2-Dichlorobenzene	AVRG		1.62431749		14.642	15.000
1,3,5-Trimethylbenzene	LINR	-3.96e-002	0.43065742		0.9991791	0.9900000
1,3-Dichloropropane	AVRG		0.56767088		8.446	15.000
1,3-Dichlorobenzene	AVRG		1.70625475		12.228	15.000
1,4-Dichlorobenzene	AVRG		1.66768867		11.278	15.000
2,2-Dichloropropane	AVRG		0.68019872		10.467	15.000
2-Butanone	AVRG		0.21637126		13.652	15.000
2-Hexanone	AVRG		0.24348857		4.111	15.000
2-Chlorotoluene	AVRG		2.57035383		13.331	15.000
4-Chlorotoluene	LINR	-3.15e-002	0.43591168		0.9993643	0.9900000
p-Isopropyltoluene	AVRG		2.79924729		14.634	15.000
Acetone	2ORDR	-0.1455905	8.44205784	-1.5882645	0.9965348	0.9900000
Benzene	AVRG		1.25075054		7.848	15.000
Bromodichloromethane	AVRG		0.41797745		6.014	15.000
Bromobenzene	AVRG		1.01032395		10.988	15.000
Bromochloromethane	AVRG		0.23921082		11.976	15.000
Bromomethane	2ORDR	-7.29e-003	1.87129409	1.79194043	0.9999652	0.9900000
Carbon Disulfide	AVRG		0.91937133		14.200	15.000
Bromoform	AVRG		0.27127004		10.037	15.000
Chloroethane	2ORDR	-3.48e-002	2.38094923	0.59380876	0.9993539	0.9900000
Carbon Tetrachloride	LINR	-4.72e-003	2.35285442		0.9986200	0.9900000
Chloromethane	LINR	-4.85e-002	1.15522743		0.9970973	0.9900000
Chloroform	AVRG		0.87169863		13.862	15.000
Chlorobenzene	AVRG		0.97698426		12.513	15.000
cis-1,2-Dichloroethene	AVRG		0.51598951		12.029	15.000
cis-1,3-Dichloropropene	AVRG		0.49358172		7.680	15.000
Dichlorodifluoromethane	AVRG		0.45231016		11.792	15.000
Dibromochloromethane	AVRG		0.40777402		6.361	15.000
Dibromomethane	AVRG		0.18886291		7.170	15.000

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1712012

Instrument ID: VOA2 Calibration Date(s): 12/02/17 12/02/17

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1018 1332

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2	MAX %RSD OR R^2
Ethylbenzene	AVRG		0.50270704		10.608	15.000
Hexachlorobutadiene	LINR	-3.92e-002	2.76022389		0.9985221	0.9900000
m,p-Xylenes	AVRG		0.64113043		11.930	15.000
o-Xylene	AVRG		0.65910920		11.041	15.000
Isopropylbenzene	2ORDR	4.227e-003	0.59512930	4.232e-002	0.9988568	0.9900000
Methylene Chloride	AVRG		0.49775295		12.290	15.000
n-Propylbenzene	LINR	-5.52e-002	0.32948130		0.9973091	0.9900000
n-Butylbenzene	AVRG		2.03867224		13.855	15.000
Naphthalene	LINR	-4.34e-002	0.55061373		0.9969423	0.9900000
Styrene	AVRG		1.07518496		10.979	15.000
sec-Butylbenzene	LINR	-3.36e-002	0.37918234		0.9993070	0.9900000
tert-Butylbenzene	LINR	-3.21e-002	0.50473610		0.9992184	0.9900000
trans-1,2-Dichloroethene	AVRG		0.42990708		10.030	15.000
Toluene	AVRG		1.54453465		12.741	15.000
trans-1,3-Dichloropropene	AVRG		0.42933602		11.159	15.000
Tetrachloroethene	AVRG		0.31558657		9.331	15.000
Trichlorofluoromethane	AVRG		0.69527017		13.382	15.000
Trichloroethene	AVRG		0.34364320		10.144	15.000
Vinyl Chloride	LINR	-4.27e-002	1.66895402		0.9981776	0.9900000
Freon TF	AVRG		0.40942301		14.052	15.000
4-Methyl-2-Pentanone	AVRG		0.39453623		12.417	15.000
4-Bromofluorobenzene	AVRG		0.47495283		11.602	15.000
Toluene-d8	AVRG		1.23672099		14.745	15.000
Dibromofluoromethane	AVRG		0.49427766		14.240	15.000
1,2-Dichloroethane-d4	AVRG		0.57642099		13.679	15.000

FORM VI VOA

MSVOA02 -Logbook

Batch: 29843
Date: 12-02-2017
Method: 8260
Comments:

Analyst: Anjana Poluri
Reviewer:
Laboratory: Houston

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
1	BFB	TUNE	12-02-2017 09:53 am	1.00	50 mL	50 mL	D120201.D	Liquid	Y	NA
2	*Auto find/purged* VSTD00.5	ICAL1	12-02-2017 10:18 am	1.00	50 mL	50 mL	D120202.D	Liquid	Y	NA
3	*0.5 uL cal std/250 mL DI* VSTD001	ICAL2	12-02-2017 10:42 am	1.00	50 mL	50 mL	D120203.D	Liquid	Y	NA
4	*1 uL cal std/250 mL DI* VSTD002	ICAL3	12-02-2017 11:06 am	1.00	50 mL	50 mL	D120204.D	Liquid	Y	NA
5	*2 uL cal std/250 mL DI* VSTD005	ICAL4	12-02-2017 11:31 am	1.00	50 mL	50 mL	D120205.D	Liquid	Y	NA
6	*5 uL cal std/250 mL DI* VSTD010	ICAL5	12-02-2017 11:55 am	1.00	50 mL	50 mL	D120206.D	Liquid	Y	NA
7	*2 uL cal std/50 mL DI* VSTD020	ICAL6	12-02-2017 12:19 pm	1.00	50 mL	50 mL	D120207.D	Liquid	Y	NA
8	*4 uL cal std/50 mL DI* VSTD050	ICAL7	12-02-2017 12:44 pm	1.00	50 mL	50 mL	D120208.D	Liquid	Y	NA
9	*10 uL cal std/50 mL DI* VSTD100	ICAL8	12-02-2017 01:08 pm	1.00	50 mL	50 mL	D120209.D	Liquid	Y	NA
10	*20 uL cal std/50 mL DI* VSTD200	ICAL9	12-02-2017 01:32 pm	1.00	50 mL	50 mL	D120210.D	Liquid	Y	NA
11	*40 uL cal std/50 mL DI* BLK	SAMP	12-02-2017 01:57 pm	1.00	50 mL	50 mL	D120211.D	Liquid	Y	NA
12	*Cleanup blk* VSTD050	CCV	12-02-2017 02:21 pm	1.00	50 mL	50 mL	D120212.D	Liquid	Y	NA
13	*10 uL cal std/50 mL DI* VSTD050	CCV	12-02-2017 02:45 pm	1.00	50 mL	50 mL	D120213.D	Liquid	Y	NA
14	*10 uL cal std/50 mL DI* VLCSW-171202	LCS	12-02-2017 03:10 pm	1.00	50 mL	50 mL	D120214.D	Liquid	Y	NA
15	*10 uL cal std/50 mL DI* BLK	SAMP	12-02-2017 03:34 pm	1.00	50 mL	50 mL	D120215.D	Liquid	Y	NA
16	*Cleanup blk* VBLKW171202	MBLK	12-02-2017 03:59 pm	1.00	50 mL	50 mL	D120216.D	Liquid	Y	NA
17	HS17120047-01	SAMP	12-02-2017 04:23 pm	1.00	50 mL	50 mL	D120217.D	Liquid	Y	<2
18	HS17120054-01	SAMP	12-02-2017 04:47 pm	1.00	50 mL	50 mL	D120218.D	Liquid	Y	<2
19	HS17120054-02	SAMP	12-02-2017 05:12 pm	1.00	50 mL	50 mL	D120219.D	Liquid	Y	<2
20	HS17120054-03	SAMP	12-02-2017 05:37 pm	1.00	50 mL	50 mL	D120220.D	Liquid	Y	<2
21	HS17120054-04	SAMP	12-02-2017 06:01 pm	1.00	50 mL	50 mL	D120221.D	Liquid	Y	<2
22	HS17120054-05	SAMP	12-02-2017 06:25 pm	1.00	50 mL	50 mL	D120222.D	Liquid	Y	<2
23	HS17120054-06	SAMP	12-02-2017 06:50 pm	1.00	50 mL	50 mL	D120223.D	Liquid	Y	<2
24	HS17120054-07	SAMP	12-02-2017 07:14 pm	1.00	50 mL	50 mL	D120224.D	Liquid	Y	<2
25	HS17120054-08	SAMP	12-02-2017 07:39 pm	1.00	50 mL	50 mL	D120225.D	Liquid	Y	<2
26	HS17120054-09	SAMP	12-02-2017 08:03 pm	1.00	50 mL	50 mL	D120226.D	Liquid	Y	<2
27	HS17120054-09MS	MS	12-02-2017 08:28 pm	1.00	50 mL	50 mL	D120227.D	Liquid	Y	<2
28	*8 uL cal std/40 mL sample* HS17120054-09MSD	MSD	12-02-2017 08:52 pm	1.00	50 mL	50 mL	D120228.D	Liquid	Y	<2
29	*8 uL cal std/40 mL sample* CCV_END	CCV_END	12-02-2017 09:17 pm	1.00	50 mL	50 mL	D120229.D	Liquid	Y	NA
30	*10 uL cal std/50 mL DI* BFB	TUNE	12-02-2017 09:41 pm	1.00	50 mL	50 mL	E120201.D	Liquid	Y	NA
31	*Auto find/purged* CCV	CCV	12-02-2017 10:06 pm	1.00	50 mL	50 mL	E120202.D	Liquid	Y	NA

MSVOA02 -Logbook

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
32	VLCSW-171202	LCS	12-02-2017 10:31 pm	1.00	50 mL	50 mL	E120203.D	Liquid	Y	NA
	10 uL cal std/50 mL DI									
33	VLCSDW-171202	LCSD	12-02-2017 10:55 pm	1.00	50 mL	50 mL	E120204.D	Liquid	Y	NA
	10 uL cal std/50 mL DI									
34	BLK	SAMP	12-02-2017 11:19 pm	1.00	50 mL	50 mL	E120205.D	Liquid	Y	NA
	Cleanup blk									
35	VBLKW-171202	MBLK	12-02-2017 11:44 pm	1.00	50 mL	50 mL	E120206.D	Liquid	Y	NA
36	HS17120054-10	SAMP	12-03-2017 12:08 am	1.00	50 mL	50 mL	E120207.D	Liquid	Y	<2
37	HS17120054-11	SAMP	12-03-2017 12:33 am	1.00	50 mL	50 mL	E120208.D	Liquid	Y	<2
38	HS17120056-01	SAMP	12-03-2017 12:57 am	1.00	50 mL	50 mL	E120209.D	Liquid	Y	<2
39	HS17120056-02	SAMP	12-03-2017 01:22 am	1.00	50 mL	50 mL	E120210.D	Liquid	Y	<2
40	HS17120056-03	SAMP	12-03-2017 01:47 am	1.00	50 mL	50 mL	E120211.D	Liquid	Y	<2
41	HS17120056-04	SAMP	12-03-2017 02:11 am	1.00	50 mL	50 mL	E120212.D	Liquid	Y	<2
42	HS17120056-05	SAMP	12-03-2017 02:36 am	1.00	50 mL	50 mL	E120213.D	Liquid	Y	<2
43	HS17120056-06	SAMP	12-03-2017 03:00 am	1.00	50 mL	50 mL	E120214.D	Liquid	Y	<2
44	HS17120056-07	SAMP	12-03-2017 03:25 am	1.00	50 mL	50 mL	E120215.D	Liquid	Y	<2
45	HS17120056-08	SAMP	12-03-2017 03:49 am	1.00	50 mL	50 mL	E120216.D	Liquid	Y	<2
46	HS17120056-09	SAMP	12-03-2017 04:14 am	1.00	50 mL	50 mL	E120217.D	Liquid	Y	<2
47	HS17120056-10	SAMP	12-03-2017 04:38 am	1.00	50 mL	50 mL	E120218.D	Liquid	Y	<2
48	HS17120056-11	SAMP	12-03-2017 05:03 am	1.00	50 mL	50 mL	E120219.D	Liquid	Y	<2
49	HS17111408-08	SAMP	12-03-2017 05:27 am	1.00	50 mL	50 mL	E120220.D	Liquid	Y	<2
50	HS17111408-01	SAMP	12-03-2017 05:52 am	1.00	50 mL	50 mL	E120221.D	Liquid	Y	<2
51	HS17111408-03	SAMP	12-03-2017 06:17 am	1.00	50 mL	50 mL	E120222.D	Liquid	Y	<2
52	HS17111408-04	SAMP	12-03-2017 06:41 am	1.00	50 mL	50 mL	E120223.D	Liquid	Y	<2
53	HS17111408-05	SAMP	12-03-2017 07:06 am	1.00	50 mL	50 mL	E120224.D	Liquid	Y	<2
54	HS17111408-06	SAMP	12-03-2017 07:30 am	1.00	50 mL	50 mL	E120225.D	Liquid	Y	<2
55	HS17111381-14	SAMP	12-03-2017 07:58 am	5.00	10 mL	50 mL	E120226.D	Liquid	Y	<2
56	HS17120056-01MS	MS	12-03-2017 08:22 am	1.00	50 mL	50 mL	E120227.D	Liquid	Y	<2
	8 uL cal std/40 mL sample									
57	HS17120056-01MSD	MSD	12-03-2017 08:47 am	1.00	50 mL	50 mL	E120228.D	Liquid	Y	<2
	8 uL cal std/40 mL sample									
58	CCV_END	CCV_END	12-03-2017 09:11 am	1.00	50 mL	50 mL	E120229.D	Liquid	Y	NA
	10 uL cal std/50 mL DI									

Chemical	Value
SURR ID	29814-95-03
IS ID	29814-95-04
ICV STD ID	29814-95-02
LCS/MS ID	29814-95-01
CAL STD ID	29814-95-01
BFB ID	29814-95-03
pH Paper	634-37-03

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120201.D

Date : 02-DEC-2017 09:53

Client ID: BFB

Instrument: VOA2.i

Sample Info: BFB;BFB;3;;BFB

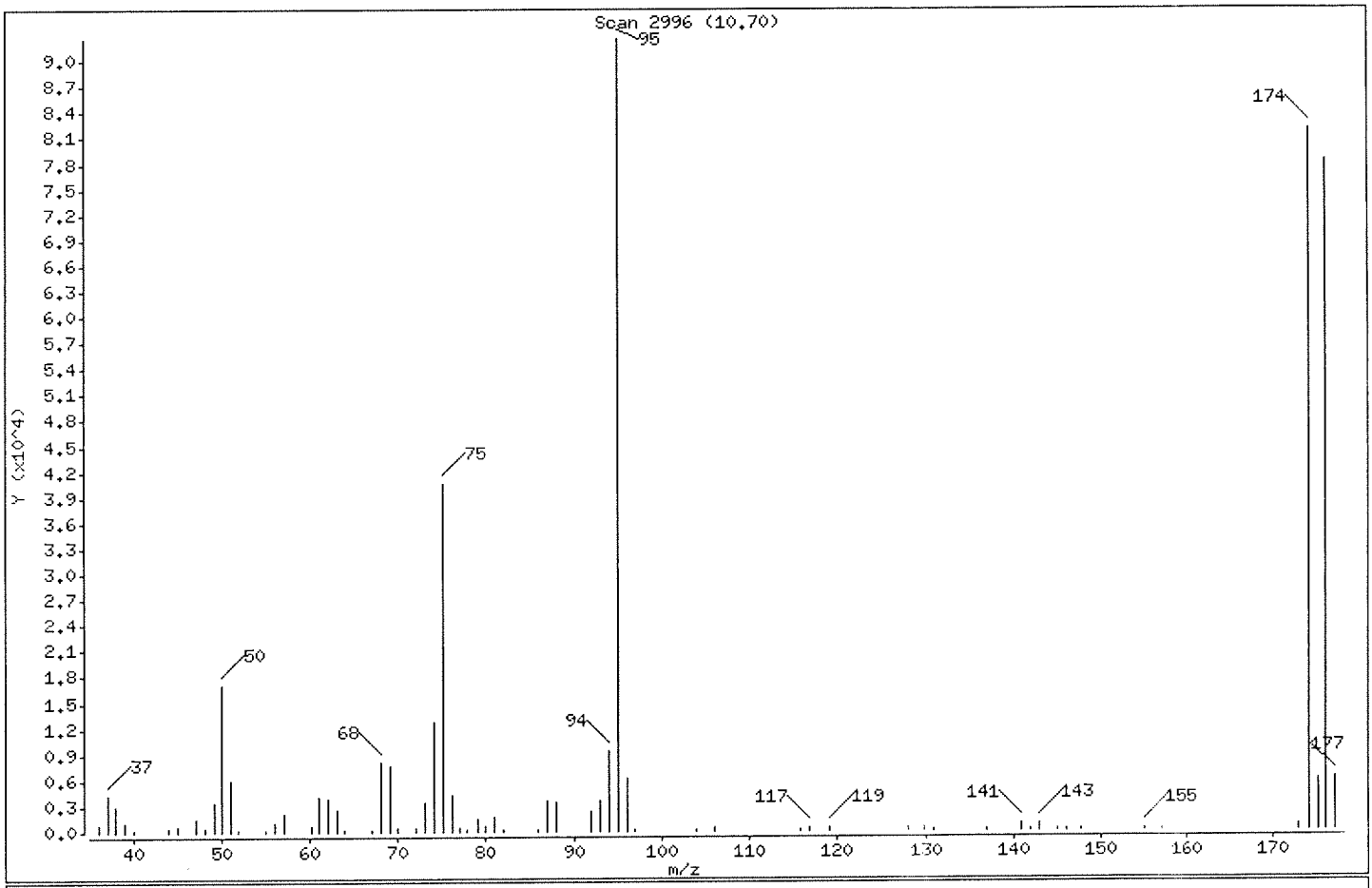
Volume Injected (uL): 2.0

Operator: AP

Column phase: DB624

Column diameter: 0.18

1 bfb



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	18.37
75	30.00 - 60.00% of mass 95	43.95
96	5.00 - 9.00% of mass 95	6.76
173	Less than 2.00% of mass 174	0.68 (0.76)
174	Greater than 50.00% of mass 95	88.61
175	5.00 - 9.00% of mass 174	6.32 (7.14)
176	95.00 - 101.00% of mass 174	84.71 (95.59)
177	5.00 - 9.00% of mass 176	6.69 (7.89)

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120201.D

Date : 02-DEC-2017 09:53

Client ID: BFB

Instrument: VOA2.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: AP

Column phase: DB624

Column diameter: 0.18

Data File: D120201.D
Spectrum: Scan 2996 (10.70)
Location of Maximum: 95.10
Number of points: 67

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.10	792	61.10	4012	81.00	1656	129.90	397
37.10	4345	62.10	3856	82.00	312	130.90	169
38.10	2954	63.10	2610	85.90	174	137.00	156
39.00	1137	64.00	192	87.00	3535	140.90	835
40.00	199	67.10	191	88.00	3309	141.90	156
44.10	447	68.10	8075	92.00	2386	142.90	852
45.10	646	69.10	7691	93.00	3592	145.00	154
47.10	1490	70.00	519	94.10	9323	146.00	250
48.10	530	72.10	351	95.10	92584	147.80	179
49.10	3362	73.00	3439	96.10	6258	154.90	269
50.10	17008	74.10	12746	97.00	248	157.10	207
51.10	5945	75.10	40688	103.90	314	172.80	625
52.00	162	76.10	4236	106.00	436	174.00	82040
55.00	263	77.00	365	115.80	189	175.00	5855
56.00	1042	77.80	200	116.90	527	176.00	78424
57.00	2069	79.00	1419	119.00	441	177.00	6191
60.10	718	80.00	586	128.00	339		

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120201.D

Date : 02-DEC-2017 09:53

Client ID: BFB

Instrument: VOA2.i

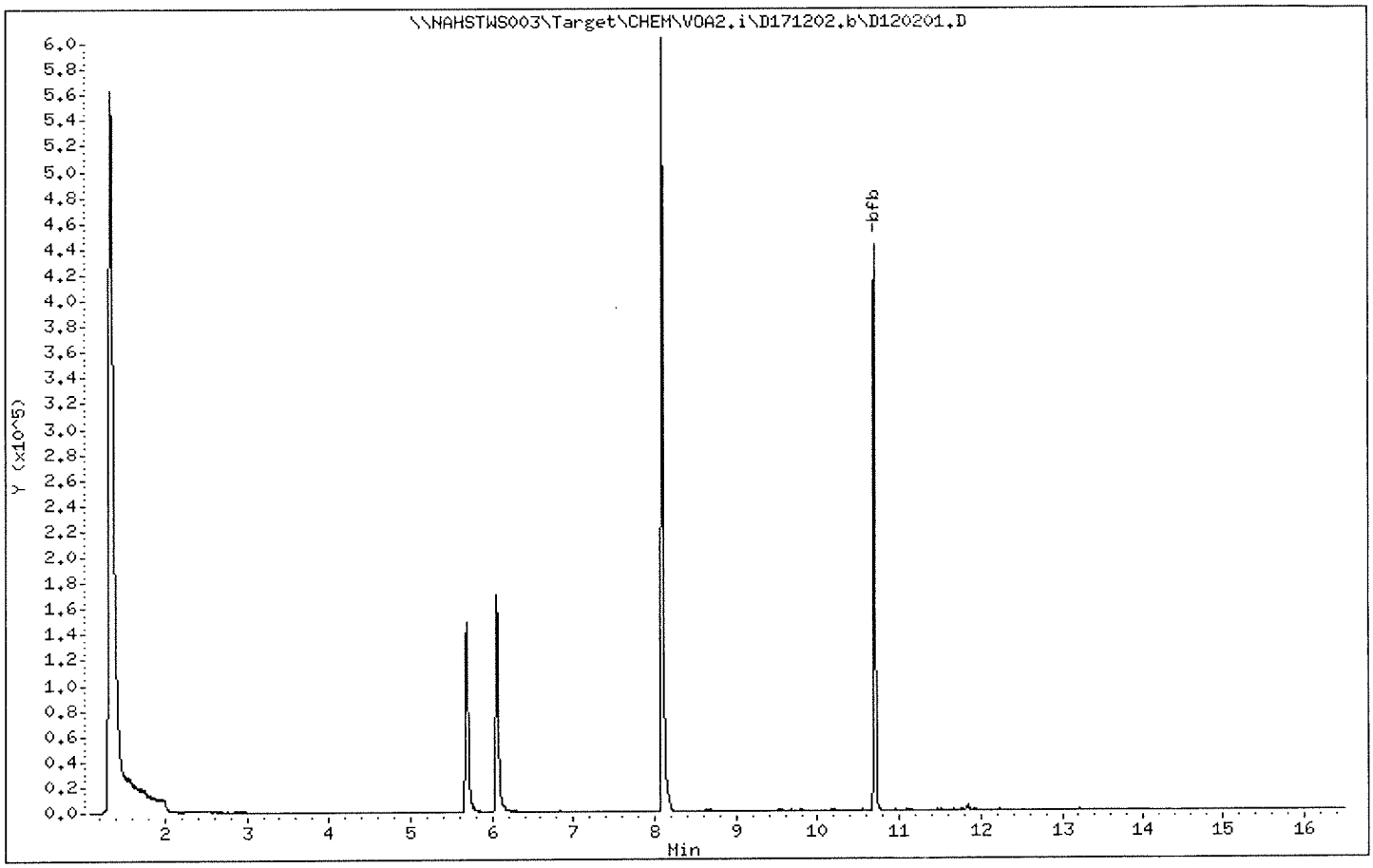
Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: AP

Column phase: DB624

Column diameter: 0.18



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120202.D
Report Date: 01-Feb-2018 17:44

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120202.D
Lab Smp Id: VSTD00.5 Client Smp ID: VSTD00.5
Inj Date : 02-DEC-2017 10:18
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD00.5;VSTD00.5;1;1;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\CHEM\VOA2.i\D171202.b\8260LL.m
Meth Date : 01-Feb-2018 17:44 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 13:32 Cal File: D120210.D
Als bottle: 2 Calibration Sample, Level: 1
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
31 1,1,1-Trichloroethane	97	5.654	5.654	(0.978)	2003	0.50000	0.54 (aM)
60 1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.012)	1359	0.50000	0.53 (aM)
68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.918)	1705	0.50000	0.60 (aM)
53 1,1,2-Trichloroethane	83	8.593	8.593	(0.902)	1210	0.50000	0.63 (aM)
32 1,1-Dichloropropene	75	5.853	5.853	(0.891)	2954	0.50000	0.74 (aM)
22 1,1-Dichloroethane	63	4.297	4.297	(0.743)	2642	0.50000	0.53 (aM)
11 1,1-Dichloroethene	96	2.763	2.763	(0.478)	1354	0.50000	0.58 (aM)
71 1,2,3-Trichloropropane	75	10.907	10.907	(0.921)	1687	0.50000	0.57 (aM)
79 1,2,4-Trimethylbenzene	105	11.504	11.504	(0.972)	5680	0.50000	(a)
93 1,2,3-Trichlorobenzene	182	14.302	14.302	(1.208)	790	0.50000	0.37 (aM)
90 1,2,4-Trichlorobenzene	180	13.821	13.821	(1.168)	1095	0.50000	0.44 (aM)
89 1,2-Dibromo-3-Chloropropane	75	13.015	13.015	(1.099)	139	0.50000	(aM)
33 1,2-Dichloroethane	62	6.148	6.148	(0.936)	2028	0.50000	0.56 (aM)
42 1,2-Dichloropropane	63	7.060	7.060	(1.074)	1547	0.50000	0.56 (aM)
57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	1553	0.50000	0.64 (aM)
88 1,2-Dichlorobenzene	146	12.229	12.229	(1.033)	2984	0.50000	0.65 (Ta)
75 1,3,5-Trimethylbenzene	105	11.135	11.135	(0.941)	5170	0.50000	(a)
54 1,3-Dichloropropane	76	8.757	8.757	(0.919)	2152	0.50000	0.56 (aM)
83 1,3-Dichlorobenzene	146	11.773	11.773	(0.995)	2920	0.50000	0.60 (aM)
84 1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	2865	0.50000	0.60 (aM)
26 2,2-Dichloropropane	77	5.048	5.048	(0.873)	1896	0.50000	0.54 (aM)

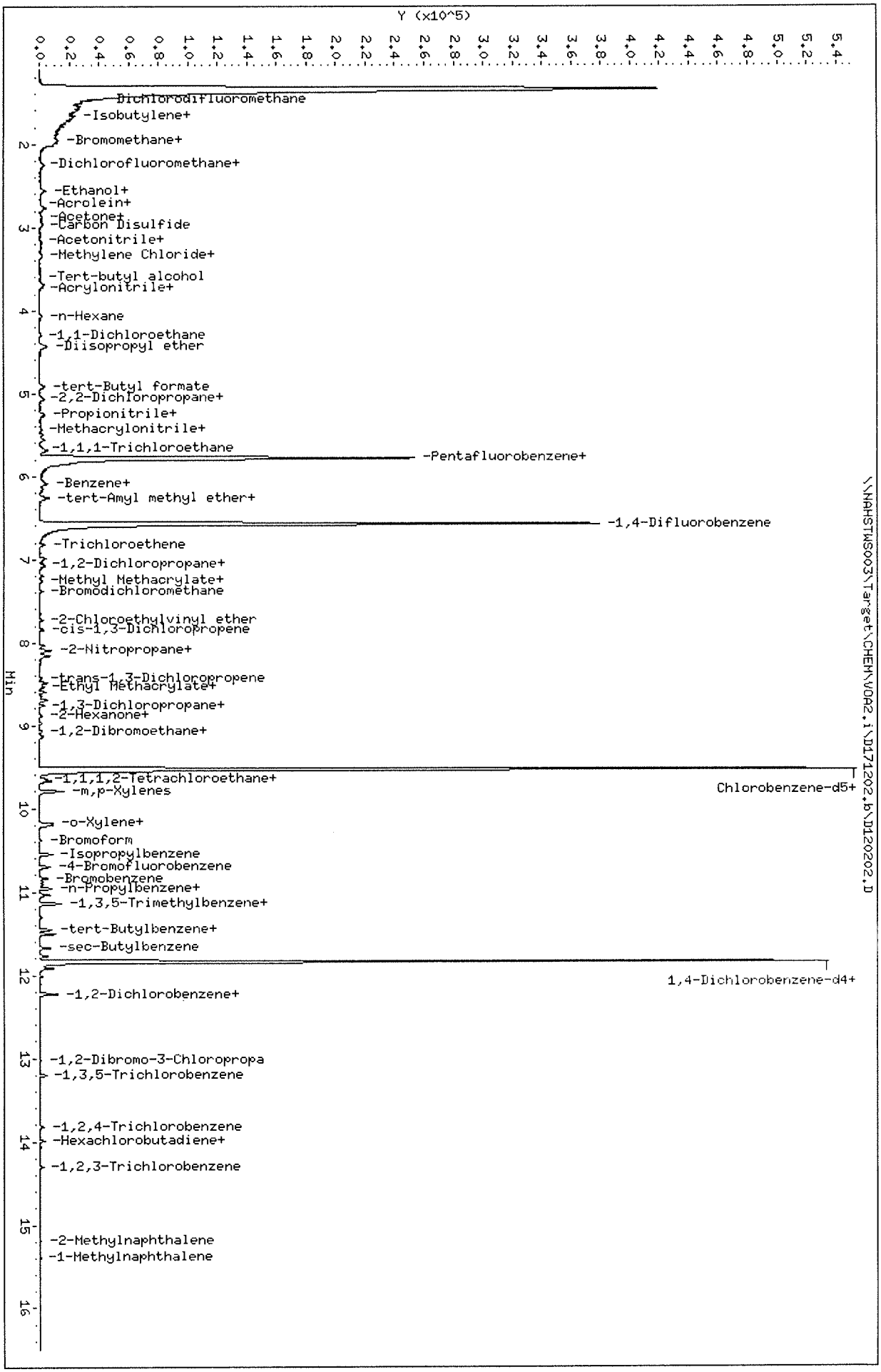
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120202.D
Report Date: 01-Feb-2018 17:44

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
24	2-Butanone	43	5.173	5.173	(0.895)	1408	1.00000	1.27 (aM)
52	2-Hexanone	43	8.879	8.879	(0.932)	1741	1.00000	1.07 (aM)
76	2-Chlorotoluene	91	11.029	11.029	(0.932)	4439	0.50000	0.61 (aM)
77	4-Chlorotoluene	91	11.141	11.141	(0.941)	5053	0.50000	(aM)
45	4-Methyl-2-Pentanone	43	8.035	8.035	(0.843)	3130	1.00000	1.19 (aM)
10	Acetone	43	2.869	2.869	(0.496)	3198	1.00000	(aM)
37	Benzene	78	6.094	6.094	(0.927)	5443	0.50000	0.57 (TaM)
39	Bromodichloromethane	83	7.374	7.374	(1.122)	1557	0.50000	0.49 (aM)
74	Bromobenzene	156	10.836	10.836	(0.915)	1717	0.50000	0.60 (aM)
29	Bromochloromethane	128	5.372	5.372	(0.929)	516	0.50000	0.42 (aM)
6	Bromomethane	94	1.961	1.961	(0.339)	1733	0.50000	0.27 (aM)
19	Carbon Disulfide	76	2.971	2.971	(0.514)	5964	1.00000	1.26 (aM)
66	Bromoform	173	10.378	10.378	(1.089)	865	0.50000	0.47 (aM)
7	Chloroethane	64	2.034	2.034	(0.352)	2385	0.50000	(aM)
34	Carbon Tetrachloride	117	5.814	5.814	(0.885)	5043	0.50000	1.33 (aM)
3	Chloromethane	50	1.601	1.601	(0.277)	3868	0.50000	(aM)
28	Chloroform	83	5.497	5.497	(0.951)	2550	0.50000	0.57 (aM)
59	Chlorobenzene	112	9.556	9.556	(1.003)	3984	0.50000	0.61 (aM)
27	cis-1,2-Dichloroethene	96	5.083	5.083	(0.880)	1491	0.50000	0.56 (aM)
46	cis-1,3-Dichloropropene	75	7.846	7.846	(1.194)	2036	0.50000	0.54 (aM)
2	Dichlorodifluoromethane	85	1.457	1.457	(0.252)	1216	0.50000	0.52 (aM)
55	Dibromochloromethane	129	8.975	8.975	(0.942)	1448	0.50000	0.53 (aM)
44	Dibromomethane	93	7.198	7.198	(1.095)	691	0.50000	0.48 (aM)
61	Ethylbenzene	106	9.675	9.675	(1.015)	1908	0.50000	0.56 (aM)
91	Hexachlorobutadiene	225	13.994	13.994	(1.182)	961	0.50000	(aM)
62	m,p-Xylenes	106	9.790	9.790	(1.028)	5108	1.00000	1.19 (Ta)
63	o-Xylene	106	10.175	10.175	(1.068)	2591	0.50000	0.58 (Ta)
67	Isopropylbenzene	105	10.551	10.551	(1.107)	6499	0.50000	0.79 (aM)
17	Methylene Chloride	84	3.337	3.337	(0.577)	1532	0.50000	0.60 (aM)
73	n-Propylbenzene	91	10.952	10.952	(0.925)	6638	0.50000	(Ta)
87	n-Butylbenzene	91	12.229	12.229	(1.033)	3401	0.50000	0.59 (aM)
92	Naphthalene	128	14.068	14.068	(1.188)	1044	0.50000	(aM)
64	Styrene	104	10.201	10.201	(1.071)	4233	0.50000	0.59 (aM)
81	sec-Butylbenzene	105	11.668	11.668	(0.986)	5811	0.50000	(aM)
78	tert-Butylbenzene	119	11.453	11.453	(0.967)	4266	0.50000	(Ta)
20	trans-1,2-Dichloroethene	96	3.671	3.671	(0.635)	1127	0.50000	0.51 (aM)
50	Toluene	91	8.160	8.160	(0.857)	6405	0.50000	0.62 (aM)
51	trans-1,3-Dichloropropene	75	8.423	8.423	(1.282)	1394	0.50000	0.43 (aM)
56	Tetrachloroethene	164	8.693	8.693	(0.912)	1069	0.50000	0.50 (aM)
8	Trichlorofluoromethane	101	2.259	2.259	(0.391)	1895	0.50000	0.53 (aM)
38	Trichloroethene	130	6.825	6.825	(1.039)	1559	0.50000	0.60 (aM)
5	Vinyl Chloride	62	1.694	1.694	(0.293)	2461	0.50000	(aM)
$ 35	1,2-Dichloroethane-d4	65	6.058	6.058	(1.048)	1945	0.50000	0.65 (aM)
* 36	1,4-Difluorobenzene	114	6.572	6.572	(1.000)	377094	50.0000	
* 70	1,4-Dichlorobenzene-d4	152	11.838	11.838	(1.000)	141237	50.0000	
* 1	Pentafluorobenzene	168	5.779	5.779	(1.000)	256093	50.0000	
* 47	Chlorobenzene-d5	117	9.527	9.527	(1.000)	333152	50.0000	
$ 30	Dibromofluoromethane	113	5.689	5.689	(0.984)	1535	0.50000	0.60 (aM)
$ 48	Toluene-d8	98	8.093	8.093	(0.849)	6426	0.50000	0.77 (aM)
$ 69	4-Bromofluorobenzene	95	10.695	10.695	(1.123)	2839	0.50000	0.89 (a)
82	p-Isopropyltoluene	119	11.818	11.818	(0.998)	5057	0.50000	0.63 (aM)
138	Freon TF	101	2.766	2.766	(0.479)	1029	0.50000	0.49 (aM)

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120202.D
Report Date: 01-Feb-2018 17:44

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120202.D
Date : 02-DEC-2017 10:18
Client ID: VSTD00.5
Sample Info: VSTD00.5;VSTD00.5;1;1;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120203.D
Report Date: 01-Feb-2018 17:44

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120203.D
Lab Smp Id: VSTD001 Client Smp ID: VSTD001
Inj Date : 02-DEC-2017 10:42
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD001;VSTD001;1;2;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\CHEM\VOA2.i\D171202.b\8260LL.m
Meth Date : 01-Feb-2018 17:44 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 10:18 Cal File: D120202.D
Als bottle: 3 Calibration Sample, Level: 2
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
31 1,1,1-Trichloroethane	97	5.657	5.657	(0.979)	3581	1.00000	0.98 (a)
60 1,1,1,2-Tetrachloroethane	131	9.646	9.646	(1.013)	2729	1.00000	1.08 (a)
68 1,1,2,2-Tetrachloroethane	83	10.869	10.869	(0.918)	3108	1.00000	1.07 (aM)
53 1,1,2-Trichloroethane	83	8.597	8.597	(0.903)	1909	1.00000	1.00 (aM)
32 1,1-Dichloropropene	75	5.850	5.850	(0.890)	4305	1.00000	1.19 (aM)
22 1,1-Dichloroethane	63	4.278	4.278	(0.741)	5155	1.00000	1.05 (aM)
11 1,1-Dichloroethene	96	2.747	2.747	(0.476)	2255	1.00000	0.98 (aM)
71 1,2,3-Trichloropropane	75	10.904	10.904	(0.921)	3317	1.00000	1.08 (Ta)
79 1,2,4-Trimethylbenzene	105	11.498	11.498	(0.971)	9594	1.00000	(a)
93 1,2,3-Trichlorobenzene	182	14.305	14.305	(1.208)	2034	1.00000	0.93 (aM)
90 1,2,4-Trichlorobenzene	180	13.821	13.821	(1.168)	2244	1.00000	0.87 (aM)
89 1,2-Dibromo-3-Chloropropane	75	13.015	13.015	(1.099)	361	1.00000	0.15 (aM)
33 1,2-Dichloroethane	62	6.152	6.152	(0.936)	3613	1.00000	1.01 (aM)
42 1,2-Dichloropropane	63	7.069	7.069	(1.076)	3325	1.00000	1.21 (aM)
57 1,2-Dibromoethane	107	9.075	9.075	(0.953)	2466	1.00000	1.03 (aM)
88 1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	4811	1.00000	1.01 (a)
75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.940)	9046	1.00000	(a)
54 1,3-Dichloropropane	76	8.751	8.751	(0.919)	4004	1.00000	1.06 (aM)
83 1,3-Dichlorobenzene	146	11.764	11.764	(0.994)	5472	1.00000	1.10 (a)
84 1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	5271	1.00000	1.08 (a)
26 2,2-Dichloropropane	77	5.048	5.048	(0.874)	3467	1.00000	1.00 (aM)

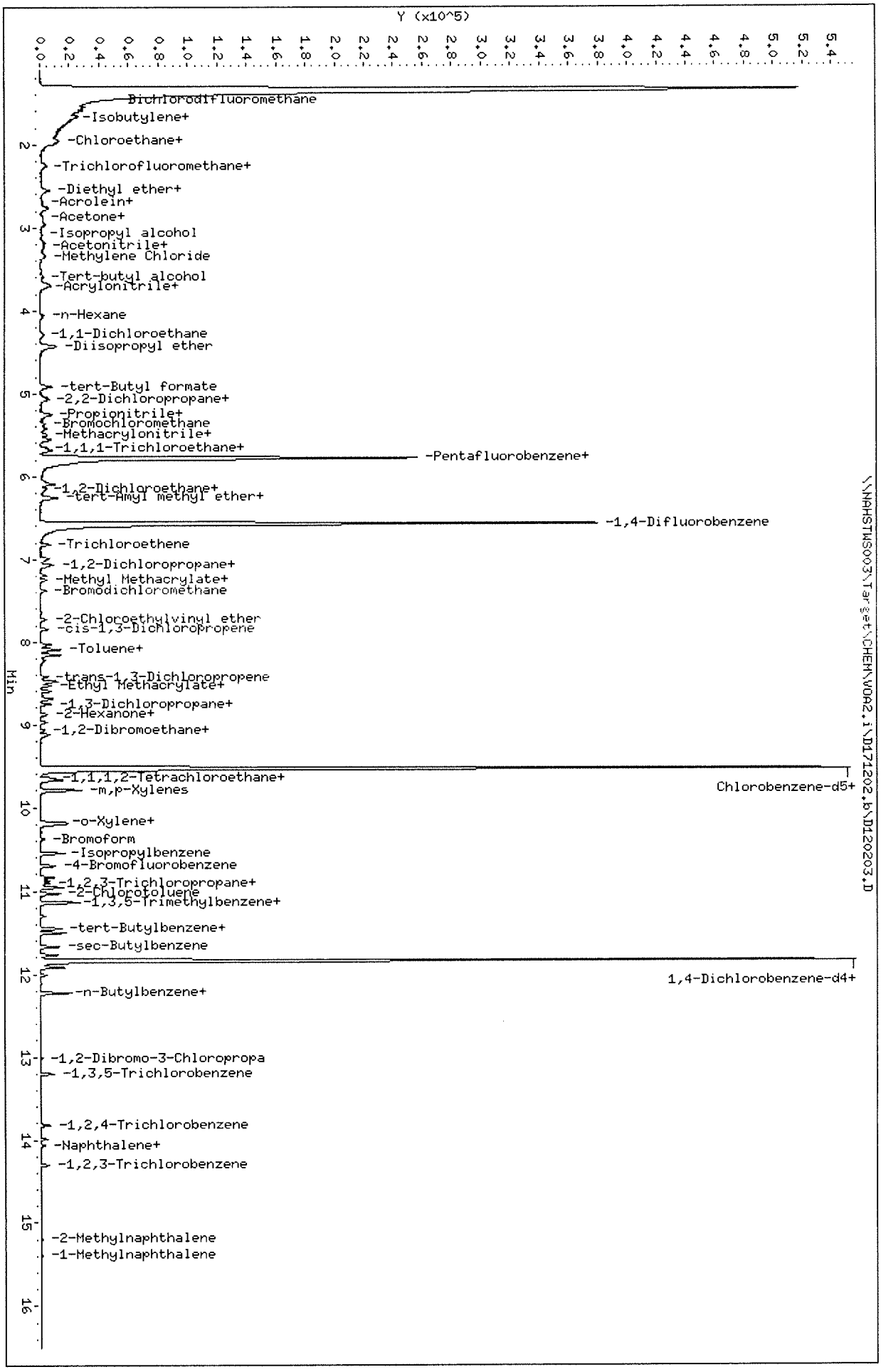
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120203.D
Report Date: 01-Feb-2018 17:44

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
24	2-Butanone	43	5.163	5.163	(0.894)	2564	2.00000	2.33 (aM)
52	2-Hexanone	43	8.876	8.876	(0.932)	3306	2.00000	2.05 (aM)
76	2-Chlorotoluene	91	11.026	11.026	(0.931)	8059	1.00000	1.07 (Ta)
77	4-Chlorotoluene	91	11.138	11.138	(0.941)	8809	1.00000	(a)
45	4-Methyl-2-Pentanone	43	8.035	8.035	(0.844)	6250	2.00000	2.40 (aM)
10	Acetone	43	2.866	2.866	(0.496)	3976	2.00000	(aM)
37	Benzene	78	6.087	6.087	(0.926)	9883	1.00000	1.05 (aM)
39	Bromodichloromethane	83	7.374	7.374	(1.122)	3134	1.00000	1.00 (aM)
74	Bromobenzene	156	10.837	10.837	(0.915)	3054	1.00000	1.03 (a)
29	Bromochloromethane	128	5.369	5.369	(0.929)	1036	1.00000	0.85 (aM)
6	Bromomethane	94	1.951	1.951	(0.338)	3575	1.00000	0.96 (TaM)
19	Carbon Disulfide	76	2.956	2.956	(0.512)	8133	2.00000	1.74 (aM)
66	Bromoform	173	10.375	10.375	(1.089)	1610	1.00000	0.89 (aM)
7	Chloroethane	64	2.051	2.051	(0.355)	3477	1.00000	(aM)
34	Carbon Tetrachloride	117	5.837	5.837	(0.888)	4445	1.00000	1.16 (TaM)
3	Chloromethane	50	1.598	1.598	(0.277)	6636	1.00000	(aM)
28	Chloroform	83	5.491	5.491	(0.951)	5093	1.00000	1.14 (aM)
59	Chlorobenzene	112	9.553	9.553	(1.003)	7053	1.00000	1.09 (Ta)
27	cis-1,2-Dichloroethene	96	5.070	5.070	(0.878)	2962	1.00000	1.12 (aM)
46	cis-1,3-Dichloropropene	75	7.839	7.839	(1.193)	3337	1.00000	0.90 (aM)
2	Dichlorodifluoromethane	85	1.454	1.454	(0.252)	2151	1.00000	0.93 (aM)
55	Dibromochloromethane	129	8.972	8.972	(0.942)	2455	1.00000	0.91 (aM)
44	Dibromomethane	93	7.198	7.198	(1.095)	1587	1.00000	1.12 (aM)
61	Ethylbenzene	106	9.675	9.675	(1.016)	3482	1.00000	1.05 (aMH)
91	Hexachlorobutadiene	225	13.991	13.991	(1.182)	1063	1.00000	(aM)
62	m,p-Xylenes	106	9.791	9.791	(1.028)	8999	2.00000	2.12 (a)
63	o-Xylene	106	10.176	10.176	(1.068)	4550	1.00000	1.04 (a)
67	Isopropylbenzene	105	10.551	10.551	(1.108)	10686	1.00000	1.17 (a)
17	Methylene Chloride	84	3.341	3.341	(0.578)	2757	1.00000	1.08 (aM)
73	n-Propylbenzene	91	10.955	10.955	(0.925)	11530	1.00000	(Ta)
87	n-Butylbenzene	91	12.220	12.220	(1.032)	5133	1.00000	0.86 (Ta)
92	Naphthalene	128	14.068	14.068	(1.188)	3027	1.00000	(a)
64	Styrene	104	10.201	10.201	(1.071)	7533	1.00000	1.06 (a)
81	sec-Butylbenzene	105	11.668	11.668	(0.986)	9365	1.00000	(aM)
78	tert-Butylbenzene	119	11.453	11.453	(0.967)	7196	1.00000	(aM)
20	trans-1,2-Dichloroethene	96	3.668	3.668	(0.635)	2064	1.00000	0.94 (aM)
50	Toluene	91	8.157	8.157	(0.856)	11168	1.00000	1.09 (Ta)
51	trans-1,3-Dichloropropene	75	8.424	8.424	(1.282)	3133	1.00000	0.97 (aM)
56	Tetrachloroethene	164	8.693	8.693	(0.913)	2236	1.00000	1.07 (aM)
8	Trichlorofluoromethane	101	2.266	2.266	(0.392)	3024	1.00000	0.85 (TaM)
38	Trichloroethene	130	6.825	6.825	(1.039)	2690	1.00000	1.04 (aM)
5	Vinyl Chloride	62	1.682	1.682	(0.291)	3763	1.00000	(TaM)
$ 35	1,2-Dichloroethane-d4	65	6.059	6.059	(1.049)	3070	1.00000	1.04 (aM)
* 36	1,4-Difluorobenzene	114	6.572	6.572	(1.000)	373936	50.0000	
* 70	1,4-Dichlorobenzene-d4	152	11.838	11.838	(1.000)	145657	50.0000	
* 1	Pentafluorobenzene	168	5.776	5.776	(1.000)	254164	50.0000	
* 47	Chlorobenzene-d5	117	9.524	9.524	(1.000)	329829	50.0000	
$ 30	Dibromofluoromethane	113	5.686	5.686	(0.984)	2347	1.00000	0.93 (aM)
$ 48	Toluene-d8	98	8.093	8.093	(0.850)	9941	1.00000	1.21 (aM)
$ 69	4-Bromofluorobenzene	95	10.699	10.699	(1.123)	3894	1.00000	1.24 (a)
82	p-Isopropyltoluene	119	11.819	11.819	(0.998)	8013	1.00000	0.98 (aM)
138	Freon TF	101	2.769	2.769	(0.479)	1750	1.00000	0.84 (aM)

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120203.D
Report Date: 01-Feb-2018 17:44

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



Data File: \\NAHSTWS003\Target\CHEM\WOA2.i\D171202.b\D120203.D
Date : 02-DEC-2017 10:42
Client ID: VSTD001
Sample Info: VSTD001;VSTD001;1;2;
Purge Volume: 5.0
Column phase: DB624

Instrument: WOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120204.D
Report Date: 01-Feb-2018 17:44

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120204.D
Lab Smp Id: VSTD002 Client Smp ID: VSTD002
Inj Date : 02-DEC-2017 11:06
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD002;VSTD002;1;3;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\CHEM\VOA2.i\D171202.b\8260LL.m
Meth Date : 01-Feb-2018 17:44 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 10:42 Cal File: D120203.D
Als bottle: 4 Calibration Sample, Level: 3
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
31 1,1,1-Trichloroethane	97	5.654	5.654	(0.978)	8427	2.00000	2.07(a)
60 1,1,1,2-Tetrachloroethane	131	9.646	9.646	(1.013)	5023	2.00000	1.95(a)
68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.919)	6180	2.00000	2.12(aM)
53 1,1,2-Trichloroethane	83	8.593	8.593	(0.902)	3646	2.00000	1.87(a)
32 1,1-Dichloropropene	75	5.856	5.856	(0.891)	9416	2.00000	2.81(aM)
22 1,1-Dichloroethane	63	4.290	4.290	(0.742)	10376	2.00000	1.88(aM)
11 1,1-Dichloroethene	96	2.756	2.756	(0.477)	4642	2.00000	1.79(aM)
71 1,2,3-Trichloropropane	75	10.904	10.904	(0.921)	6474	2.00000	2.11(a)
79 1,2,4-Trimethylbenzene	105	11.504	11.504	(0.972)	19532	2.00000	1.27(a)
93 1,2,3-Trichlorobenzene	182	14.308	14.308	(1.209)	4412	2.00000	2.01(aM)
90 1,2,4-Trichlorobenzene	180	13.821	13.821	(1.168)	4742	2.00000	1.84(Ta)
89 1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	841	2.00000	1.22(aM)
33 1,2-Dichloroethane	62	6.148	6.148	(0.936)	7241	2.00000	2.01(a)
42 1,2-Dichloropropane	63	7.069	7.069	(1.076)	5538	2.00000	1.99(aM)
57 1,2-Dibromoethane	107	9.068	9.068	(0.952)	4896	2.00000	2.00(Ta)
88 1,2-Dichlorobenzene	146	12.229	12.229	(1.033)	10163	2.00000	2.13(a)
75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	18401	2.00000	0.72(a)
54 1,3-Dichloropropane	76	8.747	8.747	(0.918)	7803	2.00000	2.03(aM)
83 1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	10348	2.00000	2.07(a)
84 1,4-Dichlorobenzene	146	11.863	11.863	(1.002)	10225	2.00000	2.09(a)
26 2,2-Dichloropropane	77	5.041	5.041	(0.872)	7256	2.00000	1.87(aM)

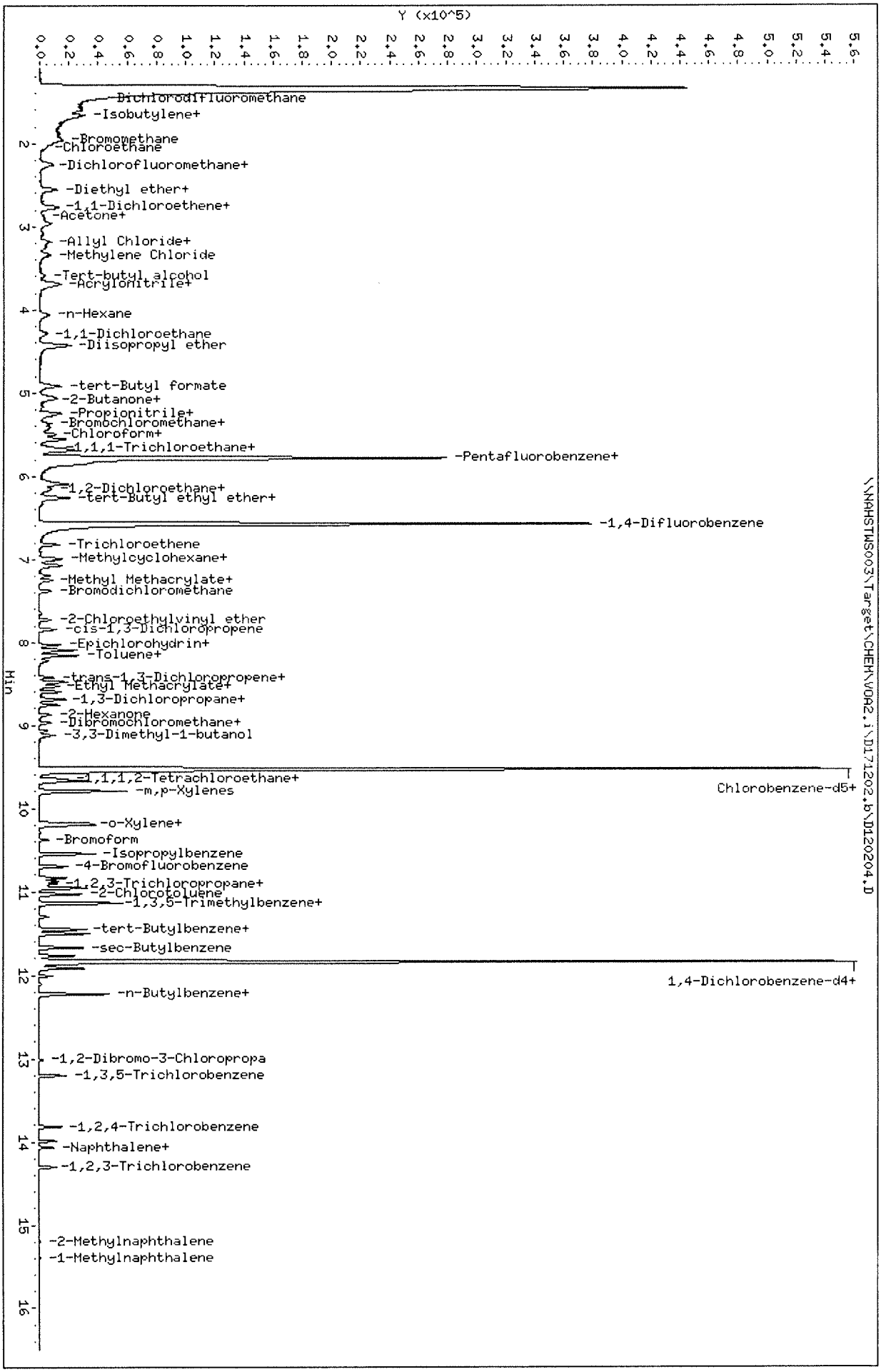
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120204.D
Report Date: 01-Feb-2018 17:44

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
24	2-Butanone	43	5.157	5.157	(0.892)	4385	4.00000	3.55(aM)
52	2-Hexanone	43	8.869	8.869	(0.931)	6473	4.00000	3.93(a)
76	2-Chlorotoluene	91	11.029	11.029	(0.932)	16577	2.00000	2.20(a)
77	4-Chlorotoluene	91	11.138	11.138	(0.941)	18244	2.00000	1.13(a)
45	4-Methyl-2-Pentanone	43	8.029	8.029	(0.843)	10790	4.00000	4.04(aM)
10	Acetone	43	2.869	2.869	(0.496)	5385	4.00000	0.66(aM)
37	Benzene	78	6.097	6.097	(0.928)	18734	2.00000	1.97(a)
39	Bromodichloromethane	83	7.377	7.377	(1.123)	6365	2.00000	2.00(Ta)
74	Bromobenzene	156	10.840	10.840	(0.916)	6321	2.00000	2.13(a)
29	Bromochloromethane	128	5.368	5.368	(0.929)	2670	2.00000	1.95(a)
6	Bromomethane	94	1.948	1.948	(0.337)	6157	2.00000	1.69(aM)
19	Carbon Disulfide	76	2.959	2.959	(0.512)	19625	4.00000	3.74(aM)
66	Bromoform	173	10.378	10.378	(1.090)	3288	2.00000	1.79(aM)
7	Chloroethane	64	2.057	2.057	(0.356)	6678	2.00000	1.06(aM)
34	Carbon Tetrachloride	117	5.837	5.837	(0.888)	8585	2.00000	2.42(TaH)
3	Chloromethane	50	1.598	1.598	(0.277)	12476	2.00000	0.10(aM)
28	Chloroform	83	5.494	5.494	(0.951)	11280	2.00000	2.26(aM)
59	Chlorobenzene	112	9.556	9.556	(1.003)	13924	2.00000	2.10(a)
27	cis-1,2-Dichloroethene	96	5.080	5.080	(0.879)	5537	2.00000	1.88(aM)
46	cis-1,3-Dichloropropene	75	7.843	7.843	(1.193)	7440	2.00000	1.98(aM)
2	Dichlorodifluoromethane	85	1.463	1.463	(0.253)	4587	2.00000	1.77(aM)
55	Dibromochloromethane	129	8.972	8.972	(0.942)	5058	2.00000	1.83(Ta)
44	Dibromomethane	93	7.191	7.191	(1.094)	2793	2.00000	1.94(a)
61	Ethylbenzene	106	9.668	9.668	(1.015)	7349	2.00000	2.16(aMH)
91	Hexachlorobutadiene	225	13.991	13.991	(1.182)	2817	2.00000	0.69(aM)
62	m,p-Xylenes	106	9.787	9.787	(1.028)	17786	4.00000	4.10(a)
63	o-Xylene	106	10.179	10.179	(1.069)	8974	2.00000	2.01(a)
67	Isopropylbenzene	105	10.544	10.544	(1.107)	25343	2.00000	2.45(a)
17	Methylene Chloride	84	3.347	3.347	(0.579)	5306	2.00000	1.86(aM)
73	n-Propylbenzene	91	10.955	10.955	(0.926)	24532	2.00000	(a)
87	n-Butylbenzene	91	12.226	12.226	(1.033)	13308	2.00000	2.22(a)
92	Naphthalene	128	14.065	14.065	(1.188)	7991	2.00000	(a)
64	Styrene	104	10.201	10.201	(1.071)	14339	2.00000	1.97(a)
81	sec-Butylbenzene	105	11.671	11.671	(0.986)	21030	2.00000	1.04(a)
78	tert-Butylbenzene	119	11.453	11.453	(0.968)	16119	2.00000	1.17(a)
20	trans-1,2-Dichloroethene	96	3.677	3.677	(0.636)	4577	2.00000	1.86(aM)
50	Toluene	91	8.154	8.154	(0.856)	21839	2.00000	2.04(aM)
51	trans-1,3-Dichloropropene	75	8.423	8.423	(1.282)	5994	2.00000	1.83(aM)
56	Tetrachloroethene	164	8.693	8.693	(0.913)	4566	2.00000	2.14(aM)
8	Trichlorofluoromethane	101	2.262	2.262	(0.391)	7667	2.00000	1.93(aM)
38	Trichloroethene	130	6.822	6.822	(1.038)	5343	2.00000	2.04(a)
5	Vinyl Chloride	62	1.688	1.688	(0.292)	7543	2.00000	0.07(aM)
$ 35	1,2-Dichloroethane-d4	65	6.062	6.062	(1.049)	6259	2.00000	1.90(aM)
* 36	1,4-Difluorobenzene	114	6.572	6.572	(1.000)	379462	50.0000	
* 70	1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	146409	50.0000	
* 1	Pentafluorobenzene	168	5.779	5.779	(1.000)	285166	50.0000	
* 47	Chlorobenzene-d5	117	9.524	9.524	(1.000)	338024	50.0000	
$ 30	Dibromofluoromethane	113	5.689	5.689	(0.984)	6395	2.00000	2.26(aM)
$ 48	Toluene-d8	98	8.093	8.093	(0.850)	18560	2.00000	2.21(aM)
$ 69	4-Bromofluorobenzene	95	10.695	10.695	(1.123)	6746	2.00000	2.10(a)
82	p-Isopropyltoluene	119	11.818	11.818	(0.999)	17991	2.00000	2.19(a)
138	Freon TF	101	2.782	2.782	(0.481)	4615	2.00000	1.97(aM)

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120204.D
Report Date: 01-Feb-2018 17:44

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.


Y (x10^5)
Min
-Dichlorodifluoromethane
-Isobutylene+
-Bromomethane
-Chloroethane
-Dichlorofluoromethane+
-Diethyl ether+
-1,1-Dichloroethene+
-Acetone+
-Allyl Chloride+
-Methylene Chloride
-Tert-butyl alcohol
-Acrylonitrile+
-n-Hexane
-1,1-Dichloroethane
-Diisopropyl ether
-tert-Butyl formate
-2-Butanone+
-Propionitrile+
-Bromochloromethane+
-Chloroform+
-1,1,1-Trichloroethane+
-Pentafluorobenzene+
-1,2-Dichloroethane+
-tert-Butyl ethyl ether+
-1,4-Difluorobenzene
-Trichloroethene
-Methylcyclohexane+
-Methyl Methacrylate+
-Bromodichloromethane
-2-Chloroethylvinyl ether
-cis-1,3-Dichloropropene
-Epichlorohydrin+
-Toluene+
-trans-1,3-Dichloropropene+
-Ethyl Methacrylate+
-1,3-Dichloropropane+
-2-Hexanone
-Dibromochloromethane+
-3,3-Dimethyl-1-butanol
-1,1,1,2-Tetrachloroethane+
-m,p-Xylenes
Chlorobenzene-d5+
-o-Xylene+
-Bromoform
-Isopropylbenzene
-4-Bromofluorobenzene
-1,2,3-Trichloropropane+
-2-Chlorotoluene
-1,3,5-Trimethylbenzene+
-tert-Butylbenzene+
-sec-Butylbenzene
1,4-Dichlorobenzene-d4+
-n-Butylbenzene+
-1,2-Dibromo-3-Chloropropa
-1,3,5-Trichlorobenzene
-1,2,4-Trichlorobenzene
-Naphthalene+
-1,2,3-Trichlorobenzene
-2-Methylnaphthalene
-1-Methylnaphthalene
\\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120204.D
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120204.D
Date : 02-DEC-2017 11:06
Client ID: VSTD002
Sample Info: VSTD002;VSTD002;1;3;
Purge Volume: 5.0
Column phase: DB624
Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120205.D
Report Date: 01-Feb-2018 17:44

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120205.D
Lab Smp Id: VSTD005 Client Smp ID: VSTD005
Inj Date : 02-DEC-2017 11:31
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD005;VSTD005;1;4;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\CHEM\VOA2.i\D171202.b\8260LL.m
Meth Date : 01-Feb-2018 17:44 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 11:06 Cal File: D120204.D
Als bottle: 5 Calibration Sample, Level: 4
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
31 1,1,1-Trichloroethane	97	5.657	5.657	(0.979)	17704	5.00000	5.14(M)
60 1,1,1,2-Tetrachloroethane	131	9.646	9.646	(1.012)	11672	5.00000	4.75(a)
68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.919)	14113	5.00000	5.04(M)
53 1,1,2-Trichloroethane	83	8.597	8.597	(0.902)	9253	5.00000	4.98(a)
32 1,1-Dichloropropene	75	5.863	5.863	(0.892)	15983	5.00000	4.75(aM)
22 1,1-Dichloroethane	63	4.284	4.284	(0.741)	24471	5.00000	5.27(M)
11 1,1-Dichloroethene	96	2.763	2.763	(0.478)	11834	5.00000	5.42(M)
71 1,2,3-Trichloropropane	75	10.904	10.904	(0.921)	14147	5.00000	4.79(a)
79 1,2,4-Trimethylbenzene	105	11.497	11.497	(0.972)	42815	5.00000	4.81(a)
93 1,2,3-Trichlorobenzene	182	14.305	14.305	(1.209)	10645	5.00000	5.05
90 1,2,4-Trichlorobenzene	180	13.821	13.821	(1.168)	12561	5.00000	5.07
89 1,2-Dibromo-3-Chloropropane	75	13.012	13.012	(1.100)	1939	5.00000	3.84(aM)
33 1,2-Dichloroethane	62	6.148	6.148	(0.936)	17871	5.00000	4.78(aM)
42 1,2-Dichloropropane	63	7.069	7.069	(1.076)	13638	5.00000	4.75(aM)
57 1,2-Dibromoethane	107	9.068	9.068	(0.952)	11298	5.00000	4.84(Ta)
88 1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	23094	5.00000	5.04
75 1,3,5-Trimethylbenzene	105	11.135	11.135	(0.941)	43015	5.00000	4.59(a)
54 1,3-Dichloropropane	76	8.754	8.754	(0.919)	18197	5.00000	4.96(a)
83 1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	23612	5.00000	4.90(a)
84 1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	22326	5.00000	4.74(a)
26 2,2-Dichloropropane	77	5.044	5.044	(0.873)	16428	5.00000	5.01(M)

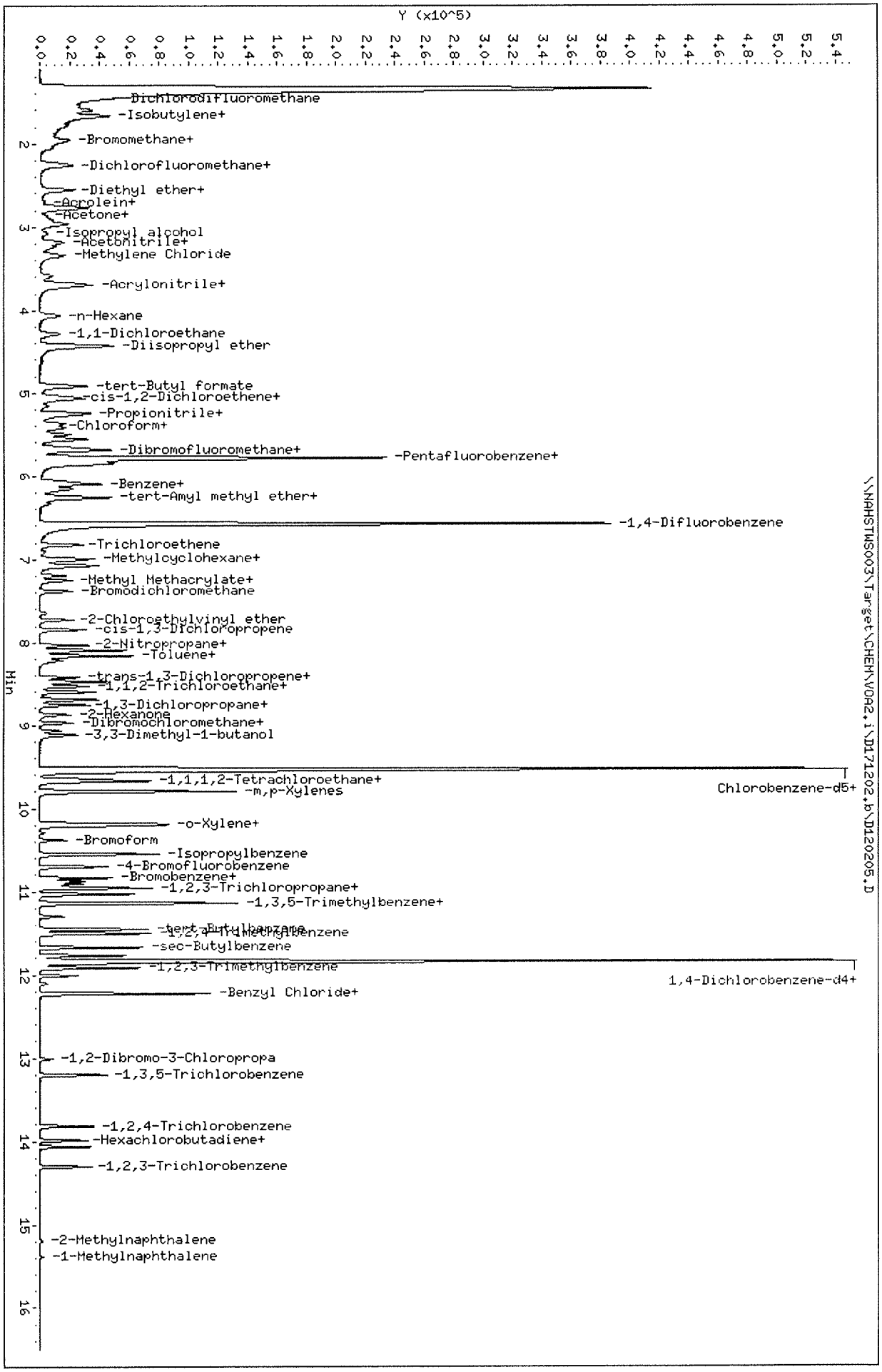
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120205.D
Report Date: 01-Feb-2018 17:44

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
	24 2-Butanone	43	5.150	5.150	(0.891)	9830	10.0000	9.43(M)
	52 2-Hexanone	43	8.869	8.869	(0.931)	15432	10.0000	9.80
	76 2-Chlorotoluene	91	11.026	11.026	(0.932)	36630	5.00000	5.05
	77 4-Chlorotoluene	91	11.138	11.138	(0.941)	40733	5.00000	4.72(a)
	45 4-Methyl-2-Pentanone	43	8.025	8.025	(0.842)	25316	10.0000	9.92
	10 Acetone	43	2.859	2.859	(0.495)	8530	10.0000	7.56
	37 Benzene	78	6.094	6.094	(0.927)	44144	5.00000	4.48(a)
	39 Bromodichloromethane	83	7.380	7.380	(1.123)	15006	5.00000	4.56(Ta)
	74 Bromobenzene	156	10.833	10.833	(0.915)	14294	5.00000	5.01
	29 Bromochloromethane	128	5.365	5.365	(0.928)	6551	5.00000	5.68(M)
	6 Bromomethane	94	1.951	1.951	(0.338)	12514	5.00000	4.73(aM)
	19 Carbon Disulfide	76	2.959	2.959	(0.512)	43717	10.0000	9.87(M)
	66 Bromoform	173	10.374	10.374	(1.089)	8011	5.00000	4.56(Ta)
	7 Chloroethane	64	2.044	2.044	(0.354)	13201	5.00000	4.87(aM)
	34 Carbon Tetrachloride	117	5.834	5.834	(0.888)	17467	5.00000	4.99(aMH)
	3 Chloromethane	50	1.601	1.601	(0.277)	30205	5.00000	4.81(TaM)
	28 Chloroform	83	5.500	5.500	(0.952)	20863	5.00000	4.96(a)
	59 Chlorobenzene	112	9.556	9.556	(1.003)	31487	5.00000	4.98(a)
	27 cis-1,2-Dichloroethene	96	5.070	5.070	(0.877)	12512	5.00000	5.03
	46 cis-1,3-Dichloropropene	75	7.839	7.839	(1.193)	17306	5.00000	4.45(a)
	2 Dichlorodifluoromethane	85	1.454	1.454	(0.252)	11220	5.00000	5.14(M)
	55 Dibromochloromethane	129	8.972	8.972	(0.942)	12389	5.00000	4.70(Ta)
	44 Dibromomethane	93	7.194	7.194	(1.095)	6993	5.00000	4.70(a)
	61 Ethylbenzene	106	9.672	9.672	(1.015)	16330	5.00000	5.02(H)
	91 Hexachlorobutadiene	225	13.991	13.991	(1.182)	6657	5.00000	4.55(a)
	62 m,p-Xylenes	106	9.790	9.790	(1.028)	40868	10.0000	9.86
	63 o-Xylene	106	10.175	10.175	(1.068)	21082	5.00000	4.94(a)
	67 Isopropylbenzene	105	10.548	10.548	(1.107)	52377	5.00000	5.09
	17 Methylene Chloride	84	3.337	3.337	(0.577)	12218	5.00000	5.09(M)
	73 n-Propylbenzene	91	10.955	10.955	(0.926)	55879	5.00000	3.76(a)
	87 n-Butylbenzene	91	12.223	12.223	(1.033)	30017	5.00000	5.22
	92 Naphthalene	128	14.061	14.061	(1.188)	26337	5.00000	2.97(a)
	64 Styrene	104	10.198	10.198	(1.070)	34604	5.00000	4.98(a)
	81 sec-Butylbenzene	105	11.668	11.668	(0.986)	47554	5.00000	4.71(a)
	78 tert-Butylbenzene	119	11.449	11.449	(0.967)	34766	5.00000	4.61(a)
	20 trans-1,2-Dichloroethene	96	3.671	3.671	(0.635)	10700	5.00000	5.16(M)
	50 Toluene	91	8.157	8.157	(0.856)	49289	5.00000	4.93(a)
	51 trans-1,3-Dichloropropene	75	8.417	8.417	(1.281)	15125	5.00000	4.48(a)
	56 Tetrachloroethene	164	8.686	8.686	(0.912)	10335	5.00000	5.06
	8 Trichlorofluoromethane	101	2.259	2.259	(0.391)	18006	5.00000	5.37(TM)
	38 Trichloroethene	130	6.816	6.816	(1.037)	12361	5.00000	4.57(aM)
	5 Vinyl Chloride	62	1.681	1.681	(0.291)	17987	5.00000	4.09(aM)
$	35 1,2-Dichloroethane-d4	65	6.062	6.062	(1.049)	13346	5.00000	4.80(aM)
*	36 1,4-Difluorobenzene	114	6.572	6.572	(1.000)	393098	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	140975	50.0000	
*	1 Pentafluorobenzene	168	5.779	5.779	(1.000)	240856	50.0000	
*	47 Chlorobenzene-d5	117	9.527	9.527	(1.000)	323114	50.0000	
$	30 Dibromofluoromethane	113	5.693	5.693	(0.985)	11890	5.00000	4.99(aM)
$	48 Toluene-d8	98	8.093	8.093	(0.849)	41738	5.00000	5.22(M)
$	69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	15307	5.00000	4.98(a)
	82 p-Isopropyltoluene	119	11.818	11.818	(0.999)	40160	5.00000	5.08
	138 Freon TF	101	2.772	2.772	(0.480)	11229	5.00000	5.69

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120205.D
Report Date: 01-Feb-2018 17:44

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.


Y (x10^5)
Min
Dichlorodifluoromethane
-Isobutylene+
-Bromomethane+
-Dichlorofluoromethane+
-Diethyl ether+
-Acrolein+
-Acetone+
-Isopropyl alcohol
-Acetonitrile+
-Methylene Chloride
-Acrylonitrile+
-n-Hexane
-1,1-Dichloroethane
-Diisopropyl ether
-tert-Butyl formate
-cis-1,2-Dichloroethene+
-Propionitrile+
-Chloroform+
-Dibromofluoromethane+
-Pentafluorobenzene+
-Benzene+
-tert-Amyl methyl ether+
-1,4-Difluorobenzene
-Trichloroethene
-Methylcyclohexane+
-Methyl Methacrylate+
-Bromodichloromethane
-2-Chloroethylvinyl ether
-cis-1,3-Dichloropropene
-2-Nitropropane+
-Toluene+
-trans-1,3-Dichloropropene+
-1,1,2-Trichloroethane+
-1,3-Dichloropropane+
-2-Hexanone
-Dibromochloromethane+
-3,3-Dimethyl-1-butanol
-1,1,1,2-Tetrachloroethane+
-m,p-Xylenes
Chlorobenzene-d5+
-o-Xylene+
-Bromoform
-Isopropylbenzene
-4-Bromofluorobenzene
-Bromobenzene+
-1,2,3-Trichloropropane+
-1,3,5-Trimethylbenzene+
-tert-Butylbenzene
-1,2,4-Trimethylbenzene
-sec-Butylbenzene
-1,2,3-Trimethylbenzene
1,4-Dichlorobenzene-d4+
-Benzyl Chloride+
-1,2-Dibromo-3-Chloropropa
-1,3,5-Trichlorobenzene
-1,2,4-Trichlorobenzene
-Hexachlorobutadiene+
-1,2,3-Trichlorobenzene
-2-Methylnaphthalene
-1-Methylnaphthalene
\\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120205.D
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120205.D
Date : 02-DEC-2017 11:31
Client ID: VSTD005
Sample Info: VSTD005;VSTD005;1;4;
Purge Volume: 5.0
Column phase: DB624
Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120206.D
Report Date: 01-Feb-2018 17:44

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120206.D
Lab Smp Id: VSTD010 Client Smp ID: VSTD010
Inj Date : 02-DEC-2017 11:55
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD010;VSTD010;1;5;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\CHEM\VOA2.i\D171202.b\8260LL.m
Meth Date : 01-Feb-2018 17:44 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 11:31 Cal File: D120205.D
Als bottle: 6 Calibration Sample, Level: 5
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
31 1,1,1-Trichloroethane	97	5.657	5.657	(0.979)	36978	10.0000	11.05
60 1,1,1,2-Tetrachloroethane	131	9.646	9.646	(1.012)	26368	10.0000	10.82
68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.918)	29834	10.0000	10.70
53 1,1,2-Trichloroethane	83	8.593	8.593	(0.902)	21354	10.0000	11.60
32 1,1-Dichloropropene	75	5.856	5.856	(0.891)	33728	10.0000	11.32(M)
22 1,1-Dichloroethane	63	4.277	4.277	(0.740)	49027	10.0000	10.86(M)
11 1,1-Dichloroethene	96	2.756	2.756	(0.477)	24829	10.0000	11.70
71 1,2,3-Trichloropropane	75	10.904	10.904	(0.921)	31874	10.0000	10.85
79 1,2,4-Trimethylbenzene	105	11.501	11.501	(0.972)	89960	10.0000	11.83
93 1,2,3-Trichlorobenzene	182	14.299	14.299	(1.208)	25190	10.0000	12.00
90 1,2,4-Trichlorobenzene	180	13.818	13.818	(1.167)	28935	10.0000	11.74
89 1,2-Dibromo-3-Chloropropane	75	13.012	13.012	(1.099)	4853	10.0000	10.66
33 1,2-Dichloroethane	62	6.145	6.145	(0.935)	36425	10.0000	10.74(M)
42 1,2-Dichloropropane	63	7.063	7.063	(1.075)	28238	10.0000	10.82(M)
57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	23074	10.0000	9.97
88 1,2-Dichlorobenzene	146	12.226	12.226	(1.033)	47675	10.0000	10.45
75 1,3,5-Trimethylbenzene	105	11.135	11.135	(0.941)	89656	10.0000	11.77
54 1,3-Dichloropropane	76	8.751	8.751	(0.918)	39472	10.0000	10.84
83 1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	51797	10.0000	10.81
84 1,4-Dichlorobenzene	146	11.860	11.860	(1.002)	49482	10.0000	10.56
26 2,2-Dichloropropane	77	5.044	5.044	(0.873)	37834	10.0000	11.86

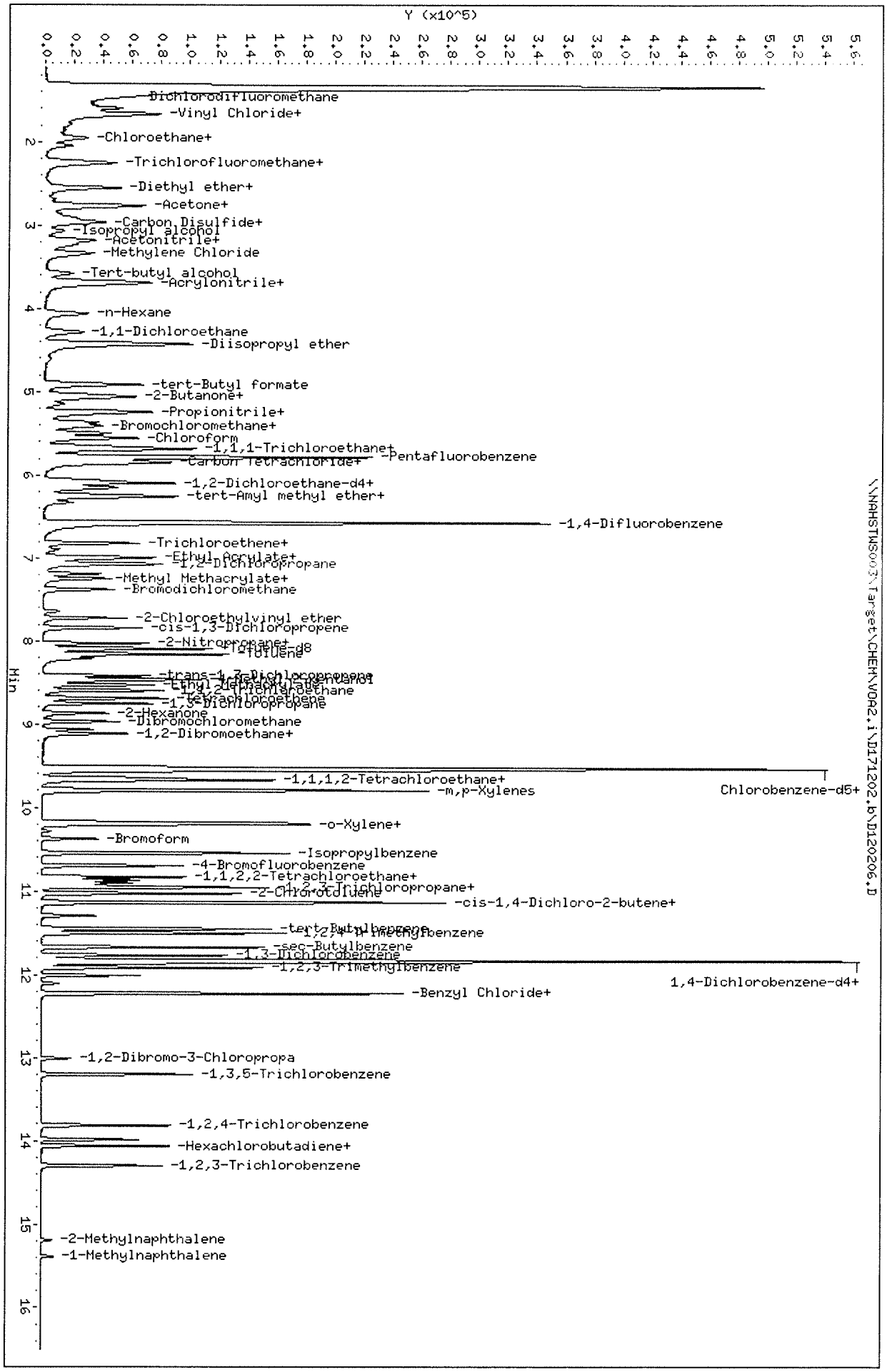
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120206.D
Report Date: 01-Feb-2018 17:44

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
24	2-Butanone	43	5.147	5.147	(0.891)	20635	20.0000	20.34
52	2-Hexanone	43	8.866	8.866	(0.931)	32634	20.0000	20.91
76	2-Chlorotoluene	91	11.029	11.029	(0.932)	76769	10.0000	10.63
77	4-Chlorotoluene	91	11.141	11.141	(0.941)	84596	10.0000	11.55
45	4-Methyl-2-Pentanone	43	8.025	8.025	(0.842)	50931	20.0000	20.14
10	Acetone	43	2.859	2.859	(0.495)	17731	20.0000	24.20
37	Benzene	78	6.094	6.094	(0.927)	91944	10.0000	10.29
39	Bromodichloromethane	83	7.377	7.377	(1.123)	33119	10.0000	11.09
74	Bromobenzene	156	10.833	10.833	(0.915)	30055	10.0000	10.59
29	Bromochloromethane	128	5.372	5.372	(0.929)	12859	10.0000	11.47
6	Bromomethane	94	1.951	1.951	(0.338)	24891	10.0000	10.58(TM)
19	Carbon Disulfide	76	2.959	2.959	(0.512)	97670	20.0000	22.66
66	Bromoform	173	10.378	10.378	(1.089)	18276	10.0000	10.51(T)
7	Chloroethane	64	2.044	2.044	(0.354)	24915	10.0000	11.25(M)
34	Carbon Tetrachloride	117	5.831	5.831	(0.887)	35037	10.0000	11.30
3	Chloromethane	50	1.601	1.601	(0.277)	61364	10.0000	12.70(TM)
28	Chloroform	83	5.500	5.500	(0.952)	43259	10.0000	10.58
59	Chlorobenzene	112	9.556	9.556	(1.003)	65710	10.0000	10.49
27	cis-1,2-Dichloroethene	96	5.070	5.070	(0.877)	27447	10.0000	11.35(M)
46	cis-1,3-Dichloropropene	75	7.843	7.843	(1.193)	38725	10.0000	10.98
2	Dichlorodifluoromethane	85	1.457	1.457	(0.252)	25515	10.0000	12.03(M)
55	Dibromochloromethane	129	8.969	8.969	(0.941)	27660	10.0000	10.58
44	Dibromomethane	93	7.191	7.191	(1.094)	14714	10.0000	10.91
61	Ethylbenzene	106	9.668	9.668	(1.015)	35578	10.0000	11.04
91	Hexachlorobutadiene	225	13.988	13.988	(1.182)	13235	10.0000	11.05
62	m,p-Xylenes	106	9.790	9.790	(1.028)	86193	20.0000	20.97
63	o-Xylene	106	10.179	10.179	(1.068)	45189	10.0000	10.69
67	Isopropylbenzene	105	10.548	10.548	(1.107)	112745	10.0000	10.94
17	Methylene Chloride	84	3.334	3.334	(0.577)	24529	10.0000	10.51
73	n-Propylbenzene	91	10.955	10.955	(0.925)	116424	10.0000	10.90
87	n-Butylbenzene	91	12.223	12.223	(1.033)	65044	10.0000	11.36
92	Naphthalene	128	14.065	14.065	(1.188)	67775	10.0000	11.11
64	Styrene	104	10.198	10.198	(1.070)	72268	10.0000	10.48
81	sec-Butylbenzene	105	11.668	11.668	(0.986)	101826	10.0000	12.07
78	tert-Butylbenzene	119	11.453	11.453	(0.967)	76128	10.0000	12.07
20	trans-1,2-Dichloroethene	96	3.671	3.671	(0.635)	22749	10.0000	11.29(M)
50	Toluene	91	8.160	8.160	(0.857)	103921	10.0000	10.49
51	trans-1,3-Dichloropropene	75	8.417	8.417	(1.281)	37999	10.0000	12.39
56	Tetrachloroethene	164	8.686	8.686	(0.912)	22721	10.0000	11.23
8	Trichlorofluoromethane	101	2.259	2.259	(0.391)	38118	10.0000	11.69
38	Trichloroethene	130	6.816	6.816	(1.037)	26520	10.0000	10.80
5	Vinyl Chloride	62	1.688	1.688	(0.292)	39831	10.0000	12.04
$ 35	1,2-Dichloroethane-d4	65	6.058	6.058	(1.048)	28889	10.0000	10.69
* 36	1,4-Difluorobenzene	114	6.572	6.572	(1.000)	357033	50.0000	
* 70	1,4-Dichlorobenzene-d4	152	11.838	11.838	(1.000)	140394	50.0000	
* 1	Pentafluorobenzene	168	5.779	5.779	(1.000)	234326	50.0000	
* 47	Chlorobenzene-d5	117	9.527	9.527	(1.000)	320456	50.0000	
$ 30	Dibromofluoromethane	113	5.689	5.689	(0.984)	23800	10.0000	10.27(M)
$ 48	Toluene-d8	98	8.093	8.093	(0.849)	87904	10.0000	11.09
$ 69	4-Bromofluorobenzene	95	10.695	10.695	(1.123)	31836	10.0000	10.45
82	p-Isopropyltoluene	119	11.818	11.818	(0.998)	84856	10.0000	10.79
138	Freon TF	101	2.769	2.769	(0.479)	23269	10.0000	12.12

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120206.D
Report Date: 01-Feb-2018 17:44

QC Flag Legend

T - Target compound detected outside RT window.
M - Compound response manually integrated.


Y (x10^5)
Min
Dichlorodifluoromethane
-Vinyl Chloride+
-Chloroethane+
-Trichlorofluoromethane+
-Diethyl ether+
-Acetone+
-Carbon Disulfide+
-Isopropyl alcohol
-Acetonitrile+
-Methylene Chloride
-Tert-butyl alcohol
-Acrylonitrile+
-n-Hexane
-1,1-Dichloroethane
-Diisopropyl ether
-tert-Butyl formate
-2-Butanone+
-Propionitrile+
-Bromochloromethane+
-Chloroform
-1,1,1-Trichloroethane+
-Carbon Tetrachloride+
-Pentafluorobenzene
-1,2-Dichloroethane-d4+
-tert-Amyl methyl ether+
-1,4-Difluorobenzene
-Trichloroethene+
-Ethyl Acrylate+
-1,2-Dichloropropane
-Methyl Methacrylate+
-Bromodichloromethane
-2-Chloroethylvinyl ether
-cis-1,3-Dichloropropene
-2-Nitropropane+
-Toluene-d8
-Toluene
-trans-1,3-Dichloropropene
-Ethyl Methacrylate
-1,1,2-Trichloroethane
-Tetrachloroethene
-1,3-Dichloropropane
-2-Hexanone
-Dibromochloromethane
-1,2-Dibromoethane+
-1,1,1,2-Tetrachloroethane+
-m,p-Xylenes
Chlorobenzene-d5+
-o-Xylene+
-Bromoform
-Isopropylbenzene
-4-Bromofluorobenzene
-1,1,2,2-Tetrachloroethane+
-1,2,3-Trichloropropane+
-2-Chlorotoluene
-cis-1,4-Dichloro-2-butene+
-tert-Butylbenzene
-1,2,4-Trimethylbenzene
-sec-Butylbenzene
-1,3-Dichlorobenzene
-1,2,3-Trimethylbenzene
1,4-Dichlorobenzene-d4+
-Benzyl Chloride+
-1,2-Dibromo-3-Chloropropa
-1,3,5-Trichlorobenzene
-1,2,4-Trichlorobenzene
-Hexachlorobutadiene+
-1,2,3-Trichlorobenzene
-2-Methylnaphthalene
-1-Methylnaphthalene
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Date : 02-DEC-2017 11:55
Client ID: VSTD010
Sample Info: VSTD010;VSTD010;1;5;
Purge Volume: 5.0
Column phase: DB624
Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120207.D
Report Date: 01-Feb-2018 17:44

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120207.D
Lab Smp Id: VSTD020 Client Smp ID: VSTD020
Inj Date : 02-DEC-2017 12:19
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD020;VSTD020;1;6;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\CHEM\VOA2.i\D171202.b\8260LL.m
Meth Date : 01-Feb-2018 17:44 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 11:55 Cal File: D120206.D
Als bottle: 7 Calibration Sample, Level: 6
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
31 1,1,1-Trichloroethane	97	5.657	5.657	(0.978)	74410	20.0000	21.61
60 1,1,1,2-Tetrachloroethane	131	9.646	9.646	(1.012)	51708	20.0000	20.29
68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.919)	55792	20.0000	18.92
53 1,1,2-Trichloroethane	83	8.593	8.593	(0.902)	36557	20.0000	18.99
32 1,1-Dichloropropene	75	5.856	5.856	(0.891)	61656	20.0000	20.17
22 1,1-Dichloroethane	63	4.277	4.277	(0.740)	93276	20.0000	20.07
11 1,1-Dichloroethene	96	2.756	2.756	(0.477)	46264	20.0000	21.18
71 1,2,3-Trichloropropane	75	10.901	10.901	(0.921)	60118	20.0000	19.34
79 1,2,4-Trimethylbenzene	105	11.497	11.497	(0.972)	171277	20.0000	22.50
93 1,2,3-Trichlorobenzene	182	14.299	14.299	(1.208)	47966	20.0000	21.60
90 1,2,4-Trichlorobenzene	180	13.818	13.818	(1.168)	58102	20.0000	22.30
89 1,2-Dibromo-3-Chloropropane	75	13.006	13.006	(1.099)	9234	20.0000	19.69
33 1,2-Dichloroethane	62	6.145	6.145	(0.935)	68557	20.0000	19.55
42 1,2-Dichloropropane	63	7.066	7.066	(1.075)	55104	20.0000	20.42(M)
57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	44472	20.0000	18.38
88 1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	96810	20.0000	20.06
75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	173995	20.0000	23.24
54 1,3-Dichloropropane	76	8.754	8.754	(0.919)	72809	20.0000	19.13
83 1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	100104	20.0000	19.75
84 1,4-Dichlorobenzene	146	11.860	11.860	(1.002)	94488	20.0000	19.07
26 2,2-Dichloropropane	77	5.041	5.041	(0.872)	71057	20.0000	21.65

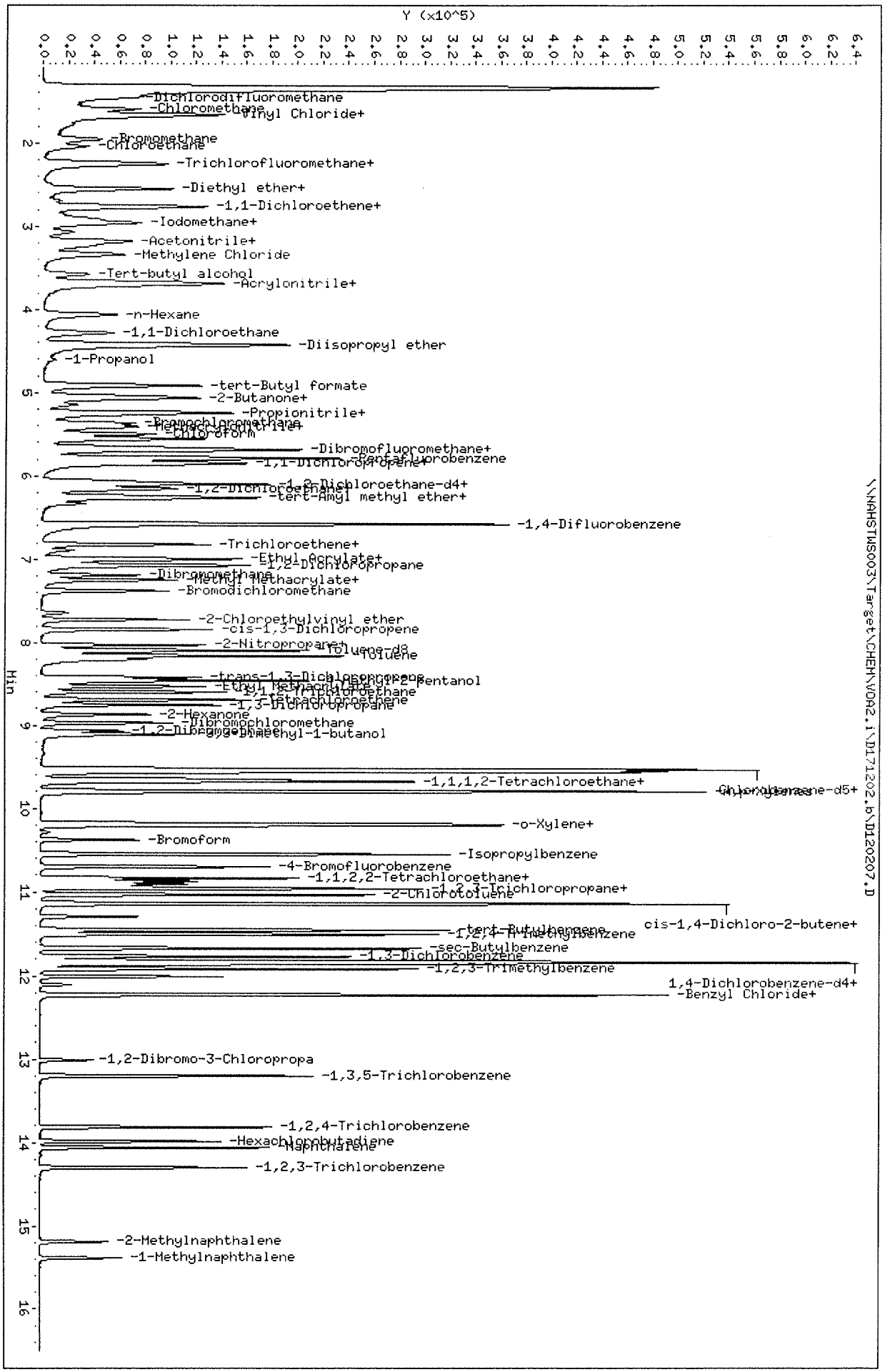
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Report Date: 01-Feb-2018 17:44

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
	24 2-Butanone	43	5.150	5.150	(0.891)	40240	40.0000	38.55
	52 2-Hexanone	43	8.869	8.869	(0.931)	62507	40.0000	38.29
	76 2-Chlorotoluene	91	11.029	11.029	(0.932)	145312	20.0000	19.03
	77 4-Chlorotoluene	91	11.141	11.141	(0.941)	162892	20.0000	22.33
	45 4-Methyl-2-Pentanone	43	8.025	8.025	(0.842)	97529	40.0000	36.87
	10 Acetone	43	2.866	2.866	(0.496)	30163	40.0000	44.26(M)
	37 Benzene	78	6.094	6.094	(0.927)	181563	20.0000	19.65
	39 Bromodichloromethane	83	7.380	7.380	(1.123)	65631	20.0000	21.25
	74 Bromobenzene	156	10.833	10.833	(0.915)	59107	20.0000	19.69
	29 Bromochloromethane	128	5.368	5.368	(0.928)	25729	20.0000	22.29
	6 Bromomethane	94	1.948	1.948	(0.337)	45961	20.0000	20.71(M)
	19 Carbon Disulfide	76	2.962	2.962	(0.512)	170930	40.0000	38.54
	66 Bromoform	173	10.378	10.378	(1.089)	37509	20.0000	20.62
	7 Chloroethane	64	2.038	2.038	(0.352)	48945	20.0000	23.63(M)
	34 Carbon Tetrachloride	117	5.837	5.837	(0.888)	63681	20.0000	20.04
	3 Chloromethane	50	1.598	1.598	(0.276)	113999	20.0000	24.87(M)
	28 Chloroform	83	5.494	5.494	(0.950)	85692	20.0000	20.37
	59 Chlorobenzene	112	9.553	9.553	(1.003)	126954	20.0000	19.38
	27 cis-1,2-Dichloroethene	96	5.073	5.073	(0.877)	52143	20.0000	20.94
	46 cis-1,3-Dichloropropene	75	7.839	7.839	(1.193)	77381	20.0000	21.22
	2 Dichlorodifluoromethane	85	1.454	1.454	(0.251)	50312	20.0000	23.05
	55 Dibromochloromethane	129	8.972	8.972	(0.942)	54697	20.0000	20.00
	44 Dibromomethane	93	7.188	7.188	(1.094)	29314	20.0000	21.01
	61 Ethylbenzene	106	9.672	9.672	(1.015)	66617	20.0000	19.76
	91 Hexachlorobutadiene	225	13.991	13.991	(1.182)	28697	20.0000	24.70
	62 m,p-Xylenes	106	9.790	9.790	(1.028)	165290	40.0000	38.45
	63 o-Xylene	106	10.179	10.179	(1.068)	85915	20.0000	19.44
	67 Isopropylbenzene	105	10.544	10.544	(1.107)	215740	20.0000	20.24
	17 Methylene Chloride	84	3.340	3.340	(0.578)	46491	20.0000	19.36
	73 n-Propylbenzene	91	10.952	10.952	(0.925)	225099	20.0000	22.20
	87 n-Butylbenzene	91	12.223	12.223	(1.033)	131618	20.0000	21.73
	92 Naphthalene	128	14.061	14.061	(1.188)	132373	20.0000	22.36
	64 Styrene	104	10.198	10.198	(1.070)	141112	20.0000	19.57
	81 sec-Butylbenzene	105	11.668	11.668	(0.986)	198179	20.0000	23.62
	78 tert-Butylbenzene	119	11.449	11.449	(0.967)	146542	20.0000	23.29
	20 trans-1,2-Dichloroethene	96	3.671	3.671	(0.636)	43381	20.0000	22.91
	50 Toluene	91	8.157	8.157	(0.856)	200133	20.0000	19.32
	51 trans-1,3-Dichloropropene	75	8.417	8.417	(1.281)	67133	20.0000	21.16
	56 Tetrachloroethene	164	8.690	8.690	(0.912)	43957	20.0000	20.77
	8 Trichlorofluoromethane	101	2.259	2.259	(0.391)	80937	20.0000	24.13
	38 Trichloroethene	130	6.819	6.819	(1.038)	50457	20.0000	19.87
	5 Vinyl Chloride	62	1.685	1.685	(0.291)	76312	20.0000	24.26
$	35 1,2-Dichloroethane-d4	65	6.058	6.058	(1.048)	54600	20.0000	19.63
*	36 1,4-Difluorobenzene	114	6.572	6.572	(1.000)	369336	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	148510	50.0000	
*	1 Pentafluorobenzene	168	5.782	5.782	(1.000)	241203	50.0000	
*	47 Chlorobenzene-d5	117	9.527	9.527	(1.000)	335178	50.0000	
$	30 Dibromofluoromethane	113	5.683	5.683	(0.983)	43002	20.0000	18.03
$	48 Toluene-d8	98	8.093	8.093	(0.849)	162271	20.0000	19.57
$	69 4-Bromofluorobenzene	95	10.698	10.698	(1.123)	60738	20.0000	19.07
	82 p-Isopropyltoluene	119	11.818	11.818	(0.999)	168239	20.0000	20.23
	138 Freon TF	101	2.769	2.769	(0.479)	44551	20.0000	22.55

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120207.D
Report Date: 01-Feb-2018 17:44

QC Flag Legend

T - Target compound detected outside RT window.
M - Compound response manually integrated.


Y (x10^5)
Min
-Dichlorodifluoromethane
-Chloromethane
-Vinyl Chloride+
-Bromomethane
-Chloroethane
-Trichlorofluoromethane+
-Diethyl ether+
-1,1-Dichloroethene+
-Iodomethane+
-Acetonitrile+
-Methylene Chloride
-Tert-butyl alcohol
-Acrylonitrile+
-n-Hexane
-1,1-Dichloroethane
-Diisopropyl ether
-1-Propanol
-tert-Butyl formate
-2-Butanone+
-Propionitrile+
-Bromochloromethane
-Tetrahydrofuran+
-Chloroform
-Dibromofluoromethane+
-Perfluorobenzene
-1,1-Dichloropropene+
-1,2-Dichloroethane-d4+
-1,2-Dichloroethane+
-tert-Amyl methyl ether+
-1,4-Difluorobenzene
-Trichloroethene+
-Ethyl Acrylate+
-1,2-Dichloropropane
-Dibromomethane
-Methyl Methacrylate+
-Bromodichloromethane
-2-Chlorpethylvinyl ether
-cis-1,3-Dichloropropene
-2-Nitropropane+
-Toluene-d8
-Toluene
-trans-1,3-Dichloropropene
-Ethyl Methacrylate+
-4-Methyl-2-pentanol
-1,1,2-Trichloroethane
-Tetrachloroethene
-1,3-Dichloropropane
-2-Hexanone
-Dibromochloromethane
-1,2-Dibromoethane
-2,3-Dimethyl-1-butanol
-1,1,1,2-Tetrachloroethane+
-Chlorobenzene-d5+
-Chlorobenzene
-o-Xylene+
-Bromoform
-Isopropylbenzene
-4-Bromofluorobenzene
-1,1,2,2-Tetrachloroethane+
-1,2,3-Trichloropropane+
-2-Chlorotoluene
cis-1,4-Dichloro-2-butene+
-tert-Butylbenzene
-1,2,4-Trimethylbenzene
-sec-Butylbenzene
-1,3-Dichlorobenzene
-1,2,3-Trimethylbenzene
1,4-Dichlorobenzene-d4+
-Benzyl Chloride+
-1,2-Dibromo-3-Chloropropa
-1,3,5-Trichlorobenzene
-1,2,4-Trichlorobenzene
-Hexachlorobutadiene
-Naphthalene
-1,2,3-Trichlorobenzene
-2-Methylnaphthalene
-1-Methylnaphthalene
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120207.D
Date : 02-DEC-2017 12:19
Client ID: VSTD020
Sample Info: VSTD020;VSTD020;1;6;
Purge Volume: 5.0
Column phase: DB624
Instrument: VOA2.i
Operator: AP
Column diameter: 0.18
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Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120208.D
Report Date: 01-Feb-2018 17:44

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120208.D
Lab Smp Id: VSTD050 Client Smp ID: VSTD050
Inj Date : 02-DEC-2017 12:44
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD050;VSTD050;1;7;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\CHEM\VOA2.i\D171202.b\8260LL.m
Meth Date : 01-Feb-2018 17:44 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 12:19 Cal File: D120207.D
Als bottle: 8 Calibration Sample, Level: 7
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
31 1,1,1-Trichloroethane	97	5.654	5.654	(0.978)	167343	50.0000	44.60
60 1,1,1,2-Tetrachloroethane	131	9.646	9.646	(1.012)	122846	50.0000	48.04
68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.918)	138124	50.0000	47.09
53 1,1,2-Trichloroethane	83	8.593	8.593	(0.902)	91116	50.0000	47.19
32 1,1-Dichloropropene	75	5.853	5.853	(0.890)	139865	50.0000	44.59
22 1,1-Dichloroethane	63	4.284	4.284	(0.741)	226417	50.0000	44.71
11 1,1-Dichloroethene	96	2.753	2.753	(0.476)	107181	50.0000	45.04
71 1,2,3-Trichloropropane	75	10.904	10.904	(0.921)	146773	50.0000	47.48
79 1,2,4-Trimethylbenzene	105	11.501	11.501	(0.972)	379867	50.0000	52.02
93 1,2,3-Trichlorobenzene	182	14.302	14.302	(1.208)	116682	50.0000	52.84
90 1,2,4-Trichlorobenzene	180	13.818	13.818	(1.167)	135719	50.0000	52.37
89 1,2-Dibromo-3-Chloropropane	75	13.012	13.012	(1.099)	24398	50.0000	53.40
33 1,2-Dichloroethane	62	6.145	6.145	(0.935)	165335	50.0000	45.69
42 1,2-Dichloropropane	63	7.069	7.069	(1.075)	127922	50.0000	45.94
57 1,2-Dibromoethane	107	9.068	9.068	(0.952)	107909	50.0000	44.46
88 1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	222519	50.0000	46.36
75 1,3,5-Trimethylbenzene	105	11.135	11.135	(0.941)	370899	50.0000	52.08
54 1,3-Dichloropropane	76	8.754	8.754	(0.919)	175969	50.0000	46.08
83 1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	230033	50.0000	45.62
84 1,4-Dichlorobenzene	146	11.860	11.860	(1.002)	219130	50.0000	44.47
26 2,2-Dichloropropane	77	5.041	5.041	(0.872)	163209	50.0000	45.64

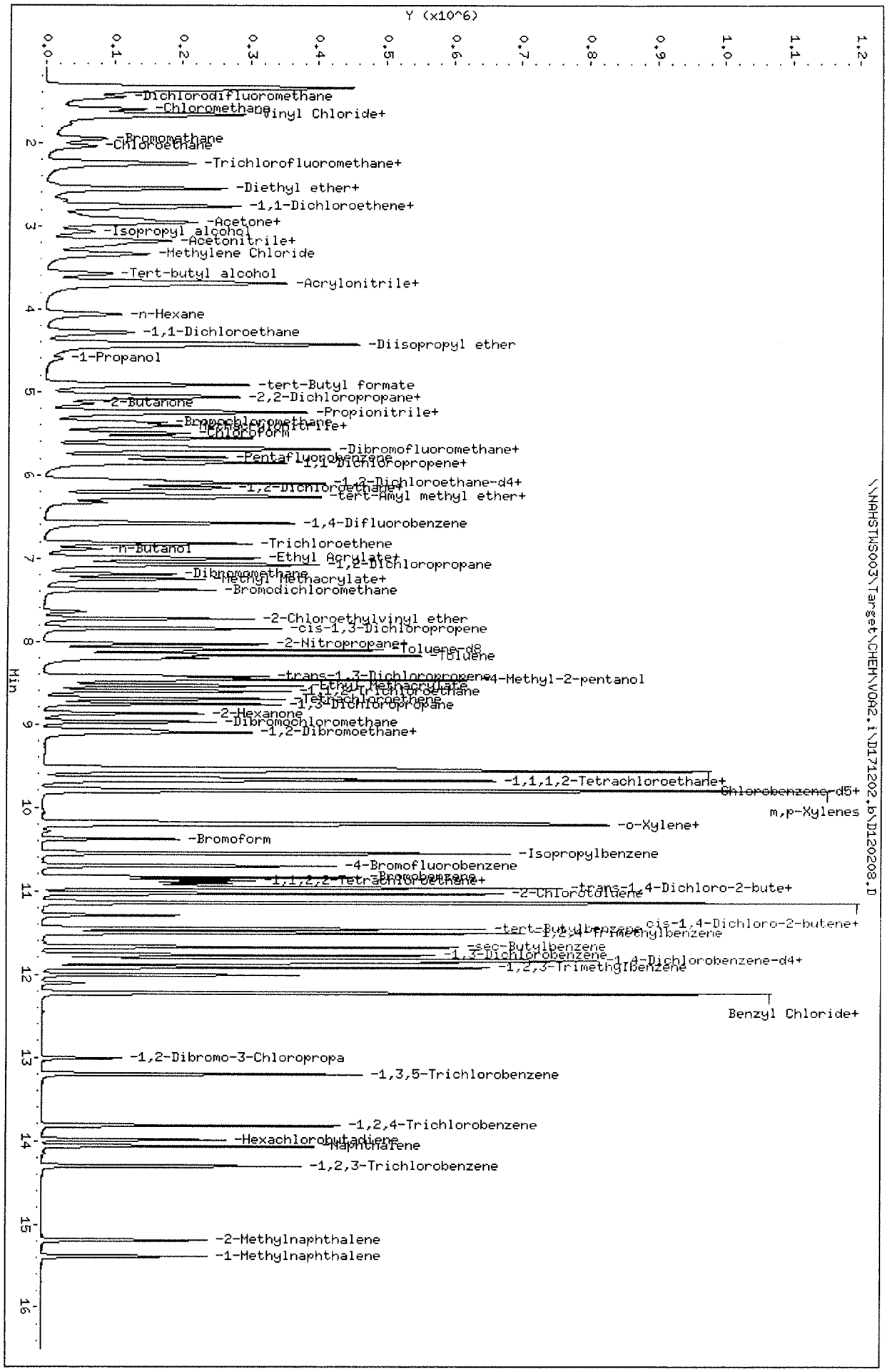
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Report Date: 01-Feb-2018 17:44

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
24	2-Butanone	43	5.141	5.141	(0.889)	104564	100.000	91.92
52	2-Hexanone	43	8.866	8.866	(0.931)	157754	100.000	96.32
76	2-Chlorotoluene	91	11.029	11.029	(0.932)	354966	50.0000	46.74
77	4-Chlorotoluene	91	11.138	11.138	(0.941)	363295	50.0000	52.02
45	4-Methyl-2-Pentanone	43	8.025	8.025	(0.842)	242283	100.000	91.30
10	Acetone	43	2.856	2.856	(0.494)	81222	100.000	115.56
37	Benzene	78	6.090	6.090	(0.926)	429298	50.0000	45.01
39	Bromodichloromethane	83	7.377	7.377	(1.122)	162295	50.0000	50.92
74	Bromobenzene	156	10.833	10.833	(0.915)	137638	50.0000	46.10
29	Bromochloromethane	128	5.365	5.365	(0.928)	63125	50.0000	50.19
6	Bromomethane	94	1.948	1.948	(0.337)	102347	50.0000	49.64
19	Carbon Disulfide	76	2.952	2.952	(0.511)	466496	100.000	96.51
66	Bromoform	173	10.374	10.374	(1.089)	94948	50.0000	52.03
7	Chloroethane	64	2.041	2.041	(0.353)	104074	50.0000	50.04
34	Carbon Tetrachloride	117	5.837	5.837	(0.888)	144188	50.0000	44.25
3	Chloromethane	50	1.598	1.598	(0.276)	256514	50.0000	53.94(M)
28	Chloroform	83	5.494	5.494	(0.950)	200096	50.0000	43.66
59	Chlorobenzene	112	9.553	9.553	(1.003)	296223	50.0000	45.07
27	cis-1,2-Dichloroethene	96	5.070	5.070	(0.877)	123053	50.0000	45.36
46	cis-1,3-Dichloropropene	75	7.839	7.839	(1.192)	190864	50.0000	50.71
2	Dichlorodifluoromethane	85	1.450	1.450	(0.251)	113217	50.0000	47.61
55	Dibromochloromethane	129	8.969	8.969	(0.941)	137096	50.0000	49.98
44	Dibromomethane	93	7.191	7.191	(1.094)	71154	50.0000	49.40
61	Ethylbenzene	106	9.672	9.672	(1.015)	148719	50.0000	43.98
91	Hexachlorobutadiene	225	13.988	13.988	(1.182)	53304	50.0000	47.83
62	m,p-Xylenes	106	9.794	9.794	(1.028)	366027	100.000	84.88
63	o-Xylene	106	10.179	10.179	(1.068)	196960	50.0000	44.42
67	Isopropylbenzene	105	10.548	10.548	(1.107)	460822	50.0000	44.95
17	Methylene Chloride	84	3.340	3.340	(0.578)	114462	50.0000	43.74
73	n-Propylbenzene	91	10.955	10.955	(0.925)	547102	50.0000	58.24
87	n-Butylbenzene	91	12.223	12.223	(1.033)	260940	50.0000	43.32
92	Naphthalene	128	14.065	14.065	(1.188)	319306	50.0000	57.33
64	Styrene	104	10.198	10.198	(1.070)	323360	50.0000	44.71
81	sec-Butylbenzene	105	11.668	11.668	(0.986)	400095	50.0000	49.66
78	tert-Butylbenzene	119	11.449	11.449	(0.967)	305835	50.0000	50.64
20	trans-1,2-Dichloroethene	96	3.671	3.671	(0.635)	101491	50.0000	44.90
50	Toluene	91	8.157	8.157	(0.856)	448451	50.0000	43.16
51	trans-1,3-Dichloropropene	75	8.417	8.417	(1.280)	170327	50.0000	52.02
56	Tetrachloroethene	164	8.690	8.690	(0.912)	93279	50.0000	43.94
8	Trichlorofluoromethane	101	2.256	2.256	(0.390)	163453	50.0000	44.71
38	Trichloroethene	130	6.819	6.819	(1.037)	122235	50.0000	46.64
5	Vinyl Chloride	62	1.685	1.685	(0.291)	176982	50.0000	54.05
$ 35	1,2-Dichloroethane-d4	65	6.058	6.058	(1.048)	130343	50.0000	43.01
* 36	1,4-Difluorobenzene	114	6.575	6.575	(1.000)	381252	50.0000	
* 70	1,4-Dichlorobenzene-d4	152	11.838	11.838	(1.000)	147730	50.0000	
* 1	Pentafluorobenzene	168	5.782	5.782	(1.000)	262856	50.0000	
* 47	Chlorobenzene-d5	117	9.527	9.527	(1.000)	336294	50.0000	
$ 30	Dibromofluoromethane	113	5.686	5.686	(0.983)	102778	50.0000	39.55
$ 48	Toluene-d8	98	8.093	8.093	(0.849)	365247	50.0000	43.91
$ 69	4-Bromofluorobenzene	95	10.698	10.698	(1.123)	142007	50.0000	44.45
82	p-Isopropyltoluene	119	11.818	11.818	(0.998)	345659	50.0000	41.79
138	Freon TF	101	2.772	2.772	(0.480)	92030	50.0000	42.75

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120208.D
Report Date: 01-Feb-2018 17:44

QC Flag Legend

M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120208.D
Date : 02-DEC-2017 12:44
Client ID: VSTD050
Sample Info: VSTD050;VSTD050;1;7;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

\\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120208.D

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120209.D
Report Date: 01-Feb-2018 17:44

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120209.D
Lab Smp Id: VSTD100 Client Smp ID: VSTD100
Inj Date : 02-DEC-2017 13:08
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD100;VSTD100;1;8;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\CHEM\VOA2.i\D171202.b\8260LL.m
Meth Date : 01-Feb-2018 17:44 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 12:44 Cal File: D120208.D
Als bottle: 9 Calibration Sample, Level: 8
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
31 1,1,1-Trichloroethane	97	5.654	5.654	(0.977)	346146	100.000	84.26
60 1,1,1,2-Tetrachloroethane	131	9.646	9.646	(1.012)	240736	100.000	97.88
68 1,1,2,2-Tetrachloroethane	83	10.875	10.875	(0.919)	266725	100.000	82.91
53 1,1,2-Trichloroethane	83	8.597	8.597	(0.902)	170032	100.000	91.55
32 1,1-Dichloropropene	75	5.856	5.856	(0.891)	338565	100.000	103.71
22 1,1-Dichloroethane	63	4.277	4.277	(0.739)	471503	100.000	85.04
11 1,1-Dichloroethene	96	2.750	2.750	(0.475)	201708	100.000	77.43
71 1,2,3-Trichloropropane	75	10.907	10.907	(0.921)	296183	100.000	87.36
79 1,2,4-Trimethylbenzene	105	11.504	11.504	(0.972)	756966	100.000	95.73
93 1,2,3-Trichlorobenzene	182	14.302	14.302	(1.208)	243163	100.000	100.39
90 1,2,4-Trichlorobenzene	180	13.821	13.821	(1.168)	286157	100.000	104.67
89 1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	50559	100.000	101.47
33 1,2-Dichloroethane	62	6.145	6.145	(0.935)	360272	100.000	95.38
42 1,2-Dichloropropane	63	7.069	7.069	(1.076)	246317	100.000	84.75
57 1,2-Dibromoethane	107	9.068	9.068	(0.952)	219448	100.000	94.01
88 1,2-Dichlorobenzene	146	12.226	12.226	(1.033)	433803	100.000	82.40
75 1,3,5-Trimethylbenzene	105	11.135	11.135	(0.941)	751645	100.000	97.90
54 1,3-Dichloropropane	76	8.754	8.754	(0.919)	344933	100.000	93.92
83 1,3-Dichlorobenzene	146	11.770	11.770	(0.994)	460658	100.000	83.30
84 1,4-Dichlorobenzene	146	11.860	11.860	(1.002)	516207	100.000	95.51
26 2,2-Dichloropropane	77	5.041	5.041	(0.871)	332827	100.000	85.01

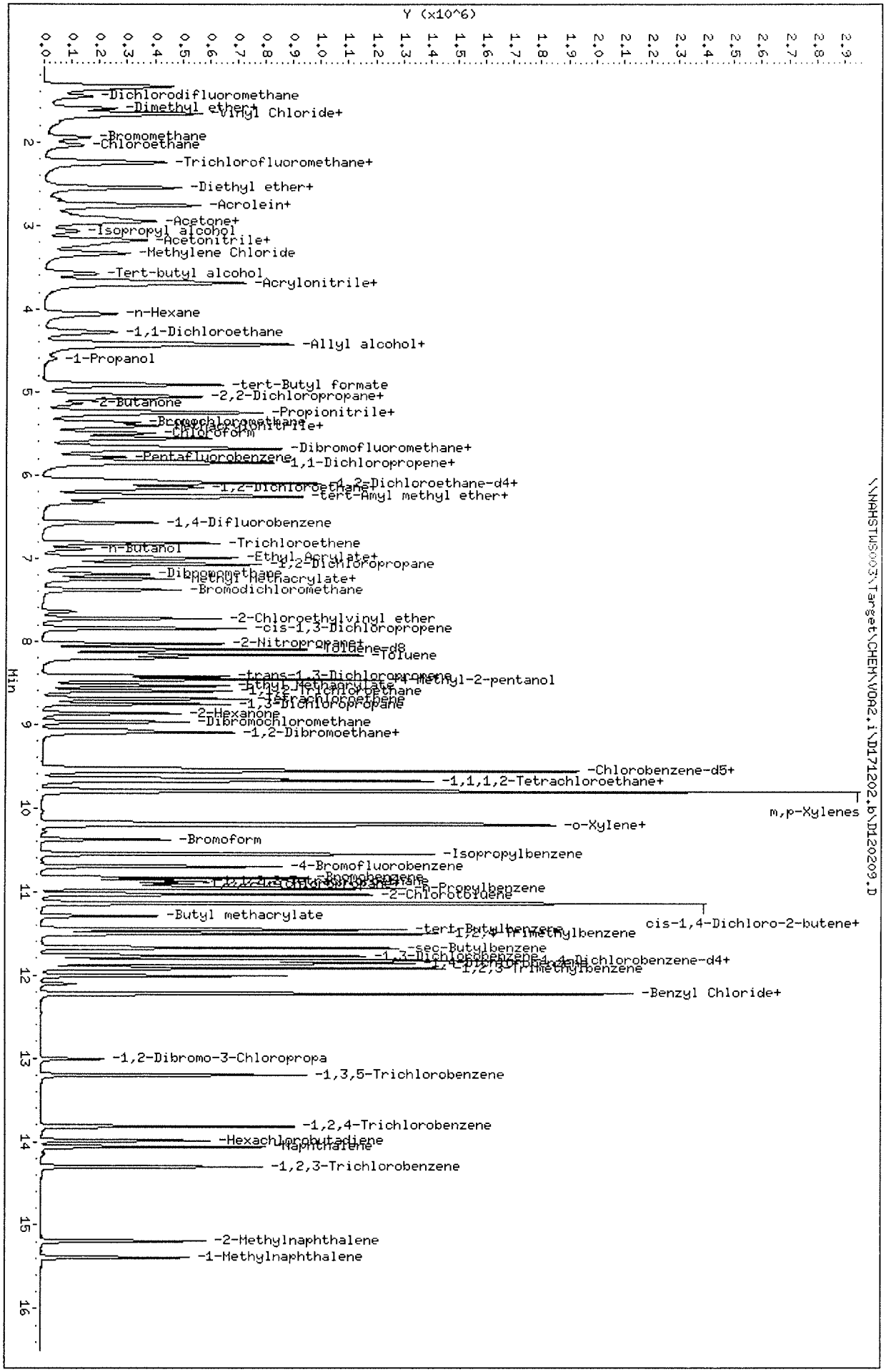
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120209.D
Report Date: 01-Feb-2018 17:44

			QUANT SIG					AMOUNTS	
		Compounds	MASS	RT	EXP RT	REL RT	RESPONSE	CAL-AMT (ug/l)	ON-COL (ug/l)
	24	2-Butanone	43	5.141	5.141	(0.889)	210032	200.000	168.66
	52	2-Hexanone	43	8.869	8.869	(0.931)	316646	200.000	201.01(A)
	76	2-Chlorotoluene	91	11.032	11.032	(0.932)	670473	100.000	80.44
	77	4-Chlorotoluene	91	11.141	11.141	(0.941)	735701	100.000	97.38
	45	4-Methyl-2-Pentanone	43	8.029	8.029	(0.843)	474202	200.000	185.78
	10	Acetone	43	2.856	2.856	(0.494)	145831	200.000	186.23
	37	Benzene	78	6.097	6.097	(0.928)	1008942	100.000	101.35
	39	Bromodichloromethane	83	7.377	7.377	(1.123)	319156	100.000	95.93
	74	Bromobenzene	156	10.833	10.833	(0.915)	277248	100.000	84.67
	29	Bromochloromethane	128	5.372	5.372	(0.928)	122231	100.000	88.78
	6	Bromomethane	94	1.941	1.941	(0.336)	189031	100.000	99.75
	19	Carbon Disulfide	76	2.949	2.949	(0.510)	841702	200.000	159.07
	66	Bromoform	173	10.378	10.378	(1.089)	212849	100.000	121.28
	7	Chloroethane	64	2.031	2.031	(0.351)	204381	100.000	97.78
	34	Carbon Tetrachloride	117	5.834	5.834	(0.888)	351661	100.000	103.72
	3	Chloromethane	50	1.598	1.598	(0.276)	476675	100.000	93.25(M)
	28	Chloroform	83	5.494	5.494	(0.950)	385200	100.000	76.78
	59	Chlorobenzene	112	9.556	9.556	(1.003)	580544	100.000	91.85
	27	cis-1,2-Dichloroethene	96	5.067	5.067	(0.876)	236291	100.000	79.56
	46	cis-1,3-Dichloropropene	75	7.843	7.843	(1.193)	394383	100.000	100.39
	2	Dichlorodifluoromethane	85	1.454	1.454	(0.251)	225343	100.000	86.56
	55	Dibromochloromethane	129	8.972	8.972	(0.942)	271565	100.000	102.94
	44	Dibromomethane	93	7.191	7.191	(1.094)	141151	100.000	93.90
	61	Ethylbenzene	106	9.675	9.675	(1.015)	301501	100.000	92.70
	91	Hexachlorobutadiene	225	13.988	13.988	(1.182)	124014	100.000	103.66
	62	m,p-Xylenes	106	9.794	9.794	(1.028)	885438	200.000	213.47(A)
	63	o-Xylene	106	10.179	10.179	(1.068)	448311	100.000	105.13
	67	Isopropylbenzene	105	10.548	10.548	(1.107)	933730	100.000	103.73
	17	Methylene Chloride	84	3.328	3.328	(0.575)	226823	100.000	79.17
	73	n-Propylbenzene	91	10.958	10.958	(0.926)	1002145	100.000	99.12
	87	n-Butylbenzene	91	12.223	12.223	(1.033)	560565	100.000	84.84
	92	Naphthalene	128	14.061	14.061	(1.188)	619282	100.000	103.04
	64	Styrene	104	10.201	10.201	(1.071)	735233	100.000	105.70
	81	sec-Butylbenzene	105	11.671	11.671	(0.986)	855674	100.000	98.43
	78	tert-Butylbenzene	119	11.453	11.453	(0.967)	634473	100.000	97.20
	20	trans-1,2-Dichloroethene	96	3.665	3.665	(0.633)	210545	100.000	85.09
	50	Toluene	91	8.163	8.163	(0.857)	916963	100.000	91.76
	51	trans-1,3-Dichloropropene	75	8.417	8.417	(1.281)	345045	100.000	100.97
	56	Tetrachloroethene	164	8.693	8.693	(0.912)	191478	100.000	93.78
	8	Trichlorofluoromethane	101	2.249	2.249	(0.389)	341679	100.000	85.38
	38	Trichloroethene	130	6.819	6.819	(1.038)	251694	100.000	92.02
	5	Vinyl Chloride	62	1.681	1.681	(0.291)	338527	100.000	96.03
$	35	1,2-Dichloroethane-d4	65	6.058	6.058	(1.047)	300743	100.000	90.65
*	36	1,4-Difluorobenzene	114	6.572	6.572	(1.000)	397952	50.0000	
*	70	1,4-Dichlorobenzene-d4	152	11.838	11.838	(1.000)	162040	50.0000	
*	1	Pentafluorobenzene	168	5.786	5.786	(1.000)	287766	50.0000	
*	47	Chlorobenzene-d5	117	9.527	9.527	(1.000)	323472	50.0000	
$	30	Dibromofluoromethane	113	5.683	5.683	(0.982)	190819	100.000	67.07
$	48	Toluene-d8	98	8.093	8.093	(0.849)	707549	100.000	88.43
$	69	4-Bromofluorobenzene	95	10.699	10.699	(1.123)	278494	100.000	90.63
	82	p-Isopropyltoluene	119	11.822	11.822	(0.999)	808199	100.000	89.06
	138	Freon TF	101	2.763	2.763	(0.478)	195093	100.000	82.79

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120209.D
Report Date: 01-Feb-2018 17:44

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.


Y (x10^6)
Min
-Dichlorodifluoromethane
-Dimethyl ether+
-Vinyl Chloride+
-Bromomethane
-Chloroethane
-Trichlorofluoromethane+
-Diethyl ether+
-Acrolein+
-Acetone+
-Isopropyl alcohol
-Acetonitrile+
-Methylene Chloride
-Tert-butyl alcohol
-Acrylonitrile+
-n-Hexane
-1,1-Dichloroethane
-Allyl alcohol+
-1-Propanol
-tert-Butyl formate
-2,2-Dichloropropane+
-2-Butanone
-Propionitrile+
-Bromochloromethane
-Methacrylonitrile+
-Chloroform
-Dibromofluoromethane+
-Pentafluorobenzene
-1,1-Dichloropropene+
-1,2-Dichloroethane
-tert-Amyl methyl ether+
-1,4-Difluorobenzene
-Trichloroethene
-n-Butanol
-Ethyl Acrylate+
-1,2-Dichloropropane
-Dibromomethane
-Methyl methacrylate+
-Bromodichloromethane
-2-Chloroethylvinyl ether
-cis-1,3-Dichloropropene
-2-Nitropropane+
-Toluene-d8
-Toluene
-trans-1,3-Dichloropropene
-Ethyl Methacrylate
-1,1,2-Trichloroethane
-Tetrachloroethene
-1,3-Dichloropropane
-2-Hexanone
-Dibromochloromethane
-1,2-Dibromoethane+
-Chlorobenzene-d5+
-1,1,1,2-Tetrachloroethane+
m,p-Xylenes
-o-Xylene+
-Bromoform
-Isopropylbenzene
-4-Bromofluorobenzene
-Bromobenzene
-n-Propylbenzene
-2-Chlorotoluene
-Butyl methacrylate
cis-1,4-Dichloro-2-butene+
-tert-Butylbenzene
-1,2,4-Trimethylbenzene
-sec-Butylbenzene
-1,3-Dichlorobenzene
-1,4-Dichlorobenzene-d4+
-1,2,3-Trimethylbenzene
-Benzyl Chloride+
-1,2-Dibromo-3-Chloropropa
-1,3,5-Trichlorobenzene
-1,2,4-Trichlorobenzene
-Hexachlorobutadiene
-Naphthalene
-1,2,3-Trichlorobenzene
-2-Methylnaphthalene
-1-Methylnaphthalene
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120209.D
Date : 02-DEC-2017 13:08
Client ID: VSTD100
Sample Info: VSTD100;VSTD100;1;8;
Purge Volume: 5.0
Column phase: DB624
Instrument: VOA2.i
Operator: AP
Column diameter: 0.18
\\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120209.D

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120210.D
Report Date: 01-Feb-2018 17:44

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120210.D
Lab Smp Id: VSTD200 Client Smp ID: VSTD200
Inj Date : 02-DEC-2017 13:32
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD200;VSTD200;1;9;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\CHEM\VOA2.i\D171202.b\8260LL.m
Meth Date : 01-Feb-2018 17:44 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 13:08 Cal File: D120209.D
Als bottle: 10 Calibration Sample, Level: 9
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
31 1,1,1-Trichloroethane	97	5.657	5.657	(0.978)	738070	200.000	186.23
60 1,1,1,2-Tetrachloroethane	131	9.649	9.649	(1.012)	472510	200.000	174.86
68 1,1,2,2-Tetrachloroethane	83	10.878	10.878	(0.919)	558945	200.000	169.88
53 1,1,2-Trichloroethane	83	8.600	8.600	(0.902)	334476	200.000	163.91
32 1,1-Dichloropropene	75	5.859	5.859	(0.891)	651586	200.000	199.17
22 1,1-Dichloroethane	63	4.277	4.277	(0.740)	1115467	200.000	208.54(A)
11 1,1-Dichloroethene	96	2.747	2.747	(0.475)	483681	200.000	192.44
71 1,2,3-Trichloropropane	75	10.907	10.907	(0.921)	608498	200.000	175.49(M)
79 1,2,4-Trimethylbenzene	105	11.507	11.507	(0.972)	1613252	200.000	201.12(A)
93 1,2,3-Trichlorobenzene	182	14.305	14.305	(1.208)	474213	200.000	191.42
90 1,2,4-Trichlorobenzene	180	13.821	13.821	(1.167)	554860	200.000	190.85
89 1,2-Dibromo-3-Chloropropane	75	13.012	13.012	(1.099)	100759	200.000	198.34
33 1,2-Dichloroethane	62	6.148	6.148	(0.935)	731386	200.000	193.03
42 1,2-Dichloropropane	63	7.072	7.072	(1.076)	489125	200.000	167.77
57 1,2-Dibromoethane	107	9.072	9.072	(0.952)	488777	200.000	190.56
88 1,2-Dichlorobenzene	146	12.229	12.229	(1.033)	867575	200.000	161.13
75 1,3,5-Trimethylbenzene	105	11.141	11.141	(0.941)	1554608	200.000	199.99
54 1,3-Dichloropropane	76	8.760	8.760	(0.919)	711492	200.000	176.31
83 1,3-Dichlorobenzene	146	11.773	11.773	(0.994)	968033	200.000	171.15
84 1,4-Dichlorobenzene	146	11.866	11.866	(1.002)	936512	200.000	169.41
26 2,2-Dichloropropane	77	5.044	5.044	(0.872)	708791	200.000	187.65

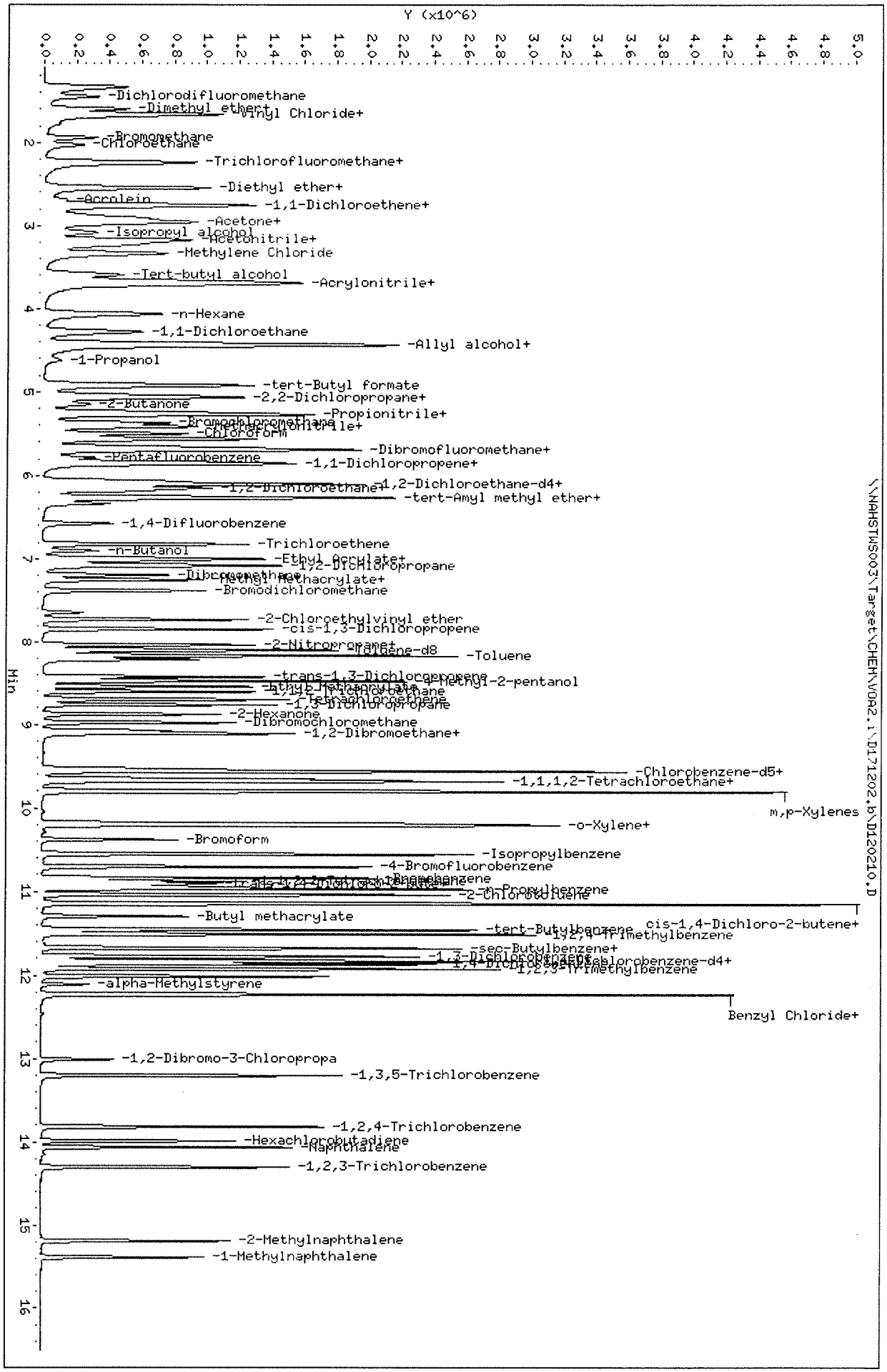
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Report Date: 01-Feb-2018 17:44

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
	24 2-Butanone	43	5.150	5.150	(0.891)	475117	400.000	395.44(A)
	52 2-Hexanone	43	8.873	8.873	(0.931)	666417	400.000	385.03(A)
	76 2-Chlorotoluene	91	11.035	11.035	(0.932)	1420701	200.000	166.74
	77 4-Chlorotoluene	91	11.148	11.148	(0.941)	1535880	200.000	200.40(A)
	45 4-Methyl-2-Pentanone	43	8.035	8.035	(0.843)	934919	400.000	333.36
	10 Acetone	43	2.862	2.862	(0.495)	353245	400.000	401.21(A)
	37 Benzene	78	6.100	6.100	(0.928)	1954999	200.000	195.77
	39 Bromodichloromethane	83	7.380	7.380	(1.122)	629154	200.000	188.53
	74 Bromobenzene	156	10.836	10.836	(0.915)	585408	200.000	174.80
	29 Bromochloromethane	128	5.368	5.368	(0.928)	275370	200.000	207.31(A)
	6 Bromomethane	94	1.938	1.938	(0.335)	294913	200.000	200.11(AM)
	19 Carbon Disulfide	76	2.955	2.955	(0.511)	2211623	400.000	433.21(A)
	66 Bromoform	173	10.378	10.378	(1.089)	384345	200.000	199.31
	7 Chloroethane	64	2.031	2.031	(0.351)	357211	200.000	200.57(AM)
	34 Carbon Tetrachloride	117	5.837	5.837	(0.888)	676893	200.000	199.24
	3 Chloromethane	50	1.595	1.595	(0.276)	979134	200.000	201.27(A)
	28 Chloroform	83	5.497	5.497	(0.951)	833800	200.000	172.25
	59 Chlorobenzene	112	9.559	9.559	(1.003)	1099160	200.000	158.27
	27 cis-1,2-Dichloroethene	96	5.070	5.070	(0.877)	521185	200.000	181.90
	46 cis-1,3-Dichloropropene	75	7.843	7.843	(1.193)	740036	200.000	187.79
	2 Dichlorodifluoromethane	85	1.450	1.450	(0.251)	462750	200.000	184.24
	55 Dibromochloromethane	129	8.975	8.975	(0.942)	623664	200.000	215.15(A)
	44 Dibromomethane	93	7.194	7.194	(1.094)	277761	200.000	184.21
	61 Ethylbenzene	106	9.678	9.678	(1.015)	589458	200.000	164.95
	91 Hexachlorobutadiene	225	13.991	13.991	(1.182)	240075	200.000	197.95
	62 m,p-Xylenes	106	9.800	9.800	(1.028)	1461350	400.000	320.65(A)
	63 o-Xylene	106	10.185	10.185	(1.069)	744676	200.000	158.94
	67 Isopropylbenzene	105	10.551	10.551	(1.107)	1757586	200.000	199.10
	17 Methylene Chloride	84	3.337	3.337	(0.577)	590736	200.000	213.72(A)
	73 n-Propylbenzene	91	10.965	10.965	(0.926)	2016642	200.000	197.69
	87 n-Butylbenzene	91	12.226	12.226	(1.033)	1158976	200.000	171.50
	92 Naphthalene	128	14.065	14.065	(1.188)	1192359	200.000	195.89
	64 Styrene	104	10.204	10.204	(1.071)	1214906	200.000	158.95
	81 sec-Butylbenzene	105	11.674	11.674	(0.986)	1765667	200.000	200.30(A)
	78 tert-Butylbenzene	119	11.456	11.456	(0.967)	1328519	200.000	200.66(A)
	20 trans-1,2-Dichloroethene	96	3.661	3.661	(0.633)	544806	200.000	228.21(A)
	50 Toluene	91	8.163	8.163	(0.857)	1819122	200.000	165.68
	51 trans-1,3-Dichloropropene	75	8.420	8.420	(1.281)	684878	200.000	199.80
	56 Tetrachloroethene	164	8.693	8.693	(0.912)	379826	200.000	169.31
	8 Trichlorofluoromethane	101	2.246	2.246	(0.389)	705306	200.000	182.68
	38 Trichloroethene	130	6.822	6.822	(1.038)	484504	200.000	176.59
	5 Vinyl Chloride	62	1.678	1.678	(0.290)	673091	200.000	200.16(A)
$	35 1,2-Dichloroethane-d4	65	6.058	6.058	(1.048)	578356	200.000	180.69
*	36 1,4-Difluorobenzene	114	6.575	6.575	(1.000)	399189	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	11.841	11.841	(1.000)	165737	50.0000	
*	1 Pentafluorobenzene	168	5.782	5.782	(1.000)	277642	50.0000	
*	47 Chlorobenzene-d5	117	9.530	9.530	(1.000)	355420	50.0000	
$	30 Dibromofluoromethane	113	5.686	5.686	(0.983)	405181	200.000	147.62
$	48 Toluene-d8	98	8.096	8.096	(0.850)	1365802	200.000	155.36
$	69 4-Bromofluorobenzene	95	10.702	10.702	(1.123)	617222	200.000	182.81
	82 p-Isopropyltoluene	119	11.828	11.828	(0.999)	1493948	200.000	161.00
	138 Freon TF	101	2.756	2.756	(0.477)	467073	200.000	205.44(A)

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120210.D
Report Date: 01-Feb-2018 17:44

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120210.D
Date : 02-DEC-2017 13:32
Client ID: VSTD200
Sample Info: VSTD200;VSTD200;1;9;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120212.D
Report Date: 01-Feb-2018 17:44

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120212.D
Lab Smp Id: VSTD-ICV Client Smp ID: VSTD-ICV
Inj Date : 02-DEC-2017 14:21
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD050;VSTD050;2;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\CHEM\VOA2.i\D171202.b\8260LL.m
Meth Date : 01-Feb-2018 17:44 VOA2.i Quant Type: ISTD
Cal Date : 02-DEC-2017 13:32 Cal File: D120210.D
Als bottle: 12 QC Sample: METHSPIKE
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
31 1,1,1-Trichloroethane	97	5.651	5.657	(0.977)	161475	45.9543	45.95
60 1,1,1,2-Tetrachloroethane	131	9.646	9.649	(1.012)	130084	49.1159	49.11
68 1,1,2,2-Tetrachloroethane	83	10.872	10.878	(0.918)	135469	45.1168	45.11
53 1,1,2-Trichloroethane	83	8.593	8.600	(0.902)	87213	43.6065	43.60
32 1,1-Dichloropropene	75	5.856	5.859	(0.891)	127058	40.0783	40.07
22 1,1-Dichloroethane	63	4.281	4.277	(0.740)	220671	46.5309	46.53
11 1,1-Dichloroethene	96	2.753	2.747	(0.476)	94048	42.2032	42.20
71 1,2,3-Trichloropropane	75	10.901	10.907	(0.921)	145114	45.8584	45.85
79 1,2,4-Trimethylbenzene	105	11.501	11.507	(0.972)	375904	50.2294	50.22
93 1,2,3-Trichlorobenzene	182	14.299	14.305	(1.208)	114341	50.5766	50.57
90 1,2,4-Trichlorobenzene	180	13.817	13.821	(1.167)	133917	50.4746	50.47
89 1,2-Dibromo-3-Chloropropane	75	13.009	13.012	(1.099)	23863	50.9899	50.98
33 1,2-Dichloroethane	62	6.145	6.148	(0.935)	170840	46.7268	46.72
42 1,2-Dichloropropane	63	7.066	7.072	(1.075)	127314	45.2554	45.25
57 1,2-Dibromoethane	107	9.068	9.072	(0.952)	106627	42.4146	42.41
88 1,2-Dichlorobenzene	146	12.223	12.229	(1.033)	216736	44.1089	44.10
75 1,3,5-Trimethylbenzene	105	11.132	11.141	(0.940)	360276	49.3119	49.31
54 1,3-Dichloropropane	76	8.754	8.760	(0.919)	175154	44.2852	44.28
83 1,3-Dichlorobenzene	146	11.767	11.773	(0.994)	222407	43.0894	43.08
84 1,4-Dichlorobenzene	146	11.860	11.866	(1.002)	213657	42.3514	42.35
26 2,2-Dichloropropane	77	5.041	5.044	(0.872)	155248	46.3586	46.35

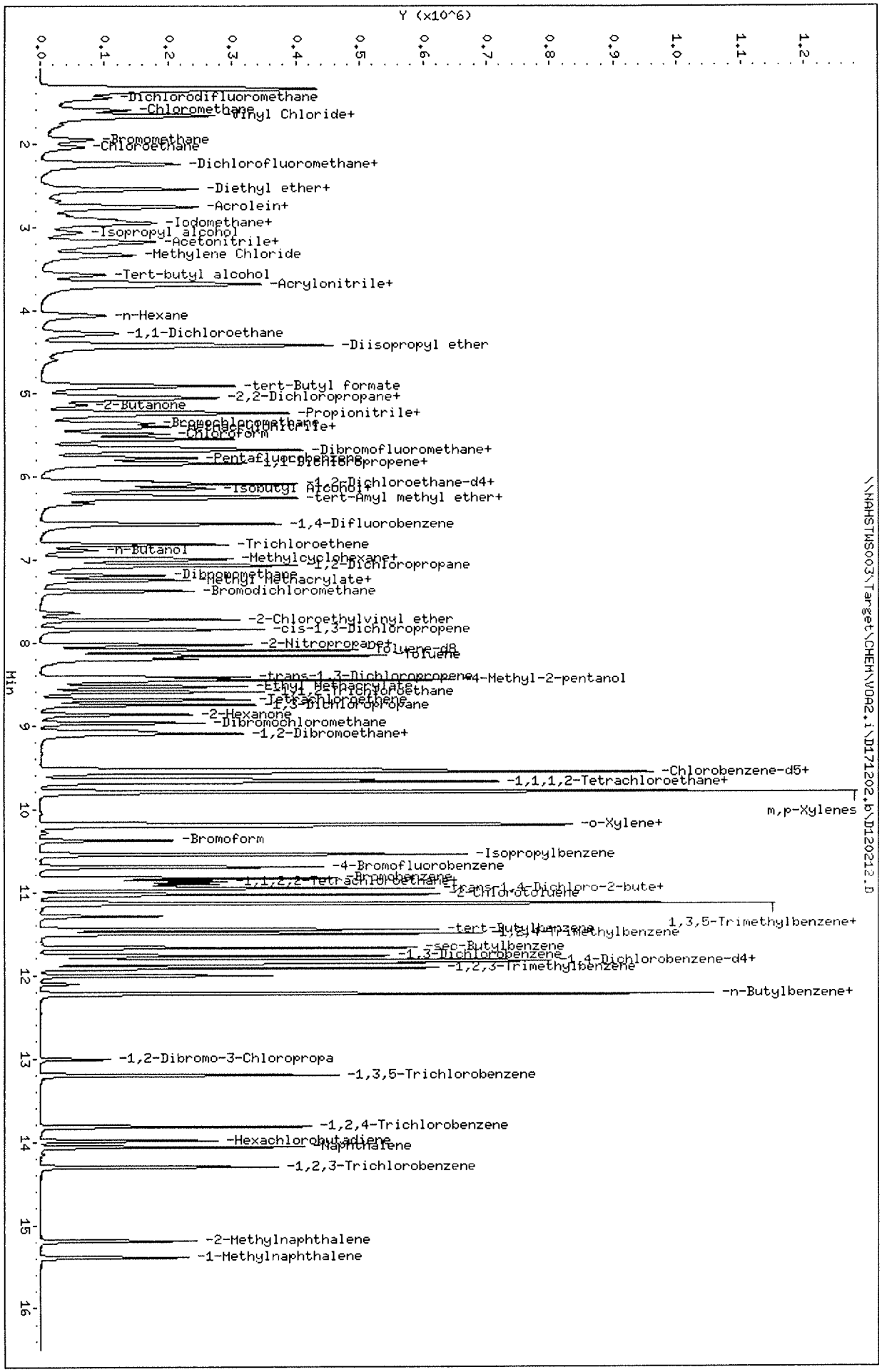
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120212.D
Report Date: 01-Feb-2018 17:44

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
24	2-Butanone	43	5.144	5.150	(0.890)	104569	98.1620	98.16
52	2-Hexanone	43	8.866	8.873	(0.931)	159905	94.2582	94.25
76	2-Chlorotoluene	91	11.029	11.035	(0.932)	330884	42.5548	42.55
77	4-Chlorotoluene	91	11.138	11.148	(0.941)	356248	49.7591	49.75
45	4-Methyl-2-Pentanone	43	8.025	8.035	(0.842)	245626	89.3558	89.35
10	Acetone	43	2.853	2.862	(0.493)	69239	105.162	105.16
37	Benzene	78	6.094	6.100	(0.927)	422677	43.8644	43.86
39	Bromodichloromethane	83	7.377	7.380	(1.123)	159073	49.3990	49.39
74	Bromobenzene	156	10.833	10.836	(0.915)	135051	44.1879	44.18
29	Bromochloromethane	128	5.365	5.368	(0.928)	62490	53.0603	53.06
6	Bromomethane	94	1.951	1.938	(0.337)	95308	49.2912	49.29
19	Carbon Disulfide	76	2.955	2.955	(0.511)	391739	86.5458	86.54
66	Bromoform	173	10.374	10.378	(1.089)	100517	53.1830	53.18
7	Chloroethane	64	2.047	2.031	(0.354)	94720	48.4621	48.46
34	Carbon Tetrachloride	117	5.840	5.837	(0.889)	135345	41.0986	41.09(M)
3	Chloromethane	50	1.598	1.595	(0.276)	245199	55.1091	55.10
28	Chloroform	83	5.494	5.497	(0.950)	196128	45.6997	45.69
59	Chlorobenzene	112	9.559	9.559	(1.003)	308121	45.2657	45.26
27	cis-1,2-Dichloroethene	96	5.070	5.070	(0.877)	121661	47.8906	47.89
46	cis-1,3-Dichloropropene	75	7.839	7.843	(1.193)	192345	50.5821	50.58
2	Dichlorodifluoromethane	85	1.450	1.450	(0.251)	105756	47.4907	47.49
55	Dibromochloromethane	129	8.969	8.975	(0.941)	136061	47.8905	47.89
44	Dibromomethane	93	7.191	7.194	(1.094)	71085	48.8547	48.85
61	Ethylbenzene	106	9.672	9.678	(1.015)	161459	46.0981	46.09
91	Hexachlorobutadiene	225	13.991	13.991	(1.182)	55311	48.5096	48.50
62	m,p-Xylenes	106	9.790	9.800	(1.028)	365489	81.8207	81.82
63	o-Xylene	106	10.179	10.185	(1.068)	191838	41.7746	41.77
67	Isopropylbenzene	105	10.548	10.551	(1.107)	444067	41.5808	41.58(M)
17	Methylene Chloride	84	3.331	3.337	(0.576)	112047	45.7221	45.72
73	n-Propylbenzene	91	10.955	10.965	(0.925)	463401	47.7117	47.71
87	n-Butylbenzene	91	12.223	12.226	(1.033)	258762	41.9584	41.95
92	Naphthalene	128	14.061	14.065	(1.188)	313637	54.9167	54.91
64	Styrene	104	10.198	10.204	(1.070)	324143	43.2702	43.27
81	sec-Butylbenzene	105	11.667	11.674	(0.986)	390993	47.3308	47.33
78	tert-Butylbenzene	119	11.449	11.456	(0.967)	295574	47.7111	47.71
20	trans-1,2-Dichloroethene	96	3.671	3.661	(0.635)	102516	48.4348	48.43
50	Toluene	91	8.160	8.163	(0.857)	436606	40.5721	40.57
51	trans-1,3-Dichloropropene	75	8.417	8.420	(1.281)	165729	50.1044	50.10
56	Tetrachloroethene	164	8.690	8.693	(0.912)	89503	40.7056	40.70
8	Trichlorofluoromethane	101	2.259	2.246	(0.391)	161588	47.2058	47.20
38	Trichloroethene	130	6.816	6.822	(1.037)	117783	44.4887	44.48
5	Vinyl Chloride	62	1.685	1.678	(0.291)	169133	55.1987	55.19
$ 35	1,2-Dichloroethane-d4	65	6.058	6.058	(1.048)	131929	46.4880	46.48
* 36	1,4-Difluorobenzene	114	6.572	6.575	(1.000)	385208	50.0000	
* 70	1,4-Dichlorobenzene-d4	152	11.838	11.841	(1.000)	151253	50.0000	
* 1	Pentafluorobenzene	168	5.782	5.782	(1.000)	246167	50.0000	
* 47	Chlorobenzene-d5	117	9.527	9.530	(1.000)	348365	50.0000	
$ 30	Dibromofluoromethane	113	5.686	5.686	(0.983)	98655	40.5404	40.54
$ 48	Toluene-d8	98	8.093	8.096	(0.849)	368152	42.7259	42.72
$ 69	4-Bromofluorobenzene	95	10.695	10.702	(1.123)	142707	43.1251	43.12
82	p-Isopropyltoluene	119	11.818	11.828	(0.998)	338780	40.0076	40.00
138	Freon TF	101	2.766	2.756	(0.478)	81724	40.5432	40.54(M)

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120212.D
Report Date: 01-Feb-2018 17:44

QC Flag Legend

M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120212.D
Date : 02-DEC-2017 14:21
Client ID: VSTD-ICV
Sample Info: VSTD050;VSTD050;2;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

\\NAHSTWS003\Target\CHEM\VOA2.i\D171202.b\D120212.D

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17120123

Lab File ID: D120801 BFB Injection Date: 12/08/17

Instrument ID: VOA2 BFB Injection Time: 0958

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	18.2
75	30.0 - 60.0% of mass 95	44.7
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	5.8
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	87.0
175	5.0 - 9.0% of mass 174	6.8 (7.8)1
176	95.0 - 101.0% of mass 174	83.8 (96.4)1
177	5.0 - 9.0% of mass 176	5.3 (6.3)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CCV	CCV	D120802	12/08/17	1022
02	VLCSW-171208	VLCSW-171208	D120804	12/08/17	1111
03	VLCSDW-17120	VLCSDW-171208	D120805	12/08/17	1136
04	VBLKW-171208	VBLKW-171208	D120807	12/08/17	1225
05	HS17120220-0	HS17120220-02M	D120815	12/08/17	1542
06	HS17120220-0	HS17120220-02M	D120816	12/08/17	1606
07	HS17120123-0	HS17120123-08	D120819	12/08/17	1722
08	HS17120123-0	HS17120123-01	D120820	12/08/17	1747
09	HS17120123-0	HS17120123-02	D120821	12/08/17	1812
10	HS17120123-0	HS17120123-03	D120822	12/08/17	1836
11	HS17120123-0	HS17120123-04	D120823	12/08/17	1901
12	HS17120123-0	HS17120123-05	D120824	12/08/17	1925
13	HS17120123-0	HS17120123-06	D120825	12/08/17	1950
14	HS17120123-0	HS17120123-07	D120826	12/08/17	2015
15	CCV_END	CCV_END	D120829	12/08/17	2128
16					
17					
18					
19					
20					
21					
22					

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17120123

Instrument ID: VOA2 Calibration Date: 12/08/17 Time: 1022

Lab File ID: D120802 Init. Calib. Date(s): 12/02/17 12/02/17

Init. Calib. Times: 1018 1332

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
1,1,1-Trichloroethane	0.7140000	0.7090736	0.7090736	0.1	-0.69	20.00	AVRG
1,1,1,2-Tetrachloroethane	0.3800000	0.3813285	0.3813285	0.1	0.35	20.00	AVRG
1,1,2,2-Tetrachloroethane	0.9920000	0.9671885	0.9671885	0.3	-2.50	20.00	AVRG
1,1,2-Trichloroethane	0.2870000	0.2748979	0.2748979	0.1	-4.22	20.00	AVRG
1,1-Dichloropropene	46.988378	50.000000	0.3864110	0.1	-6.02	20.00	LINR
1,1-Dichloroethane	0.9630000	0.9147429	0.9147429	0.2	-5.01	20.00	AVRG
1,1-Dichloroethene	0.4530000	0.3937089	0.3937089	0.1	-13.09	20.00	AVRG
1,2,3-Trichloropropane	1.0460000	1.0462887	1.0462887	0.1	0.03	20.00	AVRG
1,2,4-Trimethylbenzene	54.728485	50.000000	2.7013943	0.1	9.46	20.00	LINR
1,2,3-Trichlorobenzene	0.7470000	0.8366196	0.8366196	0.1	12.00	20.00	AVRG
1,2,4-Trichlorobenzene	0.8770000	0.9945772	0.9945772	0.2	13.41	20.00	AVRG
1,2-Dibromo-3-Chloropropane	56.734344	50.000000	0.1753182	0.05	13.47	20.00	LINR
1,2-Dichloroethane	0.4750000	0.4436623	0.4436623	0.1	-6.60	20.00	AVRG
1,2-Dichloropropane	0.3650000	0.3585303	0.3585303	0.1	-1.77	20.00	AVRG
1,2-Dibromoethane	0.3610000	0.3569457	0.3569457	0.1	-1.12	20.00	AVRG
1,2-Dichlorobenzene	1.6240000	1.5059625	1.5059625	0.4	-7.27	20.00	AVRG
1,3,5-Trimethylbenzene	55.190172	50.000000	2.6549332	0.1	10.38	20.00	LINR
1,3-Dichloropropane	0.5680000	0.5561348	0.5561348	0.1	-2.09	20.00	AVRG
1,3-Dichlorobenzene	1.7060000	1.5807704	1.5807704	0.6	-7.34	20.00	AVRG
1,4-Dichlorobenzene	1.6680000	1.4906458	1.4906458	0.4	-10.63	20.00	AVRG
2,2-Dichloropropane	0.6800000	0.7070009	0.7070009	0.1	3.97	20.00	AVRG
2-Butanone	0.2160000	0.2368078	0.2368078	0.1	9.63	20.00	AVRG
2-Hexanone	0.2430000	0.2608979	0.2608979	0.1	7.36	20.00	AVRG
2-Chlorotoluene	2.5700000	2.2894399	2.2894399	0.1	-10.92	20.00	AVRG
4-Chlorotoluene	53.681074	50.000000	2.5352546	0.1	7.36	20.00	LINR
p-Isopropyltoluene	2.7990000	2.5757245	2.5757245	0.1	-7.98	20.00	AVRG
Acetone	115.45921	100.00000	0.1543544	0.1	15.46	20.00	2RDR
Benzene	1.2510000	1.2128516	1.2128516	0.5	-3.05	20.00	AVRG
Bromodichloromethane	0.4180000	0.4512864	0.4512864	0.2	7.96	20.00	AVRG
Bromobenzene	1.0100000	0.9361527	0.9361527	0.1	-7.31	20.00	AVRG
Bromochloromethane	0.2390000	0.2556105	0.2556105	0.1	6.95	20.00	AVRG
Bromomethane	41.678299	50.000000	0.3391805	0.1	-16.64	20.00	2RDR
Carbon Disulfide	0.9190000	0.8501565	0.8501565	0.1	-7.49	20.00	AVRG
Bromoform	0.2710000	0.3026674	0.3026674	0.1	11.68	20.00	AVRG
Chloroethane	40.132030	50.000000	0.3253345	0.1	-19.74	20.00	2RDR
Carbon Tetrachloride	47.342356	50.000000	0.4044298	0.1	-5.32	20.00	LINR
Chloromethane	41.368336	50.000000	0.7581793	0.1	-17.26	20.00	LINR
Chloroform	0.8720000	0.8172948	0.8172948	0.2	-6.27	20.00	AVRG
Chlorobenzene	0.9770000	0.9360949	0.9360949	0.5	-4.19	20.00	AVRG
cis-1,2-Dichloroethene	0.5160000	0.5104297	0.5104297	0.1	-1.08	20.00	AVRG
cis-1,3-Dichloropropene	0.4940000	0.5437732	0.5437732	0.2	10.08	20.00	AVRG
Dichlorodifluoromethane	0.4520000	0.3757657	0.3757657	0.1	-16.86	20.00	AVRG

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1712012

Instrument ID: VOA2 Calibration Date: 12/08/17 Time: 1022

Lab File ID: D120802 Init. Calib. Date(s): 12/02/17 12/02/17

Init. Calib. Times: 1018 1332

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Dibromochloromethane	0.4080000	0.4218808	0.4218808	0.1	3.40	20.00	AVRG
Dibromomethane	0.1890000	0.2035472	0.2035472	0.1	7.70	20.00	AVRG
Ethylbenzene	0.5030000	0.4811417	0.4811417	0.1	-4.34	20.00	AVRG
Hexachlorobutadiene	56.072919	50.000000	0.4204879	0.1	12.14	20.00	LINR
m,p-Xylenes	0.6410000	0.5951779	0.5951779	0.1	-7.15	20.00	AVRG
o-Xylene	0.6590000	0.6301727	0.6301727	0.3	-4.37	20.00	AVRG
Isopropylbenzene	50.460680	50.000000	1.5236103	0.1	0.92	20.00	2RDR
Methylene Chloride	0.4980000	0.4821512	0.4821512	0.1	-3.18	20.00	AVRG
n-Propylbenzene	53.929334	50.000000	3.4411699	0.1	7.86	20.00	LINR
n-Butylbenzene	2.0380000	2.0404251	2.0404251	0.05	0.12	20.00	AVRG
Naphthalene	59.158171	50.000000	2.4175433	0.2	18.32	20.00	2RDR
Styrene	1.0750000	1.0403487	1.0403487	0.3	-3.22	20.00	AVRG
sec-Butylbenzene	55.330851	50.000000	3.0069877	0.1	10.66	20.00	LINR
tert-Butylbenzene	53.899360	50.000000	2.1993792	0.1	7.80	20.00	LINR
trans-1,2-Dichloroethene	0.4300000	0.4357128	0.4357128	0.1	1.33	20.00	AVRG
Toluene	1.5440000	1.4140895	1.4140895	0.4	-8.41	20.00	AVRG
trans-1,3-Dichloropropene	0.4290000	0.4789740	0.4789740	0.1	11.65	20.00	AVRG
Tetrachloroethene	0.3160000	0.3063204	0.3063204	0.2	-3.06	20.00	AVRG
Trichlorofluoromethane	0.6950000	0.5870345	0.5870345	0.1	-15.53	20.00	AVRG
Trichloroethene	0.3440000	0.3463981	0.3463981	0.2	0.70	20.00	AVRG
Vinyl Chloride	45.274156	50.000000	0.5681354	0.1	-9.45	20.00	LINR
Freon TF	0.4090000	0.3842332	0.3842332	0.1	-6.06	20.00	AVRG
4-Methyl-2-Pentanone	0.3940000	0.3999488	0.3999488	0.1	1.51	20.00	AVRG
4-Bromofluorobenzene	0.4750000	0.4777701	0.4777701	0.1	0.58	20.00	AVRG
Toluene-d8	1.2370000	1.2476914	1.2476914	0.1	0.86	20.00	AVRG
Dibromofluoromethane	0.4940000	0.4257069	0.4257069	0.1	-13.82	20.00	AVRG
1,2-Dichloroethane-d4	0.5760000	0.5320522	0.5320522	0.1	-7.63	20.00	AVRG

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17120123

Instrument ID: VOA2 Calibration Date: 12/08/17 Time: 2128

Lab File ID: D120829 Init. Calib. Date(s): 12/02/17 12/02/17

Init. Calib. Times: 1018 1332

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE	
1,1,1-Trichloroethane	0.7140000	0.7268806	0.7268806	0.1	1.80	20.00	AVRG	
1,1,1,2-Tetrachloroethane	0.3800000	0.3581852	0.3581852	0.1	-5.74	20.00	AVRG	
1,1,2,2-Tetrachloroethane	0.9920000	0.8357654	0.8357654	0.3	-15.75	20.00	AVRG	
1,1,2-Trichloroethane	0.2870000	0.2546652	0.2546652	0.1	-11.27	20.00	AVRG	
1,1-Dichloropropene	48.697900	50.000000	0.4004058	0.1	-2.60	20.00	LINR	
1,1-Dichloroethane	0.9630000	0.9136082	0.9136082	0.2	-5.13	20.00	AVRG	
1,1-Dichloroethene	0.4530000	0.4047101	0.4047101	0.1	-10.66	20.00	AVRG	
1,2,3-Trichloropropane	1.0460000	0.9316929	0.9316929	0.1	-10.93	20.00	AVRG	
1,2,4-Trimethylbenzene	53.771944	50.000000	2.6554442	0.1	7.54	20.00	LINR	
1,2,3-Trichlorobenzene	0.7470000	0.8108562	0.8108562	0.1	8.55	20.00	AVRG	
1,2,4-Trichlorobenzene	0.8770000	0.9498918	0.9498918	0.2	8.31	20.00	AVRG	
1,2-Dibromo-3-Chloropropane	50.975182	50.000000	0.1577239	0.05	1.95	20.00	LINR	
1,2-Dichloroethane	0.4750000	0.4235805	0.4235805	0.1	-10.82	20.00	AVRG	
1,2-Dichloropropane	0.3650000	0.3397948	0.3397948	0.1	-6.90	20.00	AVRG	
1,2-Dibromoethane	0.3610000	0.3220495	0.3220495	0.1	-10.79	20.00	AVRG	
1,2-Dichlorobenzene	1.6240000	1.4477989	1.4477989	0.4	-10.85	20.00	AVRG	
1,3,5-Trimethylbenzene	54.548743	50.000000	2.6251449	0.1	9.10	20.00	LINR	
1,3-Dichloropropane	0.5680000	0.5094266	0.5094266	0.1	-10.31	20.00	AVRG	
1,3-Dichlorobenzene	1.7060000	1.5140452	1.5140452	0.6	-11.25	20.00	AVRG	
1,4-Dichlorobenzene	1.6680000	1.4275070	1.4275070	0.4	-14.42	20.00	AVRG	
2,2-Dichloropropane	0.6800000	0.6459313	0.6459313	0.1	-5.01	20.00	AVRG	
2-Butanone	0.2160000	0.2103731	0.2103731	0.1	-2.60	20.00	AVRG	
2-Hexanone	0.2430000	0.2360933	0.2360933	0.1	-2.84	20.00	AVRG	
2-Chlorotoluene	2.5700000	2.2208019	2.2208019	0.1	-13.59	20.00	AVRG	
4-Chlorotoluene	51.828822	50.000000	2.4502718	0.1	3.66	20.00	LINR	
p-Isopropyltoluene	2.7990000	2.5785206	2.5785206	0.1	-7.88	20.00	AVRG	
Acetone	100.65486	100.00000	0.1346781	0.1	0.65	20.00	2RDR	
Benzene	1.2510000	1.2051221	1.2051221	0.5	-3.67	20.00	AVRG	
Bromodichloromethane	0.4180000	0.4277779	0.4277779	0.2	2.34	20.00	AVRG	
Bromobenzene	1.0100000	0.8887780	0.8887780	0.1	-12.00	20.00	AVRG	
Bromochloromethane	0.2390000	0.2396633	0.2396633	0.1	0.28	20.00	AVRG	
Bromomethane	34.189116	50.000000	0.2892081	0.1	-31.62	20.00	2RDR	<-
Carbon Disulfide	0.9190000	0.8699349	0.8699349	0.1	-5.34	20.00	AVRG	
Bromoform	0.2710000	0.2712795	0.2712795	0.1	0.10	20.00	AVRG	
Chloroethane	39.985979	50.000000	0.3242787	0.1	-20.03	20.00	2RDR	<-
Carbon Tetrachloride	49.320535	50.000000	0.4212449	0.1	-1.36	20.00	LINR	
Chloromethane	40.290417	50.000000	0.7395177	0.1	-19.42	20.00	LINR	
Chloroform	0.8720000	0.7874074	0.7874074	0.2	-9.70	20.00	AVRG	
Chlorobenzene	0.9770000	0.8897723	0.8897723	0.5	-8.93	20.00	AVRG	
cis-1,2-Dichloroethene	0.5160000	0.4951281	0.4951281	0.1	-4.04	20.00	AVRG	
cis-1,3-Dichloropropene	0.4940000	0.5091919	0.5091919	0.2	3.08	20.00	AVRG	
Dichlorodifluoromethane	0.4520000	0.4231740	0.4231740	0.1	-6.38	20.00	AVRG	

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1712012

Instrument ID: VOA2 Calibration Date: 12/08/17 Time: 2128

Lab File ID: D120829 Init. Calib. Date(s): 12/02/17 12/02/17

Init. Calib. Times: 1018 1332

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Dibromochloromethane	0.4080000	0.3900085	0.3900085	0.1	-4.41	20.00	AVRG
Dibromomethane	0.1890000	0.1847429	0.1847429	0.1	-2.25	20.00	AVRG
Ethylbenzene	0.5030000	0.4757857	0.4757857	0.1	-5.41	20.00	AVRG
Hexachlorobutadiene	54.450887	50.000000	0.4087350	0.1	8.90	20.00	LINR
m,p-Xylenes	0.6410000	0.5829529	0.5829529	0.1	-9.06	20.00	AVRG
o-Xylene	0.6590000	0.6092572	0.6092572	0.3	-7.55	20.00	AVRG
Isopropylbenzene	50.817338	50.000000	1.5334559	0.1	1.63	20.00	2RDR
Methylene Chloride	0.4980000	0.4506454	0.4506454	0.1	-9.51	20.00	AVRG
n-Propylbenzene	54.319466	50.000000	3.4648515	0.1	8.64	20.00	LINR
n-Butylbenzene	2.0380000	2.0402617	2.0402617	0.05	0.11	20.00	AVRG
Naphthalene	54.623606	50.000000	2.2435859	0.2	9.25	20.00	2RDR
Styrene	1.0750000	0.9874632	0.9874632	0.3	-8.14	20.00	AVRG
sec-Butylbenzene	56.103325	50.000000	3.0477319	0.1	12.21	20.00	LINR
tert-Butylbenzene	55.135426	50.000000	2.2483578	0.1	10.27	20.00	LINR
trans-1,2-Dichloroethene	0.4300000	0.4296281	0.4296281	0.1	-0.09	20.00	AVRG
Toluene	1.5440000	1.3791660	1.3791660	0.4	-10.68	20.00	AVRG
trans-1,3-Dichloropropene	0.4290000	0.4428227	0.4428227	0.1	3.22	20.00	AVRG
Tetrachloroethene	0.3160000	0.3095669	0.3095669	0.2	-2.04	20.00	AVRG
Trichlorofluoromethane	0.6950000	0.6328815	0.6328815	0.1	-8.94	20.00	AVRG
Trichloroethene	0.3440000	0.3593156	0.3593156	0.2	4.45	20.00	AVRG
Vinyl Chloride	47.325386	50.000000	0.5927164	0.1	-5.35	20.00	LINR
Freon TF	0.4090000	0.4127544	0.4127544	0.1	0.92	20.00	AVRG
4-Methyl-2-Pentanone	0.3940000	0.3623891	0.3623891	0.1	-8.02	20.00	AVRG
4-Bromofluorobenzene	0.4750000	0.4732097	0.4732097	0.1	-0.38	20.00	AVRG
Toluene-d8	1.2370000	1.2356885	1.2356885	0.1	-0.11	20.00	AVRG
Dibromofluoromethane	0.4940000	0.4256221	0.4256221	0.1	-13.84	20.00	AVRG
1,2-Dichloroethane-d4	0.5760000	0.5295229	0.5295229	0.1	-8.07	20.00	AVRG

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17120123

Lab File ID (Standard): D120802 Date Analyzed: 12/08/17

Instrument ID: VOA2 Time Analyzed: 1022

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

		IS1(CBZ) AREA #	RT #	IS2(DFB) AREA #	RT #	IS3(DCB) AREA #	RT #
	12 HOUR STD	333964	9.52	367782	6.57	156561	11.83
	UPPER LIMIT	667928	10.02	735564	7.07	313122	12.33
	LOWER LIMIT	166982	9.02	183891	6.07	78281	11.33
	CLIENT SAMPLE NO.						
01	VLCSW-171208	327932	9.52	362737	6.57	152178	11.83
02	VLCSDW-171208	332754	9.53	363631	6.57	154181	11.83
03	VBLKW-171208	333708	9.52	366675	6.57	151231	11.83
04	HS17120220-02	324206	9.52	358910	6.57	151530	11.84
05	HS17120220-02	327571	9.52	363518	6.57	150680	11.83
06	HS17120123-08	331243	9.52	366376	6.57	152308	11.83
07	HS17120123-01	336922	9.52	372275	6.57	154838	11.84
08	HS17120123-02	332897	9.52	370831	6.57	150959	11.83
09	HS17120123-03	335427	9.52	362197	6.57	151609	11.83
10	HS17120123-04	346211	9.52	377491	6.57	162261	11.83
11	HS17120123-05	337353	9.52	372538	6.57	153140	11.83
12	HS17120123-06	339403	9.52	374965	6.57	152009	11.83
13	HS17120123-07	347161	9.52	378804	6.57	162987	11.83
14							
15							
16							
17							
18							
19							
20							

IS1 (CBZ) = Chlorobenzene-d5
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17120123

Lab File ID (Standard): D120802 Date Analyzed: 12/08/17

Instrument ID: VOA2 Time Analyzed: 1022

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

		IS4 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	248953	5.78				
	UPPER LIMIT	497906	6.28				
	LOWER LIMIT	124477	5.28				
	CLIENT SAMPLE NO.						
01	VLCSW-171208	241325	5.78				
02	VLCSDW-171208	245672	5.78				
03	VBLKW-171208	260801	5.78				
04	HS17120220-02	243192	5.78				
05	HS17120220-02	241571	5.78				
06	HS17120123-08	260912	5.77				
07	HS17120123-01	263173	5.78				
08	HS17120123-02	260789	5.78				
09	HS17120123-03	258620	5.78				
10	HS17120123-04	268406	5.78				
11	HS17120123-05	262006	5.77				
12	HS17120123-06	264396	5.78				
13	HS17120123-07	268752	5.78				
14							
15							
16							
17							
18							
19							
20							

IS4 = Pentafluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

MSVOA02 -Logbook

Batch: 30142 **Analyst:** Anjana Poluri

Date: 12-08-2017 **Reviewer:**

Method: 8260 **Laboratory:** Houston

Comments:

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
1	BFB	TUNE	12-08-2017 09:58 am	1.00	50 mL	50 mL	D120801.D	Liquid	Y	NA
2	*Auto find/purged* CCV	CCV	12-08-2017 10:22 am	1.00	50 mL	50 mL	D120802.D	Liquid	Y	NA
3	*10 uL cal std/50 mL DI* CCB	SAMP	12-08-2017 10:47 am	1.00	50 mL	50 mL	D120803.D	Liquid	Y	NA
4	*CCB* VLCSW-171208	LCS	12-08-2017 11:11 am	1.00	50 mL	50 mL	D120804.D	Liquid	Y	NA
5	*10 uL cal std/50 mL DI* VLCSDW-171208	LCSD	12-08-2017 11:36 am	1.00	50 mL	50 mL	D120805.D	Liquid	Y	NA
6	*10 uL cal std/50 mL DI* BLK	SAMP	12-08-2017 12:01 pm	1.00	50 mL	50 mL	D120806.D	Liquid	Y	NA
7	*Cleanup blk* VBLKW-171208	MBLK	12-08-2017 12:25 pm	1.00	50 mL	50 mL	D120807.D	Liquid	Y	NA
8	HS17120290-01	SAMP	12-08-2017 12:50 pm	1.00	50 mL	50 mL	D120808.D	Liquid	Y	<2
9	HS17120372-01	SAMP	12-08-2017 01:14 pm	1.00	50 mL	50 mL	D120809.D	Liquid	Y	<2
10	HS17120107-10	SAMP	12-08-2017 01:39 pm	1.00	50 mL	50 mL	D120810.D	Liquid	Y	<2
11	HS17120107-13	SAMP	12-08-2017 02:03 pm	1.00	50 mL	50 mL	D120811.D	Liquid	Y	<2
12	HS17120107-15	SAMP	12-08-2017 02:28 pm	1.00	50 mL	50 mL	D120812.D	Liquid	Y	<2
13	HS17120220-02	SAMP	12-08-2017 02:53 pm	1.00	50 mL	50 mL	D120813.D	Liquid	Y	<2
14	HS17120250-01	SAMP	12-08-2017 03:17 pm	1.00	50 mL	50 mL	D120814.D	Liquid	Y	<2
15	HS17120220-02MS	MS	12-08-2017 03:42 pm	1.00	50 mL	50 mL	D120815.D	Liquid	Y	<2
16	*8 uL cal std/40 mL sample* HS17120220-02MSD	MSD	12-08-2017 04:06 pm	1.00	50 mL	50 mL	D120816.D	Liquid	Y	<2
17	*8 uL cal std/40 mL sample* HS17120127-02	SAMP	12-08-2017 04:33 pm	25.00	2 mL	50 mL	D120817.D	Liquid	Y	<2
18	BLK	SAMP	12-08-2017 04:58 pm	1.00	50 mL	50 mL	D120818.D	Liquid	Y	NA
19	*Cleanup blk* HS17120123-08	SAMP	12-08-2017 05:22 pm	1.00	50 mL	50 mL	D120819.D	Liquid	Y	<2
20	HS17120123-01	SAMP	12-08-2017 05:47 pm	1.00	50 mL	50 mL	D120820.D	Liquid	Y	<2
21	HS17120123-02	SAMP	12-08-2017 06:12 pm	1.00	50 mL	50 mL	D120821.D	Liquid	Y	<2
22	HS17120123-03	SAMP	12-08-2017 06:36 pm	1.00	50 mL	50 mL	D120822.D	Liquid	Y	<2
23	HS17120123-04	SAMP	12-08-2017 07:01 pm	1.00	50 mL	50 mL	D120823.D	Liquid	Y	<2
24	HS17120123-05	SAMP	12-08-2017 07:25 pm	1.00	50 mL	50 mL	D120824.D	Liquid	Y	<2
25	HS17120123-06	SAMP	12-08-2017 07:50 pm	1.00	50 mL	50 mL	D120825.D	Liquid	Y	<2
26	HS17120123-07	SAMP	12-08-2017 08:15 pm	1.00	50 mL	50 mL	D120826.D	Liquid	Y	<2
27	HS17120115-01	SAMP	12-08-2017 08:39 pm	1.00	50 mL	50 mL	D120827.D	Liquid	Y	<2
28	HS17120115-02	SAMP	12-08-2017 09:04 pm	1.00	50 mL	50 mL	D120828.D	Liquid	Y	<2
29	CCV_END	CCV_END	12-08-2017 09:28 pm	1.00	50 mL	50 mL	D120829.D	Liquid	Y	NA
30	*10 uL cal std/50 mL DI* BFB	TUNE	12-08-2017 09:53 pm	1.00	50 mL	50 mL	E120801.D	Liquid	Y	NA
31	*Auto find/purged* CCV	CCV	12-08-2017 10:18 pm	1.00	50 mL	50 mL	E120802.D	Liquid	Y	NA
32	*10 uL cal std/50 mL DI* CCV	CCV	12-08-2017 10:42 pm	1.00	50 mL	50 mL	E120803.D	Liquid	Y	NA
33	*10 uL cal std/50 mL DI* CCB	SAMP	12-08-2017 11:07 pm	1.00	50 mL	50 mL	E120804.D	Liquid	Y	NA
34	*CCB* VLCSW-171208	LCS	12-08-2017 11:31 pm	1.00	50 mL	50 mL	E120805.D	Liquid	Y	NA

MSVOA02 -Logbook

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
35	BLK	SAMP	12-08-2017 11:56 pm	1.00	50 mL	50 mL	E120806.D	Liquid	Y	NA
36	*Cleanup blk* VBLKW-171208	MBLK	12-09-2017 12:21 am	1.00	50 mL	50 mL	E120807.D	Liquid	Y	NA
37	HS17120256-03	SAMP	12-09-2017 12:45 am	1.00	50 mL	50 mL	E120808.D	Liquid	Y	<2
38	HS17120296-01	SAMP	12-09-2017 01:10 am	1.00	50 mL	50 mL	E120809.D	Liquid	Y	<2
39	HS17120296-01MS	MS	12-09-2017 01:35 am	1.00	50 mL	50 mL	E120810.D	Liquid	Y	<2
40	*8 uL cal std/40 mL sample* HS17120296-01MSD	MSD	12-09-2017 01:59 am	1.00	50 mL	50 mL	E120811.D	Liquid	Y	<2
41	*8 uL cal std/40 mL sample* BLK	SAMP	12-09-2017 02:24 am	1.00	50 mL	50 mL	E120812.D	Liquid	Y	NA
42	*Cleanup blk* HS17120248-01	SAMP	12-09-2017 02:49 am	1.00	50 mL	50 mL	E120813.D	Liquid	Y	<2
43	HS17120248-02	SAMP	12-09-2017 03:13 am	1.00	50 mL	50 mL	E120814.D	Liquid	Y	<2
44	HS17120248-03	SAMP	12-09-2017 03:38 am	1.00	50 mL	50 mL	E120815.D	Liquid	Y	<2
45	HS17120248-04	SAMP	12-09-2017 04:02 am	1.00	50 mL	50 mL	E120816.D	Liquid	Y	<2
46	HS17120248-05	SAMP	12-09-2017 04:27 am	1.00	50 mL	50 mL	E120817.D	Liquid	Y	<2
47	HS17120248-06	SAMP	12-09-2017 04:52 am	1.00	50 mL	50 mL	E120818.D	Liquid	Y	<2
48	HS17120248-07	SAMP	12-09-2017 05:16 am	1.00	50 mL	50 mL	E120819.D	Liquid	Y	<2
49	HS17120248-08	SAMP	12-09-2017 05:41 am	1.00	50 mL	50 mL	E120820.D	Liquid	Y	<2
50	HS17120248-09	SAMP	12-09-2017 06:06 am	1.00	50 mL	50 mL	E120821.D	Liquid	Y	<2
51	HS17120296-02	SAMP	12-09-2017 06:30 am	1.00	50 mL	50 mL	E120822.D	Liquid	Y	<2
52	HS17120296-03	SAMP	12-09-2017 06:55 am	1.00	50 mL	50 mL	E120823.D	Liquid	Y	<2
53	HS17120296-04	SAMP	12-09-2017 07:20 am	1.00	50 mL	50 mL	E120824.D	Liquid	Y	<2
54	HS17120296-05	SAMP	12-09-2017 07:44 am	1.00	50 mL	50 mL	E120825.D	Liquid	Y	<2
55	HS17120296-06	SAMP	12-09-2017 08:09 am	1.00	50 mL	50 mL	E120826.D	Liquid	Y	<2
56	HS17120256-01	SAMP	12-09-2017 08:33 am	1.00	50 mL	50 mL	E120827.D	Liquid	Y	<2
57	HS17120256-02	SAMP	12-09-2017 08:58 am	1.00	50 mL	50 mL	E120828.D	Liquid	Y	<2
58	HS17120081-01	SAMP	12-09-2017 09:25 am	25.00	2 mL	50 mL	E120829.D	Liquid	Y	<2
59	HS17120081-02	SAMP	12-09-2017 09:52 am	100000.	0.5 µL	50 mL	E120830.D	Liquid	Y	<2

Chemical	Value
SURR ID	29814-95-03
IS ID	29814-95-04
LCS/MS ID	29814-95-01
CAL STD ID	29814-95-01
BFB ID	29814-95-03
pH Paper	634-37-03

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120801.D

Date : 08-DEC-2017 09:58

Client ID: BFB

Instrument: VOA2.i

Sample Info: BFB;BFB;3;;BFB

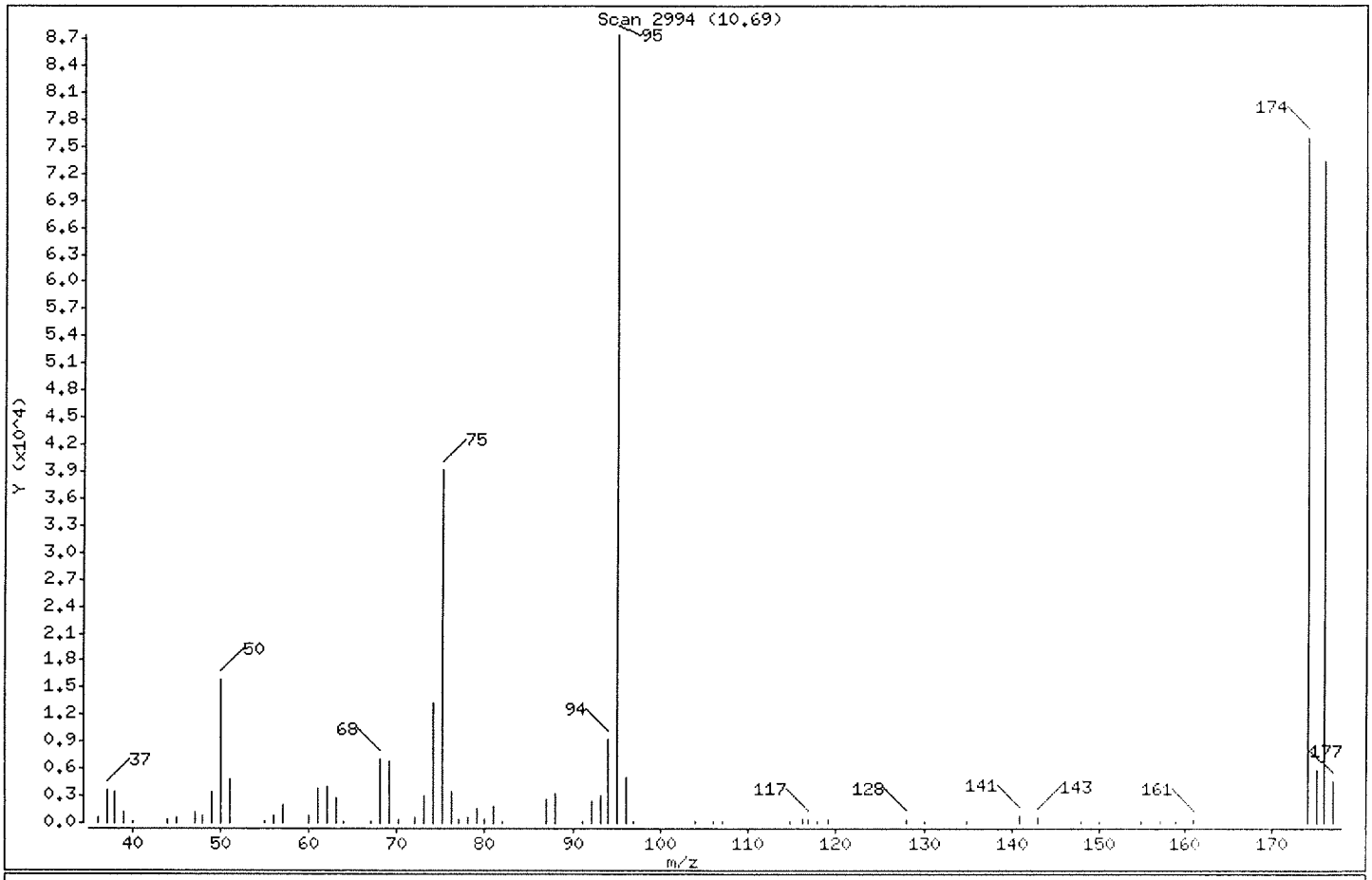
Volume Injected (uL): 2.0

Operator: AP

Column phase: DB624

Column diameter: 0.18

1 bfb



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	18.21
75	30.00 - 60.00% of mass 95	44.73
96	5.00 - 9.00% of mass 95	5.81
173	Less than 2.00% of mass 174	0.00 (0.00)
174	Greater than 50.00% of mass 95	86.95
175	5.00 - 9.00% of mass 174	6.76 (7.77)
176	95.00 - 101.00% of mass 174	83.81 (96.39)
177	5.00 - 9.00% of mass 176	5.26 (6.28)

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120801.D

Date : 08-DEC-2017 09:58

Client ID: BFB Instrument: VOA2.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0 Operator: AP

Column phase: DB624 Column diameter: 0.18

Data File: D120801.D
Spectrum: Scan 2994 (10.69)
Location of Maximum: 95.10
Number of points: 67

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.10	609	62.10	4021	81.90	289	119.10	324
37.10	3594	63.10	2779	87.00	2582	128.00	330
38.10	3424	64.00	214	88.00	3160	130.00	301
39.10	1241	67.00	253	91.00	252	134.90	150
40.00	162	68.10	7121	92.10	2466	140.90	843
44.00	422	69.10	6795	93.10	3029	142.90	594
45.10	613	70.10	477	94.10	9194	147.90	192
47.10	1135	72.00	537	95.10	87432	149.90	183
48.00	792	73.10	3044	96.10	5082	154.80	164
49.00	3483	74.10	13239	96.90	285	157.00	172
50.10	15917	75.10	39112	103.90	216	159.00	186
51.10	4911	76.10	3496	106.10	225	161.00	345
55.00	178	76.90	375	107.10	160	174.00	76024
56.10	802	78.00	526	114.80	170	175.10	5909
57.10	1935	79.00	1573	116.10	404	176.00	73280
60.00	759	80.00	482	116.90	447	177.00	4600
61.00	3813	81.00	1794	117.90	269		

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120801.D

Date : 08-DEC-2017 09:58

Client ID: BFB

Instrument: VOA2.i

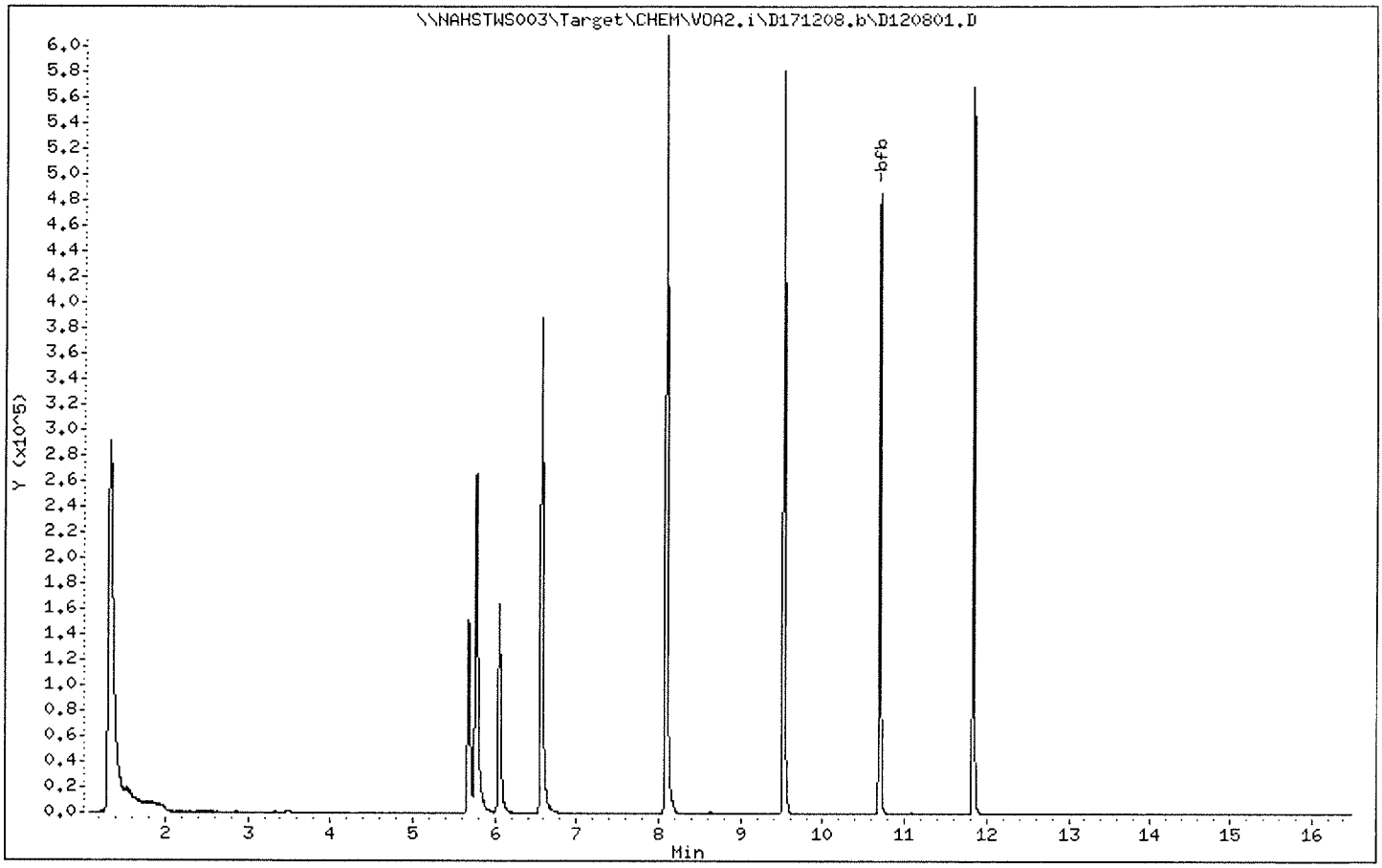
Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: AP

Column phase: DB624

Column diameter: 0.18



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120802.D
Report Date: 01-Feb-2018 17:54

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120802.D
Lab Smp Id: CCV Client Smp ID: CCV
Inj Date : 08-DEC-2017 10:22
Operator : AP Inst ID: VOA2.i
Smp Info : CCV;CCV;2;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\chem\voa2.i\D171208.b\8260LL.m
Meth Date : 01-Feb-2018 17:54 diana.nguy Quant Type: ISTD
Cal Date : 02-DEC-2017 11:31 Cal File: D120205.D
Als bottle: 2 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

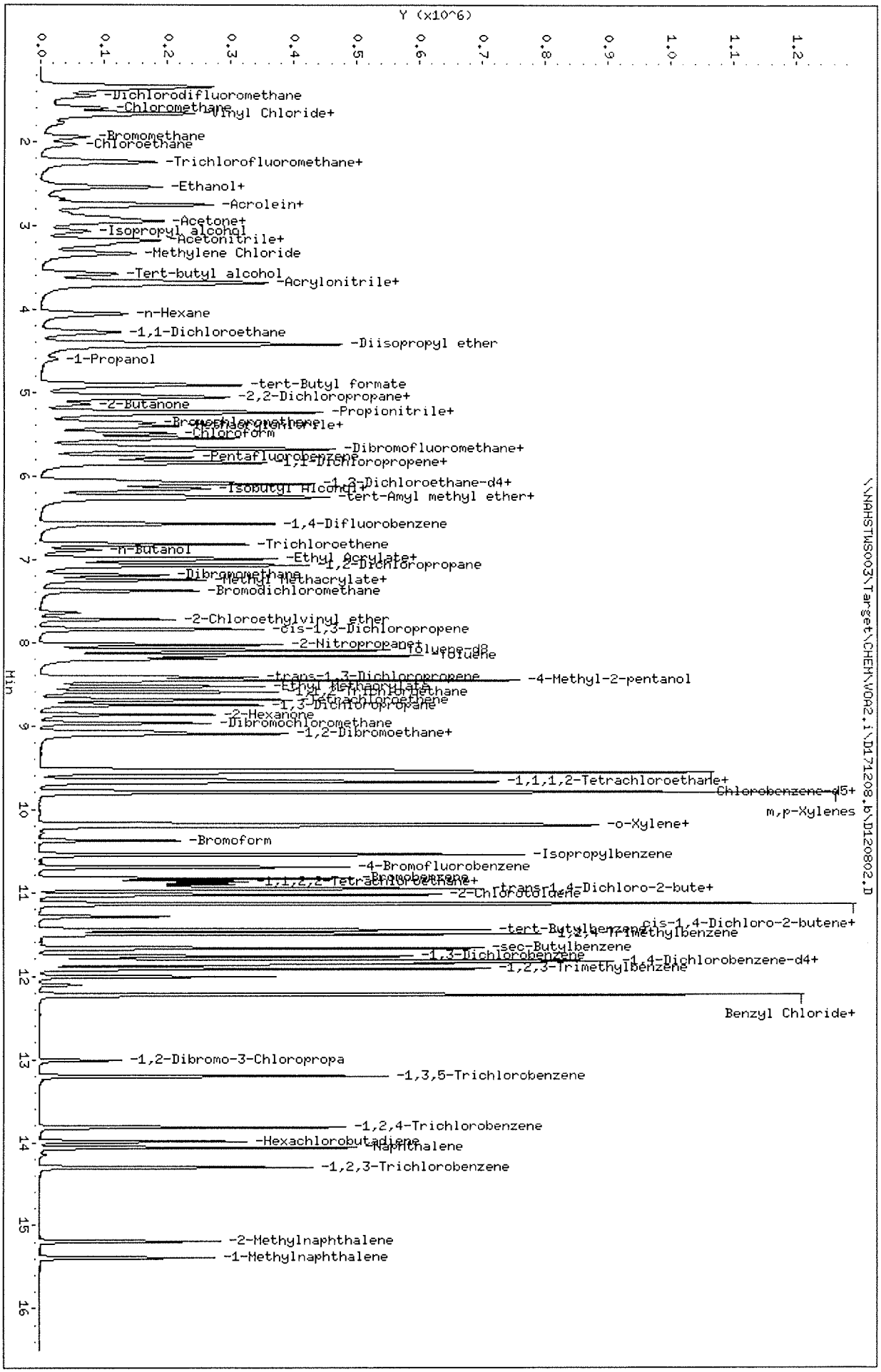
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
31 1,1,1-Trichloroethane	97	5.651	5.651	(0.978)	176526	50.0000	49.67
60 1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.012)	127350	50.0000	50.15
68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.919)	151424	50.0000	48.72
53 1,1,2-Trichloroethane	83	8.590	8.590	(0.902)	91806	50.0000	47.88
32 1,1-Dichloropropene	75	5.853	5.853	(0.891)	142115	50.0000	46.98
22 1,1-Dichloroethane	63	4.277	4.277	(0.740)	227728	50.0000	47.48
11 1,1-Dichloroethene	96	2.747	2.747	(0.475)	98015	50.0000	43.49
71 1,2,3-Trichloropropane	75	10.901	10.901	(0.921)	163808	50.0000	50.01
79 1,2,4-Trimethylbenzene	105	11.501	11.501	(0.972)	422933	50.0000	54.72
93 1,2,3-Trichlorobenzene	182	14.299	14.299	(1.208)	130982	50.0000	55.97
90 1,2,4-Trichlorobenzene	180	13.814	13.814	(1.167)	155712	50.0000	56.69
89 1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	27448	50.0000	56.73
33 1,2-Dichloroethane	62	6.139	6.139	(0.934)	163171	50.0000	46.74
42 1,2-Dichloropropane	63	7.063	7.063	(1.075)	131861	50.0000	49.09
57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	119207	50.0000	49.46
88 1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	235775	50.0000	46.35
75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	415659	50.0000	55.19
54 1,3-Dichloropropane	76	8.751	8.751	(0.919)	185729	50.0000	48.98
83 1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	247487	50.0000	46.32
84 1,4-Dichlorobenzene	146	11.860	11.860	(1.002)	233377	50.0000	44.69
26 2,2-Dichloropropane	77	5.041	5.041	(0.872)	176010	50.0000	51.97

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120802.D
Report Date: 01-Feb-2018 17:54

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
	24 2-Butanone	43	5.144	5.144	(0.890)	117908	100.000	109.44
	52 2-Hexanone	43	8.863	8.863	(0.931)	174261	100.000	107.14
	76 2-Chlorotoluene	91	11.029	11.029	(0.932)	358437	50.0000	44.53
	77 4-Chlorotoluene	91	11.138	11.138	(0.941)	396922	50.0000	53.68
	45 4-Methyl-2-Pentanone	43	8.026	8.026	(0.843)	267137	100.000	101.37
	10 Acetone	43	2.856	2.856	(0.494)	76854	100.000	115.45
	37 Benzene	78	6.091	6.091	(0.927)	446065	50.0000	48.48
	39 Bromodichloromethane	83	7.374	7.374	(1.122)	165975	50.0000	53.98
	74 Bromobenzene	156	10.830	10.830	(0.915)	146565	50.0000	46.32
	29 Bromochloromethane	128	5.359	5.359	(0.927)	63635	50.0000	53.42
	6 Bromomethane	94	1.938	1.938	(0.335)	84440	50.0000	41.67
	19 Carbon Disulfide	76	2.949	2.949	(0.510)	423298	100.000	92.47
	66 Bromoform	173	10.374	10.374	(1.089)	101080	50.0000	55.78
	7 Chloroethane	64	2.028	2.028	(0.351)	80993	50.0000	40.13
	34 Carbon Tetrachloride	117	5.831	5.831	(0.887)	148742	50.0000	47.34
	3 Chloromethane	50	1.592	1.592	(0.275)	188751	50.0000	41.36
	28 Chloroform	83	5.490	5.490	(0.950)	203468	50.0000	46.87
	59 Chlorobenzene	112	9.553	9.553	(1.003)	312622	50.0000	47.90
	27 cis-1,2-Dichloroethene	96	5.064	5.064	(0.876)	127073	50.0000	49.46
	46 cis-1,3-Dichloropropene	75	7.839	7.839	(1.193)	199990	50.0000	55.08
	2 Dichlorodifluoromethane	85	1.447	1.447	(0.250)	93548	50.0000	41.53
	55 Dibromochloromethane	129	8.969	8.969	(0.942)	140893	50.0000	51.72
	44 Dibromomethane	93	7.188	7.188	(1.094)	74861	50.0000	53.88
	61 Ethylbenzene	106	9.672	9.672	(1.015)	160684	50.0000	47.85
	91 Hexachlorobutadiene	225	13.988	13.988	(1.182)	65832	50.0000	56.07
	62 m,p-Xylenes	106	9.790	9.790	(1.028)	397536	100.000	92.83
	63 o-Xylene	106	10.175	10.175	(1.068)	210455	50.0000	47.80
	67 Isopropylbenzene	105	10.548	10.548	(1.107)	508831	50.0000	50.46
	17 Methylene Chloride	84	3.328	3.328	(0.576)	120033	50.0000	48.43
	73 n-Propylbenzene	91	10.955	10.955	(0.926)	538753	50.0000	53.92
	87 n-Butylbenzene	91	12.223	12.223	(1.033)	319451	50.0000	50.04
	92 Naphthalene	128	14.061	14.061	(1.188)	378493	50.0000	59.15
	64 Styrene	104	10.198	10.198	(1.071)	347439	50.0000	48.37
	81 sec-Butylbenzene	105	11.668	11.668	(0.986)	470777	50.0000	55.33
	78 tert-Butylbenzene	119	11.449	11.449	(0.967)	344337	50.0000	53.89
	20 trans-1,2-Dichloroethene	96	3.655	3.655	(0.632)	108472	50.0000	50.67
	50 Toluene	91	8.154	8.154	(0.856)	472255	50.0000	45.77
	51 trans-1,3-Dichloropropene	75	8.414	8.414	(1.280)	176158	50.0000	55.78
	56 Tetrachloroethene	164	8.687	8.687	(0.912)	102300	50.0000	48.53
	8 Trichlorofluoromethane	101	2.246	2.246	(0.389)	146144	50.0000	42.21
	38 Trichloroethene	130	6.813	6.813	(1.037)	127399	50.0000	50.40
	5 Vinyl Chloride	62	1.678	1.678	(0.290)	141439	50.0000	45.27
$	35 1,2-Dichloroethane-d4	65	6.055	6.055	(1.048)	132456	50.0000	46.15
*	36 1,4-Difluorobenzene	114	6.572	6.572	(1.000)	367782	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	156561	50.0000	
*	1 Pentafluorobenzene	168	5.779	5.779	(1.000)	248953	50.0000	
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	333964	50.0000	
$	30 Dibromofluoromethane	113	5.683	5.683	(0.983)	105981	50.0000	43.06
$	48 Toluene-d8	98	8.093	8.093	(0.850)	416684	50.0000	50.44
$	69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	159558	50.0000	50.29
	82 p-Isopropyltoluene	119	11.818	11.818	(0.999)	403258	50.0000	46.00
	138 Freon TF	101	2.763	2.763	(0.478)	95656	50.0000	46.92



Data File: \\NAHSTWS003\Target\CHEM\WOA2.i\D171208.b\D120802.D
Date : 08-DEC-2017 10:22
Client ID: CCV
Sample Info: CCV;CCV;2;;
Purge Volume: 5.0
Column phase: DB624

Instrument: WOA2.i
Operator: AP
Column diameter: 0.18

\\NAHSTWS003\Target\CHEM\WOA2.i\D171208.b\D120802.D

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120804.D
Report Date: 01-Feb-2018 17:54

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120804.D
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Inj Date : 08-DEC-2017 11:11
Operator : AP Inst ID: VOA2.i
Smp Info : VLCSW-171208;VLCSW-171208;3;;LCS
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\chem\voa2.i\D171208.b\8260LL.m
Meth Date : 01-Feb-2018 17:54 diana.nguy Quant Type: ISTD
Cal Date : 02-DEC-2017 11:31 Cal File: D120205.D
Als bottle: 4 QC Sample: LCS
Dil Factor: 1.00000
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Target Version: 4.14
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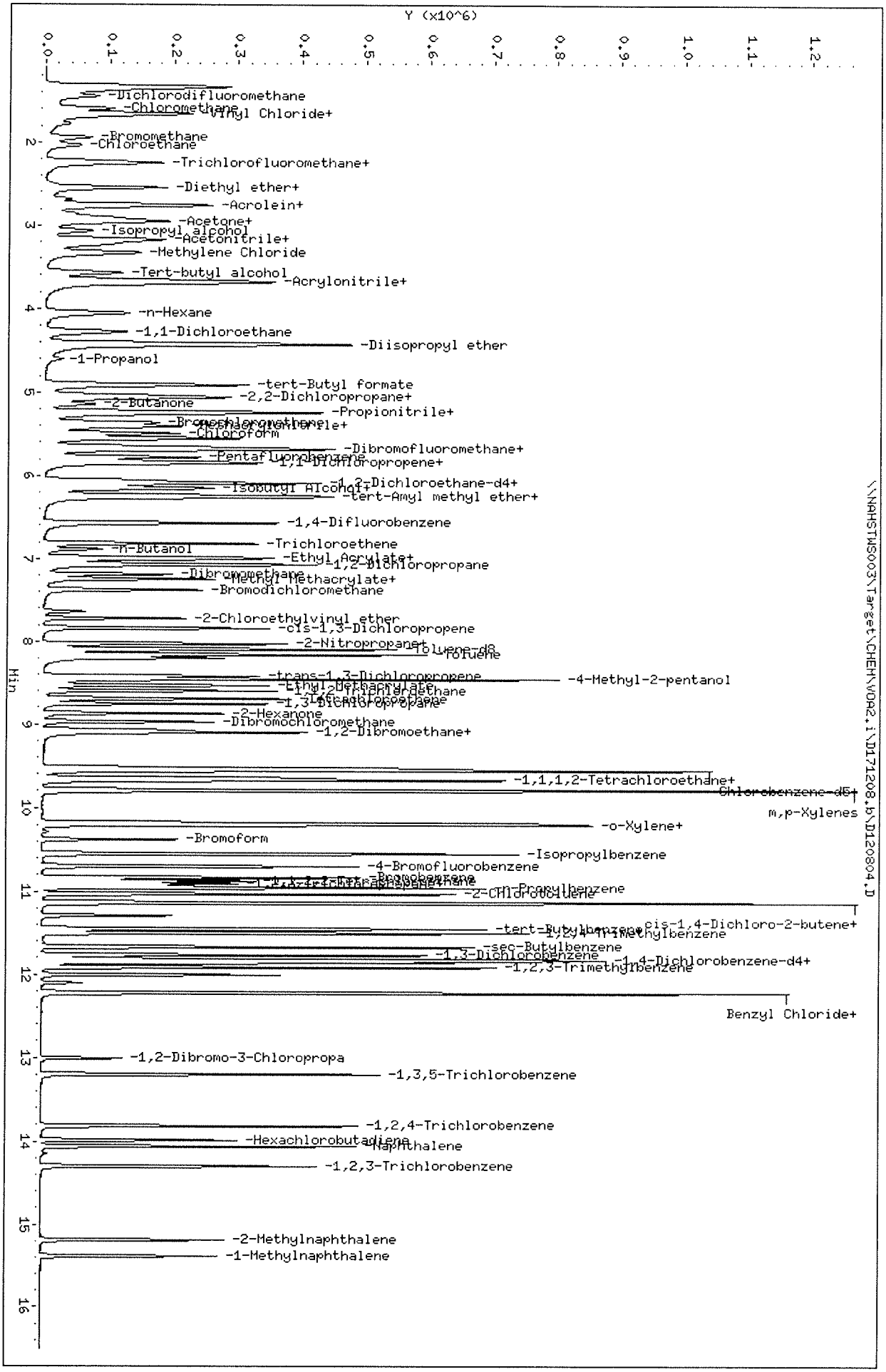
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
31 1,1,1-Trichloroethane	97	5.651	5.651	(0.978)	167773	48.7046	48.70
60 1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.012)	123198	49.4143	49.41
68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.919)	149610	49.5235	49.52
53 1,1,2-Trichloroethane	83	8.593	8.590	(0.902)	91348	48.5199	48.51
32 1,1-Dichloropropene	75	5.850	5.853	(0.891)	138070	46.2827	46.28
22 1,1-Dichloroethane	63	4.277	4.277	(0.740)	225866	48.5819	48.58
11 1,1-Dichloroethene	96	2.747	2.747	(0.475)	94607	43.3059	43.30
71 1,2,3-Trichloropropane	75	10.904	10.901	(0.921)	159680	50.1547	50.15
79 1,2,4-Trimethylbenzene	105	11.501	11.501	(0.972)	416631	55.4861	55.48
93 1,2,3-Trichlorobenzene	182	14.302	14.299	(1.209)	129777	57.0555	57.05
90 1,2,4-Trichlorobenzene	180	13.814	13.814	(1.167)	154498	57.8778	57.87
89 1,2-Dibromo-3-Chloropropane	75	13.012	13.009	(1.100)	27273	58.0108	58.01
33 1,2-Dichloroethane	62	6.142	6.139	(0.935)	163000	47.3443	47.34
42 1,2-Dichloropropane	63	7.063	7.063	(1.075)	128910	48.6614	48.66
57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	116106	49.0629	49.06
88 1,2-Dichlorobenzene	146	12.226	12.223	(1.033)	233738	47.2799	47.27
75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	406681	55.5664	55.56
54 1,3-Dichloropropane	76	8.754	8.751	(0.919)	180694	48.5326	48.53
83 1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	242998	46.7926	46.79
84 1,4-Dichlorobenzene	146	11.857	11.860	(1.002)	230359	45.3846	45.38
26 2,2-Dichloropropane	77	5.035	5.041	(0.871)	170528	51.9431	51.94

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120804.D
Report Date: 01-Feb-2018 17:54

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
24	2-Butanone	43	5.144	5.144	(0.890)	118784	113.743	113.74
52	2-Hexanone	43	8.866	8.863	(0.931)	174903	109.523	109.52
76	2-Chlorotoluene	91	11.029	11.029	(0.932)	352579	45.0694	45.06
77	4-Chlorotoluene	91	11.138	11.138	(0.941)	389071	54.1481	54.14
45	4-Methyl-2-Pentanone	43	8.025	8.026	(0.843)	265640	102.658	102.65
10	Acetone	43	2.856	2.856	(0.494)	73623	114.104	114.10
37	Benzene	78	6.090	6.091	(0.927)	432308	47.6432	47.64
39	Bromodichloromethane	83	7.374	7.374	(1.123)	157903	52.0734	52.07
74	Bromobenzene	156	10.830	10.830	(0.915)	143358	46.6208	46.62
29	Bromochloromethane	128	5.362	5.359	(0.928)	62628	54.2445	54.24
6	Bromomethane	94	1.938	1.938	(0.335)	80952	41.1035	41.10
19	Carbon Disulfide	76	2.946	2.949	(0.510)	417433	94.0727	94.07
66	Bromoform	173	10.374	10.374	(1.089)	100531	56.5047	56.50
7	Chloroethane	64	2.041	2.028	(0.353)	78493	40.1215	40.12
34	Carbon Tetrachloride	117	5.834	5.831	(0.888)	141455	45.6408	45.64
3	Chloromethane	50	1.595	1.592	(0.276)	185749	42.0341	42.03
28	Chloroform	83	5.494	5.490	(0.951)	200123	47.5662	47.56
59	Chlorobenzene	112	9.553	9.553	(1.003)	303604	47.3812	47.38
27	cis-1,2-Dichloroethene	96	5.064	5.064	(0.876)	124590	50.0276	50.02
46	cis-1,3-Dichloropropene	75	7.839	7.839	(1.193)	193328	53.9901	53.99
2	Dichlorodifluoromethane	85	1.450	1.447	(0.251)	90298	41.3628	41.36
55	Dibromochloromethane	129	8.969	8.969	(0.942)	138233	51.6867	51.68
44	Dibromomethane	93	7.188	7.188	(1.094)	72158	52.6643	52.66
61	Ethylbenzene	106	9.672	9.672	(1.015)	158505	48.0744	48.07
91	Hexachlorobutadiene	225	13.987	13.988	(1.182)	62036	54.3017	54.30
62	m,p-Xylenes	106	9.790	9.790	(1.028)	390005	92.7492	92.74
63	o-Xylene	106	10.175	10.175	(1.068)	207984	48.1126	48.11
67	Isopropylbenzene	105	10.544	10.548	(1.107)	500516	50.5573	50.55
17	Methylene Chloride	84	3.334	3.328	(0.577)	115137	47.9257	47.92
73	n-Propylbenzene	91	10.955	10.955	(0.926)	525888	54.1694	54.16
87	n-Butylbenzene	91	12.219	12.223	(1.033)	307735	49.5961	49.59
92	Naphthalene	128	14.061	14.061	(1.188)	381531	61.5104	61.51
64	Styrene	104	10.198	10.198	(1.071)	339619	48.1609	48.16
81	sec-Butylbenzene	105	11.667	11.668	(0.986)	452745	54.7263	54.72
78	tert-Butylbenzene	119	11.449	11.449	(0.967)	340297	54.8280	54.82
20	trans-1,2-Dichloroethene	96	3.661	3.655	(0.634)	104307	50.2697	50.26
50	Toluene	91	8.154	8.154	(0.856)	465572	45.9595	45.95
51	trans-1,3-Dichloropropene	75	8.417	8.414	(1.281)	172041	55.2348	55.23
56	Tetrachloroethene	164	8.690	8.687	(0.912)	99847	48.2395	48.23
8	Trichlorofluoromethane	101	2.246	2.246	(0.389)	144126	42.9493	42.94
38	Trichloroethene	130	6.816	6.813	(1.038)	124199	49.8183	49.81
5	Vinyl Chloride	62	1.678	1.678	(0.290)	136255	44.9801	44.98
$ 35	1,2-Dichloroethane-d4	65	6.055	6.055	(1.048)	129558	46.5685	46.56
* 36	1,4-Difluorobenzene	114	6.568	6.572	(1.000)	362737	50.0000	
* 70	1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	152178	50.0000	
* 1	Pentafluorobenzene	168	5.779	5.779	(1.000)	241325	50.0000	
* 47	Chlorobenzene-d5	117	9.524	9.524	(1.000)	327932	50.0000	
$ 30	Dibromofluoromethane	113	5.683	5.683	(0.983)	102993	43.1722	43.17
$ 48	Toluene-d8	98	8.090	8.093	(0.849)	404179	49.8297	49.82
$ 69	4-Bromofluorobenzene	95	10.695	10.695	(1.123)	158552	50.8988	50.89
82	p-Isopropyltoluene	119	11.818	11.818	(0.999)	390190	45.7987	45.79
138	Freon TF	101	2.760	2.763	(0.478)	92192	46.6540	46.65



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120804.D
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Sample Info: VLCSW-171208;VLCSW-171208;3;;LCS
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

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Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120805.D
Report Date: 01-Feb-2018 17:54

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120805.D
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Inj Date : 08-DEC-2017 11:36
Operator : AP Inst ID: VOA2.i
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Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\chem\voa2.i\D171208.b\8260LL.m
Meth Date : 01-Feb-2018 17:54 diana.nguy Quant Type: ISTD
Cal Date : 02-DEC-2017 11:31 Cal File: D120205.D
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Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

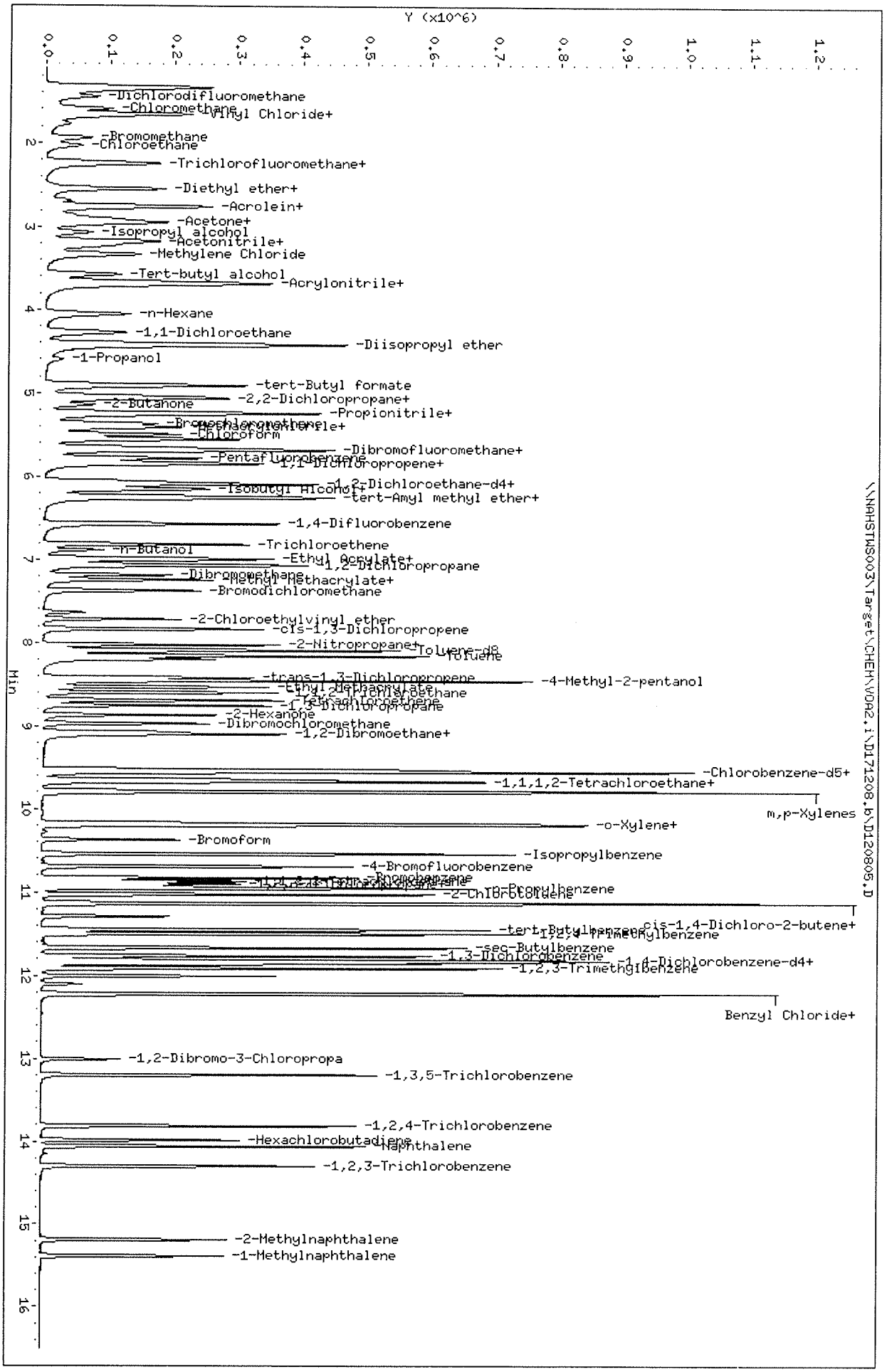
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
31 1,1,1-Trichloroethane	97	5.651	5.651	(0.978)	170822	48.7123	48.71
60 1,1,1,2-Tetrachloroethane	131	9.646	9.643	(1.012)	122447	48.4014	48.40
68 1,1,2,2-Tetrachloroethane	83	10.869	10.872	(0.918)	148094	48.3848	48.38
53 1,1,2-Trichloroethane	83	8.593	8.590	(0.902)	89942	47.0808	47.08
32 1,1-Dichloropropene	75	5.853	5.853	(0.891)	134398	44.9348	44.93
22 1,1-Dichloroethane	63	4.274	4.277	(0.740)	224258	47.3825	47.38
11 1,1-Dichloroethene	96	2.744	2.747	(0.475)	91266	41.0374	41.03
71 1,2,3-Trichloropropane	75	10.904	10.901	(0.921)	160146	49.6476	49.64
79 1,2,4-Trimethylbenzene	105	11.498	11.501	(0.972)	412972	54.2517	54.25
93 1,2,3-Trichlorobenzene	182	14.299	14.299	(1.208)	131925	57.2464	57.24
90 1,2,4-Trichlorobenzene	180	13.814	13.814	(1.167)	153334	56.6955	56.69
89 1,2-Dibromo-3-Chloropropane	75	13.006	13.009	(1.099)	26600	55.8199	55.81
33 1,2-Dichloroethane	62	6.145	6.139	(0.935)	166755	48.3159	48.31
42 1,2-Dichloropropane	63	7.063	7.063	(1.075)	127744	48.1027	48.10
57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	115744	48.2012	48.20
88 1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	233611	46.6403	46.64
75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	400236	53.9187	53.91
54 1,3-Dichloropropane	76	8.751	8.751	(0.918)	181370	48.0082	48.00
83 1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	240808	45.7684	45.76
84 1,4-Dichlorobenzene	146	11.860	11.860	(1.002)	230565	44.8350	44.83
26 2,2-Dichloropropane	77	5.041	5.041	(0.872)	166284	49.7541	49.75

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120805.D
Report Date: 01-Feb-2018 17:54

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
24	2-Butanone	43	5.141	5.144	(0.890)	113444	106.708	106.70
52	2-Hexanone	43	8.866	8.863	(0.931)	171734	105.980	105.98
76	2-Chlorotoluene	91	11.029	11.029	(0.932)	345475	43.5876	43.58
77	4-Chlorotoluene	91	11.138	11.138	(0.941)	377971	51.8551	51.85
45	4-Methyl-2-Pentanone	43	8.025	8.026	(0.842)	265229	101.014	101.01
10	Acetone	43	2.859	2.856	(0.495)	71634	109.047	109.04
37	Benzene	78	6.087	6.091	(0.926)	430314	47.3068	47.30
39	Bromodichloromethane	83	7.377	7.374	(1.123)	159501	52.4710	52.47
74	Bromobenzene	156	10.833	10.830	(0.915)	141406	45.3886	45.38
29	Bromochloromethane	128	5.362	5.359	(0.928)	62630	53.2863	53.28
6	Bromomethane	94	1.941	1.938	(0.336)	80096	39.6638	39.66
19	Carbon Disulfide	76	2.949	2.949	(0.510)	407167	90.1355	90.13
66	Bromoform	173	10.378	10.374	(1.089)	98157	54.3709	54.37
7	Chloroethane	64	2.031	2.028	(0.352)	76877	38.4196	38.41
34	Carbon Tetrachloride	117	5.831	5.831	(0.887)	138187	44.4707	44.47
3	Chloromethane	50	1.592	1.592	(0.275)	183838	40.7981	40.79
28	Chloroform	83	5.490	5.490	(0.950)	196536	45.8870	45.88
59	Chlorobenzene	112	9.553	9.553	(1.003)	295922	45.5131	45.51
27	cis-1,2-Dichloroethene	96	5.064	5.064	(0.876)	122430	48.2905	48.29
46	cis-1,3-Dichloropropene	75	7.839	7.839	(1.193)	193157	53.8097	53.80
2	Dichlorodifluoromethane	85	1.454	1.447	(0.252)	85736	38.5781	38.57
55	Dibromochloromethane	129	8.969	8.969	(0.941)	137535	50.6804	50.68
44	Dibromomethane	93	7.191	7.188	(1.094)	71998	52.4183	52.41
61	Ethylbenzene	106	9.672	9.672	(1.015)	156491	46.7758	46.77
91	Hexachlorobutadiene	225	13.988	13.988	(1.182)	62585	54.0623	54.06
62	m,p-Xylenes	106	9.790	9.790	(1.028)	384277	90.0627	90.06
63	o-Xylene	106	10.175	10.175	(1.068)	202838	46.2422	46.24
67	Isopropylbenzene	105	10.544	10.548	(1.107)	492266	48.8631	48.86
17	Methylene Chloride	84	3.337	3.328	(0.577)	115629	47.2789	47.27
73	n-Propylbenzene	91	10.955	10.955	(0.926)	518762	52.6684	52.66
87	n-Butylbenzene	91	12.220	12.223	(1.033)	302731	48.1558	48.15
92	Naphthalene	128	14.061	14.061	(1.188)	381524	60.6528	60.65
64	Styrene	104	10.198	10.198	(1.070)	336629	47.0452	47.04
81	sec-Butylbenzene	105	11.668	11.668	(0.986)	444863	53.0243	53.02
78	tert-Butylbenzene	119	11.449	11.449	(0.967)	332768	52.8625	52.86
20	trans-1,2-Dichloroethene	96	3.665	3.655	(0.634)	102958	48.7416	48.74
50	Toluene	91	8.157	8.154	(0.856)	457053	44.4647	44.46
51	trans-1,3-Dichloropropene	75	8.414	8.414	(1.280)	170717	54.6750	54.67
56	Tetrachloroethene	164	8.690	8.687	(0.912)	97167	46.2644	46.26
8	Trichlorofluoromethane	101	2.249	2.246	(0.389)	140653	41.1727	41.17
38	Trichloroethene	130	6.819	6.813	(1.038)	124493	49.8134	49.81
5	Vinyl Chloride	62	1.675	1.678	(0.290)	131719	42.6057	42.60
$ 35	1,2-Dichloroethane-d4	65	6.058	6.055	(1.048)	131137	46.3020	46.30
* 36	1,4-Difluorobenzene	114	6.572	6.572	(1.000)	363631	50.0000	
* 70	1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	154181	50.0000	
* 1	Pentafluorobenzene	168	5.779	5.779	(1.000)	245672	50.0000	
* 47	Chlorobenzene-d5	117	9.527	9.524	(1.000)	332754	50.0000	
$ 30	Dibromofluoromethane	113	5.680	5.683	(0.983)	105050	43.2553	43.25
$ 48	Toluene-d8	98	8.090	8.093	(0.849)	411455	49.9916	49.99
$ 69	4-Bromofluorobenzene	95	10.695	10.695	(1.123)	160258	50.7009	50.70
82	p-Isopropyltoluene	119	11.818	11.818	(0.999)	383017	44.3727	44.37
138	Freon TF	101	2.763	2.763	(0.478)	91576	45.5223	45.52


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11
12
13
14
15
16
-Dichlorodifluoromethane
-Chloromethane
-Vinyl Chloride+
-Bromomethane
-Chloroethane
-Trichlorofluoromethane+
-Diethyl ether+
-Acrolein+
-Acetone+
-Isopropyl alcohol
-Acetonitrile+
-Methylene Chloride
-Tert-butyl alcohol
-Acrylonitrile+
-n-Hexane
-1,1-Dichloroethane
-Diisopropyl ether
-1-Propanol
-tert-Butyl formate
-2,2-Dichloropropane+
-2-Butanone
-Propionitrile+
-Methacrylonitrile+
-Chloroform
-Dibromofluoromethane+
-Pentafluorobenzene
-1,1-Dichloropropene+
-1,2-Dichloroethane-d4+
-Isobutyl Alcohol
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-Methyl Methacrylate+
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-2-Nitropropane+
-Toluene-d8
-Toluene
-trans-1,3-Dichloropropene
-4-Methyl-2-pentanol
-Ethyl Methacrylate
-1,1,2-Trichloroethane
-Tetrachloroethene
-1,3-Dichloropropane
-2-Hexanone
-Dibromochloromethane
-1,2-Dibromoethane+
-Chlorobenzene-d5+
-1,1,1,2-Tetrachloroethane+
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-o-Xylene+
-Bromoform
-Isopropylbenzene
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-Bromobenzene
-1,1,2,2-Tetrachloroethane
-2-Chlorotoluene
-n-Propylbenzene
-tert-Butylbenzene
cis-1,4-Dichloro-2-butene+
1,2,4-Trimethylbenzene
-sec-Butylbenzene
-1,3-Dichlorobenzene
-1,4-Dichlorobenzene-d4+
-1,2,3-Trimethylbenzene
Benzyl Chloride+
-1,2-Dibromo-3-Chloropropa
-1,3,5-Trichlorobenzene
-1,2,4-Trichlorobenzene
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-Naphthalene
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Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

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Report Date: 01-Feb-2018 17:54

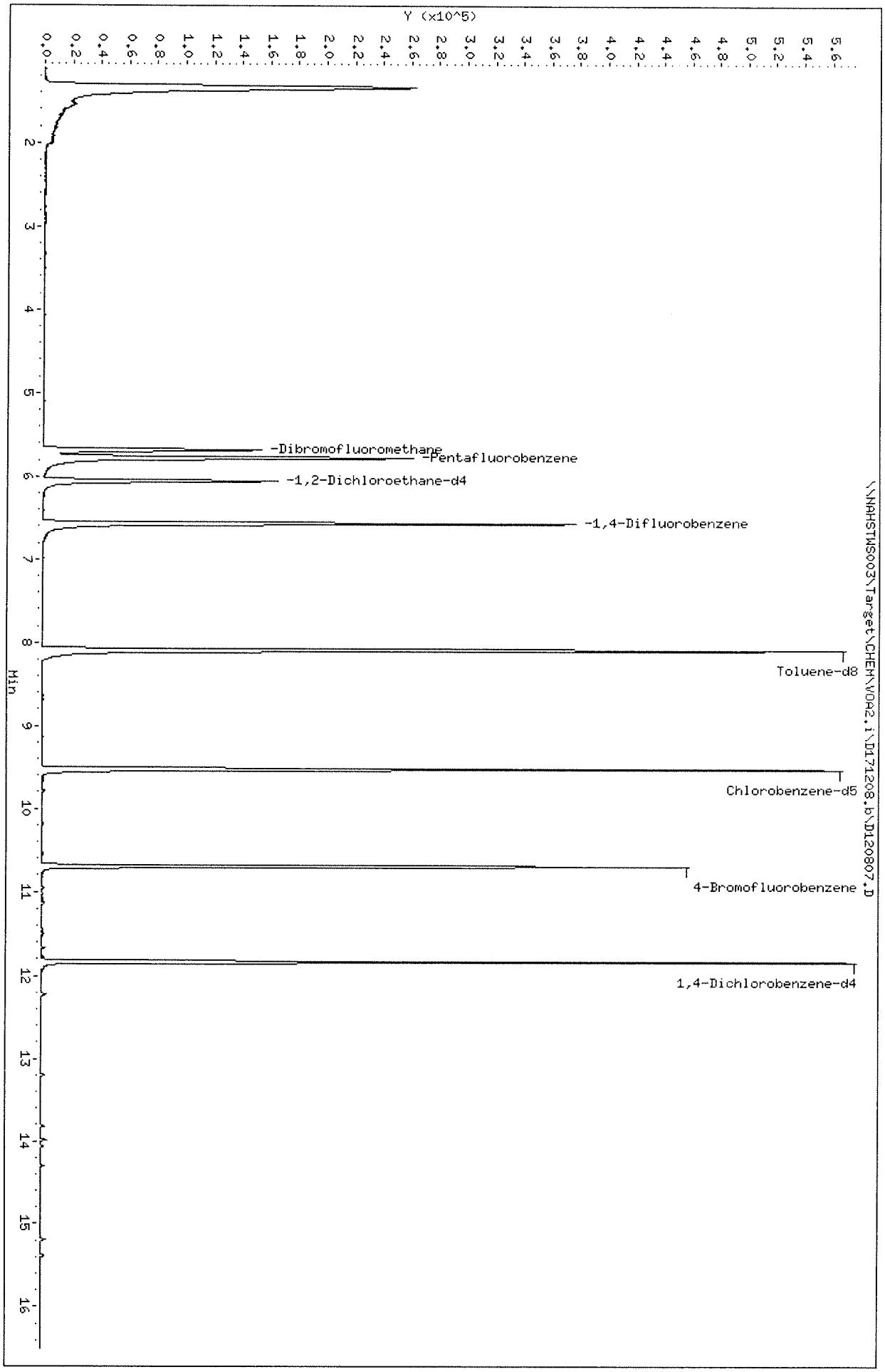
ALS Laboratory Group

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Meth Date : 01-Feb-2018 17:54 diana.nguy Quant Type: ISTD
Cal Date : 02-DEC-2017 11:31 Cal File: D120205.D
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Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
$ 35 1,2-Dichloroethane-d4	65	6.055	6.055	(1.048)	134701	44.8014	44.80
* 36 1,4-Difluorobenzene	114	6.569	6.572	(1.000)	366675	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	151231	50.0000	
* 1 Pentafluorobenzene	168	5.776	5.779	(1.000)	260801	50.0000	
* 47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	333708	50.0000	
$ 30 Dibromofluoromethane	113	5.683	5.683	(0.984)	116542	45.2035	45.20
$ 48 Toluene-d8	98	8.090	8.093	(0.849)	422246	51.1561	51.15
$ 69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	156304	49.3086	49.30


Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120807.D
Date : 08-DEC-2017 12:25
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Purge Volume: 5.0
Column phase: DB624
Instrument: VOA2.i
Operator: AP
Column diameter: 0.18
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-Pentafluorobenzene
-1,2-Dichloroethane-d4
-1,4-Difluorobenzene
Toluene-d8
Chlorobenzene-d5
4-Bromofluorobenzene
1,4-Dichlorobenzene-d4
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Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120815.D
Report Date: 01-Feb-2018 17:54

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120815.D
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Comment :
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Meth Date : 01-Feb-2018 17:54 diana.nguy Quant Type: ISTD
Cal Date : 02-DEC-2017 11:31 Cal File: D120205.D
Als bottle: 15 QC Sample: MS
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Target Version: 4.14
Processing Host: NAHSTW7056

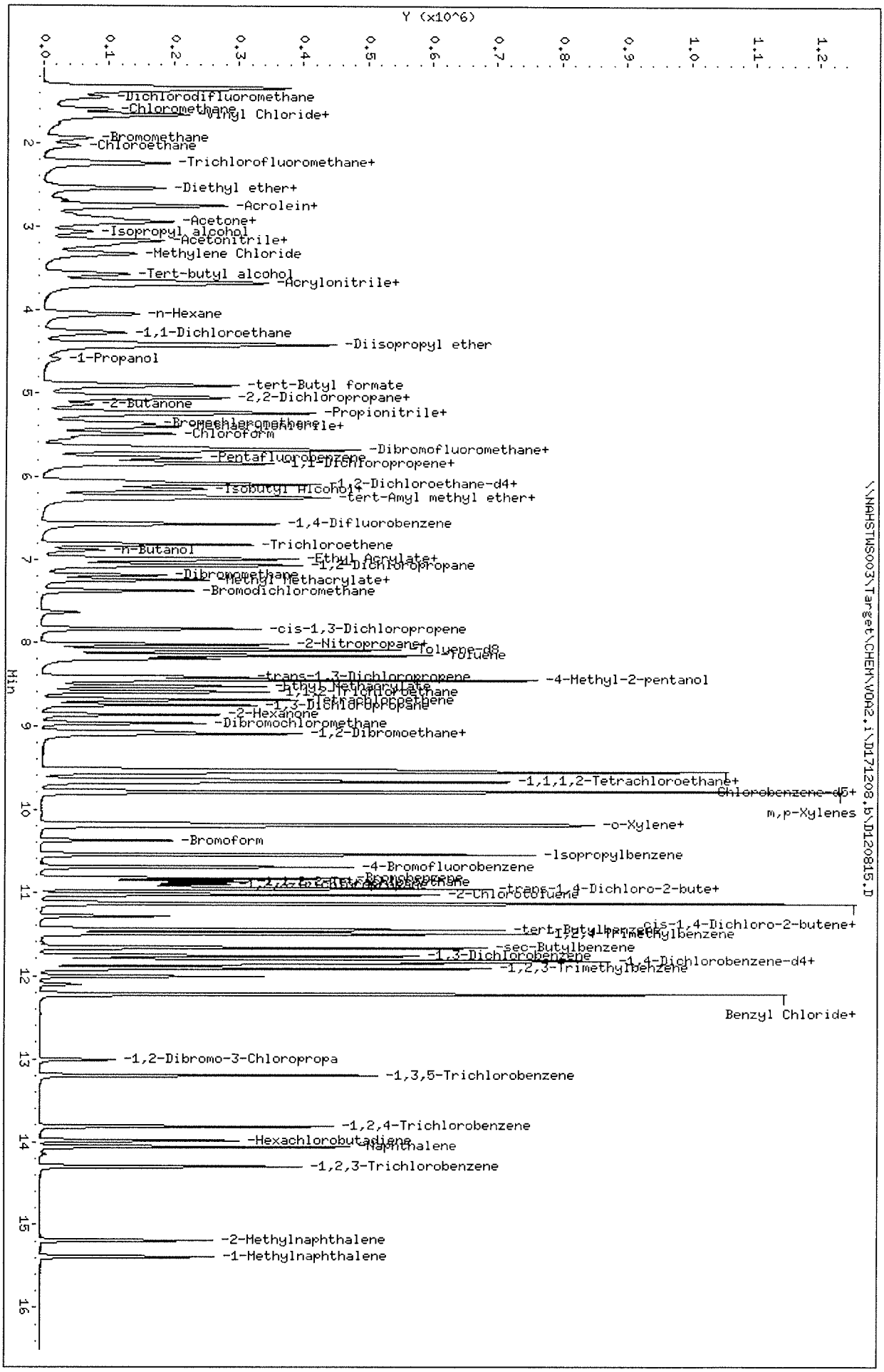
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
31 1,1,1-Trichloroethane	97	5.651	5.651	(0.978)	179315	51.6557	51.65
60 1,1,1,2-Tetrachloroethane	131	9.646	9.643	(1.013)	120721	48.9773	48.97
68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.919)	142295	47.3035	47.30
53 1,1,2-Trichloroethane	83	8.594	8.590	(0.902)	87177	46.8366	46.83
32 1,1-Dichloropropene	75	5.850	5.853	(0.891)	138644	46.9738	46.97
22 1,1-Dichloroethane	63	4.274	4.277	(0.740)	223828	47.7739	47.77
11 1,1-Dichloroethene	96	2.747	2.747	(0.476)	100725	45.7524	45.75
71 1,2,3-Trichloropropane	75	10.901	10.901	(0.921)	153716	48.4879	48.48
79 1,2,4-Trimethylbenzene	105	11.498	11.501	(0.972)	406037	54.2744	54.27
93 1,2,3-Trichlorobenzene	182	14.299	14.299	(1.208)	123476	54.5175	54.51
90 1,2,4-Trichlorobenzene	180	13.818	13.814	(1.168)	147109	55.3454	55.34
89 1,2-Dibromo-3-Chloropropane	75	13.006	13.009	(1.099)	25900	55.2957	55.29
33 1,2-Dichloroethane	62	6.142	6.139	(0.935)	156313	45.8862	45.88
42 1,2-Dichloropropane	63	7.060	7.063	(1.075)	124434	47.4726	47.47
57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	109144	46.6510	46.65
88 1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	222113	45.1206	45.12
75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	405292	55.6151	55.61
54 1,3-Dichloropropane	76	8.751	8.751	(0.919)	174265	47.3437	47.34
83 1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	231122	44.6960	44.69
84 1,4-Dichlorobenzene	146	11.857	11.860	(1.002)	222740	44.0712	44.07
26 2,2-Dichloropropane	77	5.038	5.041	(0.872)	167765	50.7091	50.70

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120815.D
Report Date: 01-Feb-2018 17:54

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
24	2-Butanone	43	5.138	5.144	(0.889)	114903	109.182	109.18
52	2-Hexanone	43	8.866	8.863	(0.931)	170346	107.895	107.89
76	2-Chlorotoluene	91	11.026	11.029	(0.932)	346431	44.4729	44.47
77	4-Chlorotoluene	91	11.138	11.138	(0.941)	378371	52.8474	52.84
45	4-Methyl-2-Pentanone	43	8.026	8.026	(0.843)	265808	103.903	103.90
10	Acetone	43	2.853	2.856	(0.494)	73735	113.400	113.40
37	Benzene	78	6.087	6.091	(0.927)	432792	48.2051	48.20
39	Bromodichloromethane	83	7.374	7.374	(1.123)	152805	50.9295	50.92
74	Bromobenzene	156	10.830	10.830	(0.915)	136535	44.5918	44.59
29	Bromochloromethane	128	5.362	5.359	(0.928)	59969	51.5426	51.54
6	Bromomethane	94	1.938	1.938	(0.336)	82190	41.4906	41.49
19	Carbon Disulfide	76	2.946	2.949	(0.510)	431838	96.5719	96.57
66	Bromoform	173	10.374	10.374	(1.089)	93918	53.3944	53.39
7	Chloroethane	64	2.031	2.028	(0.352)	80689	41.0267	41.02
34	Carbon Tetrachloride	117	5.831	5.831	(0.888)	149533	48.7777	48.77
3	Chloromethane	50	1.595	1.592	(0.276)	182971	41.0329	41.03
28	Chloroform	83	5.487	5.490	(0.950)	194535	45.8830	45.88
59	Chlorobenzene	112	9.553	9.553	(1.003)	295210	46.6007	46.60
27	cis-1,2-Dichloroethene	96	5.067	5.064	(0.877)	121809	48.5355	48.53
46	cis-1,3-Dichloropropene	75	7.836	7.839	(1.193)	186832	52.7323	52.73
2	Dichlorodifluoromethane	85	1.444	1.447	(0.250)	102840	46.7462	46.74
55	Dibromochloromethane	129	8.969	8.969	(0.942)	130846	49.4869	49.48
44	Dibromomethane	93	7.188	7.188	(1.094)	68952	50.8610	50.86
61	Ethylbenzene	106	9.672	9.672	(1.015)	158621	48.6625	48.66
91	Hexachlorobutadiene	225	13.988	13.988	(1.182)	63011	55.4303	55.43
62	m,p-Xylenes	106	9.790	9.790	(1.028)	388617	93.4812	93.48
63	o-Xylene	106	10.176	10.175	(1.068)	203584	47.6360	47.63
67	Isopropylbenzene	105	10.545	10.548	(1.107)	506129	51.8222	51.82
17	Methylene Chloride	84	3.324	3.328	(0.576)	111494	46.0530	46.05
73	n-Propylbenzene	91	10.952	10.955	(0.925)	533662	55.2580	55.25
87	n-Butylbenzene	91	12.223	12.223	(1.033)	307242	49.7284	49.72
92	Naphthalene	128	14.061	14.061	(1.188)	355666	57.3184	57.31
64	Styrene	104	10.198	10.198	(1.071)	325880	46.7437	46.74
81	sec-Butylbenzene	105	11.668	11.668	(0.986)	462803	56.2260	56.22
78	tert-Butylbenzene	119	11.449	11.449	(0.967)	344433	55.7582	55.75
20	trans-1,2-Dichloroethene	96	3.661	3.655	(0.634)	102161	48.8575	48.85
50	Toluene	91	8.154	8.154	(0.856)	460987	46.0299	46.02
51	trans-1,3-Dichloropropene	75	8.414	8.414	(1.281)	161996	52.5644	52.56
56	Tetrachloroethene	164	8.687	8.687	(0.912)	101697	49.6980	49.69
8	Trichlorofluoromethane	101	2.246	2.246	(0.389)	156424	46.2563	46.25
38	Trichloroethene	130	6.816	6.813	(1.038)	125642	50.9344	50.93
5	Vinyl Chloride	62	1.675	1.678	(0.290)	145818	47.8998	47.89
$ 35	1,2-Dichloroethane-d4	65	6.052	6.055	(1.048)	132157	47.1380	47.13
* 36	1,4-Difluorobenzene	114	6.569	6.572	(1.000)	358910	50.0000	
* 70	1,4-Dichlorobenzene-d4	152	11.835	11.834	(1.000)	151530	50.0000	
* 1	Pentafluorobenzene	168	5.776	5.779	(1.000)	243192	50.0000	
* 47	Chlorobenzene-d5	117	9.524	9.524	(1.000)	324206	50.0000	
$ 30	Dibromofluoromethane	113	5.683	5.683	(0.984)	100792	41.9253	41.92
$ 48	Toluene-d8	98	8.090	8.093	(0.849)	405701	50.5922	50.59
$ 69	4-Bromofluorobenzene	95	10.695	10.695	(1.123)	157098	51.0116	51.01
82	p-Isopropyltoluene	119	11.815	11.818	(0.998)	394646	46.5198	46.51
138	Freon TF	101	2.756	2.763	(0.477)	101492	50.9660	50.96



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Sample Info: HS17120220-02MS;HS17120220-02MS;3;MS
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

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Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120816.D
Report Date: 01-Feb-2018 17:55

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120816.D
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Inj Date : 08-DEC-2017 16:06
Operator : AP Inst ID: VOA2.i
Smp Info : HS17120220-02MSD;HS17120220-02MSD;3;;MSD
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\chem\voa2.i\D171208.b\8260LL.m
Meth Date : 01-Feb-2018 17:54 diana.nguy Quant Type: ISTD
Cal Date : 02-DEC-2017 11:31 Cal File: D120205.D
Als bottle: 15 QC Sample: MSD
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

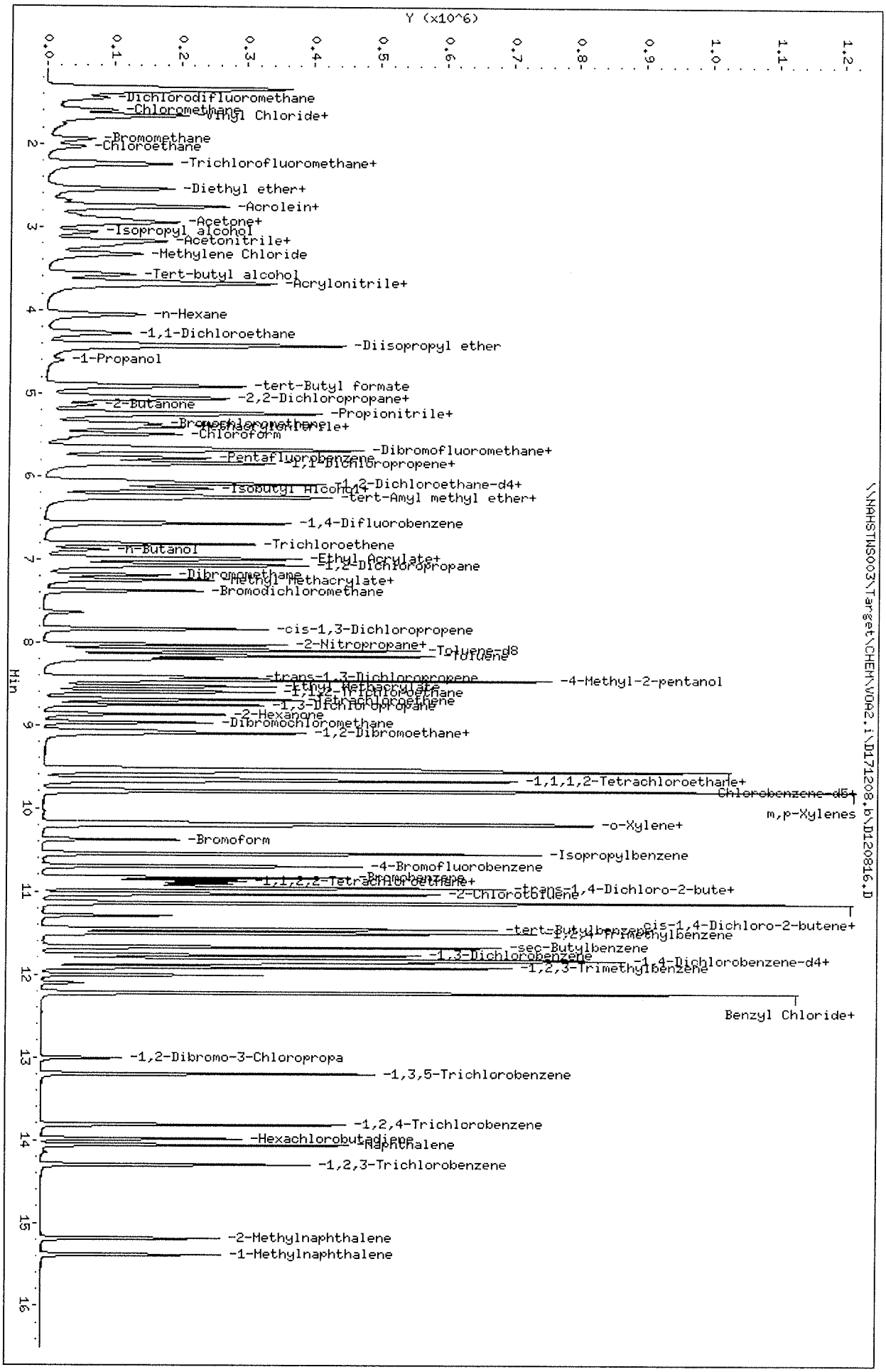
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
31 1,1,1-Trichloroethane	97	5.648	5.651	(0.977)	176157	51.0864	51.08
60 1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.012)	118086	47.4161	47.41
68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.919)	142707	47.7081	47.70
53 1,1,2-Trichloroethane	83	8.593	8.590	(0.902)	85106	45.2542	45.25
32 1,1-Dichloropropene	75	5.850	5.853	(0.891)	141509	47.3384	47.33
22 1,1-Dichloroethane	63	4.274	4.277	(0.740)	220421	47.3624	47.36
11 1,1-Dichloroethene	96	2.744	2.747	(0.475)	96071	43.9313	43.93
71 1,2,3-Trichloropropane	75	10.904	10.901	(0.921)	152990	48.5311	48.53
79 1,2,4-Trimethylbenzene	105	11.501	11.501	(0.972)	399733	53.7182	53.71
93 1,2,3-Trichlorobenzene	182	14.302	14.299	(1.209)	127733	56.7152	56.71
90 1,2,4-Trichlorobenzene	180	13.818	13.814	(1.168)	144958	54.8438	54.84
89 1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	25771	55.3311	55.33
33 1,2-Dichloroethane	62	6.142	6.139	(0.935)	154450	44.7645	44.76
42 1,2-Dichloropropane	63	7.063	7.063	(1.075)	120210	45.2798	45.27
57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	110228	46.6304	46.63
88 1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	218399	44.6164	44.61
75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	400408	55.2420	55.24
54 1,3-Dichloropropane	76	8.754	8.751	(0.919)	172152	46.2892	46.28
83 1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	229593	44.6508	44.65
84 1,4-Dichlorobenzene	146	11.860	11.860	(1.002)	217587	43.2945	43.29
26 2,2-Dichloropropane	77	5.038	5.041	(0.872)	166632	50.7047	50.70

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120816.D
Report Date: 01-Feb-2018 17:55

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
	24 2-Butanone	43	5.141	5.144	(0.890)	114093	109.140	109.14
	52 2-Hexanone	43	8.866	8.863	(0.931)	171186	107.313	107.31
	76 2-Chlorotoluene	91	11.026	11.029	(0.932)	335274	43.2834	43.28
	77 4-Chlorotoluene	91	11.138	11.138	(0.941)	369644	51.8920	51.89
	45 4-Methyl-2-Pentanone	43	8.025	8.026	(0.843)	258032	99.8277	99.82
	10 Acetone	43	2.853	2.856	(0.494)	73817	114.288	114.28
	37 Benzene	78	6.087	6.091	(0.927)	423968	46.6237	46.62
	39 Bromodichloromethane	83	7.377	7.374	(1.123)	152053	50.0364	50.03
	74 Bromobenzene	156	10.830	10.830	(0.915)	134166	44.0652	44.06
	29 Bromochloromethane	128	5.362	5.359	(0.928)	58732	50.8182	50.81
	6 Bromomethane	94	1.932	1.938	(0.334)	80032	40.4673	40.46
	19 Carbon Disulfide	76	2.949	2.949	(0.510)	424871	95.6514	95.65
	66 Bromoform	173	10.374	10.374	(1.089)	93400	52.5545	52.55
	7 Chloroethane	64	2.031	2.028	(0.352)	80186	41.0467	41.04
	34 Carbon Tetrachloride	117	5.831	5.831	(0.888)	144303	46.4639	46.46
	3 Chloromethane	50	1.592	1.592	(0.275)	181810	41.0469	41.04
	28 Chloroform	83	5.490	5.490	(0.950)	192782	45.7747	45.77
	59 Chlorobenzene	112	9.553	9.553	(1.003)	290688	45.4155	45.41
	27 cis-1,2-Dichloroethene	96	5.067	5.064	(0.877)	119036	47.7488	47.74
	46 cis-1,3-Dichloropropene	75	7.836	7.839	(1.193)	185121	51.5871	51.58
	2 Dichlorodifluoromethane	85	1.447	1.447	(0.250)	94766	43.3652	43.36
	55 Dibromochloromethane	129	8.969	8.969	(0.942)	129155	48.3455	48.34
	44 Dibromomethane	93	7.185	7.188	(1.094)	69227	50.4165	50.41
	61 Ethylbenzene	106	9.668	9.672	(1.015)	154171	46.8115	46.81
	91 Hexachlorobutadiene	225	13.988	13.988	(1.182)	63569	56.2652	56.26
	62 m,p-Xylenes	106	9.790	9.790	(1.028)	381026	90.7137	90.71
	63 o-Xylene	106	10.179	10.175	(1.069)	199165	46.1233	46.12
	67 Isopropylbenzene	105	10.544	10.548	(1.107)	494358	49.9381	49.93
	17 Methylene Chloride	84	3.331	3.328	(0.576)	107519	44.7092	44.70
	73 n-Propylbenzene	91	10.955	10.955	(0.926)	519264	54.0112	54.01
	87 n-Butylbenzene	91	12.223	12.223	(1.033)	300608	48.9291	48.92
	92 Naphthalene	128	14.061	14.061	(1.188)	357683	58.0136	58.01
	64 Styrene	104	10.198	10.198	(1.071)	325268	46.1767	46.17
	81 sec-Butylbenzene	105	11.668	11.668	(0.986)	452345	55.2367	55.23
	78 tert-Butylbenzene	119	11.449	11.449	(0.967)	335186	54.5331	54.53
	20 trans-1,2-Dichloroethene	96	3.661	3.655	(0.634)	102740	49.4641	49.46
	50 Toluene	91	8.157	8.154	(0.856)	450373	44.5081	44.50
	51 trans-1,3-Dichloropropene	75	8.414	8.414	(1.281)	161309	51.6780	51.67
	56 Tetrachloroethene	164	8.686	8.687	(0.912)	101110	48.9035	48.90
	8 Trichlorofluoromethane	101	2.249	2.246	(0.389)	151945	45.2333	45.23
	38 Trichloroethene	130	6.812	6.813	(1.037)	122552	49.0520	49.05
	5 Vinyl Chloride	62	1.675	1.678	(0.290)	139754	46.1409	46.14
$	35 1,2-Dichloroethane-d4	65	6.055	6.055	(1.048)	132189	47.4658	47.46
*	36 1,4-Difluorobenzene	114	6.569	6.572	(1.000)	363518	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	150680	50.0000	
*	1 Pentafluorobenzene	168	5.779	5.779	(1.000)	241571	50.0000	
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	327571	50.0000	
$	30 Dibromofluoromethane	113	5.683	5.683	(0.983)	104909	43.9306	43.93
$	48 Toluene-d8	98	8.090	8.093	(0.849)	405342	50.0281	50.02
$	69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	156255	50.2167	50.21
	82 p-Isopropyltoluene	119	11.818	11.818	(0.999)	383805	45.4971	45.49
	138 Freon TF	101	2.760	2.763	(0.478)	96466	48.7671	48.76



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Sample Info: HS17120220-02HSD;HS17120220-02HSD;3;;MSD
Purge Volume: 5.0
Column phase: DB624

\\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120816.D

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120819.D
Report Date: 01-Feb-2018 17:55

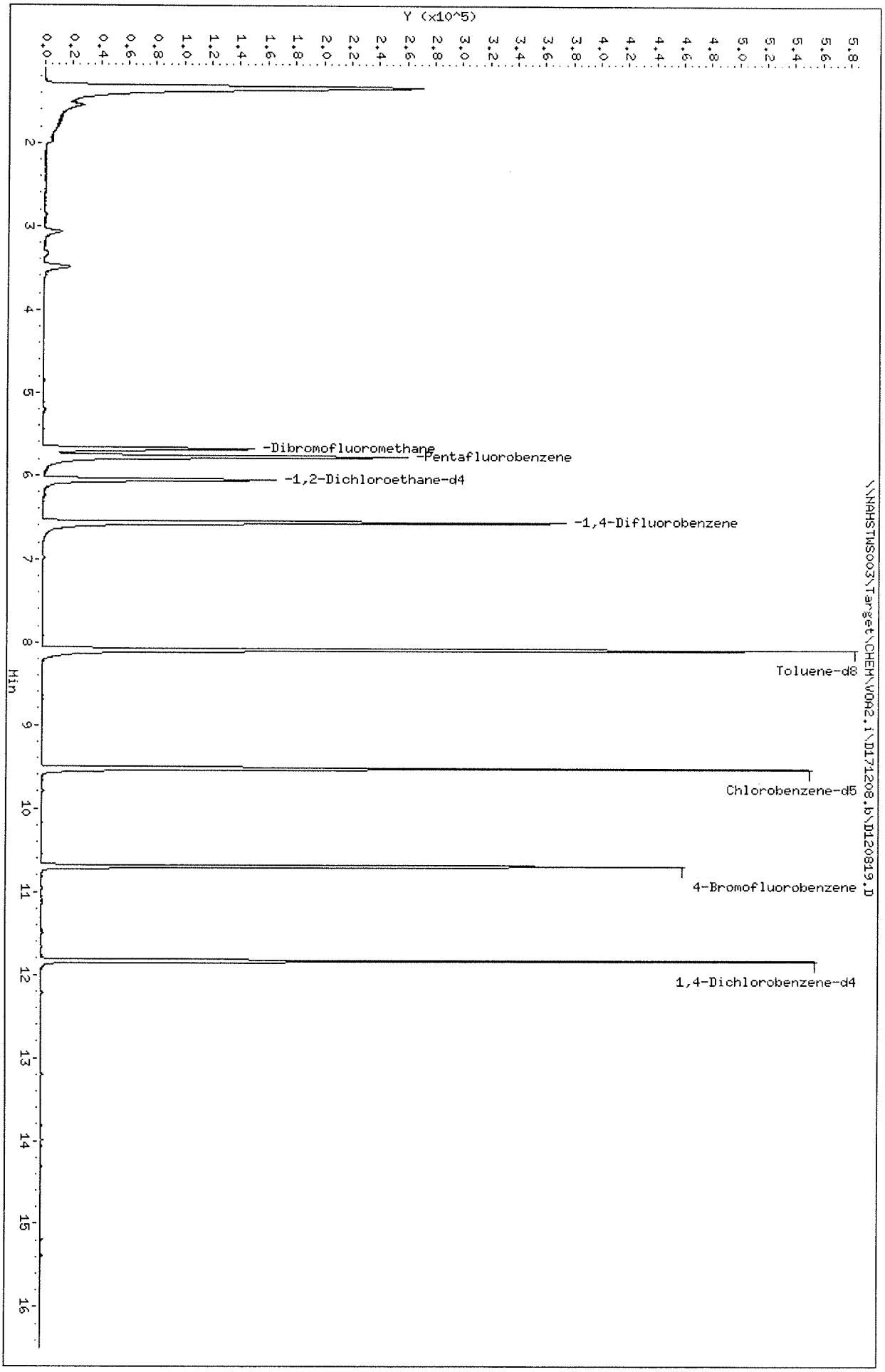
ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120819.D
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Inj Date : 08-DEC-2017 17:22
Operator : AP Inst ID: VOA2.i
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Misc Info : HS15080001;WATER;0;1;
Comment :
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Meth Date : 01-Feb-2018 17:54 diana.nguy Quant Type: ISTD
Cal Date : 02-DEC-2017 11:31 Cal File: D120205.D
Als bottle: 18
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
$ 35 1,2-Dichloroethane-d4	65	6.055	6.055	(1.049)	137567	45.7352	45.73
* 36 1,4-Difluorobenzene	114	6.569	6.572	(1.000)	366376	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	11.831	11.834	(1.000)	152308	50.0000	
* 1 Pentafluorobenzene	168	5.773	5.779	(1.000)	260912	50.0000	
* 47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	331243	50.0000	
$ 30 Dibromofluoromethane	113	5.680	5.683	(0.984)	113689	44.0782	44.07
$ 48 Toluene-d8	98	8.086	8.093	(0.849)	425634	51.9503	51.95
$ 69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	155387	49.3841	49.38



Data File: \\NAHSTWS003\Target\CHEM\WOA2.i\D171208.b\D120819.D
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Client ID: HS17120123-08
Sample Info: HS17120123-08;HS17120123-08;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: WOA2.i
Operator: AP
Column diameter: 0.18

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Report Date: 01-Feb-2018 17:55

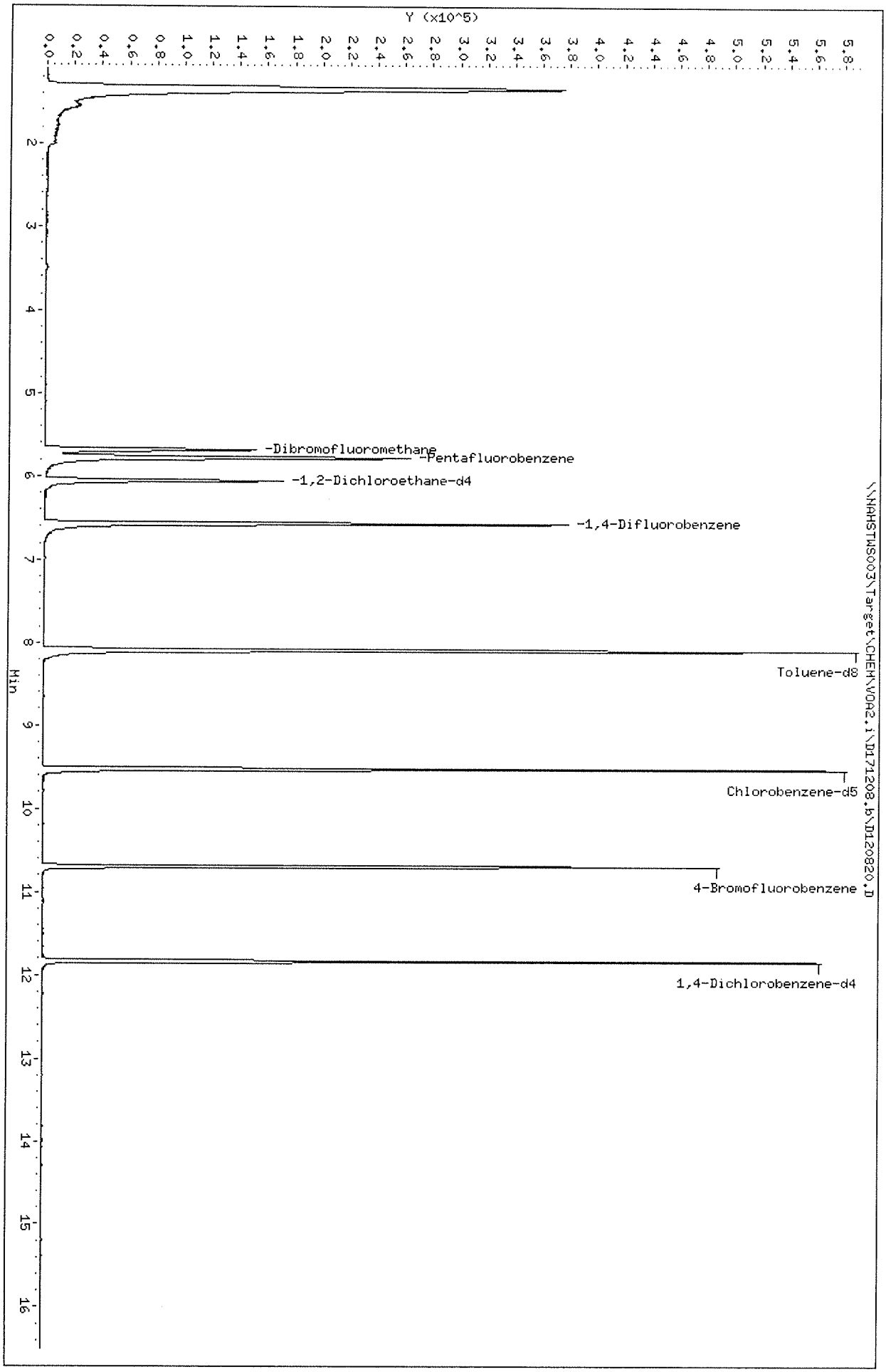
ALS Laboratory Group

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Meth Date : 01-Feb-2018 17:54 diana.nguy Quant Type: ISTD
Cal Date : 02-DEC-2017 11:31 Cal File: D120205.D
Als bottle: 19
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
$ 35 1,2-Dichloroethane-d4	65	6.055	6.055	(1.048)	138942	45.7955	45.79
* 36 1,4-Difluorobenzene	114	6.569	6.572	(1.000)	372275	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	11.835	11.834	(1.000)	154838	50.0000	
* 1 Pentafluorobenzene	168	5.776	5.779	(1.000)	263173	50.0000	
* 47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	336922	50.0000	
$ 30 Dibromofluoromethane	113	5.683	5.683	(0.984)	117524	45.1736	45.17
$ 48 Toluene-d8	98	8.087	8.093	(0.849)	431859	51.8216	51.82
$ 69 4-Bromofluorobenzene	95	10.692	10.695	(1.123)	161396	50.4293	50.42



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120820.D
Date : 08-DEC-2017 17:47
Client ID: HS17120123-01
Sample Info: HS17120123-01;HS17120123-01;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120821.D
Report Date: 01-Feb-2018 17:55

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120821.D
Lab Smp Id: HS17120123-02 Client Smp ID: HS17120123-02
Inj Date : 08-DEC-2017 18:12
Operator : AP Inst ID: VOA2.i
Smp Info : HS17120123-02;HS17120123-02;;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\chem\voa2.i\D171208.b\8260LL.m
Meth Date : 01-Feb-2018 17:54 diana.nguy Quant Type: ISTD
Cal Date : 02-DEC-2017 11:31 Cal File: D120205.D
Als bottle: 20
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

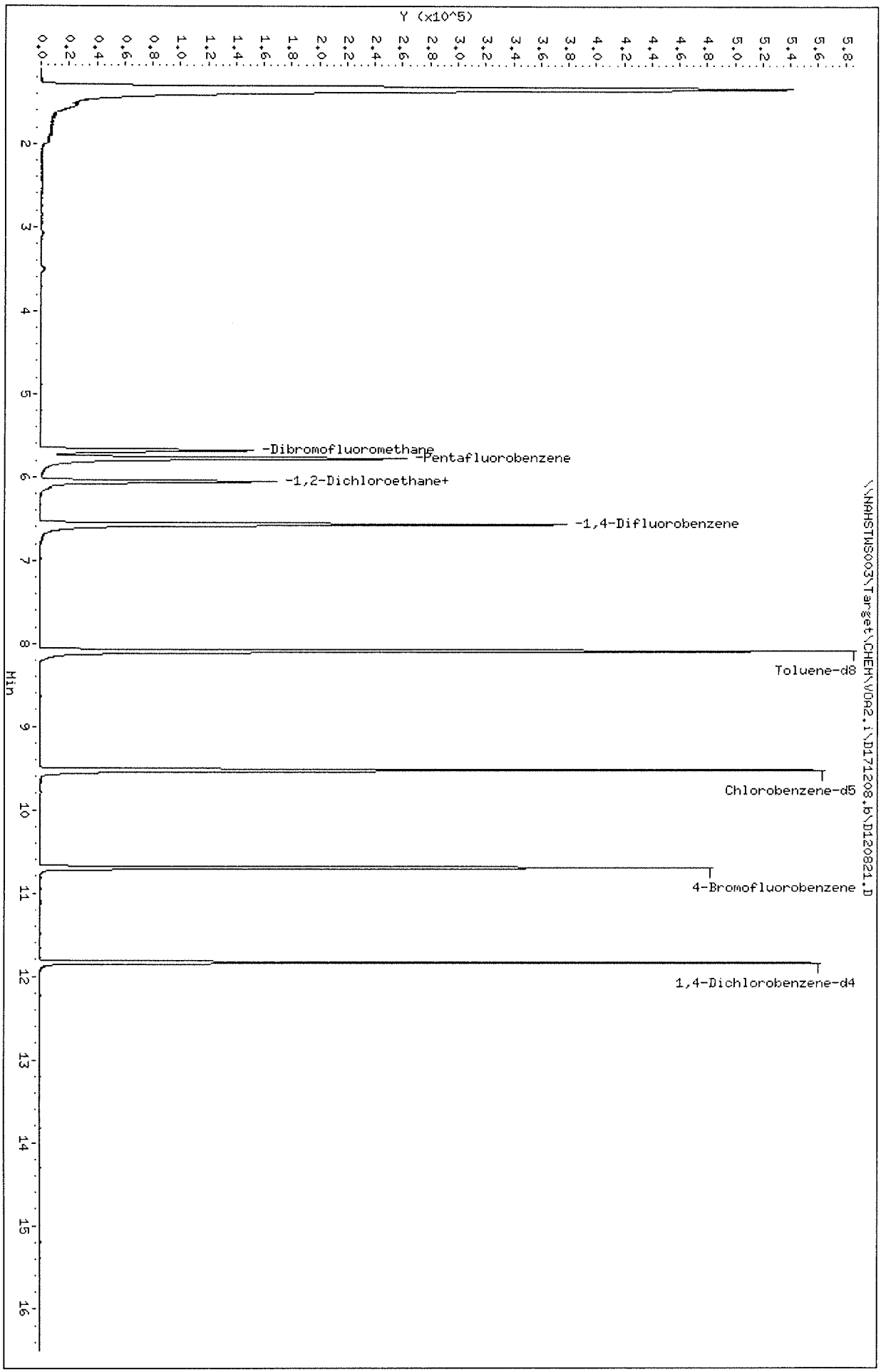
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
	33 1,2-Dichloroethane	62	6.138	6.139	(0.935)	3513	0.99810	0.99(aM)
$	35 1,2-Dichloroethane-d4	65	6.052	6.055	(1.048)	137082	45.5954	45.59
*	36 1,4-Difluorobenzene	114	6.568	6.572	(1.000)	370831	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	150959	50.0000	
*	1 Pentafluorobenzene	168	5.776	5.779	(1.000)	260789	50.0000	
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	332897	50.0000	
$	30 Dibromofluoromethane	113	5.683	5.683	(0.984)	117942	45.7486	45.74
$	48 Toluene-d8	98	8.090	8.093	(0.849)	427964	51.9751	51.97
$	69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	156341	49.4405	49.44

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.


Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120821.D
Date : 08-DEC-2017 18:12
Client ID: HS1712012 3-02
Sample Info: HS1712012 3-02;HS1712012 3-02;;;
Purge Volume: 5.0
Column phase: DB624
Instrument: VOA2.i
Operator: AP
Column diameter: 0.18
Y (x10^5)
Min
-Dibromofluoromethane
-Pentafluorobenzene
-1,2-Dichloroethane+
-1,4-Difluorobenzene
Toluene-d8
Chlorobenzene-d5
4-Bromofluorobenzene
1,4-Dichlorobenzene-d4
\\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120821.D

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120821.D

Date : 08-DEC-2017 18:12

Client ID: HS17120123-02

Instrument: VOA2.i

Sample Info: HS17120123-02;HS17120123-02;;;

Purge Volume: 5.0

Operator: AP

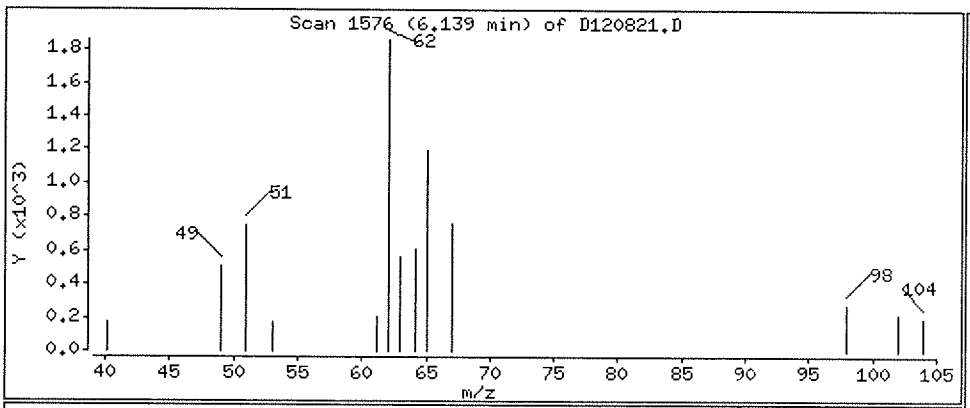
Column phase: DB624

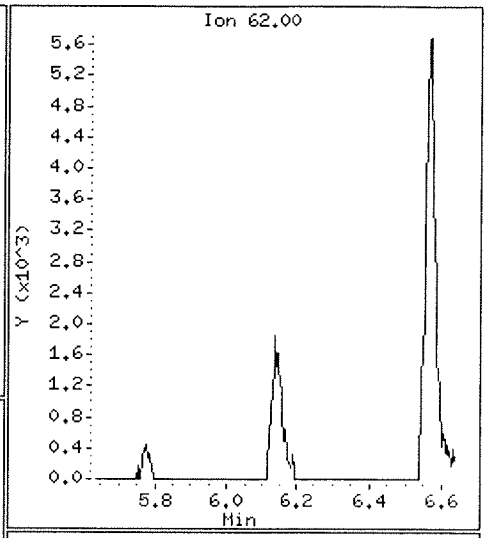
Column diameter: 0.18

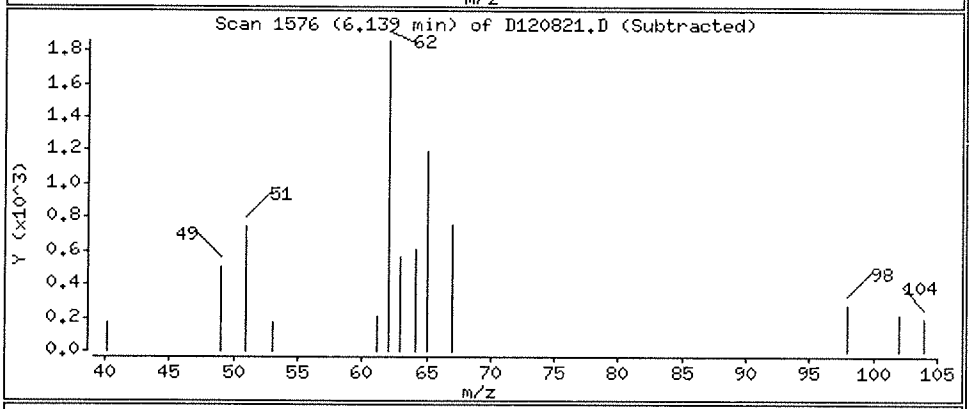
33 1,2-Dichloroethane

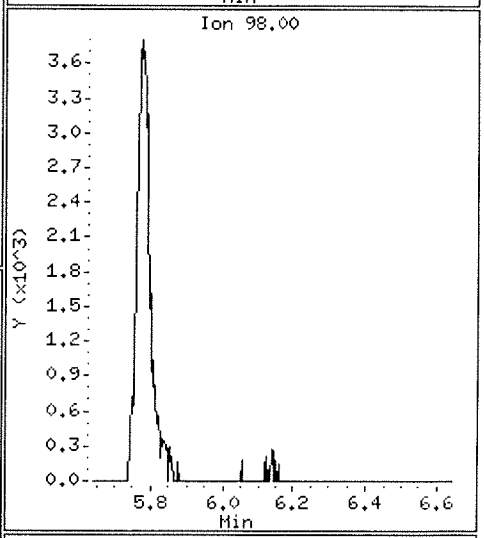
Concentration: 0.99 ug/l

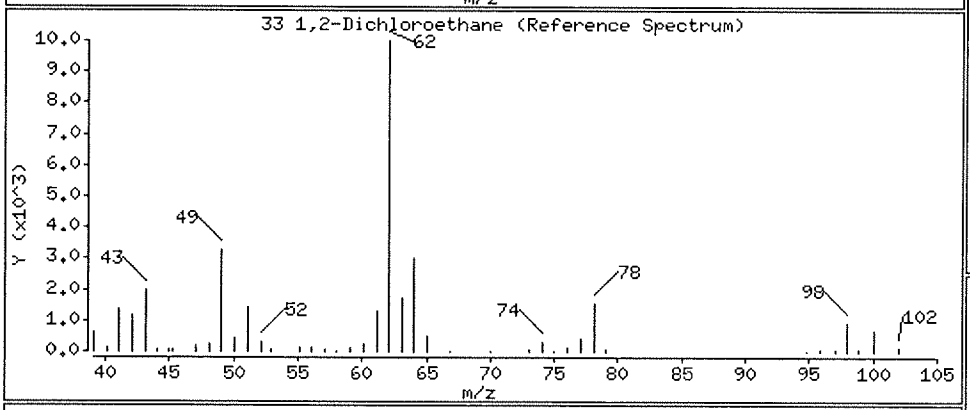
Review Code:

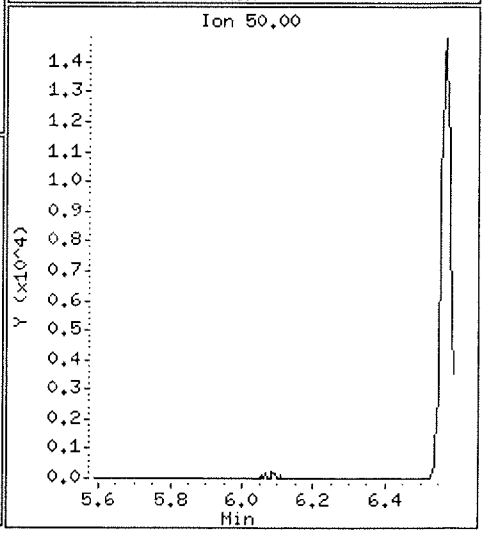


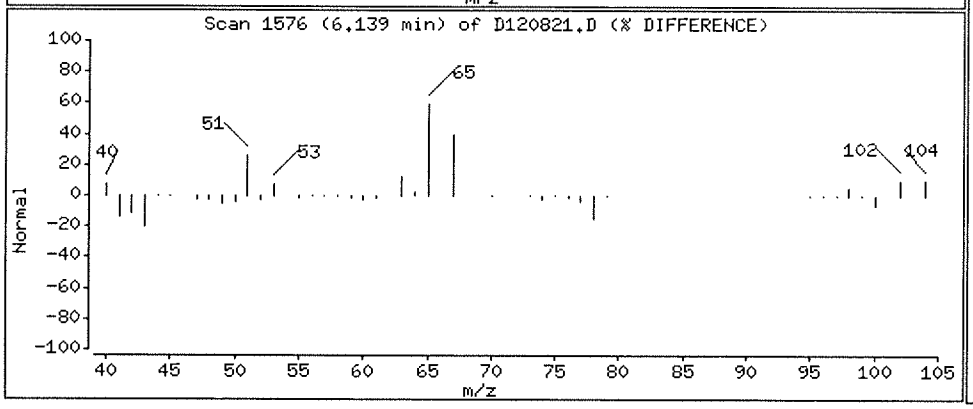












Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120822.D
Report Date: 01-Feb-2018 17:55

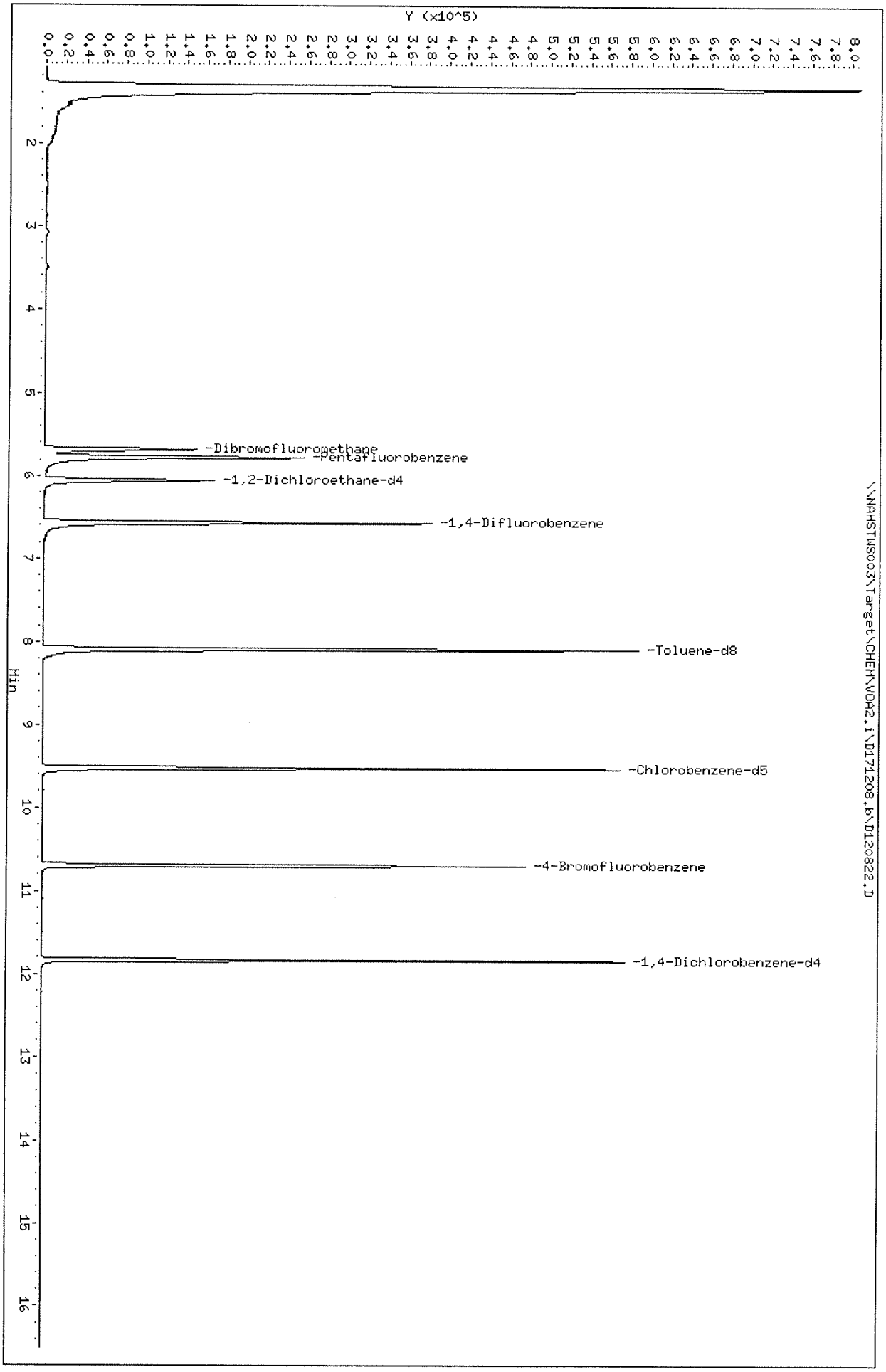
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Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120822.D
Lab Smp Id: HS17120123-03 Client Smp ID: HS17120123-03
Inj Date : 08-DEC-2017 18:36
Operator : AP Inst ID: VOA2.i
Smp Info : HS17120123-03;HS17120123-03;;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\chem\voa2.i\D171208.b\8260LL.m
Meth Date : 01-Feb-2018 17:54 diana.nguy Quant Type: ISTD
Cal Date : 02-DEC-2017 11:31 Cal File: D120205.D
Als bottle: 21
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
$ 35 1,2-Dichloroethane-d4	65	6.055	6.055	(1.048)	137310	46.0543	46.05
* 36 1,4-Difluorobenzene	114	6.569	6.572	(1.000)	362197	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	151609	50.0000	
* 1 Pentafluorobenzene	168	5.776	5.779	(1.000)	258620	50.0000	
* 47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	335427	50.0000	
$ 30 Dibromofluoromethane	113	5.680	5.683	(0.983)	115543	45.1940	45.19
$ 48 Toluene-d8	98	8.090	8.093	(0.849)	431216	51.9751	51.97
$ 69 4-Bromofluorobenzene	95	10.692	10.695	(1.123)	159358	50.0144	50.01



Data File: \\NAHSTWS003\Target\CHEM\VOA2,i\D171208,b\D120822.D
Date : 08-DEC-2017 18:36
Client ID: HS17120123-03
Sample Info: HS17120123-03;HS17120123-03;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2,i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120823.D
Report Date: 01-Feb-2018 17:55

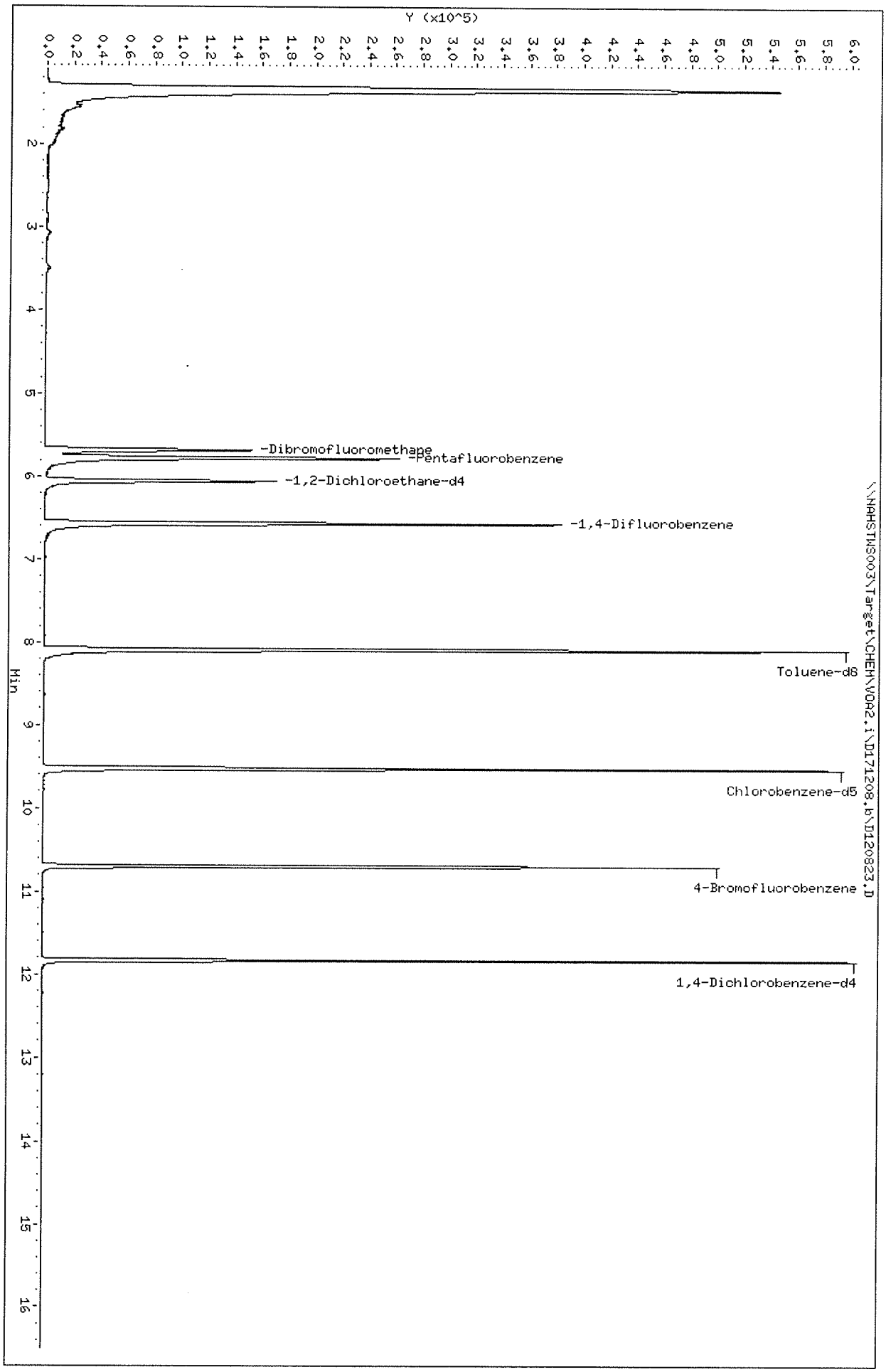
ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120823.D
Lab Smp Id: HS17120123-04 Client Smp ID: HS17120123-04
Inj Date : 08-DEC-2017 19:01
Operator : AP Inst ID: VOA2.i
Smp Info : HS17120123-04;HS17120123-04;;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\chem\voa2.i\D171208.b\8260LL.m
Meth Date : 01-Feb-2018 17:54 diana.nguy Quant Type: ISTD
Cal Date : 02-DEC-2017 11:31 Cal File: D120205.D
Als bottle: 22
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
$ 35 1,2-Dichloroethane-d4	65	6.055	6.055	(1.048)	140298	45.3408	45.34
* 36 1,4-Difluorobenzene	114	6.572	6.572	(1.000)	377491	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	162261	50.0000	
* 1 Pentafluorobenzene	168	5.779	5.779	(1.000)	268406	50.0000	
* 47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	346211	50.0000	
$ 30 Dibromofluoromethane	113	5.683	5.683	(0.983)	118527	44.6708	44.67
$ 48 Toluene-d8	98	8.090	8.093	(0.849)	440148	51.3992	51.39
$ 69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	165733	50.3950	50.39


Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120823.D
Date : 08-DEC-2017 19:01
Client ID: HS17120123-04
Sample Info: HS17120123-04;HS17120123-04;;;
Purge Volume: 5.0
Column phase: DB624
Instrument: VOA2.i
Operator: AP
Column diameter: 0.18
Y (x10^5)
Min
-Dibromofluoromethane
-Pentafluorobenzene
-1,2-Dichloroethane-d4
-1,4-Difluorobenzene
Toluene-d8
Chlorobenzene-d5
4-Bromofluorobenzene
1,4-Dichlorobenzene-d4
\\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120823.D

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120824.D
Report Date: 01-Feb-2018 17:55

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Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120824.D
Lab Smp Id: HS17120123-05 Client Smp ID: HS17120123-05
Inj Date : 08-DEC-2017 19:25
Operator : AP Inst ID: VOA2.i
Smp Info : HS17120123-05;HS17120123-05;;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\chem\voa2.i\D171208.b\8260LL.m
Meth Date : 01-Feb-2018 17:54 diana.nguy Quant Type: ISTD
Cal Date : 02-DEC-2017 11:31 Cal File: D120205.D
Als bottle: 23
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

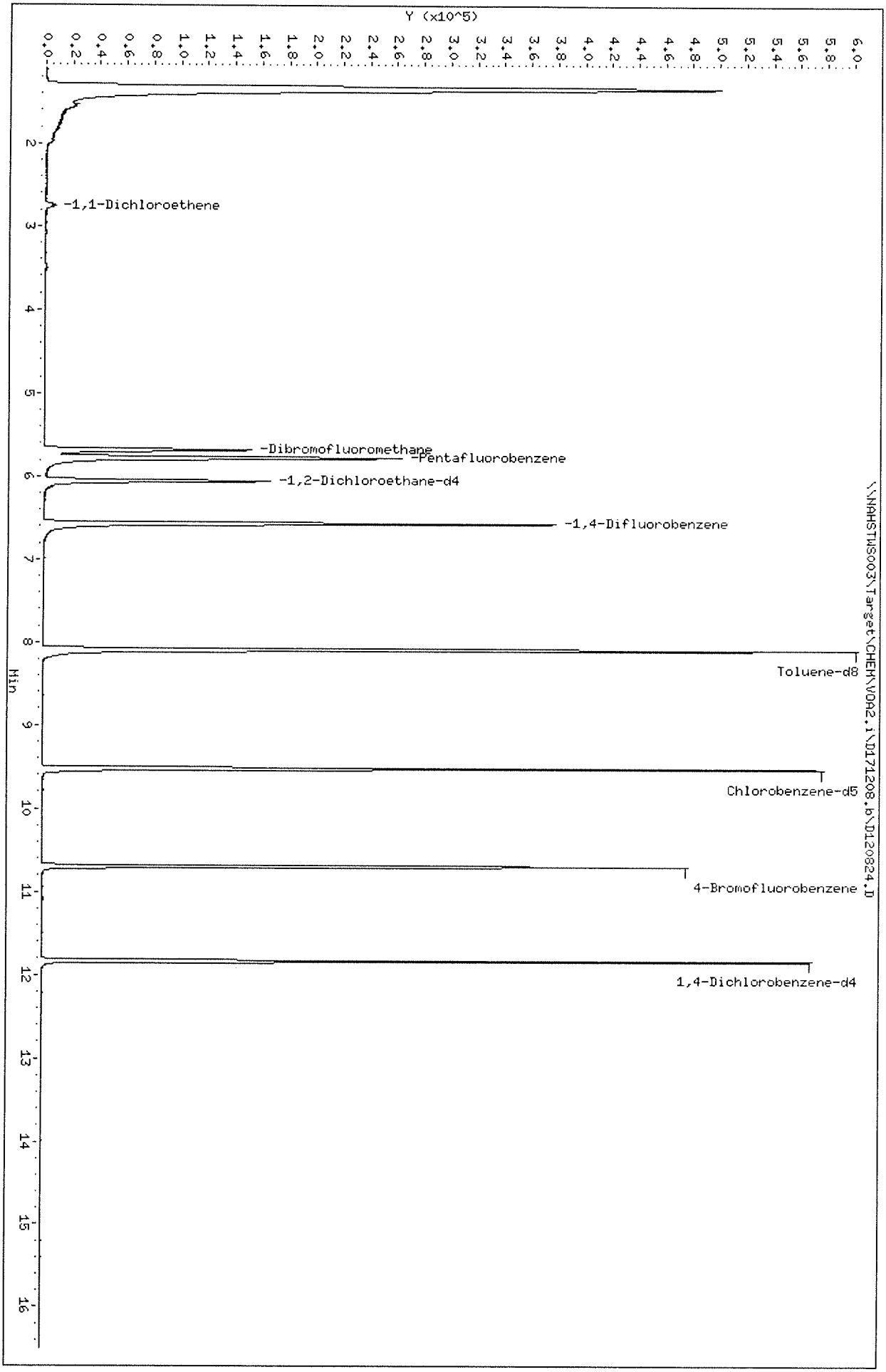
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
11 1,1-Dichloroethene	96	2.760	2.747	(0.478)	5264	2.21938	2.21(aM)
$ 35 1,2-Dichloroethane-d4	65	6.052	6.055	(1.048)	137591	45.5522	45.55
* 36 1,4-Difluorobenzene	114	6.569	6.572	(1.000)	372538	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	11.831	11.834	(1.000)	153140	50.0000	
* 1 Pentafluorobenzene	168	5.773	5.779	(1.000)	262006	50.0000	
* 47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	337353	50.0000	
$ 30 Dibromofluoromethane	113	5.683	5.683	(0.984)	118601	45.7906	45.79
$ 48 Toluene-d8	98	8.090	8.093	(0.849)	429235	51.4409	51.44
$ 69 4-Bromofluorobenzene	95	10.692	10.695	(1.123)	158355	49.4159	49.41

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120824.D
Date : 08-DEC-2017 19:25
Client ID: HS17120123-05
Sample Info: HS17120123-05;HS17120123-05;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120824.D

Date : 08-DEC-2017 19:25

Client ID: HS17120123-05

Instrument: VOA2.i

Sample Info: HS17120123-05;HS17120123-05;;;

Purge Volume: 5.0

Operator: AP

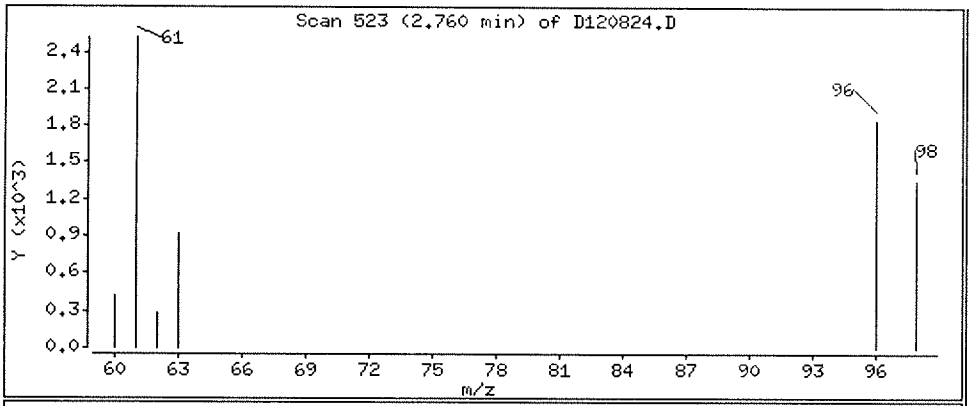
Column phase: DB624

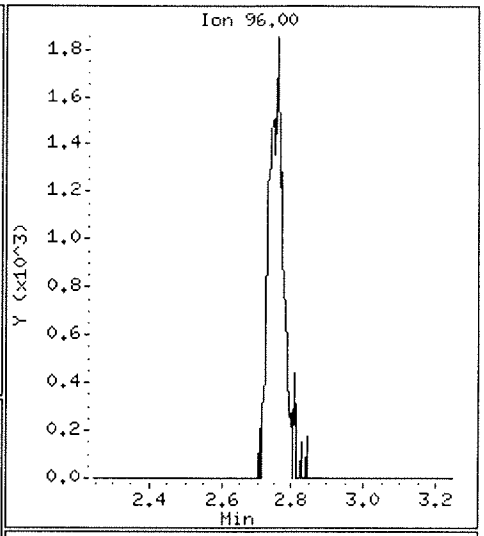
Column diameter: 0.18

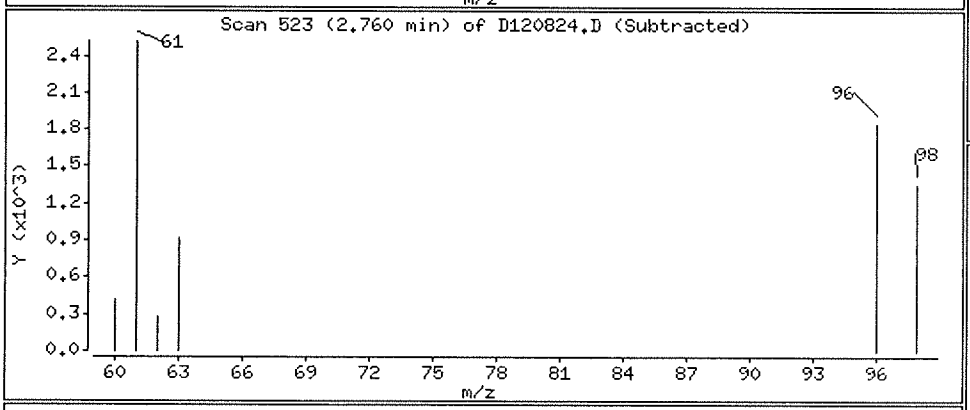
11 1,1-Dichloroethene

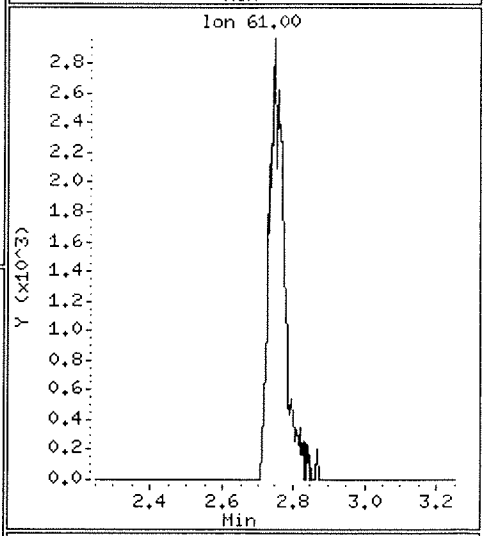
Concentration: 2.21 ug/l

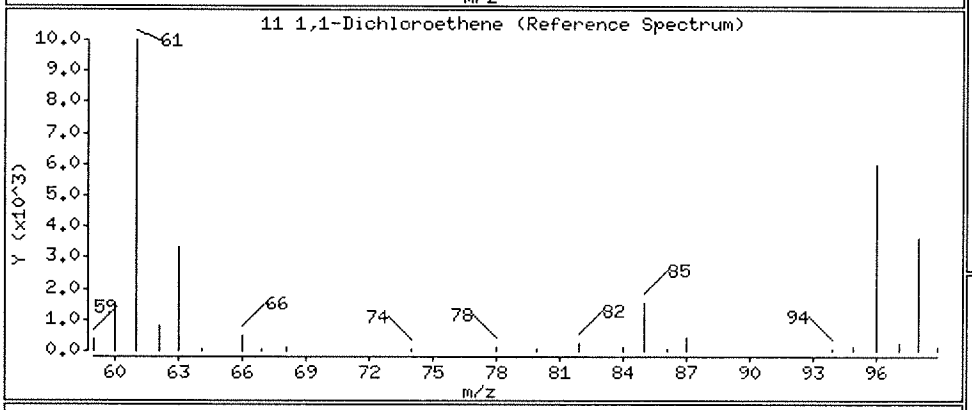
Review Code:

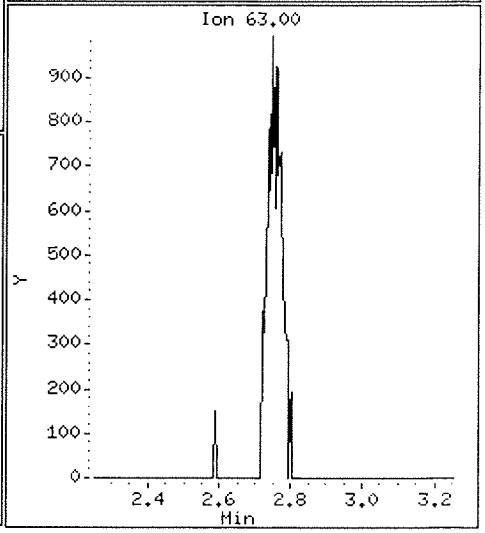


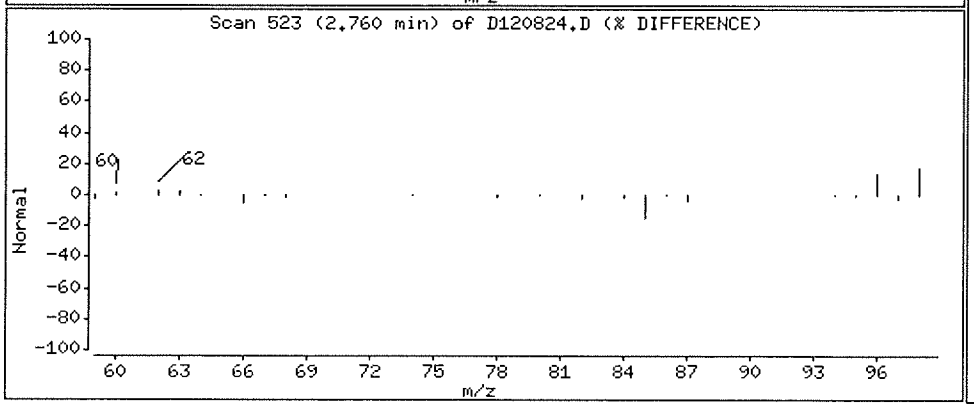












Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120825.D
Report Date: 01-Feb-2018 17:55

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Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120825.D
Lab Smp Id: HS17120123-06 Client Smp ID: HS17120123-06
Inj Date : 08-DEC-2017 19:50
Operator : AP Inst ID: VOA2.i
Smp Info : HS17120123-06;HS17120123-06;;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\chem\voa2.i\D171208.b\8260LL.m
Meth Date : 01-Feb-2018 17:54 diana.nguy Quant Type: ISTD
Cal Date : 02-DEC-2017 11:31 Cal File: D120205.D
Als bottle: 24
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

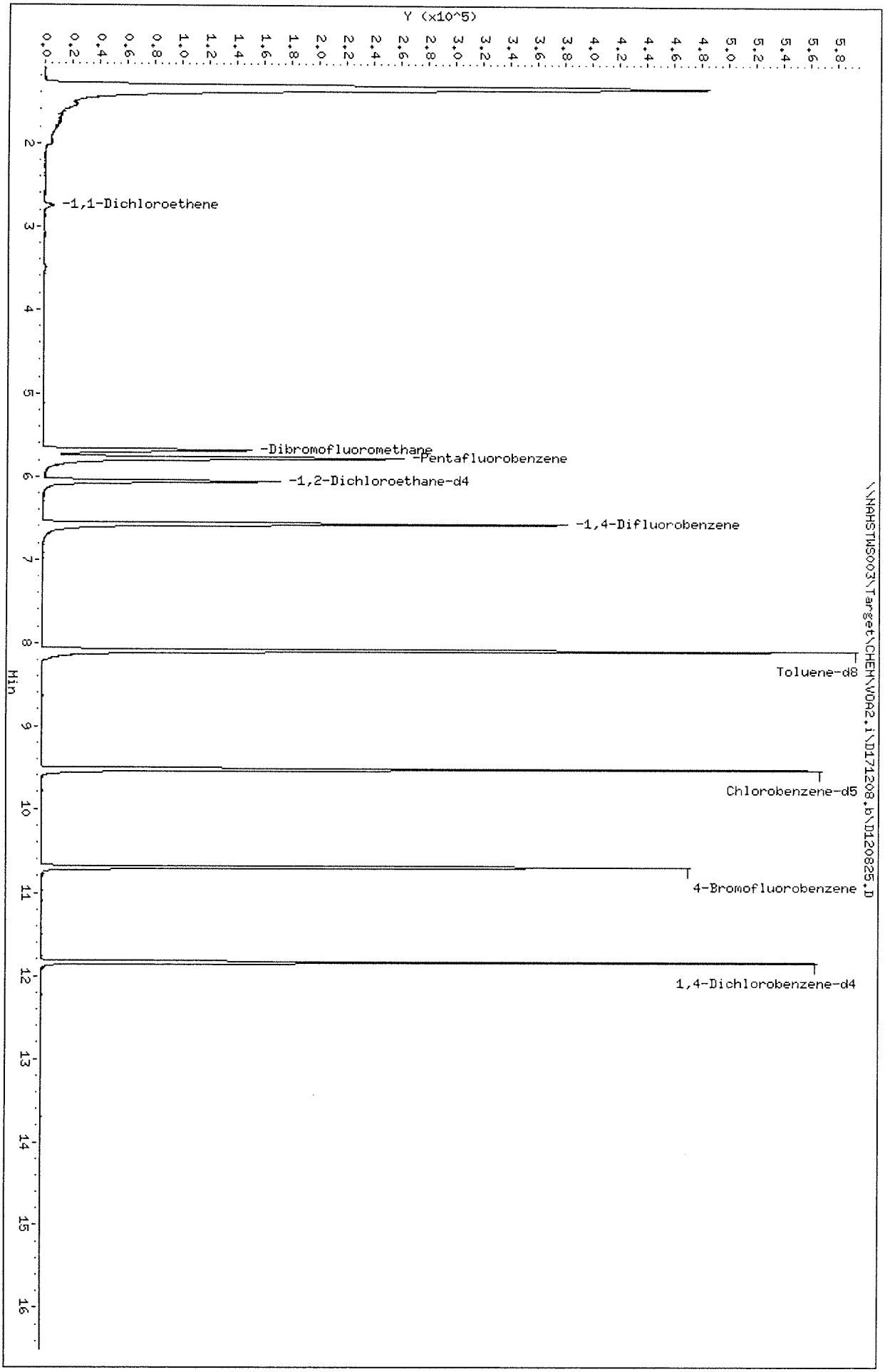
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
	11 1,1-Dichloroethene	96	2.744	2.747	(0.475)	4236	1.76981	1.76 (aM)
$	35 1,2-Dichloroethane-d4	65	6.055	6.055	(1.048)	138125	45.3156	45.31
*	36 1,4-Difluorobenzene	114	6.569	6.572	(1.000)	374965	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	152009	50.0000	
*	1 Pentafluorobenzene	168	5.779	5.779	(1.000)	264396	50.0000	
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	339403	50.0000	
$	30 Dibromofluoromethane	113	5.683	5.683	(0.983)	116807	44.6903	44.69
$	48 Toluene-d8	98	8.090	8.093	(0.849)	431769	51.4321	51.43
$	69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	158996	49.3163	49.31

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120825.D
Date : 08-DEC-2017 19:50
Client ID: HS17120123-06
Sample Info: HS17120123-06;HS17120123-06;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120825.D

Date : 08-DEC-2017 19:50

Client ID: HS17120123-06

Instrument: VOA2.i

Sample Info: HS17120123-06;HS17120123-06;;;

Purge Volume: 5.0

Operator: AP

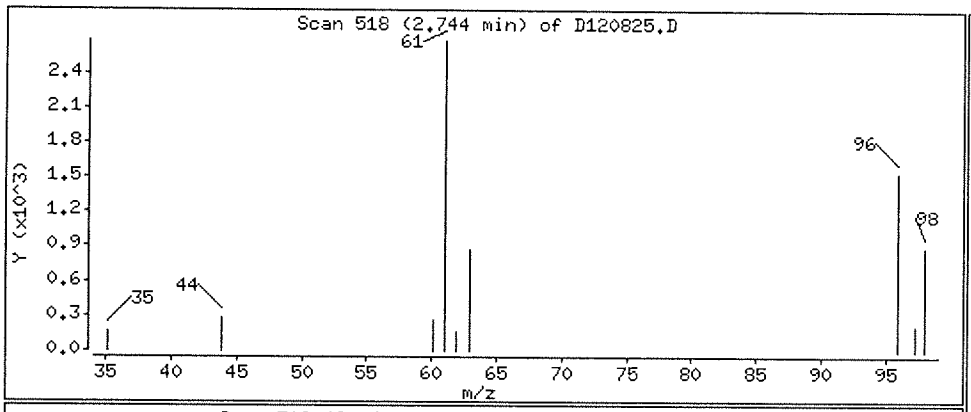
Column phase: DB624

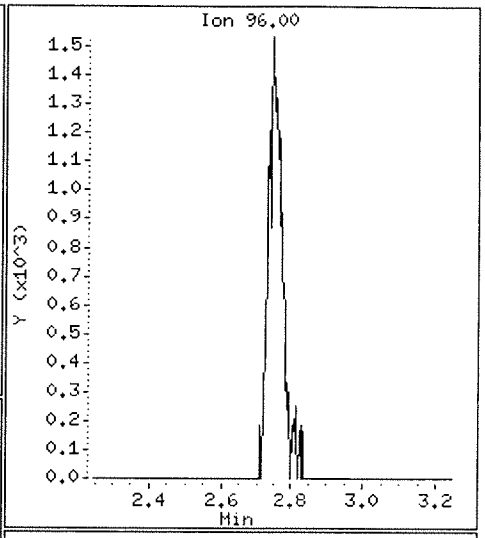
Column diameter: 0.18

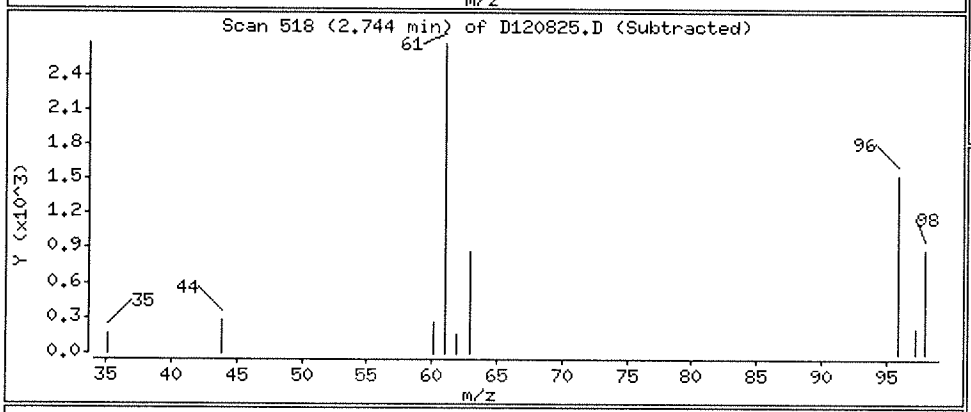
11 1,1-Dichloroethene

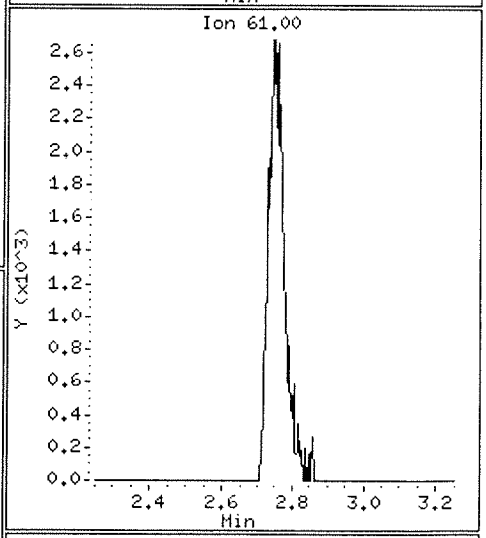
Concentration: 1.76 ug/l

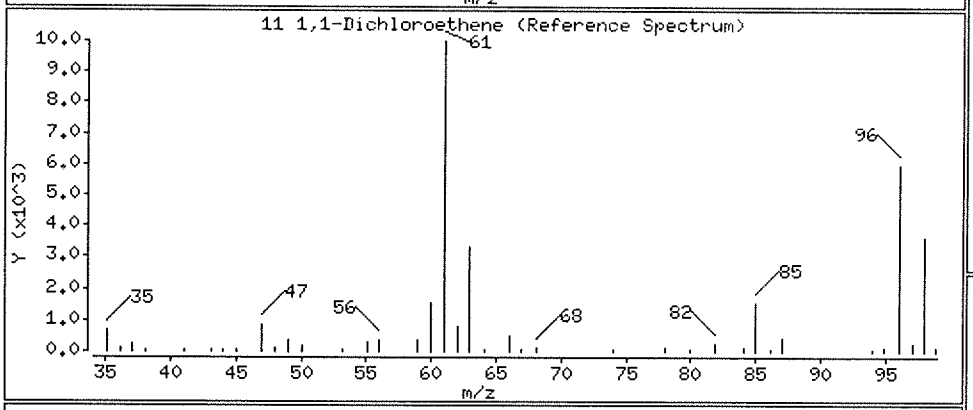
Review Code:

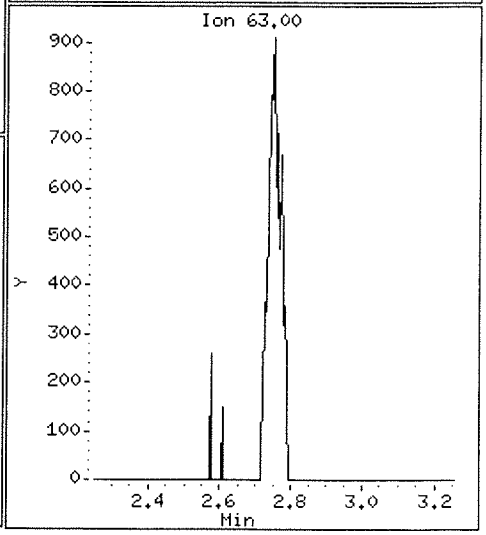


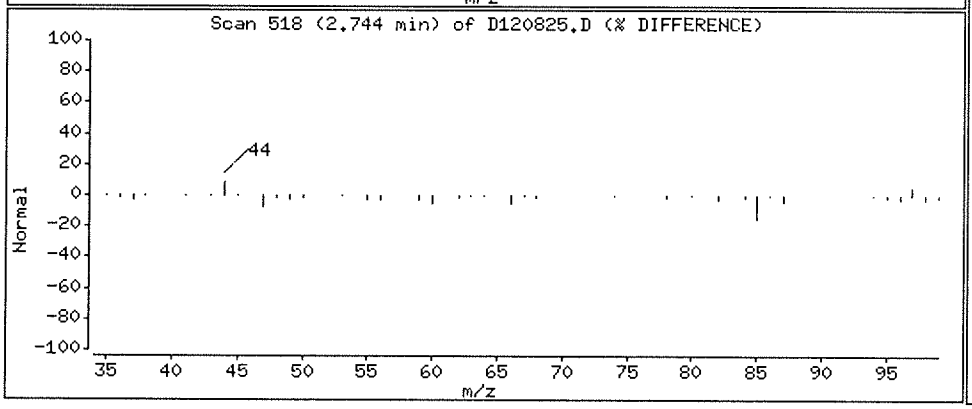












Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120826.D
Report Date: 01-Feb-2018 17:55

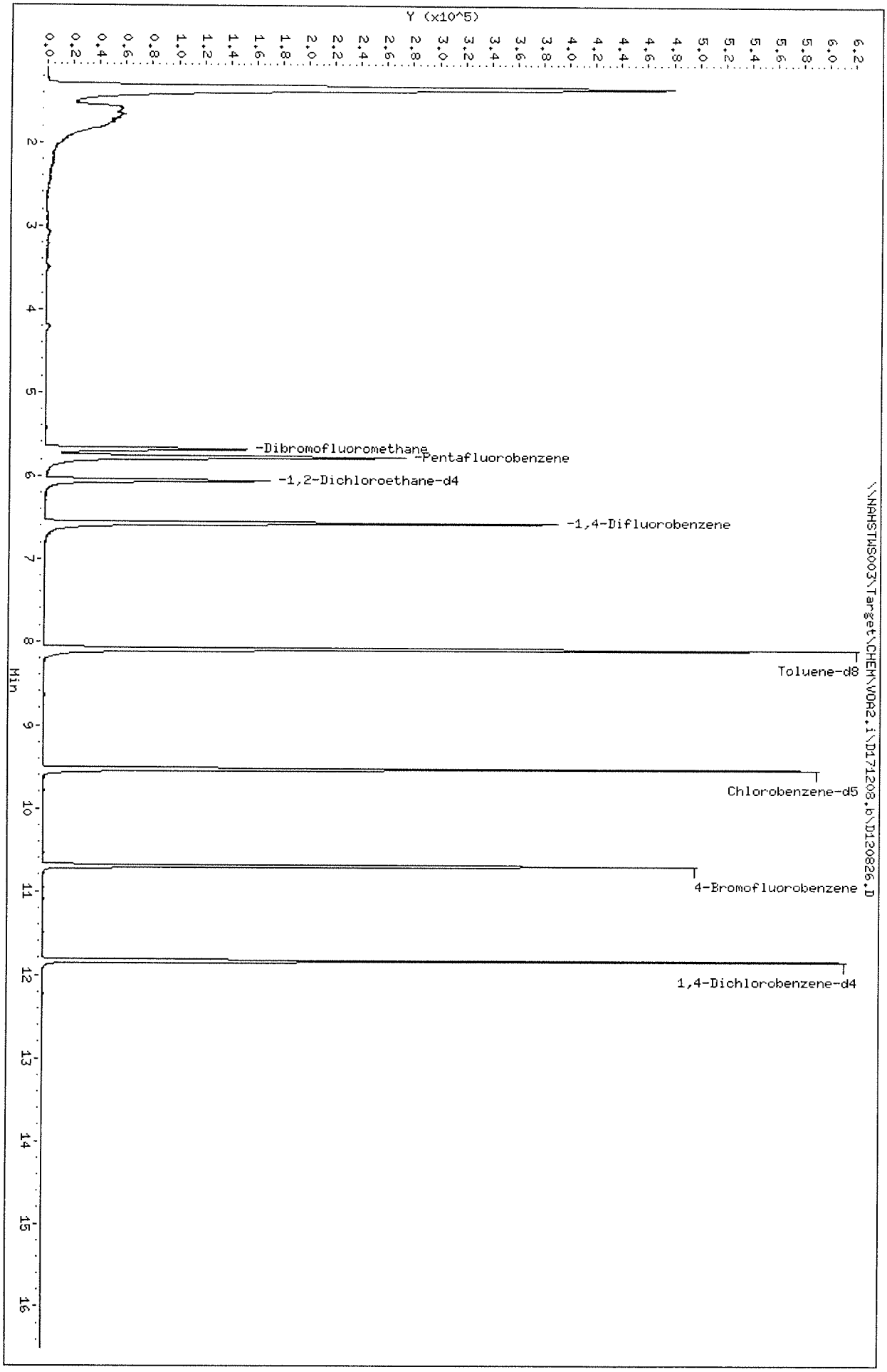
ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120826.D
Lab Smp Id: HS17120123-07 Client Smp ID: HS17120123-07
Inj Date : 08-DEC-2017 20:15
Operator : AP Inst ID: VOA2.i
Smp Info : HS17120123-07;HS17120123-07;;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\chem\voa2.i\D171208.b\8260LL.m
Meth Date : 01-Feb-2018 17:54 diana.nguy Quant Type: ISTD
Cal Date : 02-DEC-2017 11:31 Cal File: D120205.D
Als bottle: 25
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
$ 35 1,2-Dichloroethane-d4	65	6.052	6.055	(1.048)	140395	45.3138	45.31
* 36 1,4-Difluorobenzene	114	6.569	6.572	(1.000)	378804	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	162987	50.0000	
* 1 Pentafluorobenzene	168	5.776	5.779	(1.000)	268752	50.0000	
* 47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	347161	50.0000	
$ 30 Dibromofluoromethane	113	5.686	5.683	(0.984)	119799	45.0921	45.09
$ 48 Toluene-d8	98	8.090	8.093	(0.849)	440818	51.3365	51.33
$ 69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	164546	49.8972	49.89


Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120826.D
Date : 08-DEC-2017 20:15
Client ID: HS17120123-07
Sample Info: HS17120123-07;HS17120123-07;;;
Purge Volume: 5.0
Column phase: DB624
Instrument: VOA2.i
Operator: AP
Column diameter: 0.18
Y (x10^5)
Min
-Dibromofluoromethane
-Pentafluorobenzene
-1,2-Dichloroethane-d4
-1,4-Difluorobenzene
Toluene-d8
Chlorobenzene-d5
4-Bromofluorobenzene
1,4-Dichlorobenzene-d4
\\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120826.D

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120829.D
Report Date: 01-Feb-2018 17:55

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120829.D
Lab Smp Id: CCV_END Client Smp ID: CCV_END
Inj Date : 08-DEC-2017 21:28
Operator : AP Inst ID: VOA2.i
Smp Info : CCV_END;CCV_END;2;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\nahstws003\Target\chem\voa2.i\D171208.b\8260LL.m
Meth Date : 01-Feb-2018 17:55 diana.nguy Quant Type: ISTD
Cal Date : 02-DEC-2017 11:31 Cal File: D120205.D
Als bottle: 28 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: zz_cbihou.sub
Target Version: 4.14
Processing Host: NAHSTW7056

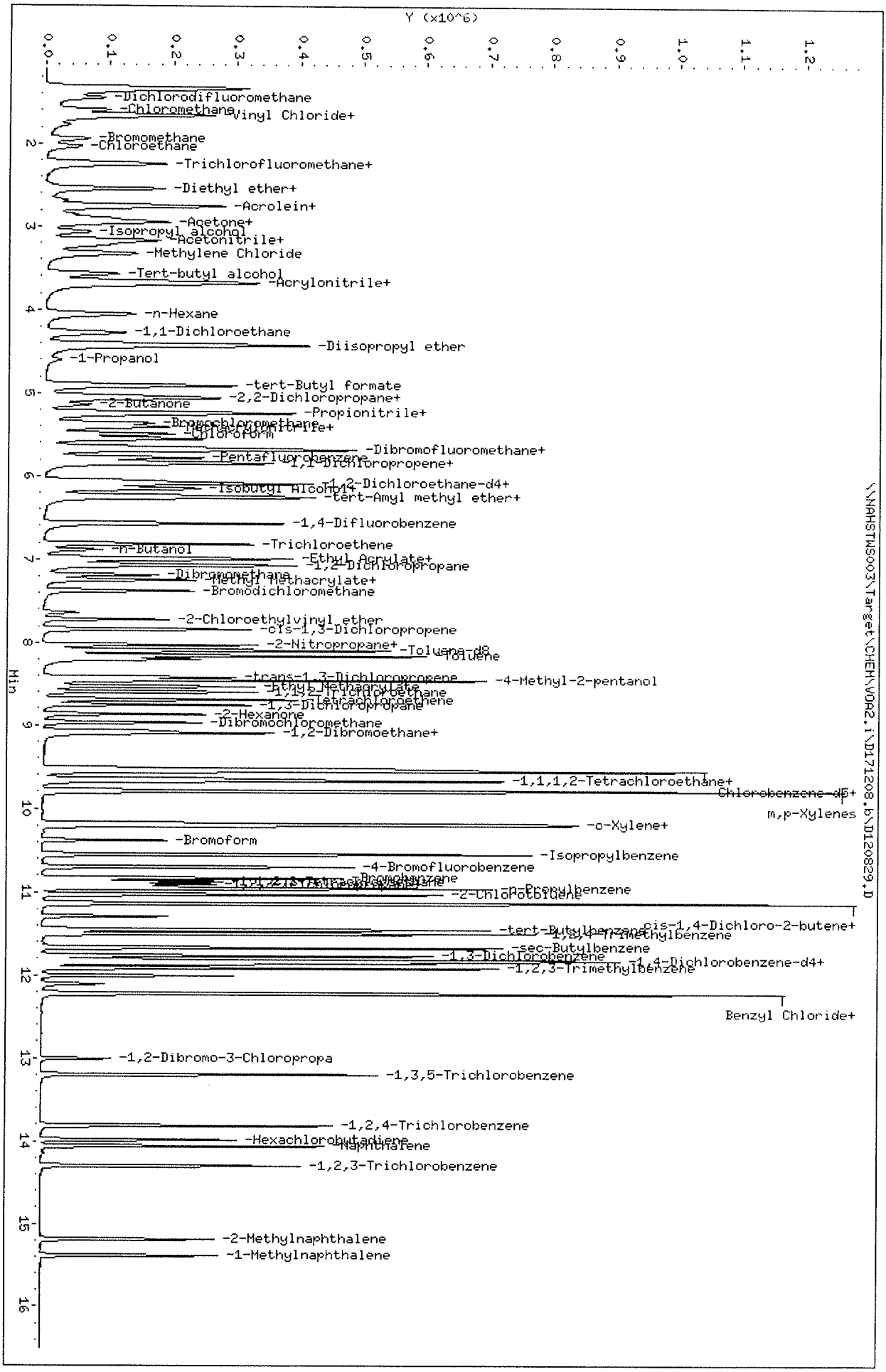
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
31 1,1,1-Trichloroethane	97	5.654	5.654	(0.978)	179634	50.0000	50.92
60 1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.012)	119026	50.0000	47.11
68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.919)	129781	50.0000	42.10
53 1,1,2-Trichloroethane	83	8.593	8.593	(0.902)	84626	50.0000	44.35
32 1,1-Dichloropropene	75	5.853	5.853	(0.891)	143664	50.0000	48.69
22 1,1-Dichloroethane	63	4.271	4.271	(0.739)	225780	50.0000	47.42
11 1,1-Dichloroethene	96	2.747	2.747	(0.475)	100016	50.0000	44.70
71 1,2,3-Trichloropropane	75	10.901	10.901	(0.921)	144677	50.0000	44.53
79 1,2,4-Trimethylbenzene	105	11.497	11.497	(0.972)	412348	50.0000	53.77
93 1,2,3-Trichlorobenzene	182	14.302	14.302	(1.209)	125913	50.0000	54.24
90 1,2,4-Trichlorobenzene	180	13.817	13.817	(1.168)	147503	50.0000	54.15
89 1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	24492	50.0000	50.97
33 1,2-Dichloroethane	62	6.139	6.139	(0.935)	151979	50.0000	44.62
42 1,2-Dichloropropane	63	7.063	7.063	(1.075)	121917	50.0000	46.52
57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	107018	50.0000	44.62
88 1,2-Dichlorobenzene	146	12.226	12.226	(1.033)	224820	50.0000	44.56
75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	407643	50.0000	54.54
54 1,3-Dichloropropane	76	8.751	8.751	(0.919)	169284	50.0000	44.86
83 1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	235107	50.0000	44.36
84 1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	221669	50.0000	42.79
26 2,2-Dichloropropane	77	5.038	5.038	(0.871)	159629	50.0000	47.48

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120829.D
Report Date: 01-Feb-2018 17:55

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
	24 2-Butanone	43	5.137	5.137	(0.888)	103979	100.000	97.22
	52 2-Hexanone	43	8.866	8.866	(0.931)	156909	100.000	96.96
	76 2-Chlorotoluene	91	11.029	11.029	(0.932)	344855	50.0000	43.20
	77 4-Chlorotoluene	91	11.138	11.138	(0.941)	380488	50.0000	51.82
	45 4-Methyl-2-Pentanone	43	8.025	8.025	(0.843)	240846	100.000	91.85
	10 Acetone	43	2.853	2.853	(0.493)	66566	100.000	100.65
	37 Benzene	78	6.090	6.090	(0.927)	432393	50.0000	48.17
	39 Bromodichloromethane	83	7.377	7.377	(1.123)	153485	50.0000	51.17
	74 Bromobenzene	156	10.830	10.830	(0.915)	138013	50.0000	43.98
	29 Bromochloromethane	128	5.359	5.359	(0.927)	59228	50.0000	50.09
	6 Bromomethane	94	1.941	1.941	(0.336)	71472	50.0000	34.18
	19 Carbon Disulfide	76	2.946	2.946	(0.509)	429974	100.000	94.62
	66 Bromoform	173	10.374	10.374	(1.089)	90147	50.0000	50.00
	7 Chloroethane	64	2.031	2.031	(0.351)	80139	50.0000	39.98
	34 Carbon Tetrachloride	117	5.831	5.831	(0.888)	151141	50.0000	49.32
	3 Chloromethane	50	1.595	1.595	(0.276)	182757	50.0000	40.29
	28 Chloroform	83	5.494	5.494	(0.950)	194592	50.0000	45.16
	59 Chlorobenzene	112	9.553	9.553	(1.003)	295674	50.0000	45.53
	27 cis-1,2-Dichloroethene	96	5.067	5.067	(0.876)	122361	50.0000	47.97
	46 cis-1,3-Dichloropropene	75	7.839	7.839	(1.193)	182696	50.0000	51.58
	2 Dichlorodifluoromethane	85	1.447	1.447	(0.250)	104579	50.0000	46.77
	55 Dibromochloromethane	129	8.969	8.969	(0.942)	129601	50.0000	47.82
	44 Dibromomethane	93	7.185	7.185	(1.094)	66285	50.0000	48.90
	61 Ethylbenzene	106	9.672	9.672	(1.015)	158105	50.0000	47.32
	91 Hexachlorobutadiene	225	13.991	13.991	(1.182)	63470	50.0000	54.45
	62 m,p-Xylenes	106	9.790	9.790	(1.028)	387434	100.000	90.92
	63 o-Xylene	106	10.175	10.175	(1.068)	202458	50.0000	46.21
	67 Isopropylbenzene	105	10.544	10.544	(1.107)	509572	50.0000	50.81
	17 Methylene Chloride	84	3.324	3.324	(0.575)	111368	50.0000	45.26
	73 n-Propylbenzene	91	10.955	10.955	(0.926)	538036	50.0000	54.31
	87 n-Butylbenzene	91	12.223	12.223	(1.033)	316820	50.0000	50.03
	92 Naphthalene	128	14.061	14.061	(1.188)	348393	50.0000	54.62
	64 Styrene	104	10.198	10.198	(1.071)	328137	50.0000	45.92
	81 sec-Butylbenzene	105	11.668	11.668	(0.986)	473264	50.0000	56.10
	78 tert-Butylbenzene	119	11.449	11.449	(0.967)	349134	50.0000	55.13
	20 trans-1,2-Dichloroethene	96	3.658	3.658	(0.633)	106174	50.0000	49.96
	50 Toluene	91	8.157	8.157	(0.856)	458301	50.0000	44.64
	51 trans-1,3-Dichloropropene	75	8.414	8.414	(1.281)	158883	50.0000	51.57
	56 Tetrachloroethene	164	8.686	8.686	(0.912)	102870	50.0000	49.04
	8 Trichlorofluoromethane	101	2.246	2.246	(0.388)	156404	50.0000	45.51
	38 Trichloroethene	130	6.816	6.816	(1.038)	128921	50.0000	52.28
	5 Vinyl Chloride	62	1.678	1.678	(0.290)	146478	50.0000	47.32
$	35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.047)	130861	50.0000	45.93
*	36 1,4-Difluorobenzene	114	6.569	6.569	(1.000)	358796	50.0000	
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	155284	50.0000	
*	1 Pentafluorobenzene	168	5.782	5.782	(1.000)	247130	50.0000	
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	332303	50.0000	
$	30 Dibromofluoromethane	113	5.683	5.683	(0.983)	105184	50.0000	43.05
$	48 Toluene-d8	98	8.093	8.093	(0.850)	410623	50.0000	49.95
$	69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	157249	50.0000	49.81
	82 p-Isopropyltoluene	119	11.818	11.818	(0.999)	400403	50.0000	46.05
	138 Freon TF	101	2.760	2.760	(0.477)	102004	50.0000	50.40



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120829.D
Date : 08-DEC-2017 21:28
Client ID: CCV_END
Sample Info: CCV_END;CCV_END;2;;
Purge Volume: 5.0
Column phase: DB624

\\NAHSTWS003\Target\CHEM\VOA2.i\D171208.b\D120829.D

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Semivolatile Organics Raw Data

Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
ALS WO# HS17120123

FORM 2
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17120123

	CLIENT SAMPLE NO.	S1 (NBZ) #	S2 #	S3 (FBP) #	S4 #	S5 #	S6 #	S7 #	S8 #	TOT OUT
01	MBLK-122922	84	121	144D						0
02	LCS-122922	88	123	155D						0
03	LCSD-122922	90	135	128						0
04	HS17120123-01	74	90	124						0
05	HS17120123-02	76	99	124						0
06	HS17120123-03	70	77	117						0
07	HS17120123-04	68	78	106						0
08	HS17120123-05	71	71	125						0
09	HS17120123-06	70	86	113						0
10	HS17120123-07	59	102	112						0
11										
12										
13										
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25										
26										
27										
28										

	QC LIMITS
S1 (NBZ) = Nitrobenzene-d5	(41-120)
S2 = 4-Terphenyl-d14	(40-140)
S3 (FBP) = 2-Fluorobiphenyl	(40-140)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

SV05 -Logbook

Batch: 29699 **Analyst:** Andrew Neir

Date: 11-27-2017 **Reviewer:**

Method: 8270D(SIM) **Laboratory:** Houston

Comments: MSSV-003(SIM)

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
1	DFTPP	TUNE	11-27-2017 04:32 pm	1.00			01.D		Y	NA
2	DX-0.08	CAL	11-27-2017 04:47 pm	1.00			02.D		Y	NA
3	DX-0.01	CAL	11-27-2017 05:19 pm	1.00			03.D		Y	NA
4	DX-0.03	CAL	11-27-2017 05:40 pm	1.00			04.D		Y	NA
5	DX-0.05	CAL	11-27-2017 06:00 pm	1.00			05.D		Y	NA
6	DX-0.1	CAL	11-27-2017 06:21 pm	1.00			06.D		Y	NA
7	DX-0.15	CAL	11-27-2017 06:41 pm	1.00			07.D		Y	NA
8	DX-0.2	CAL	11-27-2017 07:01 pm	1.00			08.D		Y	NA
9	DX-0.5	CAL	11-27-2017 07:22 pm	1.00			09.D		Y	NA
10	DX-ICV	SAMP	11-27-2017 07:42 pm	1.00			10.D		Y	NA
11	CCB	SAMP	11-27-2017 08:03 pm	1.00			11.D		Y	NA
12	MBLK-122270	MBLK	11-27-2017 08:23 pm	1.00	1000.00 mL	1.00 mL	12.D	Liquid	Y	NA
13	LCS-122270	LCS	11-27-2017 08:44 pm	1.00	1000.00 mL	1.00 mL	13.D	Liquid	Y	NA
14	LCSD-122270	LCSD	11-27-2017 09:05 pm	1.00	1000.00 mL	1.00 mL	14.D	Liquid	Y	NA
15	HS17110800-01	SAMP	11-27-2017 09:25 pm	20.00	1000.00 mL	1.00 mL	15.D	Liquid	Y	NA
16	HS17110800-02	SAMP	11-27-2017 09:46 pm	10.00	1000.00 mL	1.00 mL	16.D	Liquid	Y	NA
17	HS17110800-03	SAMP	11-27-2017 10:06 pm	10.00	1000.00 mL	1.00 mL	17.D	Liquid	Y	NA
18	HS17110800-04	SAMP	11-27-2017 10:27 pm	4.00	1000.00 mL	1.00 mL	18.D	Liquid	Y	NA
19	HS17110800-05	SAMP	11-27-2017 10:47 pm	20.00	1000.00 mL	1.00 mL	19.D	Liquid	Y	NA
20	HS17110800-06	SAMP	11-27-2017 11:08 pm	20.00	1000.00 mL	1.00 mL	20.D	Liquid	Y	NA
21	HS17110731-01	SAMP	11-27-2017 11:28 pm	4.00	1000.00 mL	11.00 mL	21.D	Liquid	Y	NA
22	HS17110731-02	SAMP	11-27-2017 11:49 pm	100.0(	1000.00 mL	1.00 mL	22.D	Liquid	Y	NA
23	HS17110731-03	SAMP	11-28-2017 12:09 am	500.0(	1000.00 mL	1.00 mL	23.D	Liquid	Y	NA
24	HS17110732-01	SAMP	11-28-2017 12:30 am	20.00	1000.00 mL	1.00 mL	24.D	Liquid	Y	NA
25	HS17110732-02	SAMP	11-28-2017 12:50 am	500.0(	1000.00 mL	1.00 mL	25.D	Liquid	Y	NA
26	HS17110813-01	SAMP	11-28-2017 01:11 am	20.00	1000.00 mL	1.00 mL	26.D	Liquid	Y	NA
27	HS17110813-02	SAMP	11-28-2017 01:31 am	20.00	1000.00 mL	1.00 mL	27.D	Liquid	Y	NA
28	HS17110816-01	SAMP	11-28-2017 01:52 am	20.00	1000.00 mL	1.00 mL	28.D	Liquid	Y	NA
29	HS17110816-02	SAMP	11-28-2017 02:12 am	20.00	1000.00 mL	1.00 mL	29.D	Liquid	Y	NA
30	DX-0.08	SAMP	11-28-2017 11:28 am	1.00	1000.00 mL	1000.00 mL	30.D	Liquid	Y	NA

SV05 -Logbook

Chemical	Value
IS ID	3041118-01
CAL STD ID	3041117-04
DFTPP ID	29722-96-01
PCP Tailing	0.67
Benz. Tailing	0.86
STD-01	3041117-01
STD-02	3041117-02
STD-03	3041117-03
STD-04	3041117-05
STD-05	3041117-06
STD-06	3041117-07
ICV ID	3041117-08

FORM 3
WATER SEMIVOLATILE METHOD SPIKE RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17120123

Matrix Spike - Sample No.: DX-ICV

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	% REC #	QC. LIMITS REC.
1,4-Dioxane	0.08000	0.08408	105	75-125

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM III SV

FORM 5
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17120123

Lab File ID: 01 DFTPP Injection Date: 11/27/17

Instrument ID: SV5 DFTPP Injection Time: 1632

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	47.4
68	Less than 2.0% of mass 69	0.9 (1.6)1
69	Mass 69 relative abundance	58.7
70	Less than 2.0% of mass 69	0.4 (0.7)1
127	10.0 - 80.0% of mass 198	62.4
197	Less than 2.0% of mass 198	0.7
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	8.3
275	10.0 - 60.0% of mass 198	26.8
365	1.0 - 100.0% of mass 198	2.7
441	Present, but less than mass 443	9.7
442	50.0 - 150.0% of mass 198	63.2
443	15.0 - 24.0% of mass 442	13.5 (21.3)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	DX-0.08	DX-0.08	02	11/27/17	1647
02	DX-0.01	DX-0.01	03	11/27/17	1719
03	DX-0.03	DX-0.03	04	11/27/17	1740
04	DX-0.05	DX-0.05	05	11/27/17	1800
05	DX-0.1	DX-0.1	06	11/27/17	1821
06	DX-0.15	DX-0.15	07	11/27/17	1841
07	DX-0.2	DX-0.2	08	11/27/17	1901
08	DX-0.5	DX-0.5	09	11/27/17	1922
09	DX-ICV	DX-ICV	10	11/27/17	1942
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17120123

Instrument ID: SV5 Calibration Date(s): 11/27/17 11/27/17

Column: RTX-5SIL MS ID: 0.28 (mm) Calibration Time(s): 1647 1922

LAB FILE ID: RF0.01: 03 RF0.025: 04 RF0.05: 05
RF0.08: 02 RF0.1: 06 RF0.15: 07

COMPOUND	RF0.01	RF0.025	RF0.05	RF0.08	RF0.1	RF0.15
1,4-Dioxane	0.082	0.080	0.075	0.082	0.082	0.084
Nitrobenzene-d5	0.654	0.579	0.439	0.385	0.438	0.456
4-Terphenyl-d14	1622	5762	17709	16179	39094	22443
2-Fluorobiphenyl	0.785	0.995	0.834	0.847	0.871	0.908

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1712012

Instrument ID: SV5 Calibration Date(s): 11/27/17 11/27/17

Column: RTX-5SIL MS ID: 0.28 (mm) Calibration Time(s): 1647 1922

LAB FILE ID: RF0.2: 08 RF0.5: 09

COMPOUND	RF0.2	RF0.5
1,4-Dioxane	0.086	0.091
Nitrobenzene-d5	0.455	0.408
4-Terphenyl-d14	31676	145184
2-Fluorobiphenyl	0.918	0.933

FORM VI SV

FORM 6
SEMIVOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1712012

Instrument ID: SV5 Calibration Date(s): 11/27/17 11/27/17

Column: RTX-5SIL MS ID: 0.28 (mm) Calibration Time(s): 1647 1922

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2	MAX %RSD OR R^2
1,4-Dioxane	AVRG		8.286e-002		5.457	20.000
Nitrobenzene-d5	AVRG		0.47670052		19.241	20.000
4-Terphenyl-d14	2ORDR	0.14589860	1.02412250	-3.79e-002	0.9949042	0.9900000
2-Fluorobiphenyl	AVRG		0.88628899		7.424	20.000

FORM VI SV

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\01.D

Date : 27-NOV-2017 16:32

Client ID: DFTPP

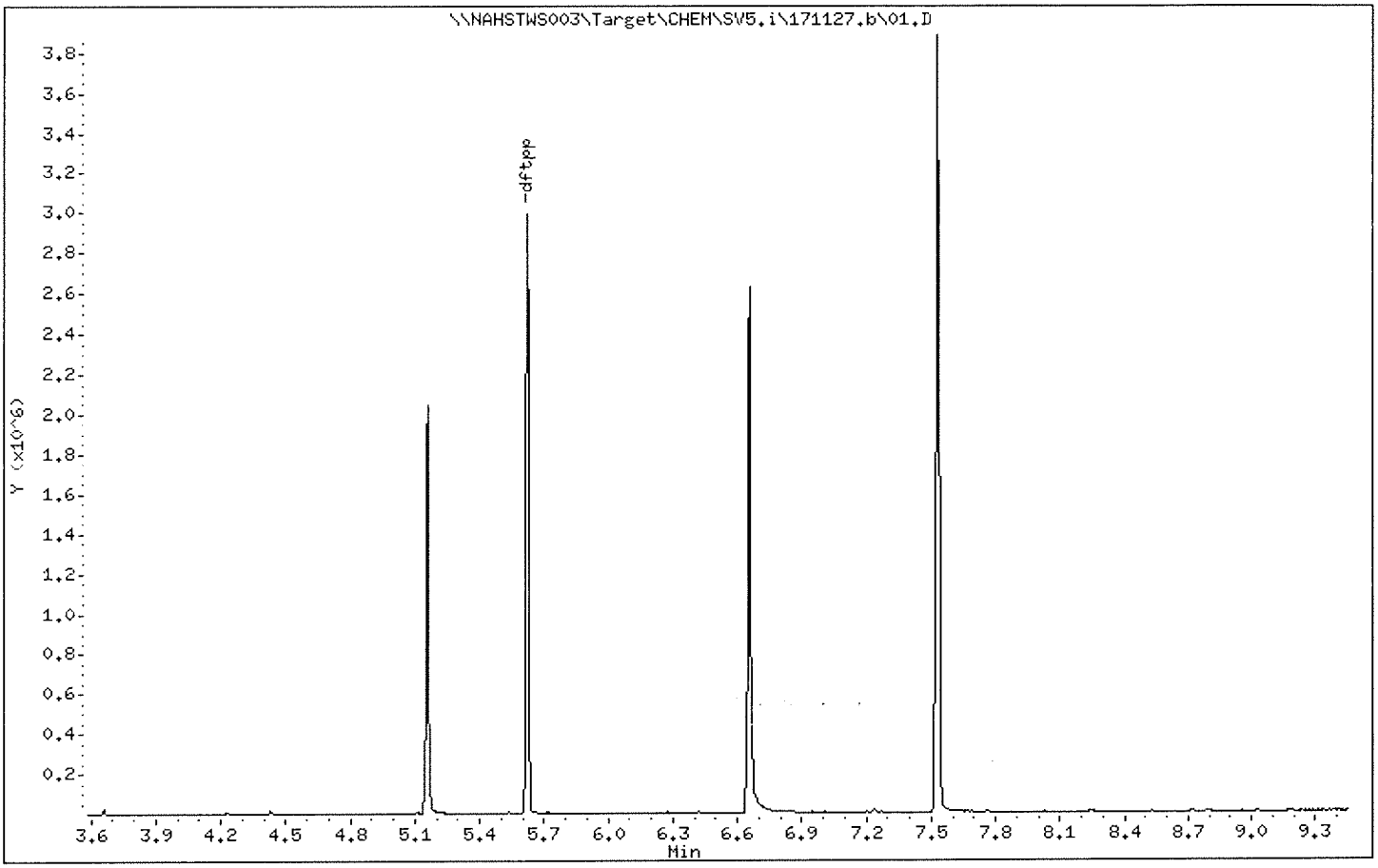
Instrument: SV5.i

Sample Info: DFTPP;DFTPP;3;;DFTPP

Operator: GY

Column phase: DB-5MS

Column diameter: 0.25



Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\01.D

Date : 27-NOV-2017 16:32

Client ID: DFTPP

Instrument: SV5.i

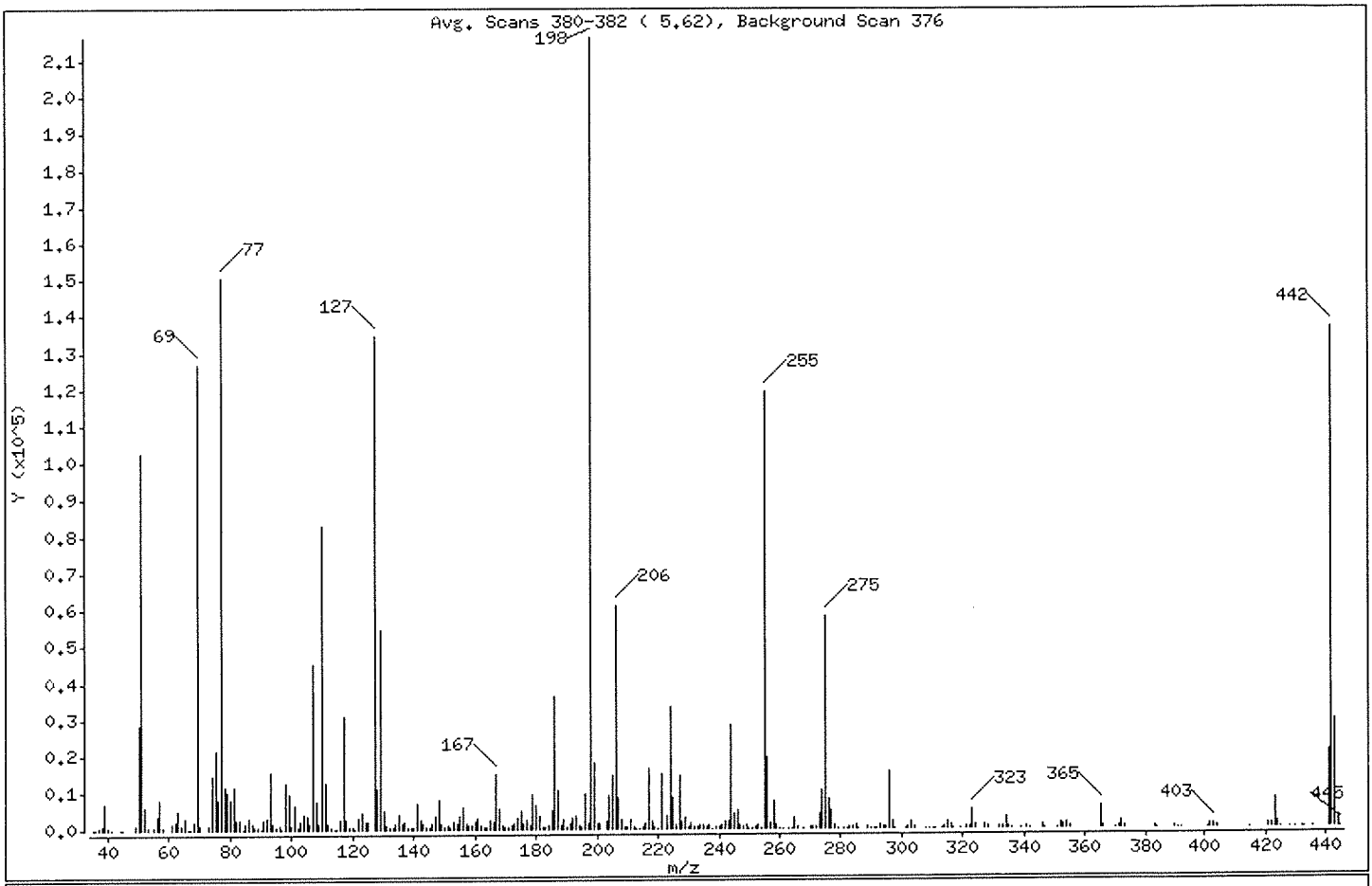
Sample Info: DFTPP;DFTPP;3;;DFTPP

Operator: GY

Column phase: DB-5MS

Column diameter: 0.25

1 dftpp



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
198	Base Peak, 100% relative abundance	100.00
51	10.00 - 80.00% of mass 198	47.36
68	Less than 2.00% of mass 69	0.92 (1.57)
69	Mass 69 relative abundance	58.68
70	Less than 2.00% of mass 69	0.43 (0.73)
127	10.00 - 80.00% of mass 198	62.40
197	Less than 2.00% of mass 198	0.70
199	5.00 - 9.00% of mass 198	8.31
275	10.00 - 60.00% of mass 198	26.85
365	1.00 - 100.00% of mass 198	2.68
441	Present, but less than mass 443	9.71
442	50.00 - 150.00% of mass 198	63.22
443	15.00 - 24.00% of mass 442	13.47 (21.30)

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\01.D

Date : 27-NOV-2017 16:32

Client ID: DFTPP

Instrument: SV5.i

Sample Info: DFTPP;DFTPP;3;;DFTPP

Operator: GY

Column phase: DB-5MS

Column diameter: 0.25

Data File: 01.D

Spectrum: Avg. Scans 380-382 (5.62), Background Scan 376

Location of Maximum: 198.00

Number of points: 311

m/z	Y	m/z	Y	m/z	Y	m/z	Y
35.00	64	123.00	4367	203.00	1836	286.00	163
36.00	179	124.00	1955	204.00	8877	289.00	252
37.00	524	125.00	1853	205.00	14549	290.00	180
38.00	1167	127.00	134976	206.00	61392	291.00	51
39.00	7068	128.00	10832	207.00	8276	292.00	164
40.00	376	129.00	54648	208.00	2239	293.00	1211
41.00	227	130.00	5039	209.00	641	294.00	331
44.00	62	131.00	760	210.00	737	295.00	305
45.00	158	132.00	443	211.00	2528	296.00	15231
49.00	855	133.00	285	212.00	478	297.00	2060
50.00	28200	134.00	1641	213.00	220	298.00	168
51.00	102448	135.00	4151	214.00	62	301.00	141
52.00	5837	136.00	1588	215.00	744	302.00	254
53.00	268	137.00	2001	216.00	1491	303.00	1992
55.00	442	138.00	436	217.00	16600	304.00	485
56.00	3389	139.00	385	218.00	2218	308.00	211
57.00	7803	140.00	693	219.00	297	309.00	59
58.00	295	141.00	6880	220.00	135	310.00	212
61.00	1446	142.00	2474	221.00	15007	311.00	79
62.00	1853	143.00	1584	223.00	3574	313.00	60
63.00	4945	144.00	424	224.00	33280	314.00	719
64.00	785	145.00	396	225.00	8598	315.00	1801
65.00	2792	146.00	1411	226.00	993	316.00	916
66.00	173	147.00	3551	227.00	14374	317.00	165
67.00	213	148.00	7951	228.00	1888	319.00	53
68.00	1993	149.00	1446	229.00	3181	321.00	590
69.00	126936	150.00	490	230.00	371	322.00	263
70.00	922	151.00	1135	231.00	1318	323.00	4734
73.00	1073	152.00	643	232.00	300	324.00	1033
74.00	14177	153.00	2120	233.00	393	327.00	1117
75.00	21464	154.00	1634	234.00	909	328.00	440
76.00	8028	155.00	3726	235.00	1155	332.00	342
77.00	150656	156.00	5846	236.00	600	333.00	530
78.00	11390	157.00	1245	237.00	1152	334.00	2964
79.00	9952	158.00	1237	238.00	68	335.00	698

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\01.D

Date : 27-NOV-2017 16:32

Client ID: DFTPP

Instrument: SV5.i

Sample Info: DFTPP;DFTPP;3;;DFTPP

Operator: GY

Column phase: DB-5MS

Column diameter: 0.25

Data File: 01.D
Spectrum: Avg. Scans 380-382 (5.62), Background Scan 376
Location of Maximum: 198.00
Number of points: 311

m/z	Y	m/z	Y	m/z	Y	m/z	Y
80.00	8009	159.00	919	239.00	624	336.00	83
81.00	11268	160.00	2200	240.00	319	339.00	127
82.00	2605	161.00	3181	241.00	801	341.00	498
83.00	2536	162.00	821	242.00	1868	342.00	197
84.00	91	163.00	316	243.00	1973	346.00	825
85.00	1564	164.00	494	244.00	28352	347.00	99
86.00	2774	165.00	2389	245.00	4068	351.00	55
87.00	1457	166.00	1859	246.00	5194	352.00	1396
88.00	640	167.00	14805	247.00	1109	353.00	1086
89.00	314	168.00	5607	248.00	377	354.00	1448
90.00	56	169.00	990	249.00	1137	355.00	310
91.00	2323	170.00	460	250.00	244	365.00	5793
92.00	3022	171.00	551	251.00	197	366.00	674
93.00	15440	172.00	1178	252.00	367	370.00	69
94.00	1256	173.00	1556	253.00	886	371.00	287
95.00	377	174.00	2888	254.00	194	372.00	2202
96.00	851	175.00	5089	255.00	119520	373.00	605
97.00	166	176.00	1670	256.00	19512	383.00	527
98.00	12622	177.00	2269	257.00	1635	384.00	134
99.00	9552	178.00	869	258.00	7227	390.00	306
100.00	846	179.00	9433	259.00	1170	391.00	166
101.00	6363	180.00	6527	260.00	227	392.00	111
102.00	355	181.00	3394	261.00	203	401.00	76
103.00	2141	182.00	578	263.00	63	402.00	864
104.00	4035	183.00	400	264.00	201	403.00	1064
105.00	3704	184.00	889	265.00	2960	404.00	544
106.00	1296	185.00	4909	266.00	674	415.00	52
107.00	45168	186.00	36312	268.00	69	421.00	1112
108.00	7315	187.00	10594	270.00	291	422.00	1216
109.00	1533	188.00	1161	271.00	280	423.00	8029
110.00	82920	189.00	2311	272.00	444	424.00	1632
111.00	12346	190.00	401	273.00	4022	425.00	182
112.00	1525	191.00	1280	274.00	10527	428.00	72
113.00	622	192.00	3160	275.00	58072	430.00	117
114.00	121	193.00	3303	276.00	8016	432.00	104

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\01.D

Date : 27-NOV-2017 16:32

Client ID: DFTPP

Instrument: SV5.i

Sample Info: DFTPP;DFTPP;3;;DFTPP

Operator: GY

Column phase: DB-5MS

Column diameter: 0.25

Data File: 01.D
Spectrum: Avg. Scans 380-382 (5.62), Background Scan 376
Location of Maximum: 198.00
Number of points: 311

m/z	Y	m/z	Y	m/z	Y	m/z	Y
115.00	211	194.00	802	277.00	4976	433.00	62
116.00	2538	195.00	631	278.00	778	436.00	56
117.00	30648	196.00	9545	279.00	222	441.00	21008
118.00	2305	197.00	1505	281.00	52	442.00	136768
119.00	288	198.00	216320	282.00	50	443.00	29136
120.00	476	199.00	17976	283.00	528	444.00	2817
121.00	231	200.00	1509	284.00	434	445.00	88
122.00	2773	201.00	1436	285.00	858		

ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\02.D
Lab Smp Id: DX-0.08 Client Smp ID: DX-0.08
Inj Date : 27-NOV-2017 16:47 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : DX-0.08;DX-0.08
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\DXSIM.m
Meth Date : 11-Jan-2018 15:47 aneir Quant Type: ISTD
Cal Date : 20-NOV-2017 15:12 Cal File: 010.D
Als bottle: 2 Calibration Sample, Level: 4
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

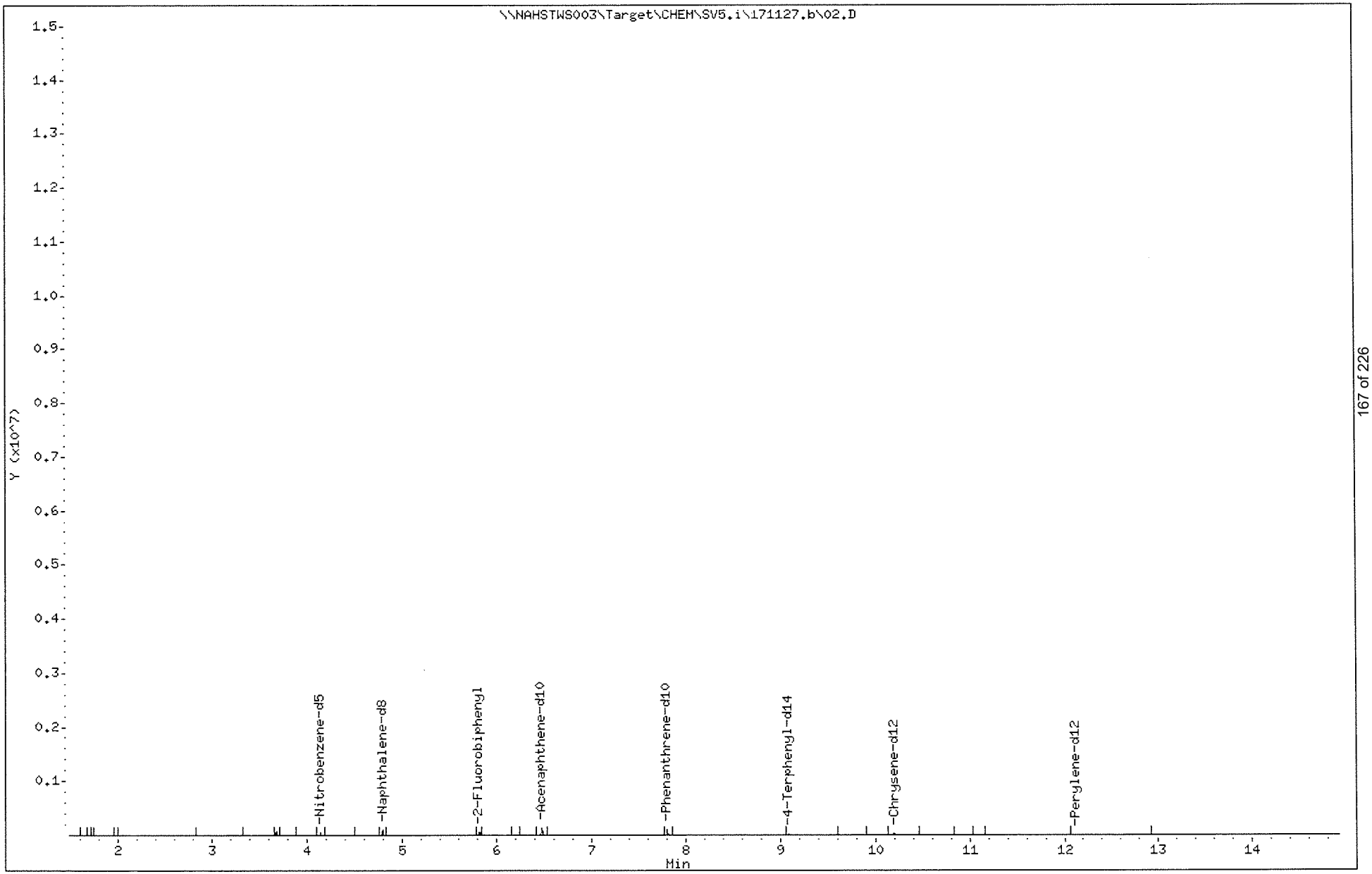
Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (NG)	ON-COL (NG)
* 45 Naphthalene-d8	136	4.800	4.800	(1.000)	80734	0.10000	(H)
$ 33 Nitrobenzene-d5	82	4.146	4.147	(0.864)	24870	0.08000	0.06456(MH)
* 86 Acenaphthene-d10	164	6.480	6.479	(1.000)	53474	0.10000	(H)
$ 69 2-Fluorobiphenyl	172	5.821	5.825	(0.938)	36229	0.08000	0.07644
* 126 Phenanthrene-d10	188	7.811	7.811	(1.000)	68006	0.10000	
* 182 Chrysene-d12	240	10.198	10.198	(1.000)	36826	0.10000	
$ 158 4-Terphenyl-d14	244	9.097	9.097	(0.892)	16179	0.08000	0.05060(M)
* 198 Perylene-d12	264	12.114	12.120	(1.000)	19912	0.10000	(M)
1 1,4-Dioxane	58	1.978	2.032	(0.441)	5306	0.08000	0.07932(aH)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\02.D
Date : 27-NOV-2017 16:47
Client ID: DX-0.08
Instrument: SV5.i
Sample Info: DX-0.08;DX-0.08
Purge Volume: 1000.0
Operator: GY
Column phase: RTX-5SIL MS
Column diameter: 0.28



Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\03.D Page 1
Report Date: 11-Jan-2018 17:38

ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\03.D
Lab Smp Id: DX-0.01 Client Smp ID: DX-0.01
Inj Date : 27-NOV-2017 17:19 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : DX-0.01;DX-0.01
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\DXSIM.m
Meth Date : 11-Jan-2018 15:47 aneir Quant Type: ISTD
Cal Date : 20-NOV-2017 15:12 Cal File: 010.D
Als bottle: 3 Calibration Sample, Level: 1
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (NG)	ON-COL (NG)
* 45 Naphthalene-d8	136	4.800	4.800	(1.000)	67668	0.10000	
$ 33 Nitrobenzene-d5	82	4.146	4.147	(0.864)	2358	0.01000	0.008596 (M)
* 86 Acenaphthene-d10	164	6.480	6.479	(1.000)	44655	0.10000	
$ 69 2-Fluorobiphenyl	172	5.821	5.825	(0.898)	3504	0.01000	0.008854
* 126 Phenanthrene-d10	188	7.811	7.811	(1.000)	59120	0.10000	
* 182 Chrysene-d12	240	10.198	10.198	(1.000)	21732	0.10000	(M)
$ 158 4-Terphenyl-d14	244	9.097	9.097	(0.892)	1493	0.01000	0.008669 (M)
* 198 Perylene-d12	264	12.120	12.120	(1.000)	11157	0.10000	

QC Flag Legend

M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\03.D

Date : 27-NOV-2017 17:19

Client ID: DX-0.01

Instrument: SV5.i

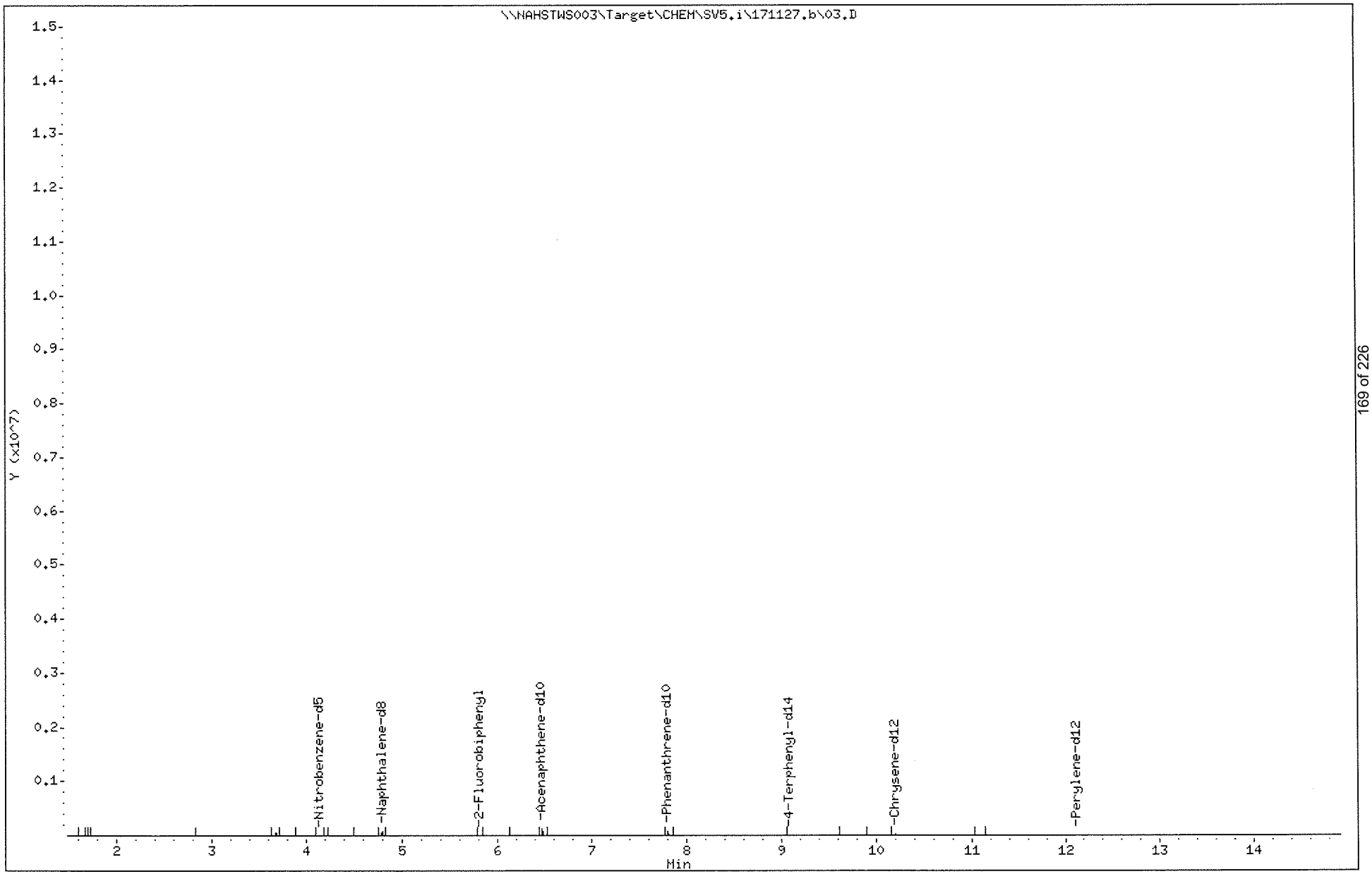
Sample Info: DX-0.01;DX-0.01

Purge Volume: 1000.0

Operator: GY

Column phase: RTX-5SIL MS

Column diameter: 0.28



ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\04.D
Lab Smp Id: DX-0.03 Client Smp ID: DX-0.03
Inj Date : 27-NOV-2017 17:40 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : DX-0.03;DX-0.03
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\DXSIM.m
Meth Date : 11-Jan-2018 15:47 aneir Quant Type: ISTD
Cal Date : 20-NOV-2017 15:12 Cal File: 010.D
Als bottle: 4 Calibration Sample, Level: 2
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (NG)	ON-COL (NG)
* 45 Naphthalene-d8	136	4.800	4.800	(1.000)	71168	0.10000	
$ 33 Nitrobenzene-d5	82	4.146	4.147	(0.864)	8040	0.02500	0.02787(M)
* 86 Acenaphthene-d10	164	6.480	6.479	(1.000)	47659	0.10000	
$ 69 2-Fluorobiphenyl	172	5.821	5.825	(0.898)	11858	0.02500	0.02807
* 126 Phenanthrene-d10	188	7.811	7.811	(1.000)	64839	0.10000	
* 182 Chrysene-d12	240	10.213	10.198	(1.000)	26518	0.10000	(M)
$ 158 4-Terphenyl-d14	244	9.102	9.097	(0.891)	5050	0.02500	0.02381(M)
* 198 Perylene-d12	264	12.130	12.120	(1.000)	13137	0.10000	

QC Flag Legend

M - Compound response manually integrated.

00911970

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\04.D

Page 2

Date : 27-NOV-2017 17:40

Client ID: DX-0.03

Instrument: SV5.i

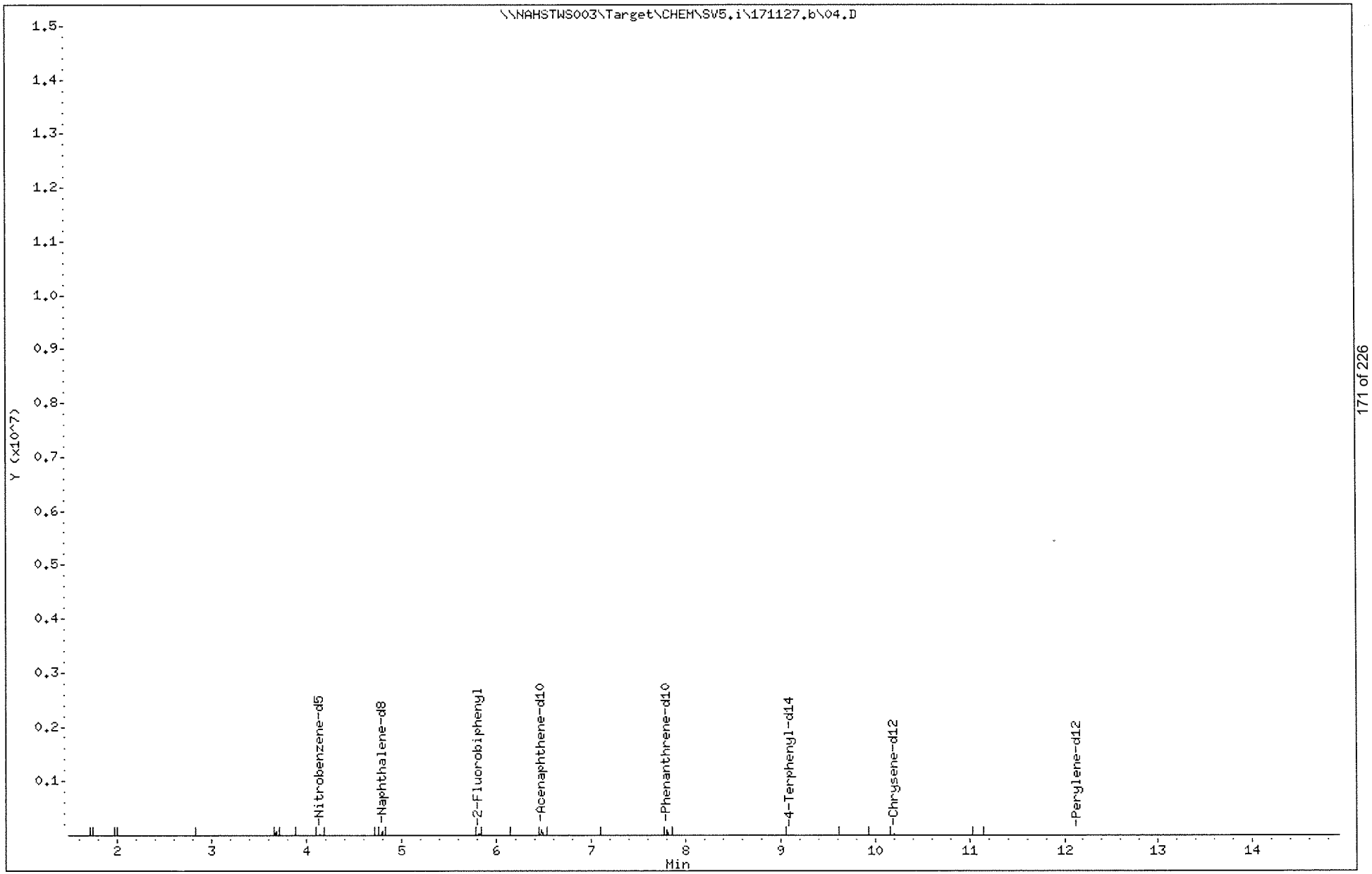
Sample Info: DX-0.03;DX-0.03

Purge Volume: 1000.0

Operator: GY

Column phase: RTX-5SIL MS

Column diameter: 0.28



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ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\05.D
Lab Smp Id: DX-0.05 Client Smp ID: DX-0.05
Inj Date : 27-NOV-2017 18:00 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : DX-0.05;DX-0.05
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\DXSIM.m
Meth Date : 11-Jan-2018 15:47 aneir Quant Type: ISTD
Cal Date : 20-NOV-2017 15:12 Cal File: 010.D
Als bottle: 5 Calibration Sample, Level: 3
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

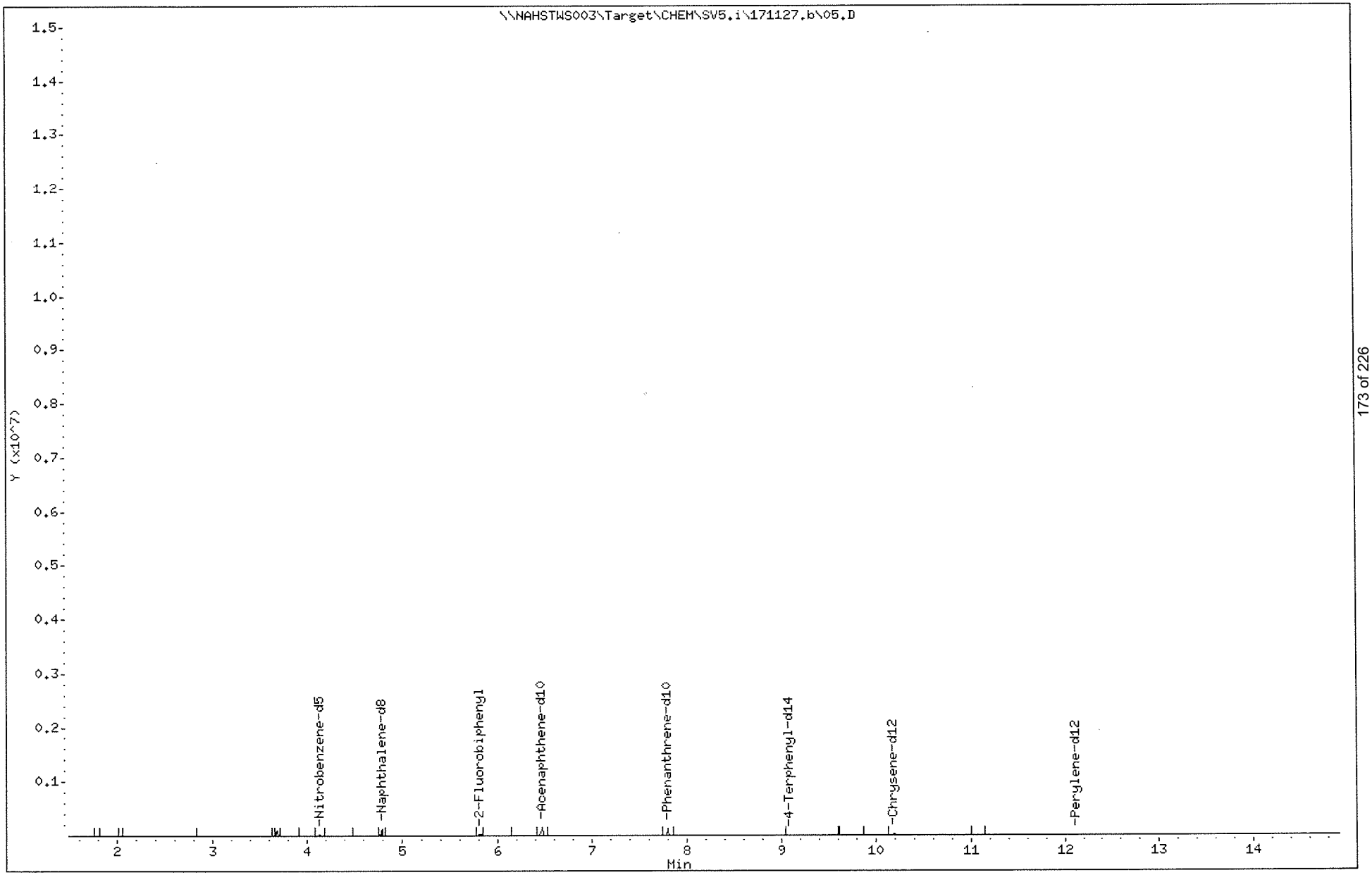
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (NG)	AMOUNTS ON-COL (NG)
* 45 Naphthalene-d8	136	4.796	4.800	(1.000)	125682	0.10000	
$ 33 Nitrobenzene-d5	82	4.146	4.147	(0.865)	24393	0.05000	0.04788 (M)
* 86 Acenaphthene-d10	164	6.479	6.479	(1.000)	83458	0.10000	
$ 69 2-Fluorobiphenyl	172	5.821	5.825	(0.898)	34818	0.05000	0.04707
* 126 Phenanthrene-d10	188	7.806	7.811	(1.000)	111086	0.10000	
* 182 Chrysene-d12	240	10.191	10.198	(1.000)	52655	0.10000	(M)
$ 158 4-Terphenyl-d14	244	9.091	9.097	(0.892)	15896	0.05000	0.03712 (M)
* 198 Perylene-d12	264	12.114	12.120	(1.000)	31570	0.10000	

QC Flag Legend

M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\05.D
Date : 27-NOV-2017 18:00
Client ID: DX-0.05
Sample Info: DX-0.05;DX-0.05
Purge Volume: 1000.0
Column phase: RTX-5SIL MS

Instrument: SV5.i
Operator: GY
Column diameter: 0.28



ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\06.D
Lab Smp Id: DX-0.1 Client Smp ID: DX-0.1
Inj Date : 27-NOV-2017 18:21 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : DX-0.1;DX-0.1
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\DXSIM.m
Meth Date : 11-Jan-2018 15:47 aneir Quant Type: ISTD
Cal Date : 20-NOV-2017 15:12 Cal File: 010.D
Als bottle: 6 Calibration Sample, Level: 5
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (NG)	ON-COL (NG)
* 45 Naphthalene-d8	136	4.796	4.800	(1.000)	127490	0.10000	
$ 33 Nitrobenzene-d5	82	4.146	4.147	(0.865)	51947	0.10000	0.1005(M)
* 86 Acenaphthene-d10	164	6.474	6.479	(1.000)	84497	0.10000	
$ 69 2-Fluorobiphenyl	172	5.821	5.825	(0.899)	73571	0.10000	0.09824
* 126 Phenanthrene-d10	188	7.806	7.811	(1.000)	107687	0.10000	
* 182 Chrysene-d12	240	10.184	10.198	(1.000)	51138	0.10000	(M)
$ 158 4-Terphenyl-d14	244	9.086	9.097	(0.892)	36635	0.10000	0.08716(M)
* 198 Perylene-d12	264	12.093	12.120	(1.000)	28102	0.10000	
1 1,4-Dioxane	58	2.034	2.032	(0.424)	10469	0.10000	0.09910(aM)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\06.D

Date : 27-NOV-2017 18:21

Client ID: DX-0.1

Instrument: SV5.i

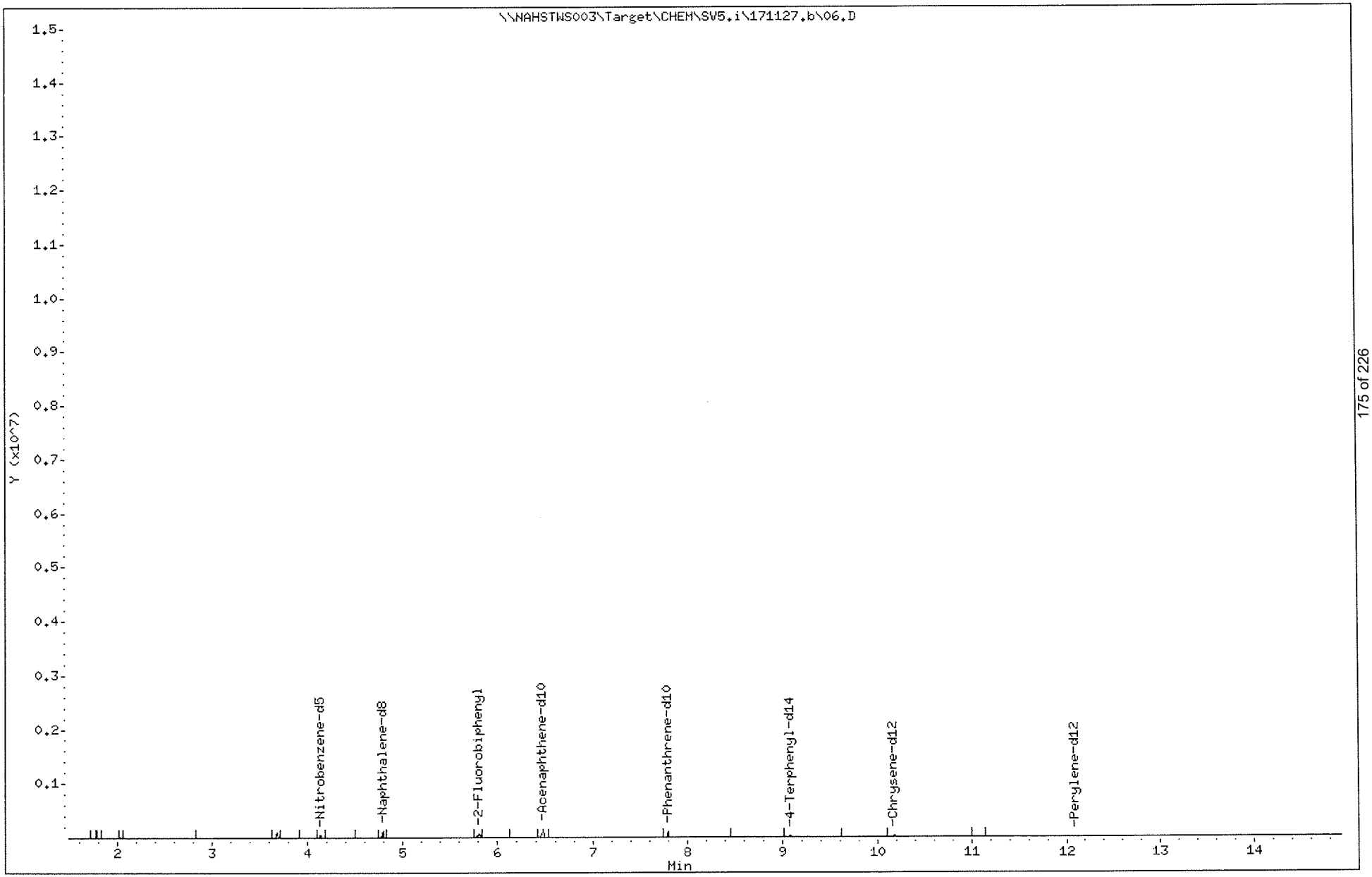
Sample Info: DX-0.1;DX-0.1

Purge Volume: 1000.0

Operator: GY

Column phase: RTX-5SIL MS

Column diameter: 0.28



ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\07.D
Lab Smp Id: DX-0.15 Client Smp ID: DX-0.15
Inj Date : 27-NOV-2017 18:41 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : DX-0.15;DX-0.15
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\DXSIM.m
Meth Date : 11-Jan-2018 15:47 aneir Quant Type: ISTD
Cal Date : 20-NOV-2017 15:12 Cal File: 010.D
Als bottle: 7 Calibration Sample, Level: 6
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

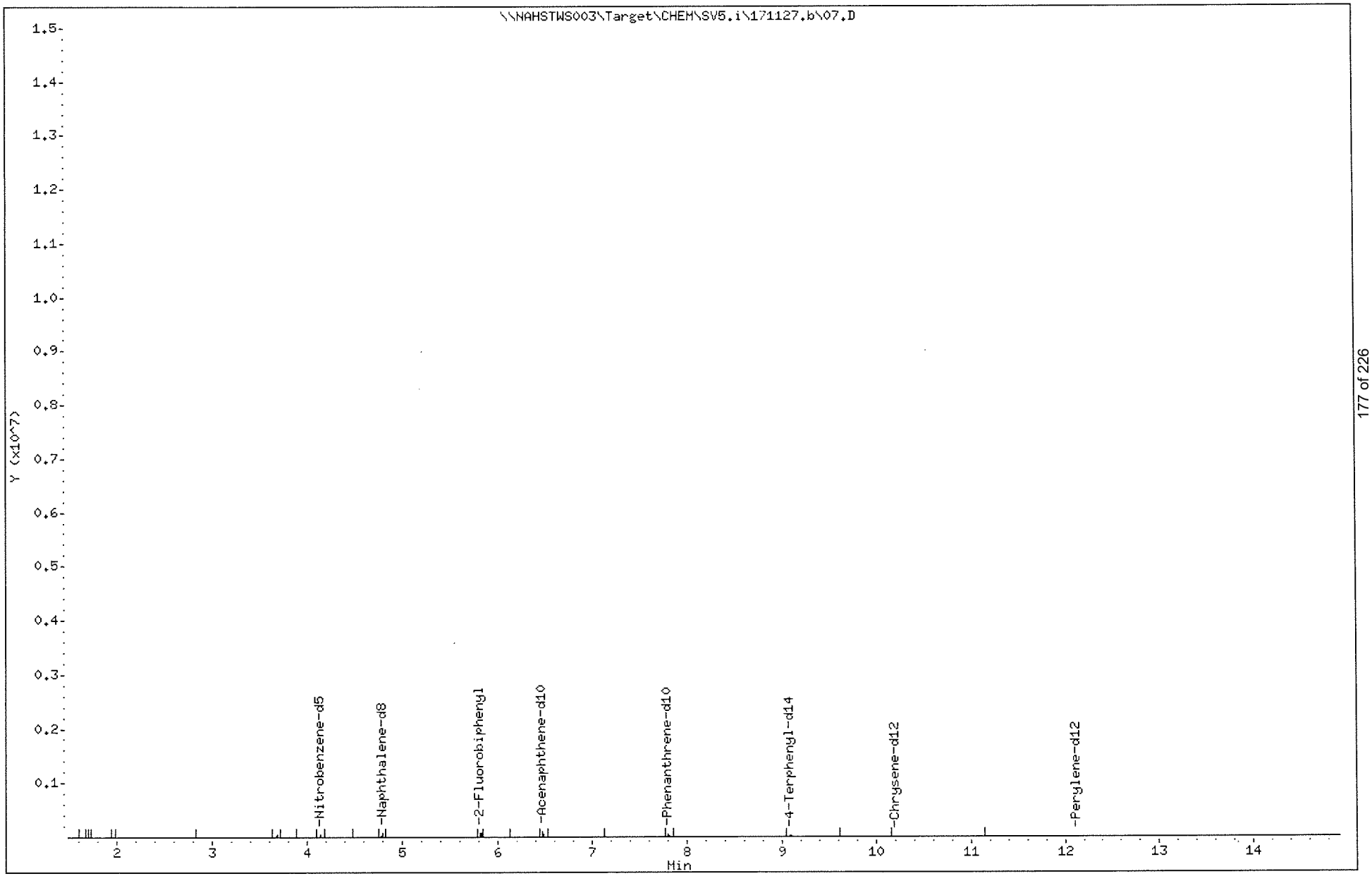
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (NG)	AMOUNTS ON-COL (NG)
* 45 Naphthalene-d8	136	4.800	4.800	(1.000)	53764	0.10000	
$ 33 Nitrobenzene-d5	82	4.146	4.147	(0.864)	34032	0.15000	0.1550(AM)
* 86 Acenaphthene-d10	164	6.479	6.479	(1.000)	35221	0.10000	
$ 69 2-Fluorobiphenyl	172	5.821	5.825	(0.898)	47953	0.15000	0.1536(A)
* 126 Phenanthrene-d10	188	7.811	7.811	(1.000)	46821	0.10000	
* 182 Chrysene-d12	240	10.198	10.198	(1.000)	16112	0.10000	(M)
$ 158 4-Terphenyl-d14	244	9.097	9.097	(0.892)	22443	0.15000	0.1604(AM)
* 198 Perylene-d12	264	12.114	12.120	(1.000)	8327	0.10000	
1 1,4-Dioxane	58	1.968	2.032	(0.410)	6762	0.15000	0.1518(aM)

QC Flag Legend

a - Target compound detected but, quantitated amount Below Limit Of Quantitation(BLOQ).
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\07.D
Date : 27-NOV-2017 18:41
Client ID: DX-0.15
Sample Info: DX-0.15;DX-0.15
Purge Volume: 1000.0
Column phase: RTX-5SIL MS

Instrument: SV5.i
Operator: GY
Column diameter: 0.28



ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\08.D
Lab Smp Id: DX-0.2 Client Smp ID: DX-0.2
Inj Date : 27-NOV-2017 19:01 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : DX-0.2;DX-0.2
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\DXSIM.m
Meth Date : 11-Jan-2018 15:47 aneir Quant Type: ISTD
Cal Date : 20-NOV-2017 15:12 Cal File: 010.D
Als bottle: 8 Calibration Sample, Level: 7
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (NG)	ON-COL (NG)
* 45 Naphthalene-d8	136	4.800	4.800	(1.000)	52772	0.10000	
$ 33 Nitrobenzene-d5	82	4.146	4.147	(0.864)	45367	0.20000	0.2121 (AM)
* 86 Acenaphthene-d10	164	6.480	6.479	(1.000)	34095	0.10000	
$ 69 2-Fluorobiphenyl	172	5.821	5.825	(0.898)	62591	0.20000	0.2071 (A)
* 126 Phenanthrene-d10	188	7.806	7.811	(1.000)	44633	0.10000	
* 182 Chrysene-d12	240	10.184	10.198	(1.000)	15430	0.10000	(M)
$ 158 4-Terphenyl-d14	244	9.086	9.097	(0.892)	28702	0.20000	0.2247 (AM)
* 198 Perylene-d12	264	12.093	12.120	(1.000)	7217	0.10000	(M)
1 1,4-Dioxane	58	1.960	2.032	(0.408)	9096	0.20000	0.2080 (M)

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\08.D

Page 2

Date : 27-NOV-2017 19:01

Client ID: DX-0.2

Instrument: SV5.i

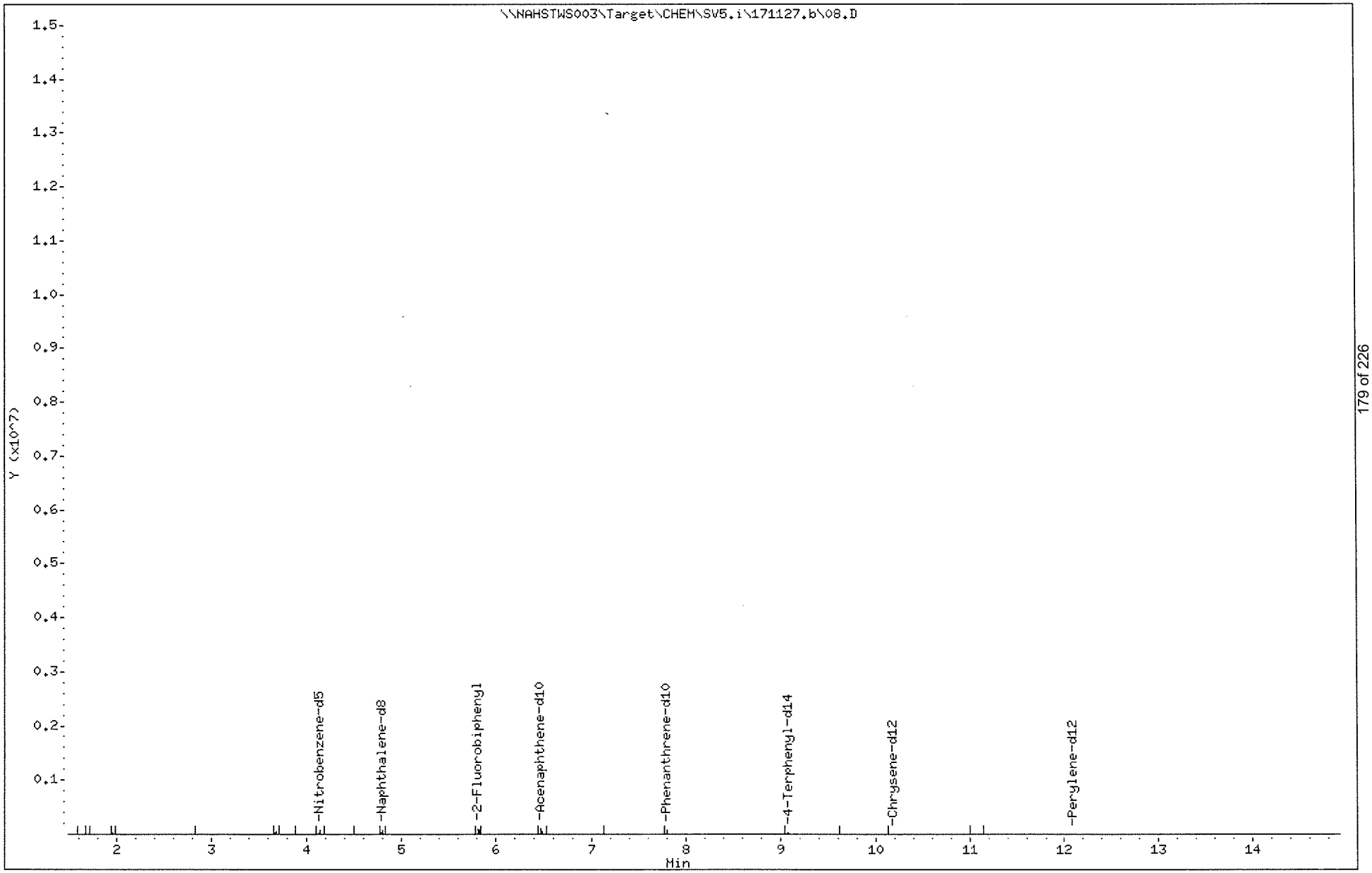
Sample Info: DX-0.2;DX-0.2

Purge Volume: 1000.0

Operator: GY

Column phase: RTX-5SIL MS

Column diameter: 0.28



Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\09.D Page 1
Report Date: 11-Jan-2018 17:38

ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\09.D
Lab Smp Id: DX-0.5 Client Smp ID: DX-0.5
Inj Date : 27-NOV-2017 19:22 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : DX-0.5;DX-0.5
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\DXSIM.m
Meth Date : 11-Jan-2018 15:47 aneir Quant Type: ISTD
Cal Date : 20-NOV-2017 15:12 Cal File: 010.D
Als bottle: 9 Calibration Sample, Level: 8
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (NG)	AMOUNTS ON-COL (NG)
* 45 Naphthalene-d8	136	4.800	4.800	(1.000)	81886	0.10000	
$ 33 Nitrobenzene-d5	82	4.146	4.147	(0.864)	167850	0.50000	0.5057(AM)
* 86 Acenaphthene-d10	164	6.479	6.479	(1.000)	49217	0.10000	
$ 69 2-Fluorobiphenyl	172	5.821	5.825	(0.898)	229568	0.50000	0.5263(A)
* 126 Phenanthrene-d10	188	7.806	7.811	(1.000)	62795	0.10000	
* 182 Chrysene-d12	240	10.191	10.198	(1.000)	23734	0.10000	(M)
$ 158 4-Terphenyl-d14	244	9.097	9.097	(0.893)	135623	0.50000	0.6803(AM)
* 198 Perylene-d12	264	12.114	12.120	(1.000)	11478	0.10000	
1 1,4-Dioxane	58	2.006	2.032	(0.418)	37264	0.50000	0.5492(M)

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\09.D

Date : 27-NOV-2017 19:22

Client ID: DX-0.5

Instrument: SV5.i

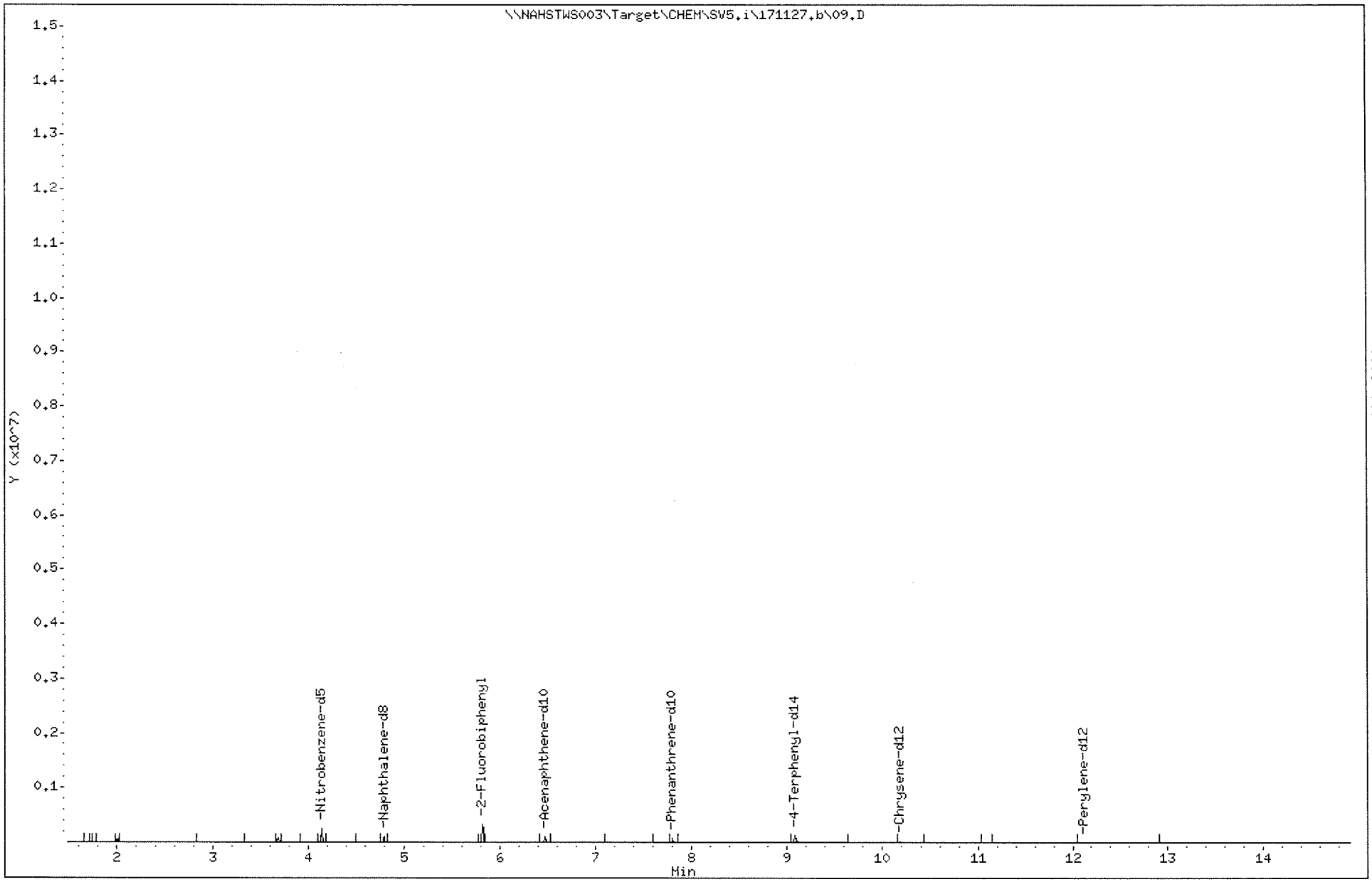
Sample Info: DX-0.5;DX-0.5

Purge Volume: 1000.0

Operator: GY

Column phase: RTX-5SIL MS

Column diameter: 0.28



Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\10.D Page 1
Report Date: 11-Jan-2018 17:38

ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\10.D
Lab Smp Id: DX-ICV Client Smp ID: DX-ICV
Inj Date : 27-NOV-2017 19:42 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : DX-ICV;DX-ICV
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\DXSIM.m
Meth Date : 11-Jan-2018 15:47 aneir Quant Type: ISTD
Cal Date : 20-NOV-2017 15:12 Cal File: 010.D
Als bottle: 10 QC Sample: METHSPIKE
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (NG)	FINAL (ug/L)
* 45 Naphthalene-d8	136	4.800	4.800	(1.000)	39413	0.10000	
$ 33 Nitrobenzene-d5	82	4.146	4.147	(0.864)	13722	0.07304	0.07304 (M)
* 86 Acenaphthene-d10	164	6.480	6.479	(1.000)	18308	0.10000	
$ 69 2-Fluorobiphenyl	172	5.825	5.825	(0.899)	19682	0.12130	0.1213 (R)
* 126 Phenanthrene-d10	188	7.806	7.811	(1.000)	25287	0.10000	
* 182 Chrysene-d12	240	10.184	10.198	(1.000)	7225	0.10000	(M)
$ 158 4-Terphenyl-d14	244	9.086	9.097	(0.892)	5850	0.09553	0.09553 (M)
* 198 Perylene-d12	264	12.098	12.120	(1.000)	3902	0.10000	
1 1,4-Dioxane	58	1.946	2.032	(0.406)	2746	0.08409	0.08408 (aM)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
R - Spike/Surrogate failed recovery limits.
M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171127.b\10.D

Date : 27-NOV-2017 19:42

Client ID: DX-ICV

Instrument: SV5.i

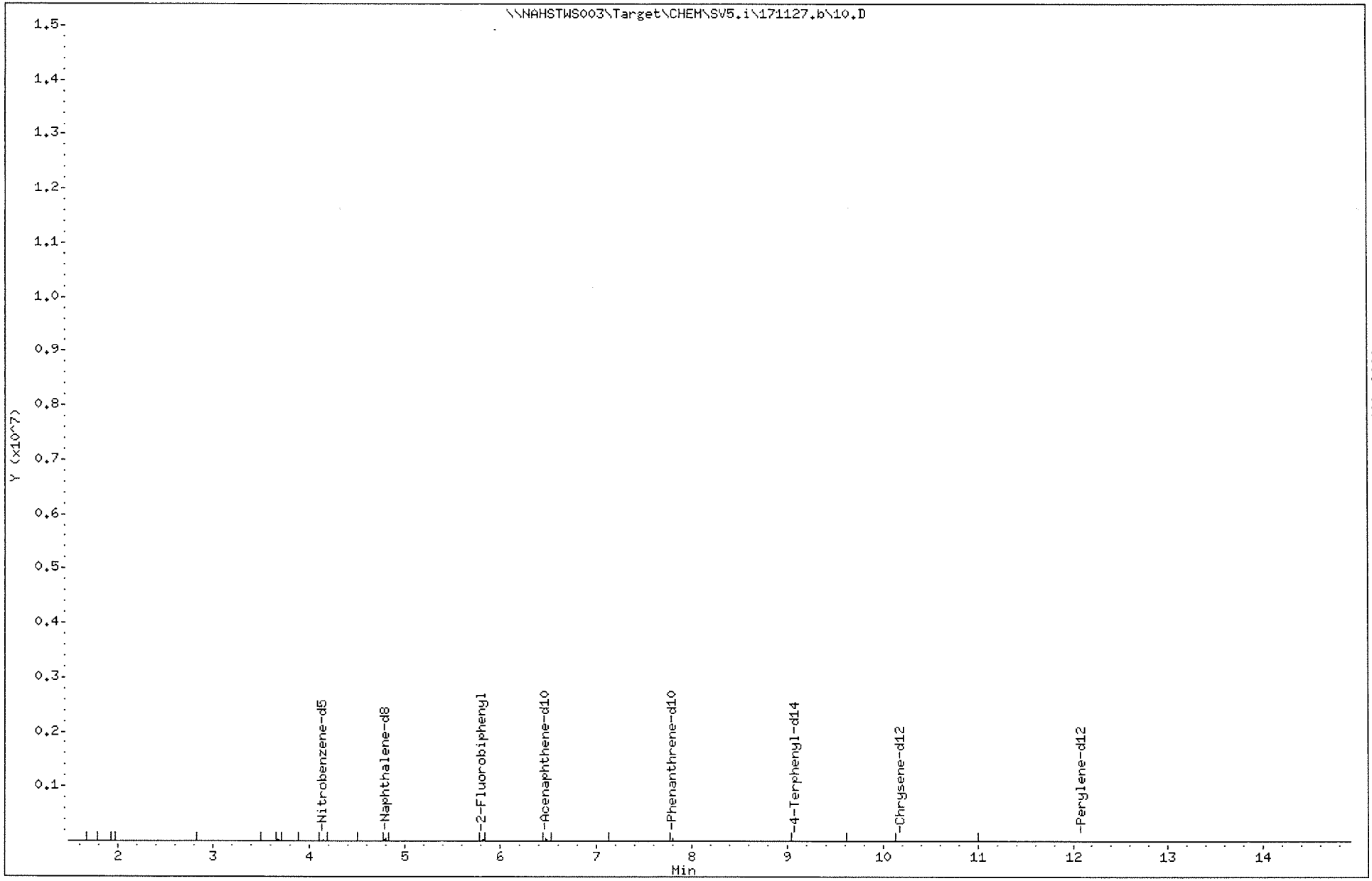
Sample Info: DX-ICV;DX-ICV

Purge Volume: 1000.0

Operator: GY

Column phase: RTX-5SIL MS

Column diameter: 0.28



SV05 -Logbook

Batch: 29858
Date: 12-05-2017
Method: 8270D(SIM)
Comments: MSSV-003(SIM)

Analyst: Andrew Neir
Reviewer:
Laboratory: Houston

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
1	DFTPP	TUNE	12-05-2017 05:18 pm	1.00			01.D		Y	NA
2	DX-0.08	CCV	12-05-2017 05:34 pm	1.00			02.D		Y	NA
3	CCB	SAMP	12-05-2017 06:06 pm	1.00			03.D		Y	NA
4	MBLK-122811	MBLK	12-05-2017 06:27 pm	1.00	1000.00 mL	1.00 mL	04.D	Liquid	Y	NA
5	LCS-122811	LCS	12-05-2017 06:47 pm	1.00	1000.00 mL	1.00 mL	05.D	Liquid	Y	NA
6	MBLK-122922	MBLK	12-05-2017 07:08 pm	1.00	1000.00 mL	1.00 mL	06.D	Liquid	Y	NA
7	LCS-122922	LCS	12-05-2017 07:28 pm	1.00	1000.00 mL	1.00 mL	07.D	Liquid	Y	NA
8	LCSD-122922	LCSD	12-05-2017 07:49 pm	1.00	1000.00 mL	1.00 mL	08.D	Liquid	Y	NA
9	HS17111408-01	SAMP	12-05-2017 08:09 pm	10.00	1000.00 mL	1.00 mL	09.D	Liquid	Y	NA
10	HS17111408-02	SAMP	12-05-2017 08:30 pm	10.00	1000.00 mL	1.00 mL	10.D	Liquid	Y	NA
11	HS17111408-03	SAMP	12-05-2017 08:50 pm	10.00	1000.00 mL	1.00 mL	11.D	Liquid	Y	NA
12	HS17111408-04	SAMP	12-05-2017 09:11 pm	10.00	1000.00 mL	1.00 mL	12.D	Liquid	Y	NA
13	HS17111408-05	SAMP	12-05-2017 09:32 pm	10.00	1000.00 mL	1.00 mL	13.D	Liquid	Y	NA
14	HS17111408-06	SAMP	12-05-2017 09:52 pm	10.00	1000.00 mL	1.00 mL	14.D	Liquid	Y	NA
15	HS17111408-07	SAMP	12-05-2017 10:13 pm	10.00	1000.00 mL	1.00 mL	15.D	Liquid	Y	NA
16	HS17111395-01	SAMP	12-05-2017 10:33 pm	10.00	1000.00 mL	1.00 mL	16.D	Liquid	Y	NA
17	HS17111395-02	SAMP	12-05-2017 10:54 pm	10.00	1000.00 mL	1.00 mL	17.D	Liquid	Y	NA
18	HS17111395-03	SAMP	12-05-2017 11:14 pm	10.00	1000.00 mL	1.00 mL	18.D	Liquid	Y	NA
19	HS17111395-03MS	MS	12-05-2017 11:35 pm	10.00	1000.00 mL	1.00 mL	19.D	Liquid	Y	NA
20	HS17111395-03MSD	MSD	12-05-2017 11:55 pm	10.00	1000.00 mL	1.00 mL	20.D	Liquid	Y	NA
21	HS17120123-01	SAMP	12-06-2017 12:16 am	10.00	1000.00 mL	1.00 mL	21.D	Liquid	Y	NA
22	HS17120123-02	SAMP	12-06-2017 12:36 am	10.00	1000.00 mL	1.00 mL	22.D	Liquid	Y	NA
23	HS17120123-03	SAMP	12-06-2017 12:57 am	10.00	1000.00 mL	1.00 mL	23.D	Liquid	Y	NA
24	HS17120123-04	SAMP	12-06-2017 01:17 am	10.00	1000.00 mL	1.00 mL	24.D	Liquid	Y	NA
25	HS17120123-05	SAMP	12-06-2017 01:38 am	10.00	1000.00 mL	1.00 mL	25.D	Liquid	Y	NA
26	HS17120123-06	SAMP	12-06-2017 01:58 am	10.00	1000.00 mL	1.00 mL	26.D	Liquid	Y	NA
27	HS17120123-07	SAMP	12-06-2017 02:19 am	10.00	1000.00 mL	1.00 mL	27.D	Liquid	Y	NA
28	CCV	SAMP	12-06-2017 02:39 am	1.00	1000.00 mL	1.00 mL	28.D	Liquid	Y	NA

Chemical	Value
IS ID	3041118-01
CAL STD ID	3041117-04
DFTPP ID	29722-96-01
PCP Tailing	0.63
Benz. Tailing	0.84

FORM 3
WATER SEMIVOLATILE METHOD SPIKE RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17120123

Matrix Spike - Sample No.: CCV

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	% REC #	QC. LIMITS REC.
1,4-Dioxane	0.08000	0.08646	108	40-140

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

_____

FORM III SV

FORM 5
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17120123

Lab File ID: 01 DFTPP Injection Date: 12/05/17

Instrument ID: SV5 DFTPP Injection Time: 1705

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	27.3
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	34.2
70	Less than 2.0% of mass 69	0.2 (0.4)1
127	10.0 - 80.0% of mass 198	50.0
197	Less than 2.0% of mass 198	0.9
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	7.2
275	10.0 - 60.0% of mass 198	35.2
365	1.0 - 100.0% of mass 198	5.2
441	Present, but less than mass 443	17.0
442	50.0 - 150.0% of mass 198	105.6
443	15.0 - 24.0% of mass 442	22.5 (21.4)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	DX-0.08	DX-0.08	02	12/05/17	1734
02	MBLK-122922	MBLK-122922	04	12/05/17	1827
03	LCS-122922	LCS-122922	05	12/05/17	1847
04	LCSD-122922	LCSD-122922	06	12/05/17	1908
05	HS17120123-0	HS17120123-01	21	12/06/17	0016
06	HS17120123-0	HS17120123-02	22	12/06/17	0036
07	HS17120123-0	HS17120123-03	23	12/06/17	0057
08	HS17120123-0	HS17120123-04	24	12/06/17	0117
09	HS17120123-0	HS17120123-05	25	12/06/17	0138
10	HS17120123-0	HS17120123-06	26	12/06/17	0158
11	HS17120123-0	HS17120123-07	27	12/06/17	0219
12	CCV	CCV	28	12/06/17	0239
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM 7B
SEMIVOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17120123

Instrument ID: SV5 Calibration Date: 12/05/17 Time: 1734

Lab File ID: 02 Init. Calib. Date(s): 11/27/17 11/27/17

Init. Calib. Times: 1647 1922

GC Column: RTX-5SIL MS ID: 0.28 (mm)

COMPOUND	RRF OR AMOUNT	RRF8e-002 OR AMOUNT	MIN RRF	%D OR %DRIFT	MAX %D OR %DRIFT	CURV TYPE	
1,4-Dioxane	8.3e-002	6.93e-002	0.01	-16.51	20.00	AVRG	
Nitrobenzene-d5	0.4770000	0.4615870	0.01	-3.23	20.00	AVRG	
4-Terphenyl-d14	0.8680000	0.9571811	0.01	10.27	20.00	AVRG	
2-Fluorobiphenyl	0.8860000	1.1235623	0.01	26.81	20.00	AVRG	<-

FORM VII SV

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17120123

Lab File ID (Standard): 02 Date Analyzed: 12/05/17

Instrument ID: SV5 Time Analyzed: 1734

		IS1(NPT) AREA #	RT #	IS2(ANT) AREA #	RT #	IS3(PHN) AREA #	RT #
	12 HOUR STD	103331	4.77	59298	6.44	59842	7.78
	UPPER LIMIT	206662	5.27	118596	6.94	119684	8.28
	LOWER LIMIT	51666	4.27	29649	5.94	29921	7.28
	CLIENT SAMPLE NO.						
01	MBLK-122922	111949	4.77	53643	6.44	67393	7.78
02	LCS-122922	100051	4.77	48052	6.44	62346	7.78
03	LCSD-122922	100998	4.77	48750	6.44	61864	7.78
04	HS17120123-01	106243	4.76	57316	6.44	85611	7.78
05	HS17120123-02	75090	4.77	41359	6.44	60882	7.78
06	HS17120123-03	100934	4.77	56379	6.45	81596	7.78
07	HS17120123-04	95614	4.77	54193	6.45	79196	7.78
08	HS17120123-05	105517	4.77	57955	6.44	84533	7.78
09	HS17120123-06	98438	4.76	53827	6.44	80251	7.78
10	HS17120123-07	99978	4.76	53701	6.44	79136	7.78
11	CCV	75560	4.77	34387	6.44	44167	7.78
12							
13							
14							
15							
16							
17							
18							
19							
20							

IS1 (NPT) = Naphthalene-d8
IS2 (ANT) = Acenaphthene-d10
IS3 (PHN) = Phenanthrene-d10

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

FORM 8
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS17120123

Lab File ID (Standard): 02 Date Analyzed: 12/05/17

Instrument ID: SV5 Time Analyzed: 1734

		IS4(CRY) AREA #	RT #	IS5(PRY) AREA #	RT #	AREA #	RT #
	12 HOUR STD	24627	10.16	11531	12.06		
	UPPER LIMIT	49254	10.66	23062	12.56		
	LOWER LIMIT	12314	9.66	5766	11.56		
	CLIENT SAMPLE NO.						
01	MBLK-122922	31422	10.16	19452	12.06		
02	LCS-122922	30956	10.14	17879	12.04		
03	LCSD-122922	31356	10.16	19145	12.06		
04	HS17120123-01	43664	10.14	20151	12.04		
05	HS17120123-02	24739	10.14	20355	12.04		
06	HS17120123-03	43958	10.16	21783	12.06		
07	HS17120123-04	45011	10.16	21867	12.06		
08	HS17120123-05	47411	10.15	22569	12.06		
09	HS17120123-06	35963	10.14	19352	12.04		
10	HS17120123-07	38796	10.14	21763	12.04		
11	CCV	17283	10.15	9865	12.06		
12							
13							
14							
15							
16							
17							
18							
19							
20							

IS4 (CRY) = Chrysene-d12
IS5 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

FORM VIII SV

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\01.D

Date : 05-DEC-2017 17:05

Client ID: DFTPP

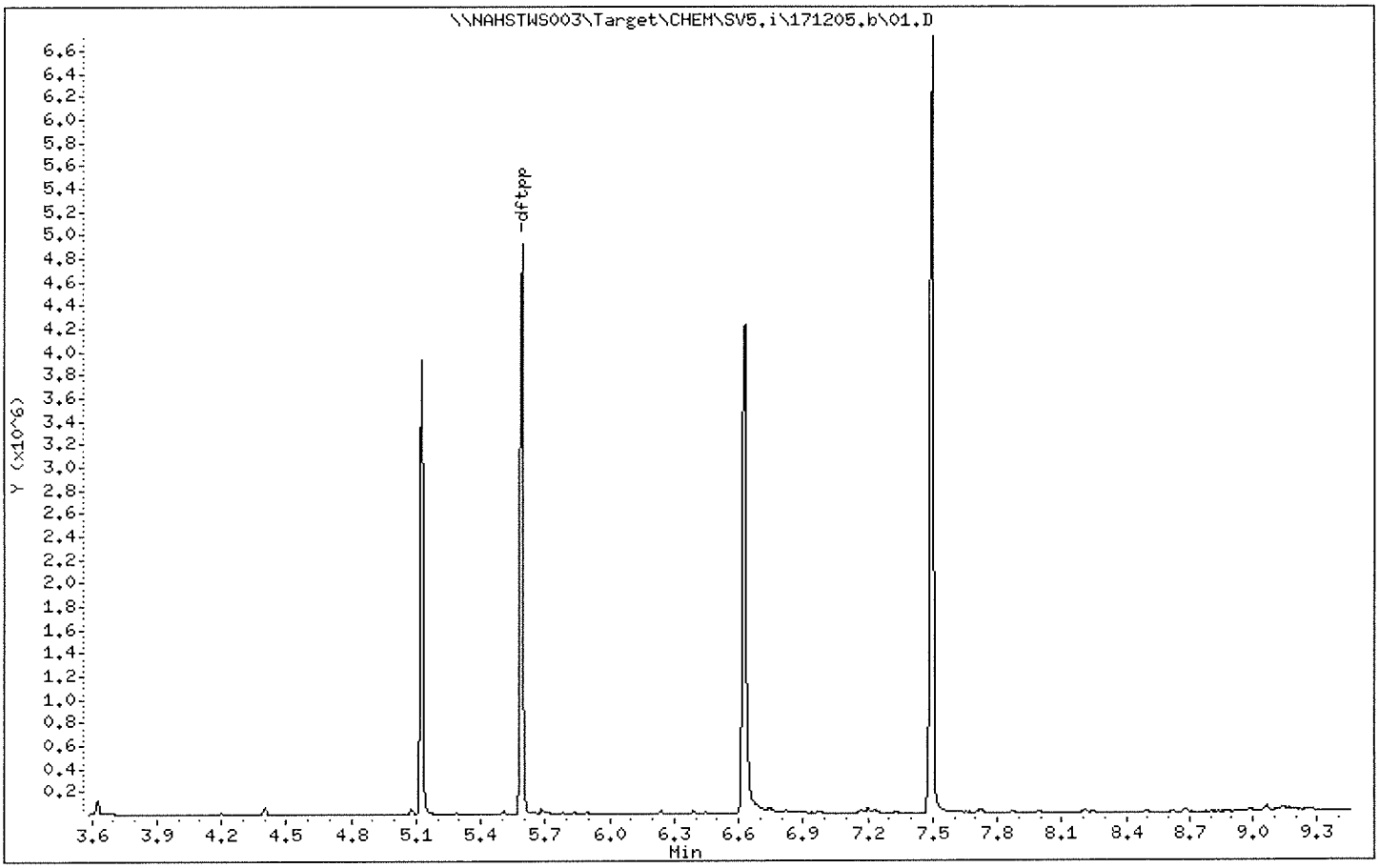
Instrument: SV5.i

Sample Info: DFTPP;DFTPP;3;;DFTPP

Operator: GY

Column phase: DB-5MS

Column diameter: 0.25



Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\01.D

Date : 05-DEC-2017 17:05

Client ID: DFTPP

Instrument: SV5.i

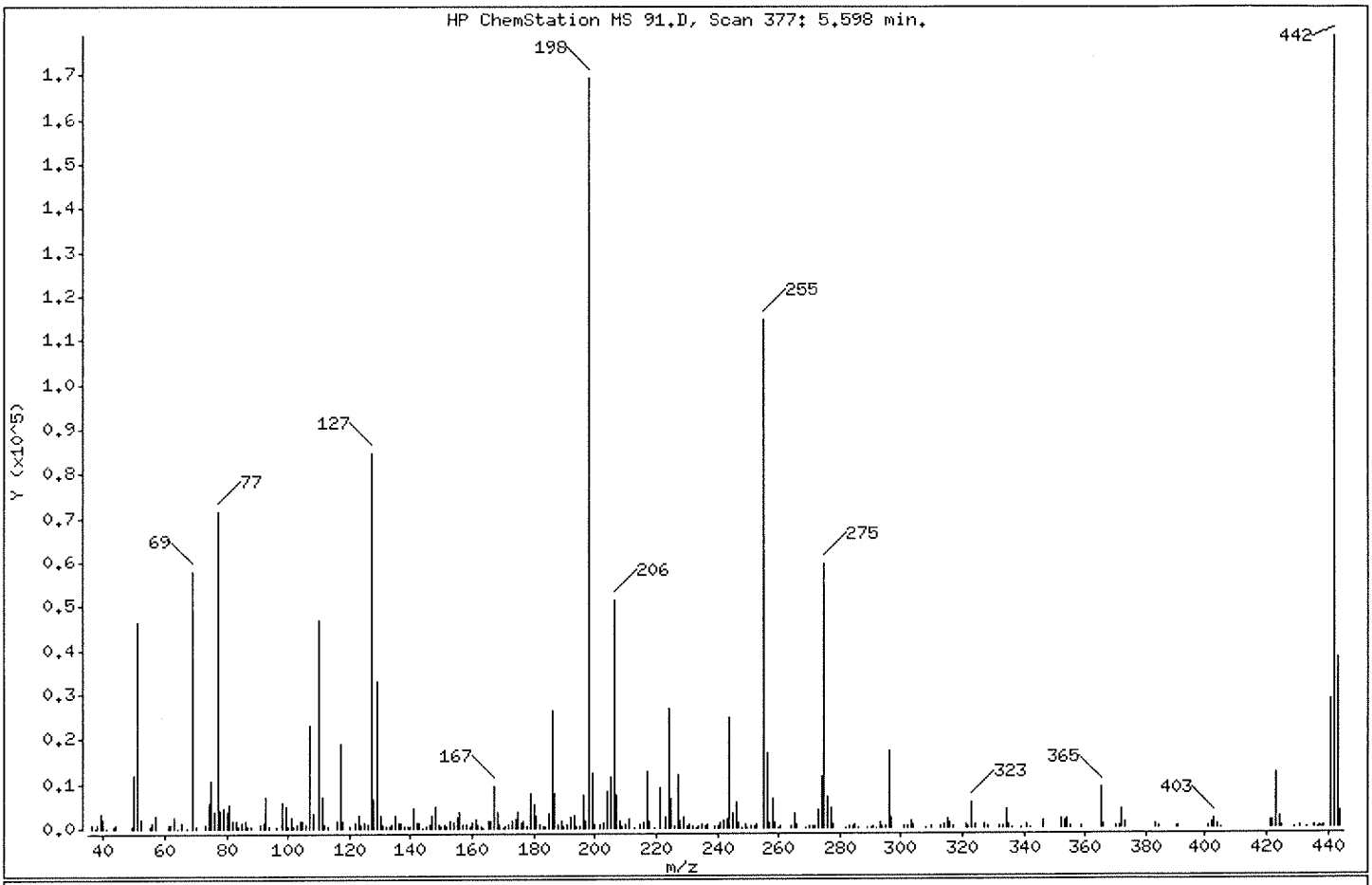
Sample Info: DFTPP;DFTPP;3;;DFTPP

Operator: GY

Column phase: DB-5MS

Column diameter: 0.25

1 dftpp



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
198	Base Peak, 100% relative abundance	100.00
51	10.00 - 80.00% of mass 198	27.34
68	Less than 2.00% of mass 69	0.00 (0.00)
69	Mass 69 relative abundance	34.23
70	Less than 2.00% of mass 69	0.15 (0.45)
127	10.00 - 80.00% of mass 198	50.04
197	Less than 2.00% of mass 198	0.93
199	5.00 - 9.00% of mass 198	7.19
275	10.00 - 60.00% of mass 198	35.21
365	1.00 - 100.00% of mass 198	5.23
441	Present, but less than mass 443	16.97
442	50.00 - 150.00% of mass 198	105.59
443	15.00 - 24.00% of mass 442	22.55 (21.35)

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\01.D

Date : 05-DEC-2017 17:05

Client ID: DFTPP

Instrument: SV5.i

Sample Info: DFTPP;DFTPP;3;;DFTPP

Operator: GY

Column phase: DB-5MS

Column diameter: 0.25

Data File: 01.D
Spectrum: HP ChemStation MS 91.D, Scan 377: 5.598 min.
Location of Maximum: 442.00
Number of points: 290

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	1017	132.00	350	204.10	8100	291.90	184
37.10	150	133.10	278	205.10	11333	293.00	1157
38.00	815	134.00	986	206.10	51584	294.10	461
39.10	3128	135.00	2897	207.10	7594	295.00	404
40.00	2192	136.10	1316	208.00	1714	296.10	17440
40.90	186	137.00	1118	209.00	424	297.00	2332
43.10	241	138.00	233	210.10	760	301.00	358
44.00	654	138.90	266	211.10	1993	301.90	416
49.00	492	139.90	484	212.90	195	303.10	1729
50.10	11746	141.00	4393	214.90	650	304.00	656
51.10	46304	142.00	1173	216.10	1077	308.10	184
52.10	2135	143.00	1304	216.90	12701	310.20	361
55.10	265	144.00	188	217.90	1570	313.00	273
56.00	1383	144.80	424	219.20	186	314.10	891
57.00	3004	146.00	937	221.00	9059	315.00	2117
61.00	891	147.00	2766	222.90	2599	316.00	1109
62.00	852	148.00	4964	224.00	26864	317.10	244
63.00	2512	149.00	839	225.00	6628	321.10	724
64.00	171	150.10	345	225.90	486	322.10	326
65.10	1378	151.20	754	227.00	11985	323.10	5615
67.10	151	151.80	442	228.00	1586	324.00	814
69.00	57968	153.00	1796	228.90	2397	326.90	887
70.00	258	154.00	1190	229.90	388	328.10	424
73.00	974	155.00	2545	230.90	686	332.00	554
74.10	5619	156.00	3809	232.00	361	333.10	537
75.00	10750	157.00	646	232.90	200	334.10	4256
76.10	3863	158.00	764	233.90	510	335.10	924
77.10	71416	159.10	514	235.00	741	336.00	205
78.10	4307	160.00	1293	236.00	547	339.10	197
79.10	4343	161.10	2034	236.90	689	341.10	780
80.00	3728	162.00	634	239.00	533	342.00	164
81.00	5139	162.90	345	240.10	391	346.10	1512
82.00	1484	163.80	179	241.10	1062	352.00	2075
83.00	1625	165.10	1834	242.10	1717	353.10	1439
83.90	266	166.10	1617	243.10	2088	354.10	2082

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\01.D

Date : 05-DEC-2017 17:05

Client ID: DFTPP

Instrument: SV5.i

Sample Info: DFTPP;DFTPP;3;;DFTPP

Operator: GY

Column phase: DB-5MS

Column diameter: 0.25

Data File: 01.D
Spectrum: HP ChemStation MS 91.D, Scan 377: 5.598 min.
Location of Maximum: 442.00
Number of points: 290

m/z	Y	m/z	Y	m/z	Y	m/z	Y
85.00	1169	167.00	9384	244.10	24616	355.00	338
85.90	1550	168.10	3575	245.10	3109	359.00	316
87.00	585	169.10	697	246.00	5944	365.00	8859
87.90	278	169.90	186	247.10	1137	366.00	763
91.00	895	170.90	412	248.00	201	370.10	324
92.00	1177	172.10	692	249.00	751	371.00	522
93.00	6991	173.00	1484	250.10	193	372.10	3913
93.90	600	174.10	1895	250.90	322	372.90	1036
96.20	401	175.10	3708	252.20	239	383.00	1020
98.00	5800	176.00	1192	252.90	660	384.20	312
99.00	4771	176.90	1607	255.10	114520	390.10	613
100.00	389	178.10	594	256.10	16696	390.70	185
100.90	2435	179.00	8012	257.00	1347	391.10	274
101.90	220	180.00	5141	258.00	6650	401.10	410
102.90	1011	181.00	2708	259.00	1219	402.10	1399
103.90	1462	182.00	622	260.00	182	403.00	1900
104.90	1551	182.90	223	260.80	275	403.90	780
106.00	657	183.10	225	264.00	267	405.10	157
107.00	22960	184.00	498	265.10	3338	421.10	1620
108.00	3112	185.00	3245	266.00	761	422.00	1550
110.00	46848	186.10	26504	268.90	166	423.10	12328
111.00	7120	187.00	7708	270.00	303	424.00	2308
111.90	740	188.10	788	271.10	448	424.90	428
112.90	437	189.00	1642	271.90	349	428.90	172
116.10	1560	189.80	299	273.00	4069	430.90	227
117.00	18744	190.80	715	274.10	11427	433.00	186
118.00	1573	191.10	634	275.10	59632	435.70	275
120.10	379	192.00	2657	276.10	7082	436.50	162
122.00	1404	193.00	2686	277.00	4537	436.80	187
123.00	2718	194.10	555	278.00	884	437.50	226
123.90	996	195.00	446	281.90	158	438.00	163
124.90	1265	196.10	7324	282.90	412	438.70	223
125.90	701	196.80	1582	284.10	592	441.00	28736
127.00	84736	198.00	169344	285.10	973	442.00	178816
128.00	6739	199.00	12181	286.10	152	443.00	38184

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\01.D

Date : 05-DEC-2017 17:05

Client ID: DFTPP

Instrument: SV5.i

Sample Info: DFTPP;DFTPP;3;;DFTPP

Operator: GY

Column phase: DB-5MS

Column diameter: 0.25

Data File: 01.D
Spectrum: HP ChemStation MS 91.D, Scan 377: 5.598 min.
Location of Maximum: 442.00
Number of points: 290

m/z	Y	m/z	Y	m/z	Y	m/z	Y
129.00	33040	200.00	927	289.00	200	444.00	3517
130.00	2928	201.50	918	290.00	188		
131.10	695	203.00	1361	290.90	228		

ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\02.D
Lab Smp Id: DX-0.08 Client Smp ID: DX-0.08
Inj Date : 05-DEC-2017 17:34 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : DX-0.08;DX-0.08
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\DXSIM.m
Meth Date : 11-Jan-2018 17:48 SV5.i Quant Type: ISTD
Cal Date : 27-NOV-2017 19:22 Cal File: 09.D
Als bottle: 2 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (NG)	ON-COL (NG)
* 45 Naphthalene-d8	136	4.767	4.767	(1.000)	103331	0.10000	
$ 33 Nitrobenzene-d5	82	4.114	4.114	(0.863)	38157	0.08000	0.07739
* 86 Acenaphthene-d10	164	6.442	6.442	(1.000)	59298	0.10000	(M)
$ 69 2-Fluorobiphenyl	172	5.788	5.788	(0.898)	53300	0.08000	0.1014(M)
* 126 Phenanthrene-d10	188	7.779	7.779	(1.000)	59842	0.10000	
* 182 Chrysene-d12	240	10.156	10.156	(1.000)	24627	0.10000	(M)
$ 158 4-Terphenyl-d14	244	9.065	9.065	(0.893)	18858	0.08000	0.08820(M)
* 198 Perylene-d12	264	12.055	12.055	(1.000)	11531	0.10000	
1 1,4-Dioxane	58	2.009	2.009	(0.421)	5728	0.08000	0.06690(aM)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.

00911995

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\02.D

Date : 05-DEC-2017 17:34

Client ID: DX-0.08

Instrument: SV5.i

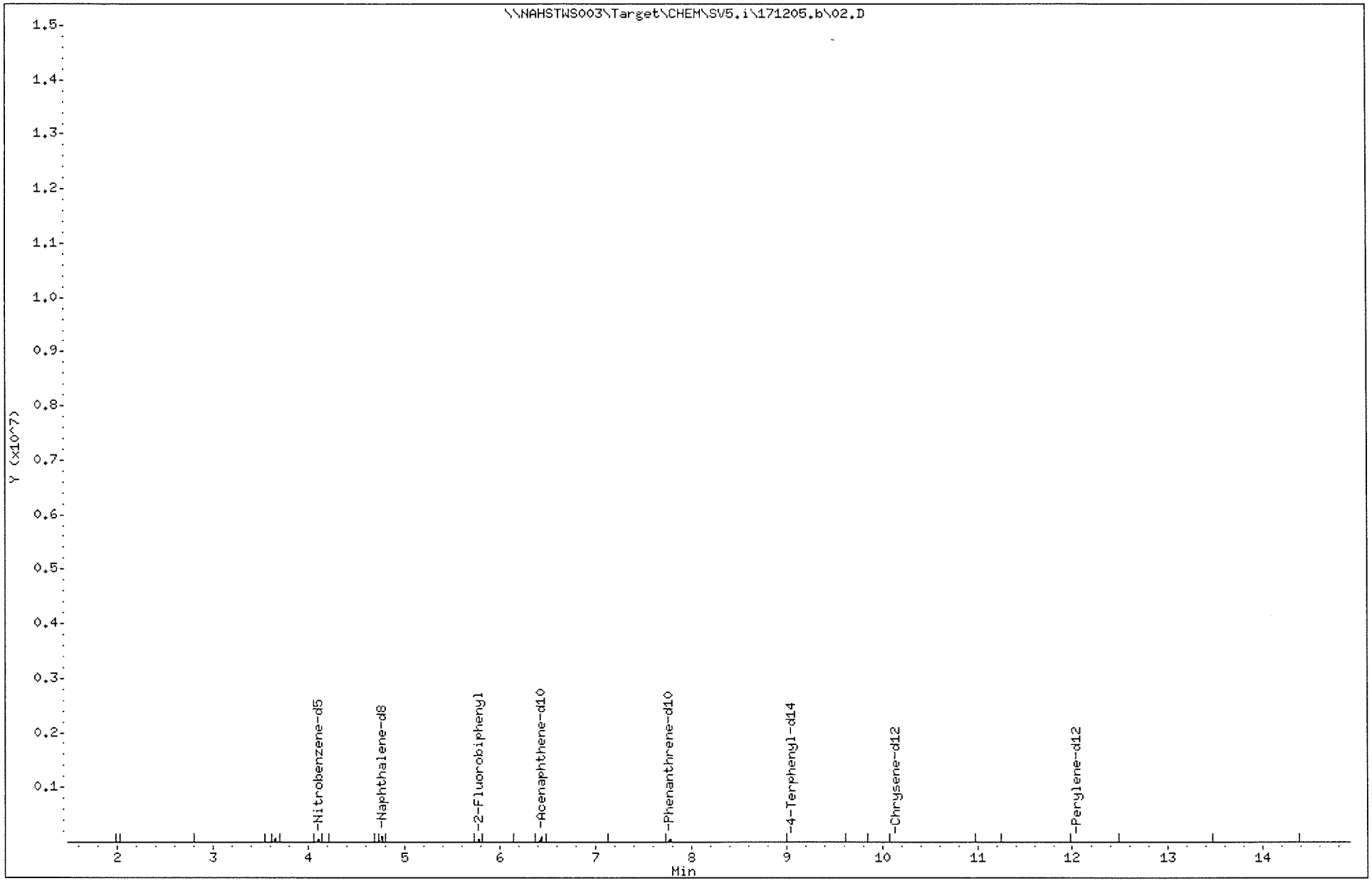
Sample Info: DX-0.08;DX-0.08

Purge Volume: 1000.0

Operator: GY

Column phase: RTX-5SIL MS

Column diameter: 0.28



ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\04.D
Lab Smp Id: MBLK-122922 Client Smp ID: MBLK-122922
Inj Date : 05-DEC-2017 18:27 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : MBLK-122922;MBLK-122922;3;;BLANK
Misc Info : HS17111408;1;0;1
Comment :
Method : \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\DXSIM.m
Meth Date : 11-Jan-2018 17:48 SV5.i Quant Type: ISTD
Cal Date : 27-NOV-2017 19:22 Cal File: 09.D
Als bottle: 4 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

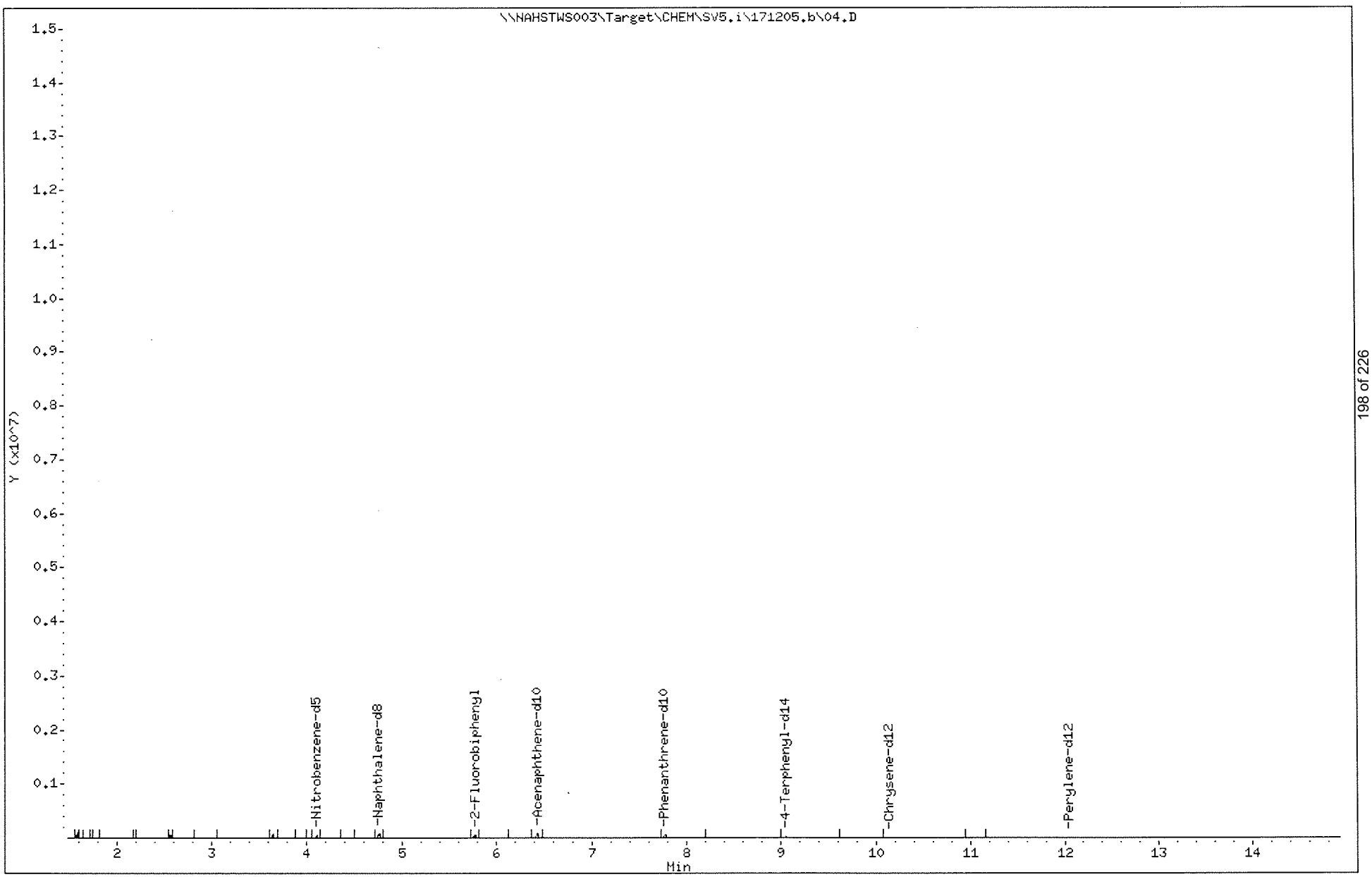
Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (NG)	FINAL (ug/L)
* 45 Naphthalene-d8	136	4.767	4.767	(1.000)	111949	0.10000	
$ 33 Nitrobenzene-d5	82	4.114	4.114	(0.863)	35876	0.06716	0.06716
* 86 Acenaphthene-d10	164	6.442	6.442	(1.000)	53643	0.10000	
$ 69 2-Fluorobiphenyl	172	5.788	5.788	(0.898)	54962	0.11560	0.1156 (RM)
* 126 Phenanthrene-d10	188	7.779	7.779	(1.000)	67393	0.10000	
* 182 Chrysene-d12	240	10.156	10.156	(1.000)	31422	0.10000	(M)
$ 158 4-Terphenyl-d14	244	9.059	9.065	(0.892)	26367	0.09665	0.09665 (M)
* 198 Perylene-d12	264	12.055	12.055	(1.000)	19452	0.10000	(M)

QC Flag Legend

R - Spike/Surrogate failed recovery limits.
M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\04.D
Date : 05-DEC-2017 18:27
Client ID: MBLK-122922
Instrument: SV5.i
Sample Info: MBLK-122922;MBLK-122922;3;;BLANK
Purge Volume: 1000.0
Operator: GY
Column phase: RTX-5SIL MS
Column diameter: 0.28



Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\05.D
Report Date: 11-Jan-2018 17:49

ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\05.D
Lab Smp Id: LCS-122922 Client Smp ID: LCS-122922
Inj Date : 05-DEC-2017 18:47 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : LCS-122811;LCS-122811;3;;LCS
Misc Info : HS17111408;1;0;1
Comment :
Method : \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\DXSIM.m
Meth Date : 11-Jan-2018 17:48 SV5.i Quant Type: ISTD
Cal Date : 27-NOV-2017 19:22 Cal File: 09.D
Als bottle: 5 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (NG)	FINAL (ug/L)
* 45 Naphthalene-d8	136	4.767	4.767	(1.000)	100051	0.10000	
$ 33 Nitrobenzene-d5	82	4.114	4.114	(0.863)	33448	0.07006	0.07006
* 86 Acenaphthene-d10	164	6.442	6.442	(1.000)	48052	0.10000	
$ 69 2-Fluorobiphenyl	172	5.788	5.788	(0.898)	52706	0.12376	0.1238(R)
* 126 Phenanthrene-d10	188	7.779	7.779	(1.000)	62346	0.10000	
* 182 Chrysene-d12	240	10.142	10.156	(1.000)	30956	0.10000	(M)
$ 158 4-Terphenyl-d14	244	9.054	9.065	(0.893)	26458	0.09844	0.09844(M)
* 198 Perylene-d12	264	12.039	12.055	(1.000)	17879	0.10000	(M)
1 1,4-Dioxane	58	2.012	2.009	(0.422)	6852	0.08265	0.08265(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
R - Spike/Surrogate failed recovery limits.
M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\05.D

Date : 05-DEC-2017 18:47

Client ID: LCS-122922

Instrument: SV5.i

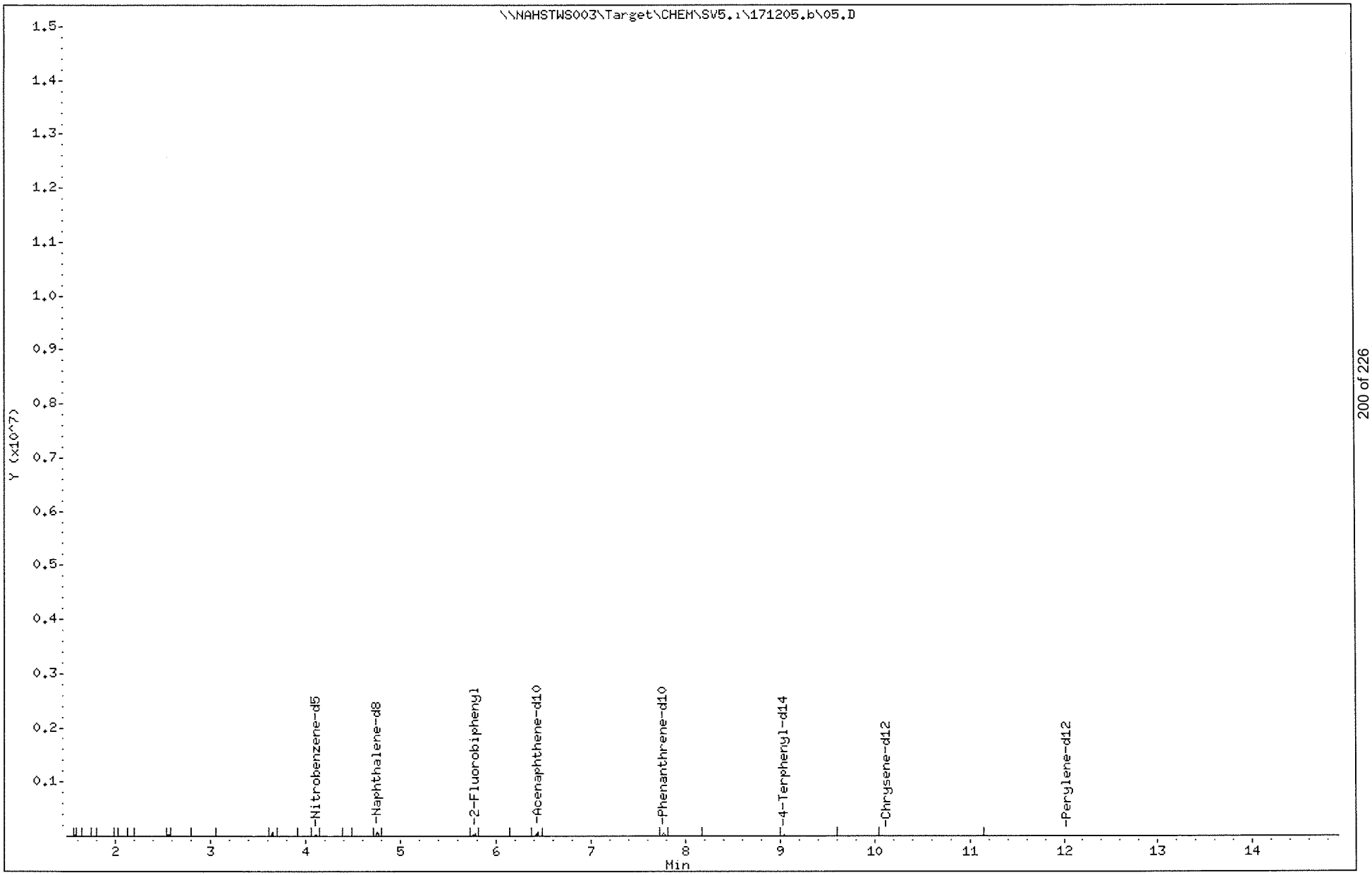
Sample Info: LCS-122811;LCS-122811;3;;LCS

Purge Volume: 1000.0

Operator: GY

Column phase: RTX-5SIL MS

Column diameter: 0.28



ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\06.D
Lab Smp Id: LCSD-122922 Client Smp ID: LCSD-122922
Inj Date : 05-DEC-2017 19:08 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : LCSD-122922;LCSD-122922
Misc Info : HS17120123;1;0;1
Comment :
Method : \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\DXSIM.m
Meth Date : 11-Jan-2018 17:48 SV5.i Quant Type: ISTD
Cal Date : 27-NOV-2017 19:22 Cal File: 09.D
Als bottle: 6 QC Sample: LCSD
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (NG)	FINAL (ug/L)
* 45 Naphthalene-d8	136	4.767	4.767	(1.000)	100998	0.10000	
$ 33 Nitrobenzene-d5	82	4.114	4.114	(0.863)	34604	0.07180	0.07180
* 86 Acenaphthene-d10	164	6.442	6.442	(1.000)	48750	0.10000	
$ 69 2-Fluorobiphenyl	172	5.788	5.788	(0.898)	44387	0.10273	0.1027(M)
* 126 Phenanthrene-d10	188	7.779	7.779	(1.000)	61864	0.10000	
* 182 Chrysene-d12	240	10.156	10.156	(1.000)	31356	0.10000	(M)
$ 158 4-Terphenyl-d14	244	9.059	9.065	(0.892)	29392	0.10796	0.1080(M)
* 198 Perylene-d12	264	12.055	12.055	(1.000)	19145	0.10000	(M)
1 1,4-Dioxane	58	2.014	2.009	(0.423)	7323	0.08751	0.08750(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.

ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\21.D
Lab Smp Id: HS17120123-01 Client Smp ID: HS17120123-01
Inj Date : 06-DEC-2017 00:16 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : HS17120123-01;HS17120123-01
Misc Info : HS17120123;1;0;10
Comment :
Method : \\nahstws003\Target\chem\SV5.i\171205.b\DXSIM.m
Meth Date : 11-Jan-2018 17:48 SV5.i Quant Type: ISTD
Cal Date : 27-NOV-2017 19:22 Cal File: 09.D
Als bottle: 21
Dil Factor: 10.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14
Processing Host: NAHSTWS003

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	10.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (NG)	FINAL (ug/L)	
* 45 Naphthalene-d8	136	4.763	4.767	(1.000)	106243	0.10000		(M)
$ 33 Nitrobenzene-d5	82	4.114	4.114	(0.864)	3012	0.00594	0.05941	(M)
* 86 Acenaphthene-d10	164	6.442	6.442	(1.000)	57316	0.10000		
$ 69 2-Fluorobiphenyl	172	5.788	5.788	(0.898)	5030	0.00990	0.09902	
* 126 Phenanthrene-d10	188	7.779	7.779	(1.000)	85611	0.10000		
* 182 Chrysene-d12	240	10.142	10.156	(1.000)	43664	0.10000		(M)
$ 158 4-Terphenyl-d14	244	9.054	9.065	(0.893)	2728	0.00720	0.07196	(M)
* 198 Perylene-d12	264	12.039	12.055	(1.000)	20151	0.10000		(M)
1 1,4-Dioxane	58	1.914	2.009	(1.000)	4696	0.05334	0.5334	(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\06.D

Date : 05-DEC-2017 19:08

Client ID: LCSD-122922

Instrument: SV5.i

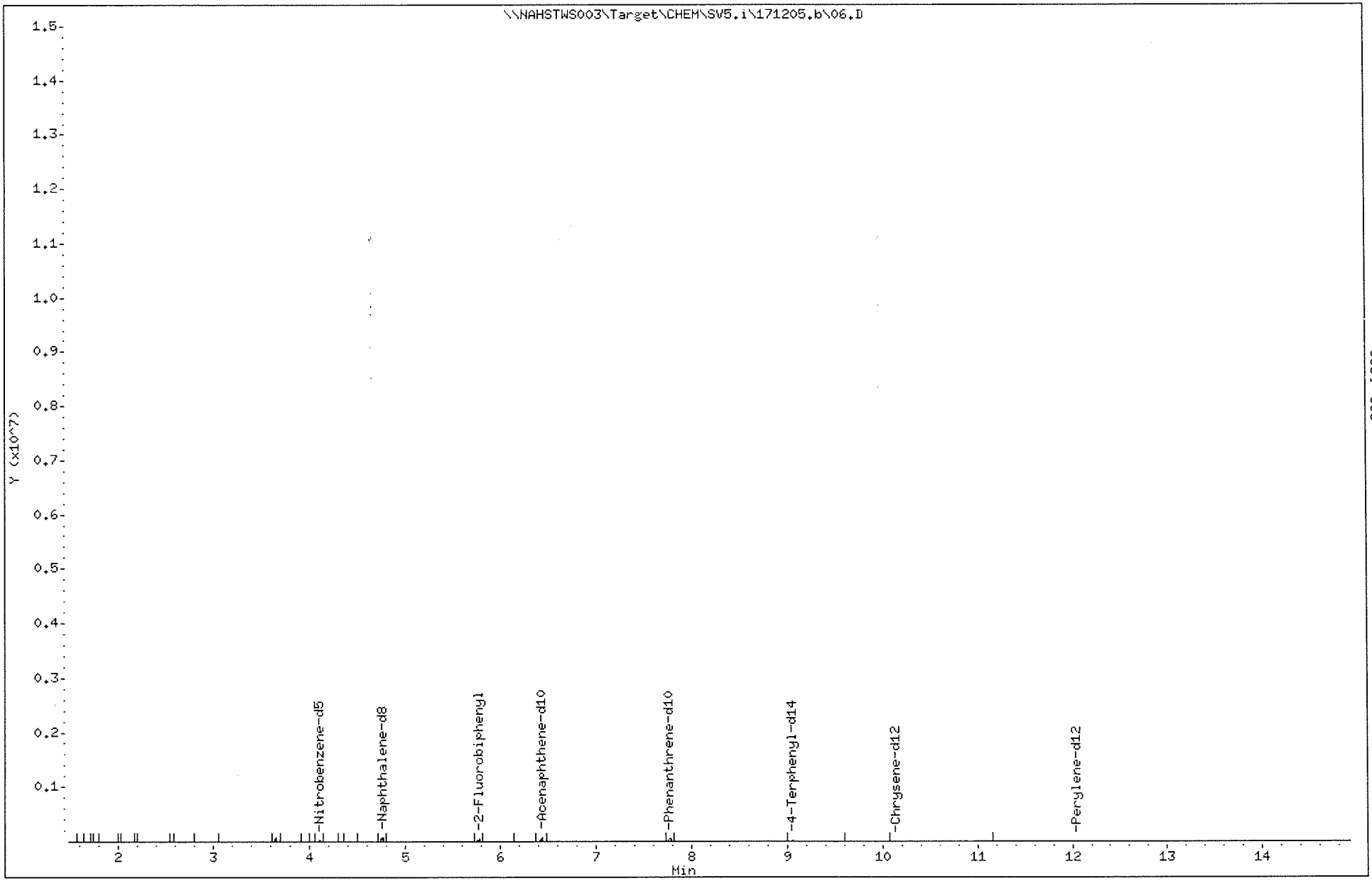
Sample Info: LCSD-122922;LCSD-122922

Purge Volume: 1000.0

Operator: GY

Column phase: RTX-5SIL MS

Column diameter: 0.28



00912003

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\21.D

Page 2

Date : 06-DEC-2017 00:16

Client ID: HS17120123-01

Instrument: SV5.i

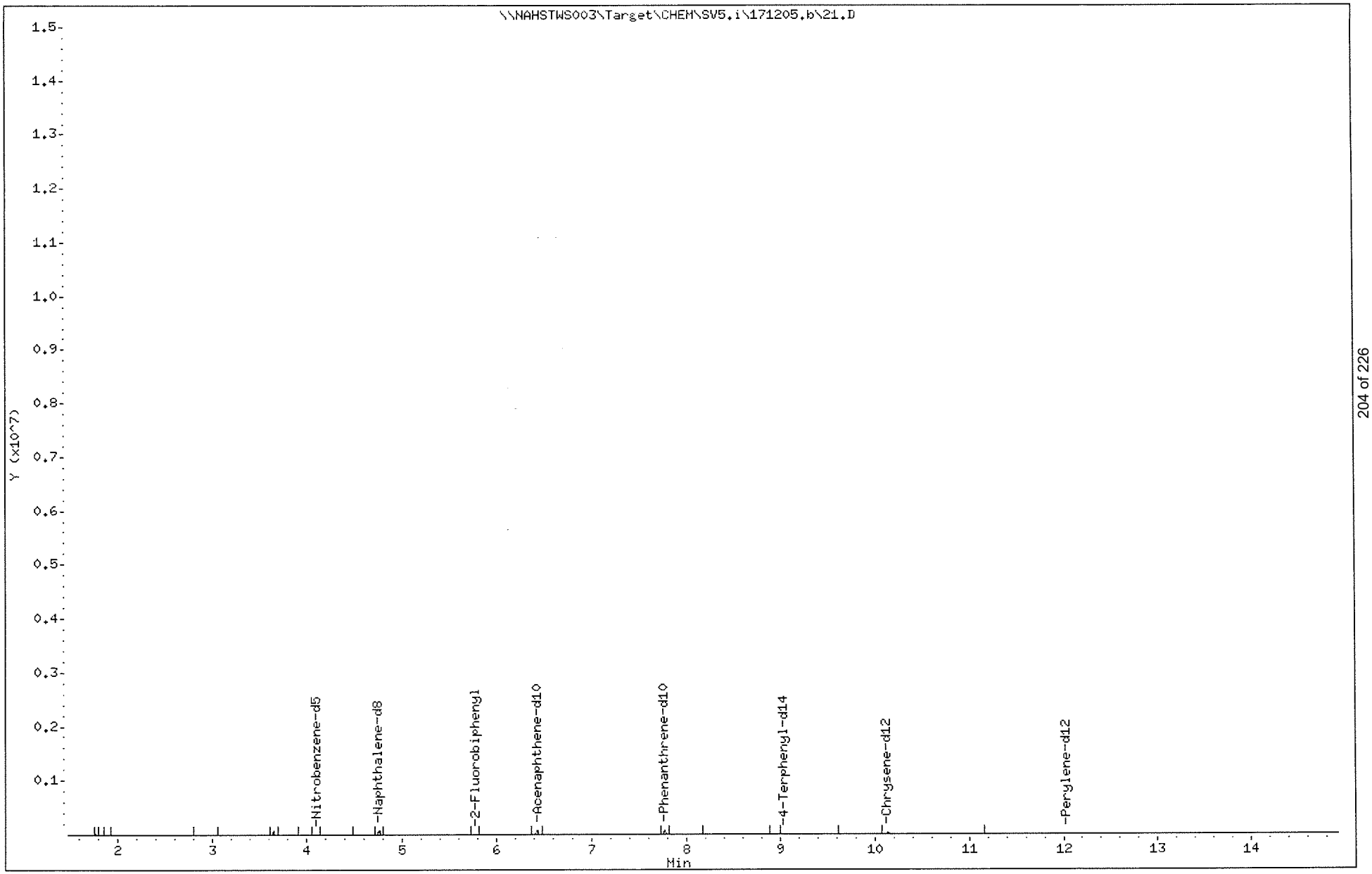
Sample Info: HS17120123-01;HS17120123-01

Purge Volume: 1000.0

Operator: GY

Column phase: RTX-5SIL MS

Column diameter: 0.28



Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\21.D

Date : 06-DEC-2017 00:16

Client ID: HS17120123-01

Instrument: SV5.i

Sample Info: HS17120123-01;HS17120123-01

Purge Volume: 1000.0

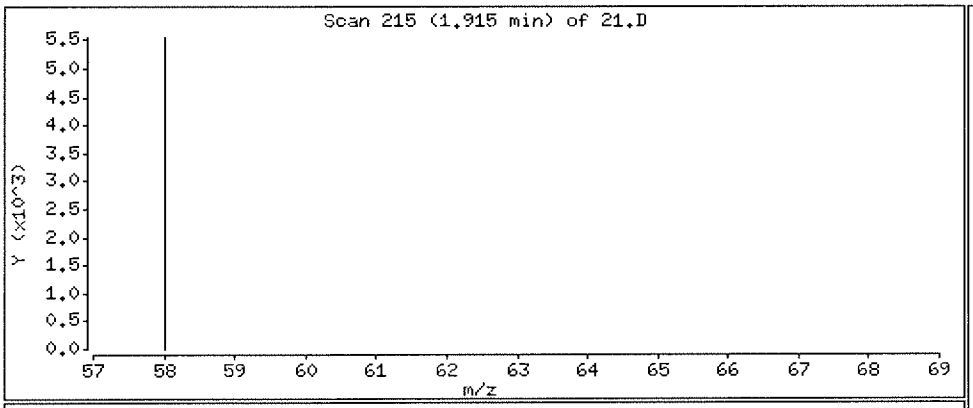
Operator: GY

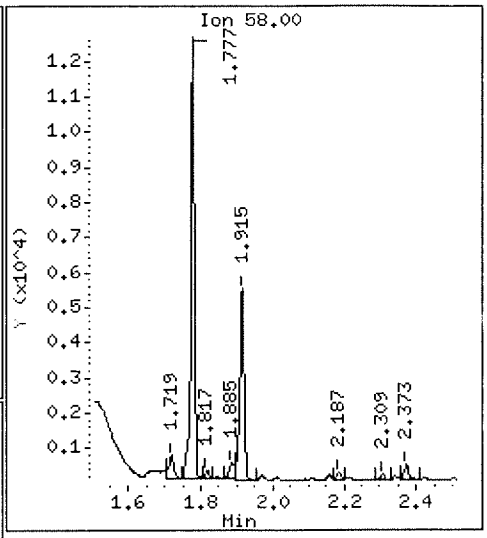
Column phase: RTX-5SIL MS

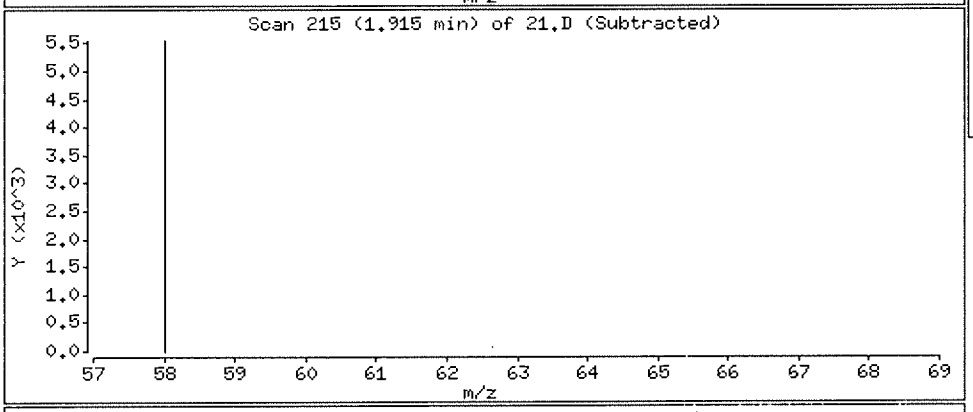
Column diameter: 0.28

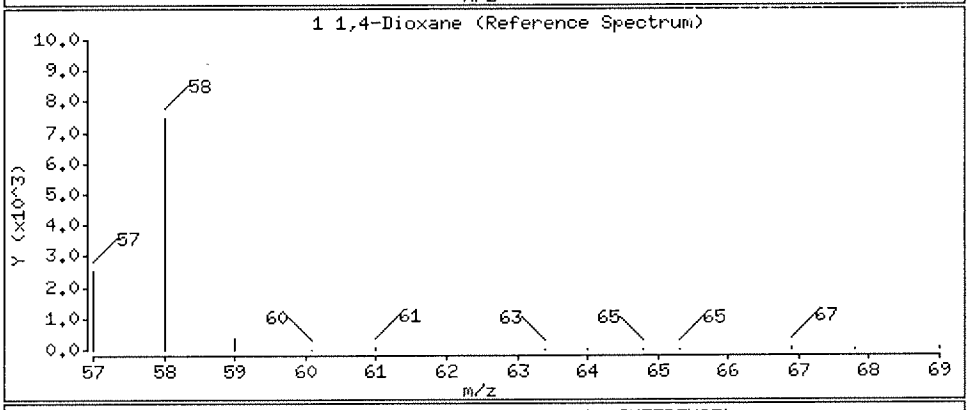
1 1,4-Dioxane

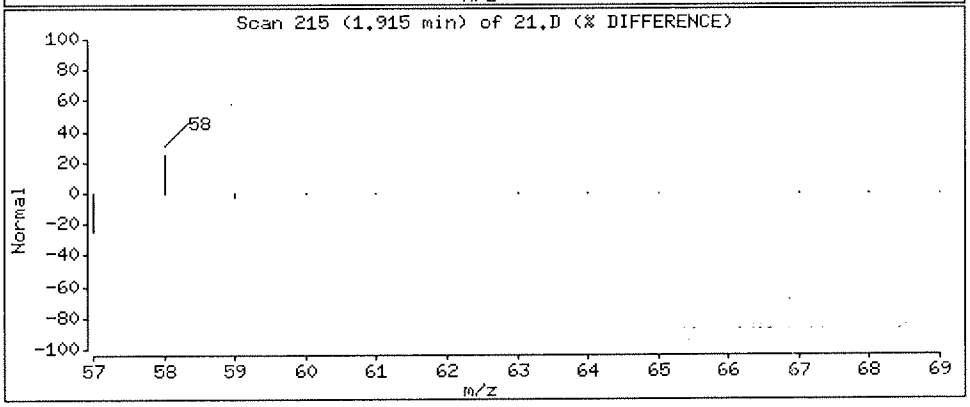
Concentration: 0.5334 ug/L











ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\22.D
Lab Smp Id: HS17120123-02 Client Smp ID: HS17120123-02
Inj Date : 06-DEC-2017 00:36 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : HS17120123-02;HS17120123-02
Misc Info : HS17120123;1;0;10
Comment :
Method : \\nahstws003\Target\chem\SV5.i\171205.b\DXSIM.m
Meth Date : 11-Jan-2018 17:48 SV5.i Quant Type: ISTD
Cal Date : 27-NOV-2017 19:22 Cal File: 09.D
Als bottle: 22
Dil Factor: 10.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14
Processing Host: NAHSTWS003

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	10.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (NG)	CONCENTRATIONS FINAL (ug/L)
* 45 Naphthalene-d8	136	4.767	4.767	(1.000)	75099	0.10000	(M)
$ 33 Nitrobenzene-d5	82	4.114	4.114	(0.863)	2188	0.00611	0.06107(M)
* 86 Acenaphthene-d10	164	6.442	6.442	(1.000)	41359	0.10000	
$ 69 2-Fluorobiphenyl	172	5.788	5.788	(0.898)	3633	0.00991	0.09911(M)
* 126 Phenanthrene-d10	188	7.779	7.779	(1.000)	60882	0.10000	
* 182 Chrysene-d12	240	10.142	10.156	(1.000)	24739	0.10000	(M)
$ 158 4-Terphenyl-d14	244	9.054	9.065	(0.893)	1702	0.00792	0.07924(M)
* 198 Perylene-d12	264	12.039	12.055	(1.000)	20355	0.10000	
1 1,4-Dioxane	58	1.898	2.009	(1.000)	10227	0.16437	1.644(aH)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\22.D

Date : 06-DEC-2017 00:36

Client ID: HS17120123-02

Instrument: SV5.i

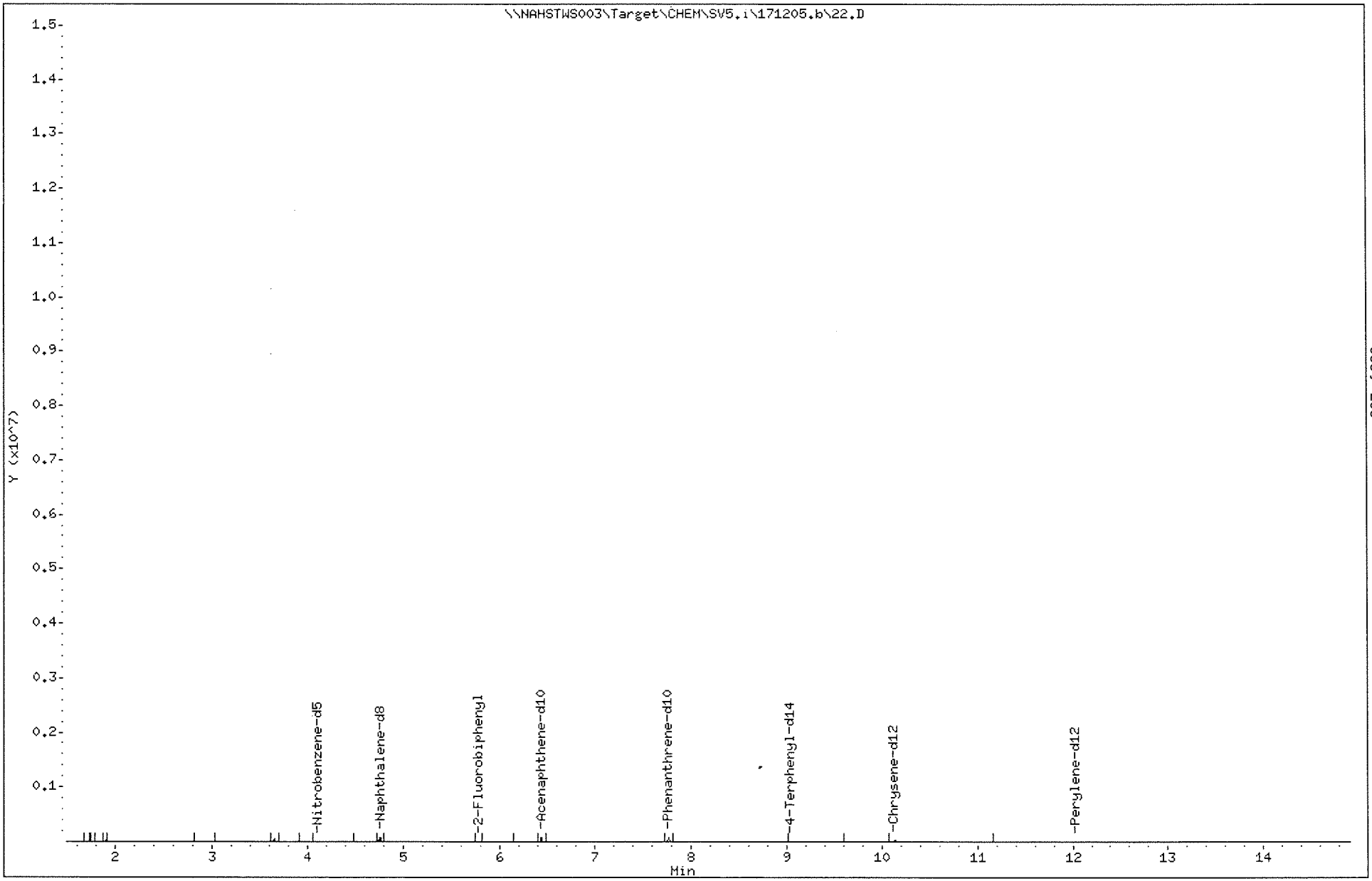
Sample Info: HS17120123-02;HS17120123-02

Purge Volume: 1000.0

Operator: GY

Column phase: RTX-5SIL MS

Column diameter: 0.28



Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\22.D

Date : 06-DEC-2017 00:36

Client ID: HS17120123-02

Instrument: SV5.i

Sample Info: HS17120123-02;HS17120123-02

Purge Volume: 1000.0

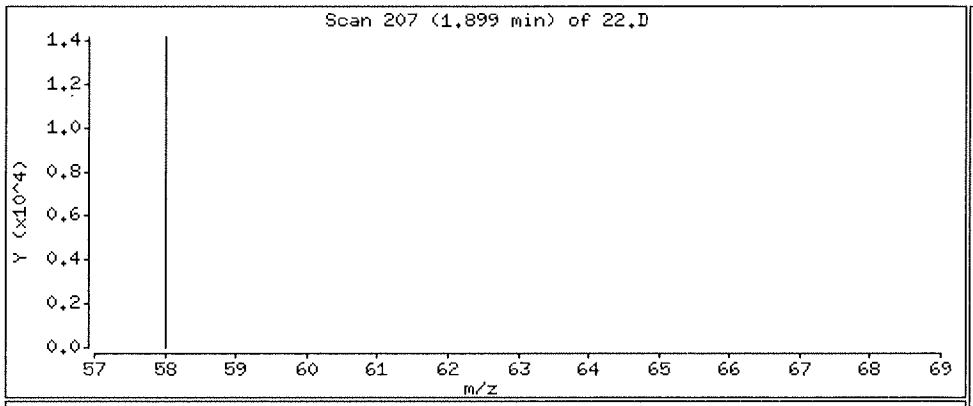
Operator: GY

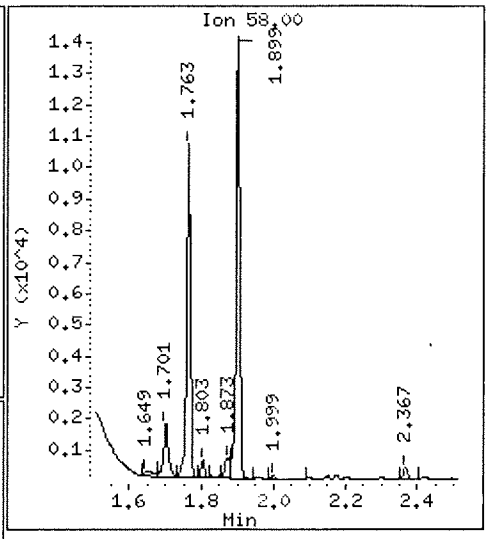
Column phase: RTX-5SIL MS

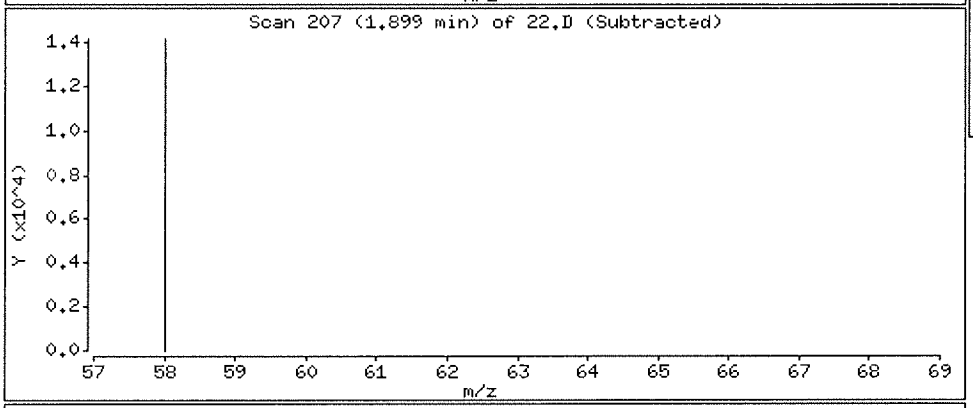
Column diameter: 0.28

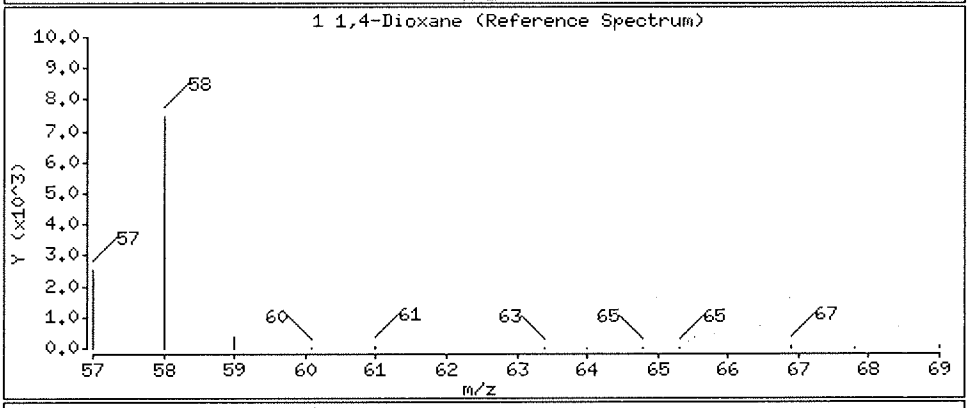
1 1,4-Dioxane

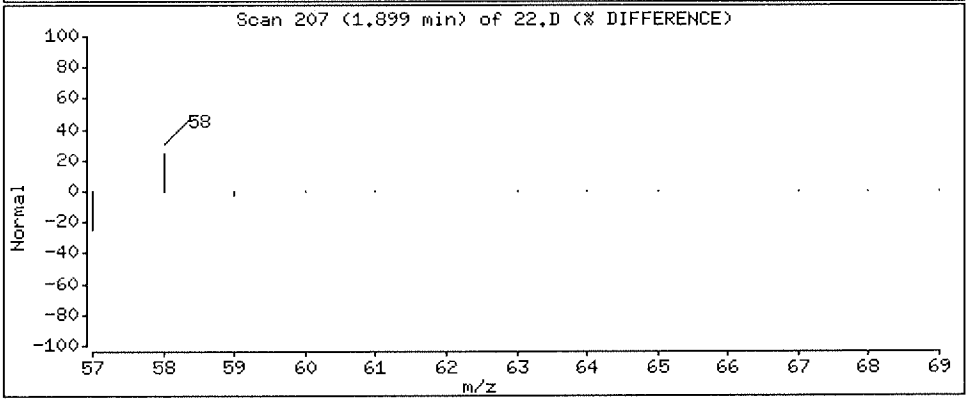
Concentration: 1.644 ug/L











ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\23.D
Lab Smp Id: HS17120123-03 Client Smp ID: HS17120123-03
Inj Date : 06-DEC-2017 00:57 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : HS17120123-03;HS17120123-03
Misc Info : HS17120123;1;0;10
Comment :
Method : \\nahstws003\Target\chem\SV5.i\171205.b\DXSIM.m
Meth Date : 11-Jan-2018 17:48 SV5.i Quant Type: ISTD
Cal Date : 27-NOV-2017 19:22 Cal File: 09.D
Als bottle: 23
Dil Factor: 10.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14
Processing Host: NAHSTWS003

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	10.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (NG)	FINAL (ug/L)	
* 45 Naphthalene-d8	136	4.767	4.767	(1.000)	100934	0.10000		(M)
$ 33 Nitrobenzene-d5	82	4.114	4.114	(0.863)	2678	0.00556	0.05560	(M)
* 86 Acenaphthene-d10	164	6.448	6.442	(1.000)	56379	0.10000		
$ 69 2-Fluorobiphenyl	172	5.788	5.788	(0.898)	4[illegible]	0.00940	0.093[illegible]	
* 126 Phenanthrene-d10	188	7.779	7.779	(1.000)	81596	0.10000		
* 182 Chrysene-d12	240	10.156	10.156	(1.000)	43958	0.10000		(M)
$ 158 4-Terphenyl-d14	244	9.065	9.065	(0.893)	2363	0.00619	0.06191	(M)
* 198 Perylene-d12	264	12.061	12.055	(1.000)	21783	0.10000		(M)

QC Flag Legend

M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\23.D

Date : 06-DEC-2017 00:57

Client ID: HS17120123-03

Instrument: SV5.i

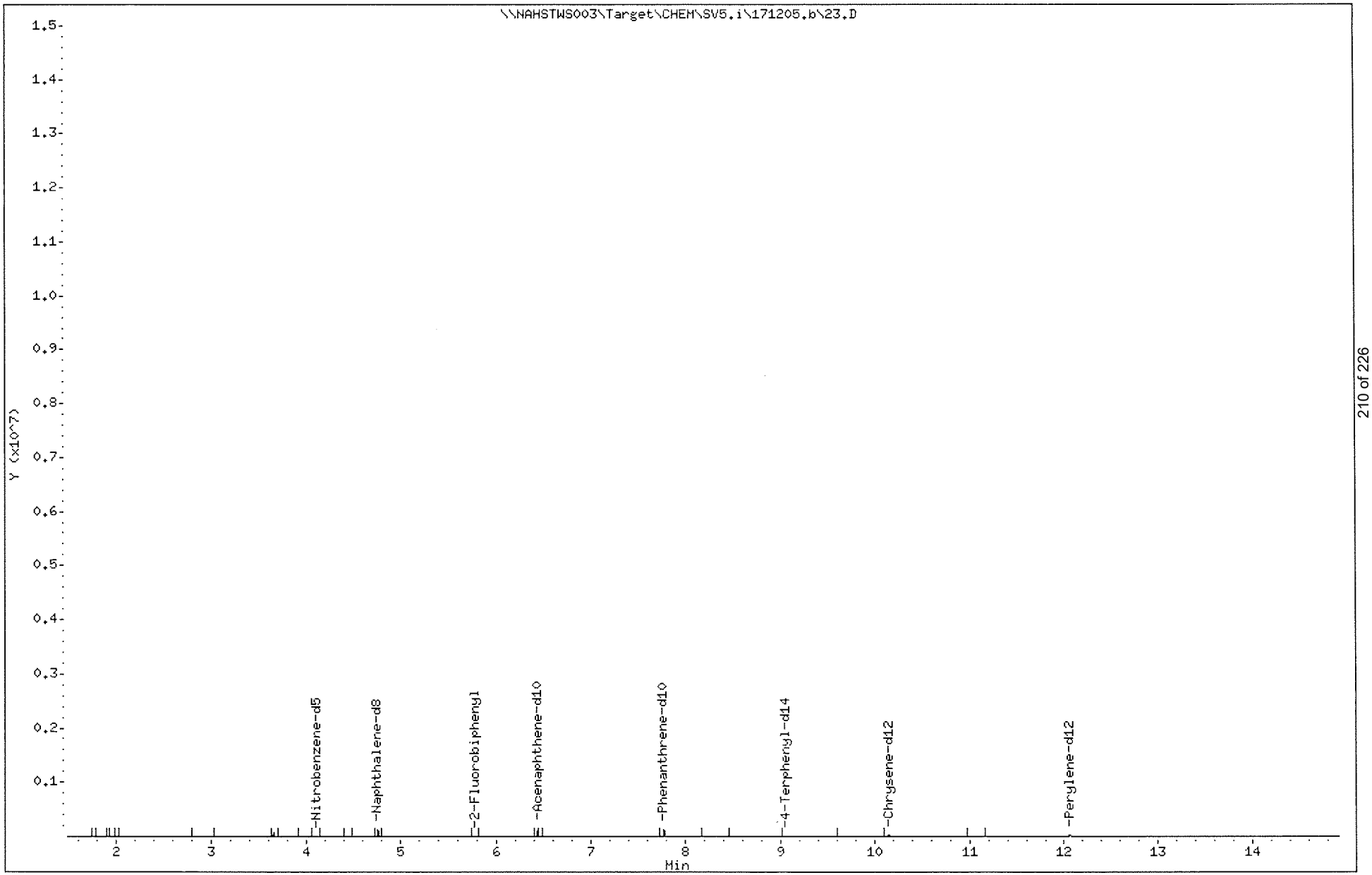
Sample Info: HS17120123-03;HS17120123-03

Purge Volume: 1000.0

Operator: GY

Column phase: RTX-5SIL MS

Column diameter: 0.28



Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\23.D

Date : 06-DEC-2017 00:57

Client ID: HS17120123-03

Instrument: SV5.i

Sample Info: HS17120123-03;HS17120123-03

Purge Volume: 1000.0

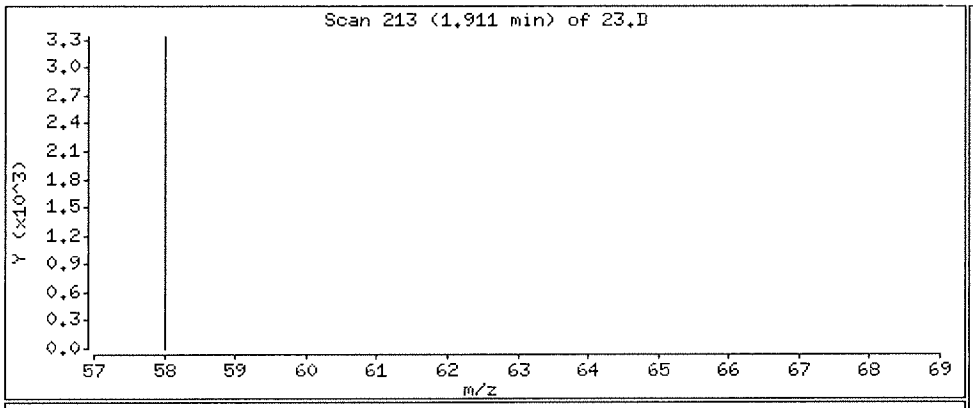
Operator: GY

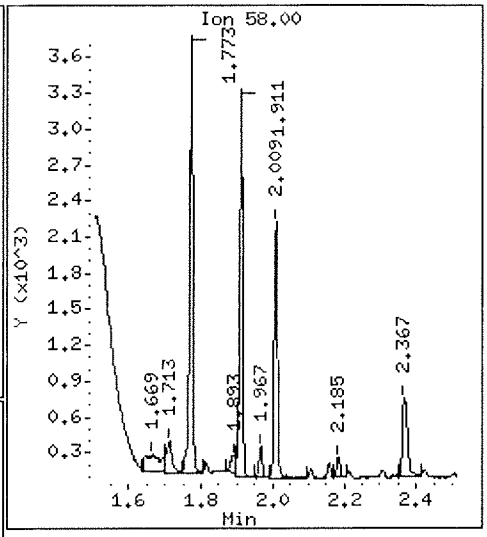
Column phase: RTX-5SIL MS

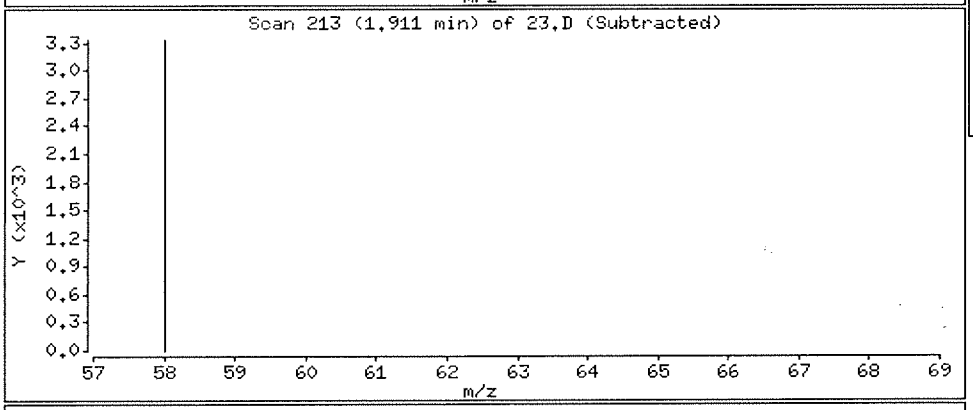
Column diameter: 0.28

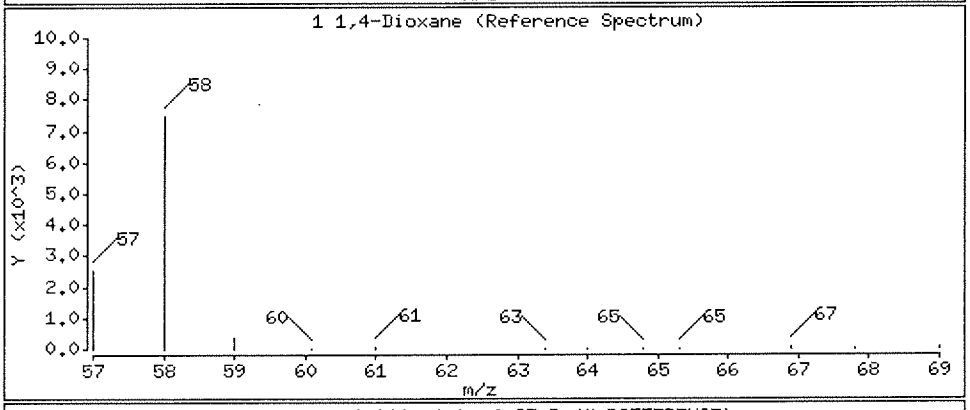
1 1,4-Dioxane

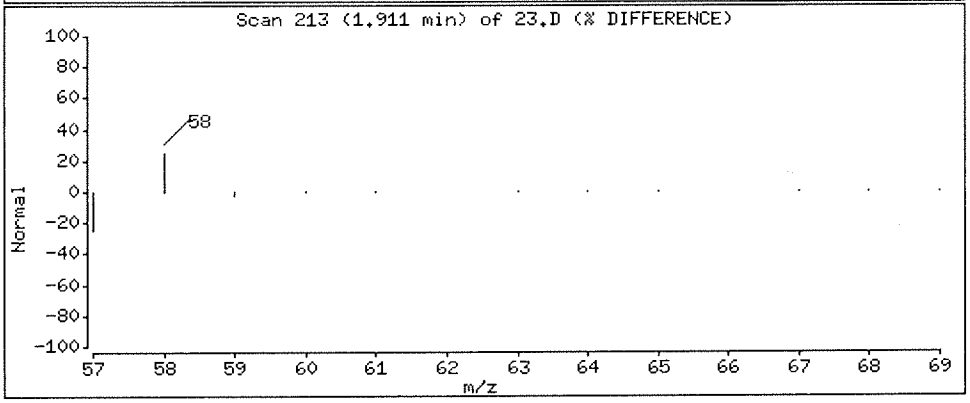
Concentration: 0.2345 ug/L











ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\24.D
Lab Smp Id: HS17120123-04 Client Smp ID: HS17120123-04
Inj Date : 06-DEC-2017 01:17 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : HS17120123-04;HS17120123-04
Misc Info : HS17120123;1;0;10
Comment :
Method : \\nahstws003\Target\chem\SV5.i\171205.b\DXSIM.m
Meth Date : 11-Jan-2018 17:48 SV5.i Quant Type: ISTD
Cal Date : 27-NOV-2017 19:22 Cal File: 09.D
Als bottle: 24
Dil Factor: 10.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14
Processing Host: NAHSTWS003

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	10.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (NG)	FINAL (ug/L)
* 45 Naphthalene-d8	136	4.767	4.767	(1.000)	95614	0.10000	
$ 33 Nitrobenzene-d5	82	4.120	4.114	(0.864)	2495	0.00547	0.05469(M)
* 86 Acenaphthene-d10	164	6.448	6.442	(1.000)	54193	0.10000	
$ 69 2-Fluorobiphenyl	172	5.788	5.788	(0.898)	4089	0.00851	0.08513
* 126 Phenanthrene-d10	188	7.779	7.779	(1.000)	79196	0.10000	
* 182 Chrysene-d12	240	10.156	10.156	(1.000)	45011	0.10000	(M)
$ 158 4-Terphenyl-d14	244	9.065	9.065	(0.893)	2454	0.00628	0.06280(M)
* 198 Perylene-d12	264	12.061	12.055	(1.000)	21867	0.10000	(M)
1 1,4-Dioxane	58	2.007	2.009	(0.421)	28163	0.35548	3.555

QC Flag Legend

M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\24.D

Date : 06-DEC-2017 01:17

Client ID: HS17120123-04

Instrument: SV5.i

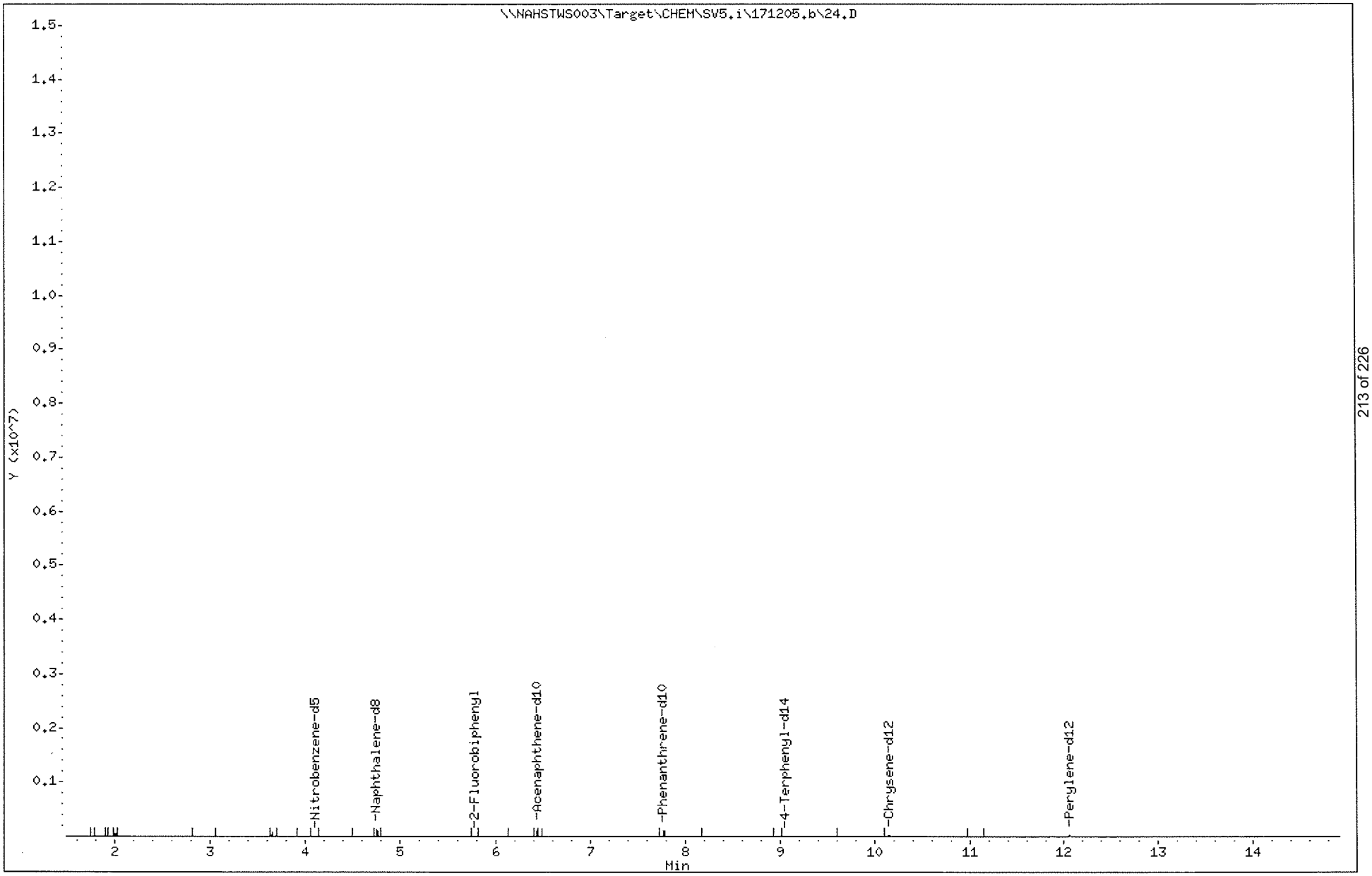
Sample Info: HS17120123-04;HS17120123-04

Purge Volume: 1000.0

Operator: GY

Column phase: RTX-5SIL MS

Column diameter: 0.28



Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\24.D

Date : 06-DEC-2017 01:17

Client ID: HS17120123-04

Instrument: SV5.i

Sample Info: HS17120123-04;HS17120123-04

Purge Volume: 1000.0

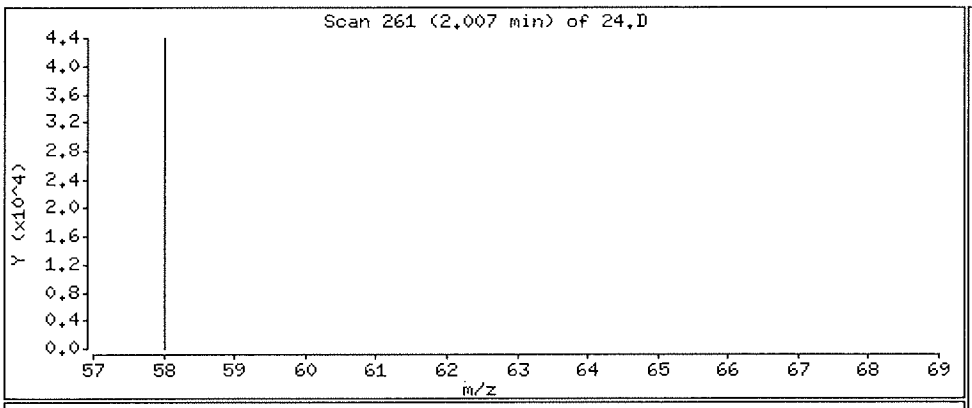
Operator: GY

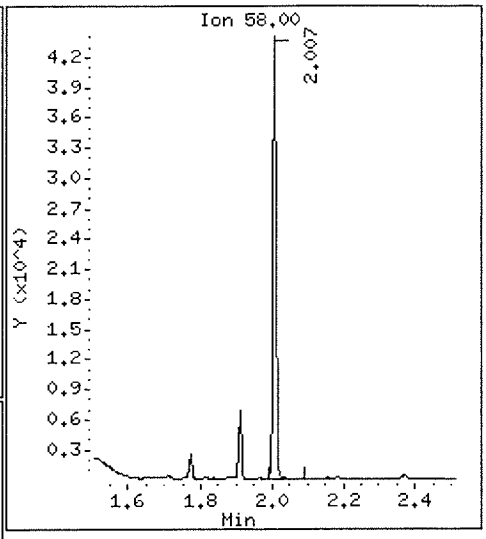
Column phase: RTX-5SIL MS

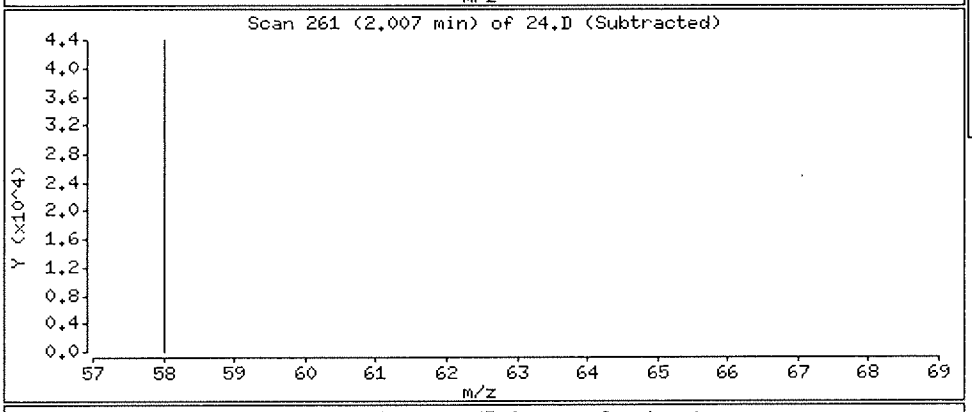
Column diameter: 0.28

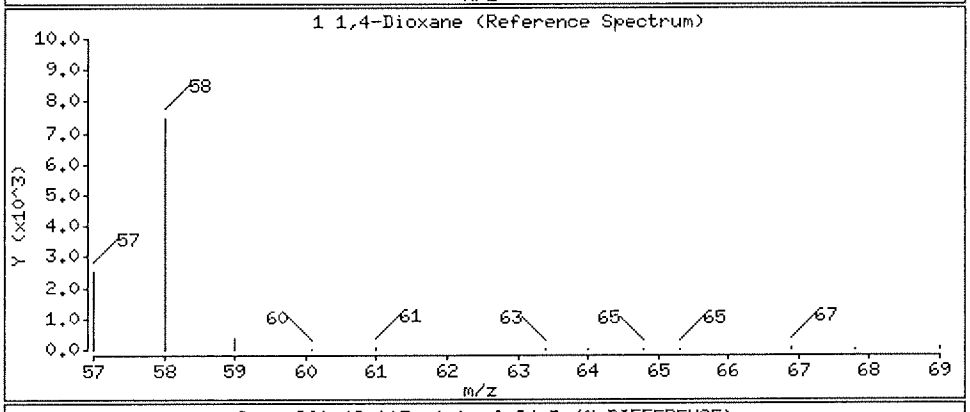
1 1,4-Dioxane

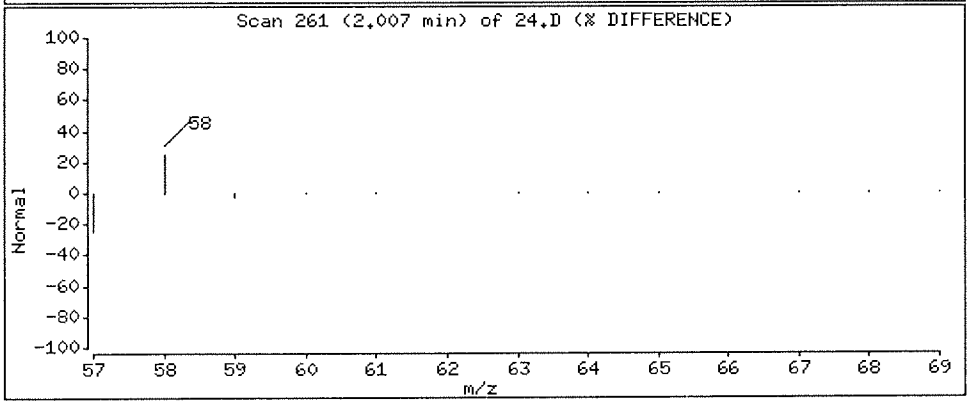
Concentration: 3.555 ug/L











ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\25.D
Lab Smp Id: HS17120123-05 Client Smp ID: HS17120123-05
Inj Date : 06-DEC-2017 01:38 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : HS17120123-05;HS17120123-05
Misc Info : HS17120123;1;0;10
Comment :
Method : \\nahstws003\Target\chem\SV5.i\171205.b\DXSIM.m
Meth Date : 11-Jan-2018 17:48 SV5.i Quant Type: ISTD
Cal Date : 27-NOV-2017 19:22 Cal File: 09.D
Als bottle: 25
Dil Factor: 10.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14
Processing Host: NAHSTWS003

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	10.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

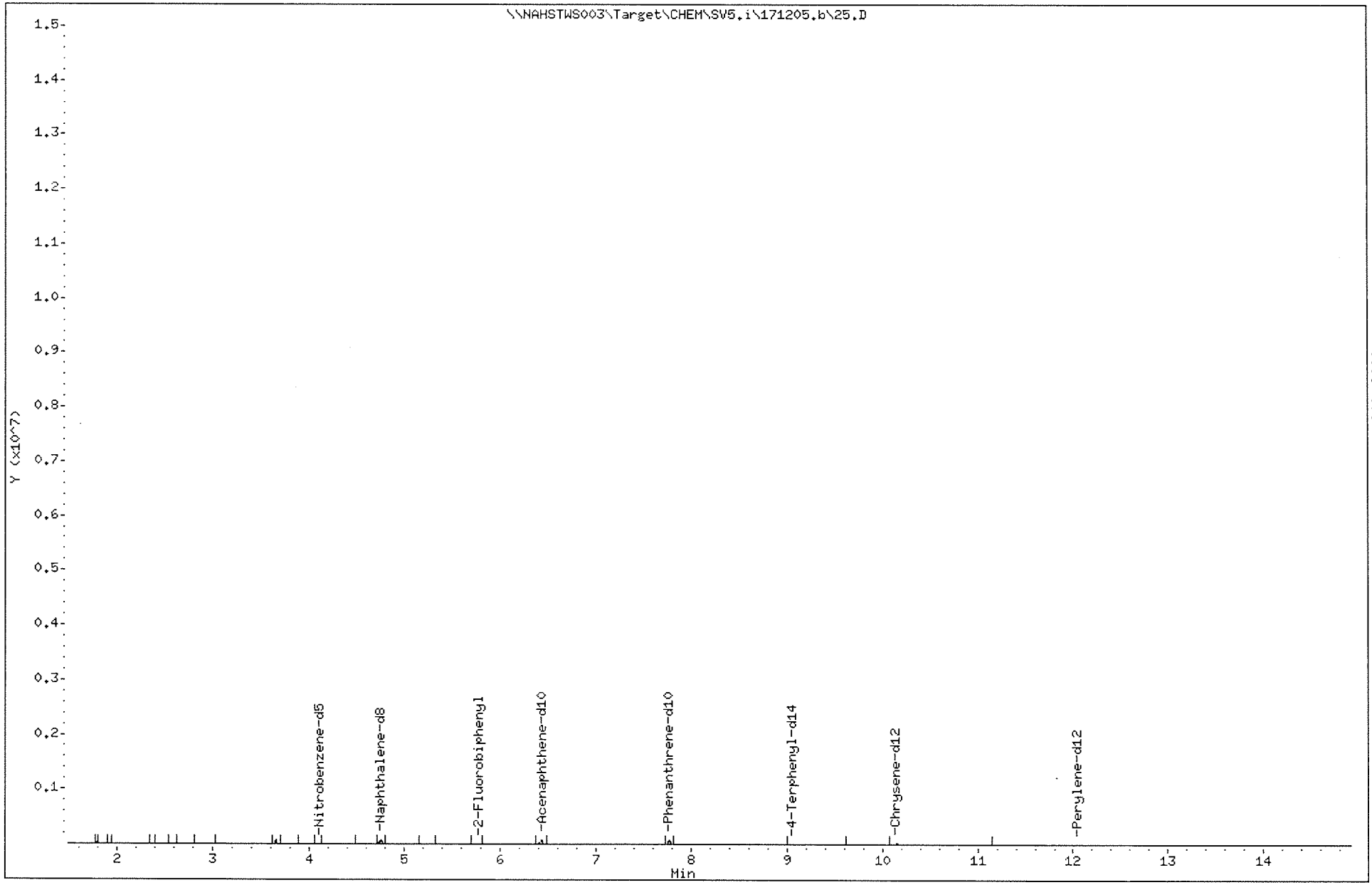
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (NG)	FINAL (ug/L)
* 45 Naphthalene-d8	136	4.767	4.767	(1.000)	105517	0.10000	
$ 33 Nitrobenzene-d5	82	4.114	4.114	(0.863)	2867	0.00569	0.05694(M)
* 86 Acenaphthene-d10	164	6.442	6.442	(1.000)	57955	0.10000	
$ 69 2-Fluorobiphenyl	172	5.788	5.788	(0.898)	5143	0.01001	0.1001
* 126 Phenanthrene-d10	188	7.779	7.779	(1.000)	84533	0.10000	
* 182 Chrysene-d12	240	10.149	10.156	(1.000)	47411	0.10000	(M)
$ 158 4-Terphenyl-d14	244	9.059	9.065	(0.893)	2331	0.00566	0.05663(M)
* 198 Perylene-d12	264	12.055	12.055	(1.000)	22569	0.10000	(M)
1 1,4-Dioxane	58	1.920	2.009	(0.403)	5232	0.05984	0.5984(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\25.D
Date : 06-DEC-2017 01:38
Client ID: HS17120123-05
Sample Info: HS17120123-05;HS17120123-05
Purge Volume: 1000.0
Column phase: RTX-5SIL MS

Instrument: SV5.i
Operator: GY
Column diameter: 0.28



Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\25.D

Date : 06-DEC-2017 01:38

Client ID: HS17120123-05

Instrument: SV5.i

Sample Info: HS17120123-05;HS17120123-05

Purge Volume: 1000.0

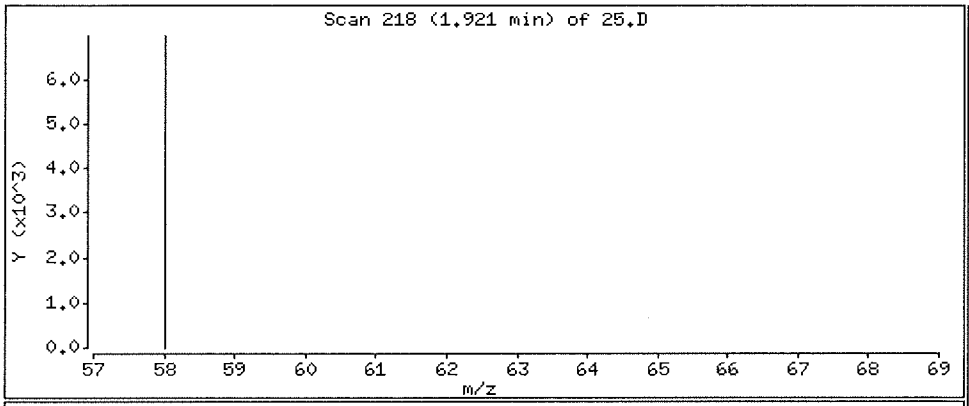
Operator: GY

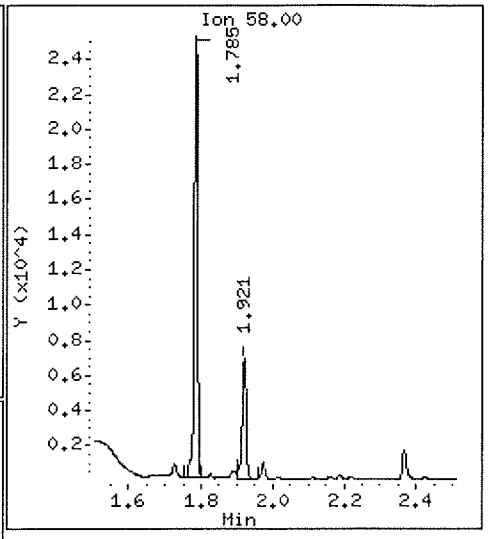
Column phase: RTX-5SIL MS

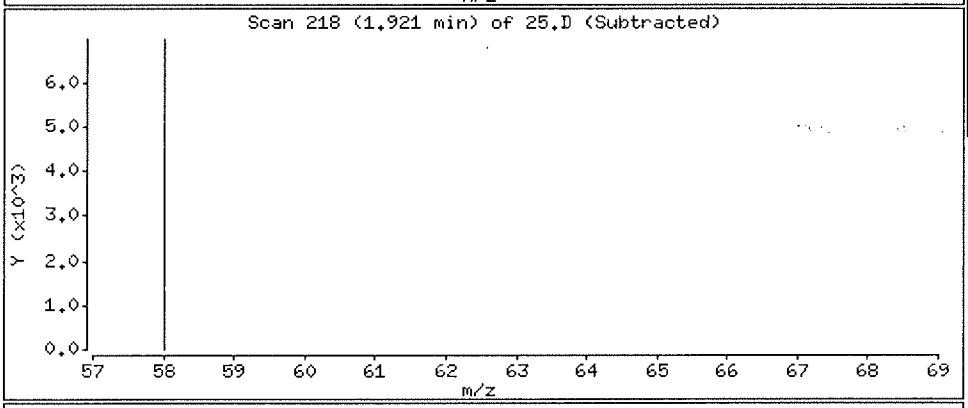
Column diameter: 0.28

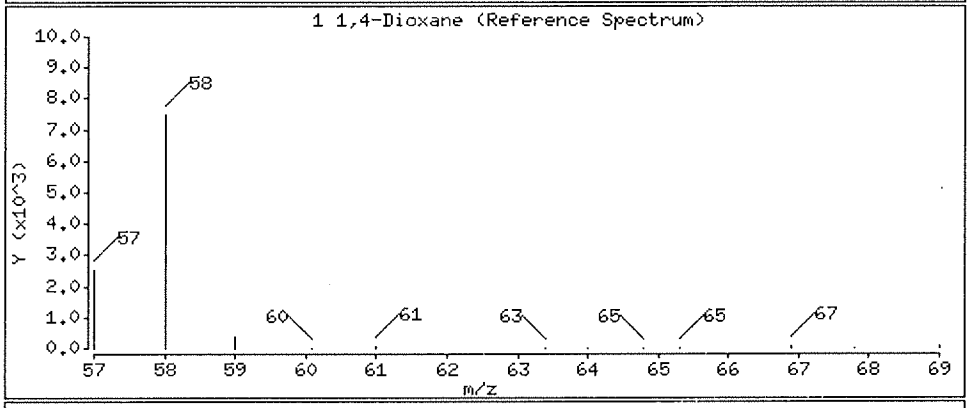
1 1,4-Dioxane

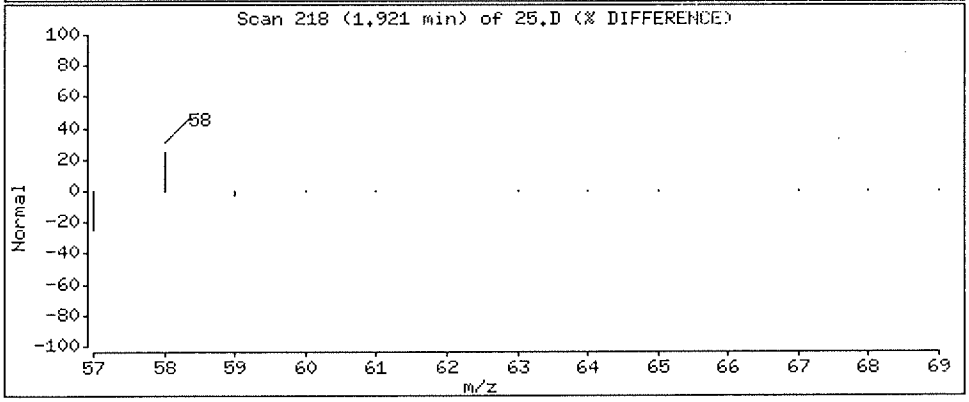
Concentration: 0.5984 ug/L











Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\26.D Page 1
Report Date: 11-Jan-2018 17:49

ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\26.D
Lab Smp Id: HS17120123-06 Client Smp ID: HS17120123-06
Inj Date : 06-DEC-2017 01:58 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : HS17120123-06;HS17120123-06
Misc Info : HS17120123;1;0;10
Comment :
Method : \\nahstws003\Target\chem\SV5.i\171205.b\DXSIM.m
Meth Date : 11-Jan-2018 17:48 SV5.i Quant Type: ISTD
Cal Date : 27-NOV-2017 19:22 Cal File: 09.D
Als bottle: 26
Dil Factor: 10.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14
Processing Host: NAHSTWS003

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	10.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (NG)	FINAL (ug/L)
* 45 Naphthalene-d8	136	4.763	4.767	(1.000)	98438	0.10000	
$ 33 Nitrobenzene-d5	82	4.114	4.114	(0.864)	2619	0.00558	0.05576(M)
* 86 Acenaphthene-d10	164	6.442	6.442	(1.000)	53827	0.10000	
$ 69 2-Fluorobiphenyl	172	5.784	5.788	(0.898)	4302	0.00902	0.09018(Q)
* 126 Phenanthrene-d10	188	7.779	7.779	(1.000)	80251	0.10000	
* 182 Chrysene-d12	240	10.142	10.156	(1.000)	35963	0.10000	(M)
$ 158 4-Terphenyl-d14	244	9.048	9.065	(0.892)	2147	0.00688	0.06876(M)
* 198 Perylene-d12	264	12.039	12.055	(1.000)	19352	0.10000	(M)

QC Flag Legend

Q - Qualifier signal failed the ratio test.
M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\26.D

Date : 06-DEC-2017 01:58

Client ID: HS17120123-06

Instrument: SV5.i

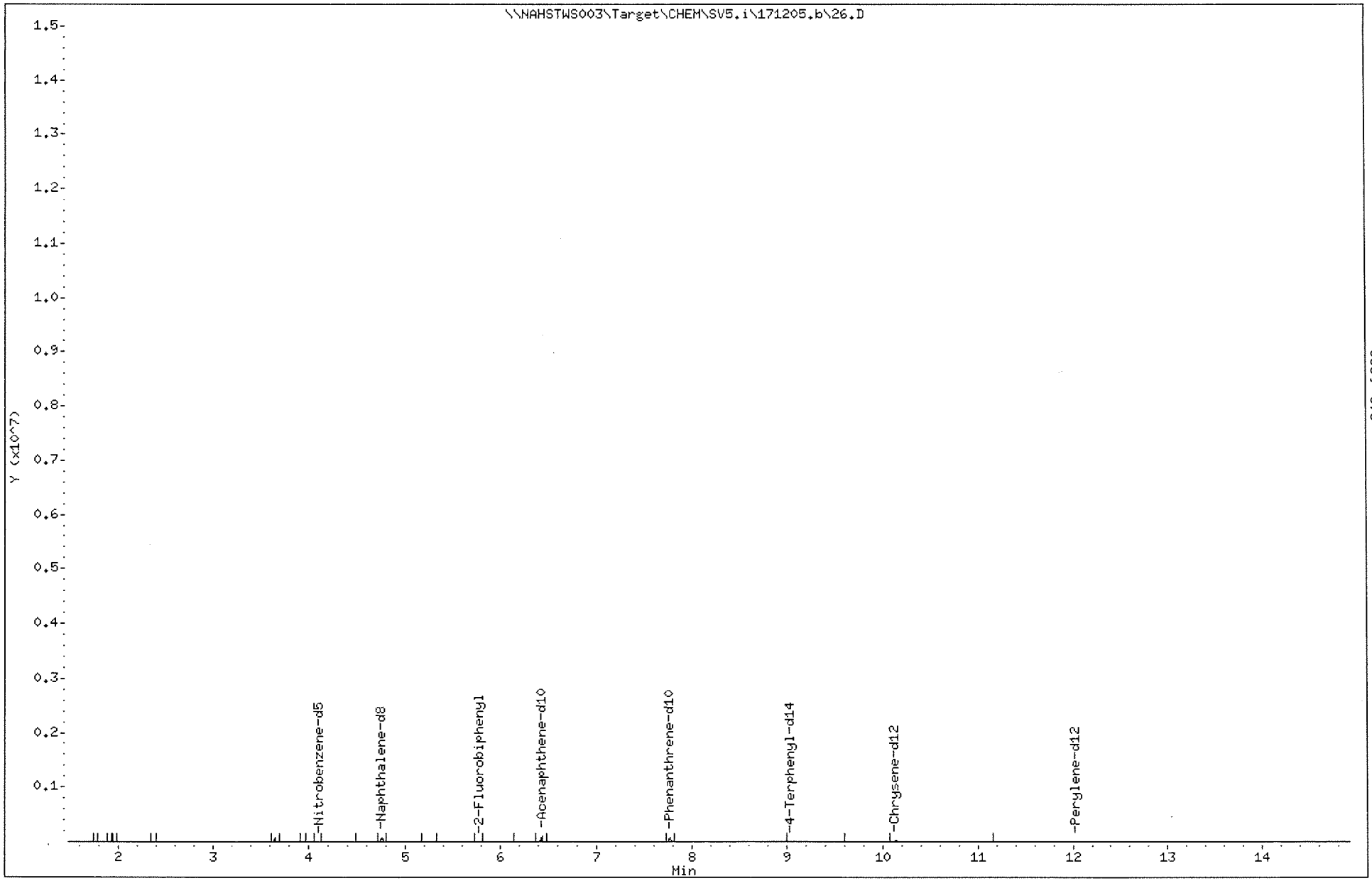
Sample Info: HS17120123-06;HS17120123-06

Purge Volume: 1000.0

Operator: GY

Column phase: RTX-5SIL MS

Column diameter: 0.28



Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\26.D

Date : 06-DEC-2017 01:58

Client ID: HS17120123-06

Instrument: SV5.i

Sample Info: HS17120123-06;HS17120123-06

Purge Volume: 1000.0

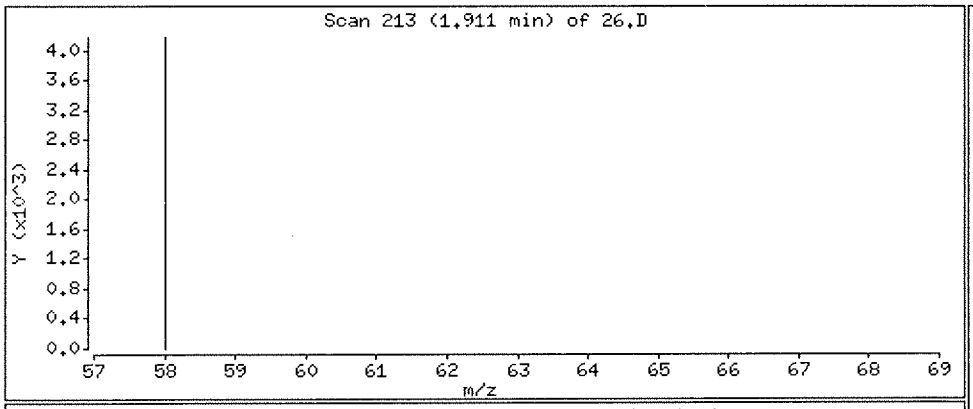
Operator: GY

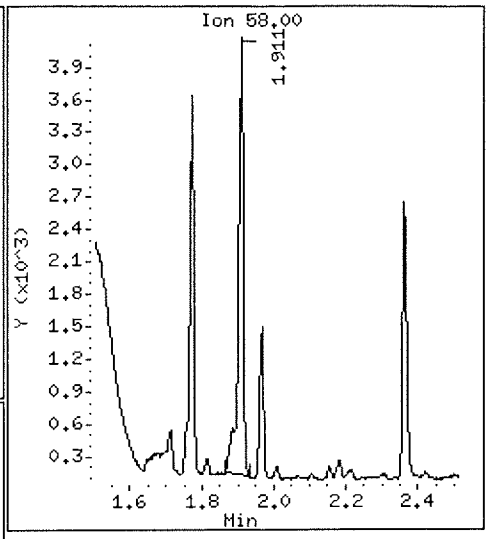
Column phase: RTX-5SIL MS

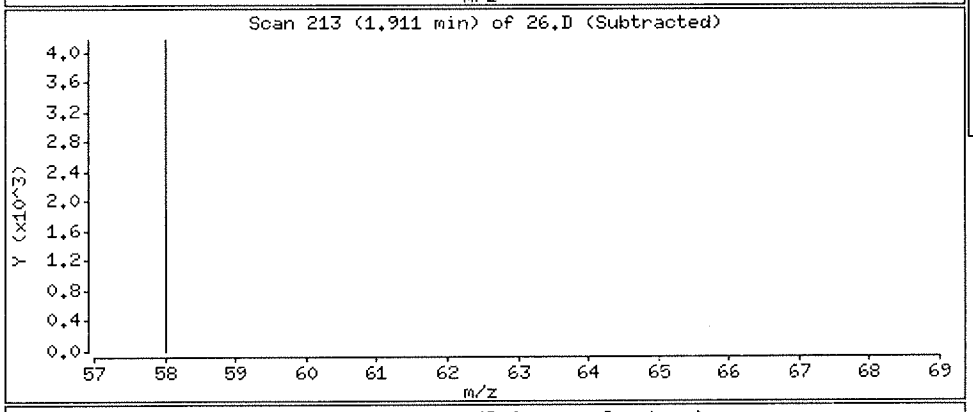
Column diameter: 0.28

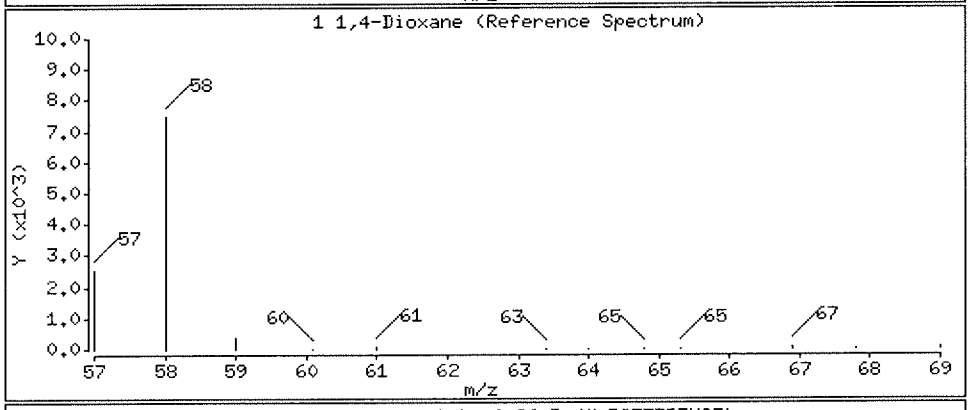
1 1,4-Dioxane

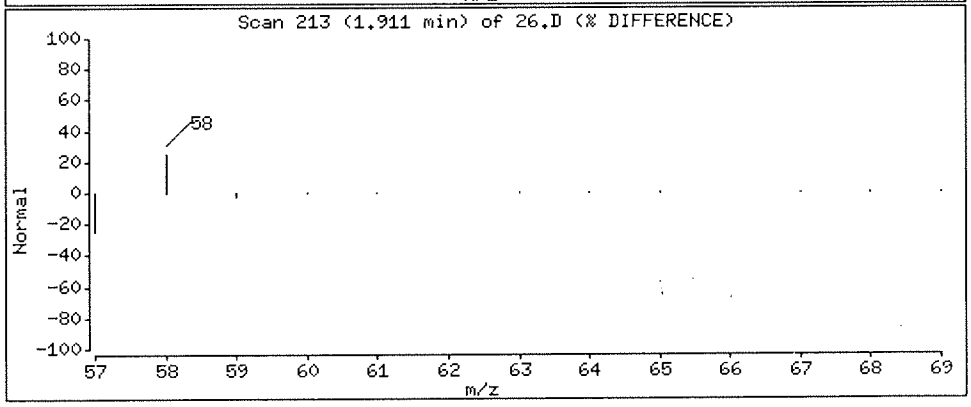
Concentration: 0.4759 ug/L











ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\27.D
Lab Smp Id: HS17120123-07 Client Smp ID: HS17120123-07
Inj Date : 06-DEC-2017 02:19 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : HS17120123-07;HS17120123-07
Misc Info : HS17120123;1;0;10
Comment :
Method : \\nahstws003\Target\chem\SV5.i\171205.b\DXSIM.m
Meth Date : 11-Jan-2018 17:48 SV5.i Quant Type: ISTD
Cal Date : 27-NOV-2017 19:22 Cal File: 09.D
Als bottle: 27
Dil Factor: 10.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14
Processing Host: NAHSTWS003

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	10.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (NG)	FINAL (ug/L)	
* 45 Naphthalene-d8	136	4.763	4.767	(1.000)	99978	0.10000		(M)
$ 33 Nitrobenzene-d5	82	4.114	4.114	(0.864)	2268	0.00475	0.04754	(M)
* 86 Acenaphthene-d10	164	6.442	6.442	(1.000)	53701	0.10000		
$ 69 2-Fluorobiphenyl	172	5.784	5.788	(0.898)	4270	0.00897	0.08972	
* 126 Phenanthrene-d10	188	7.779	7.779	(1.000)	79136	0.10000		
* 182 Chrysene-d12	240	10.135	10.156	(1.000)	38796	0.10000		(M)
$ 158 4-Terphenyl-d14	244	9.048	9.065	(0.893)	2746	0.00815	0.08152	(M)
* 198 Perylene-d12	264	12.039	12.055	(1.000)	21763	0.10000		(M)

QC Flag Legend

M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\27.D

Date : 06-DEC-2017 02:19

Client ID: HS17120123-07

Instrument: SV5.i

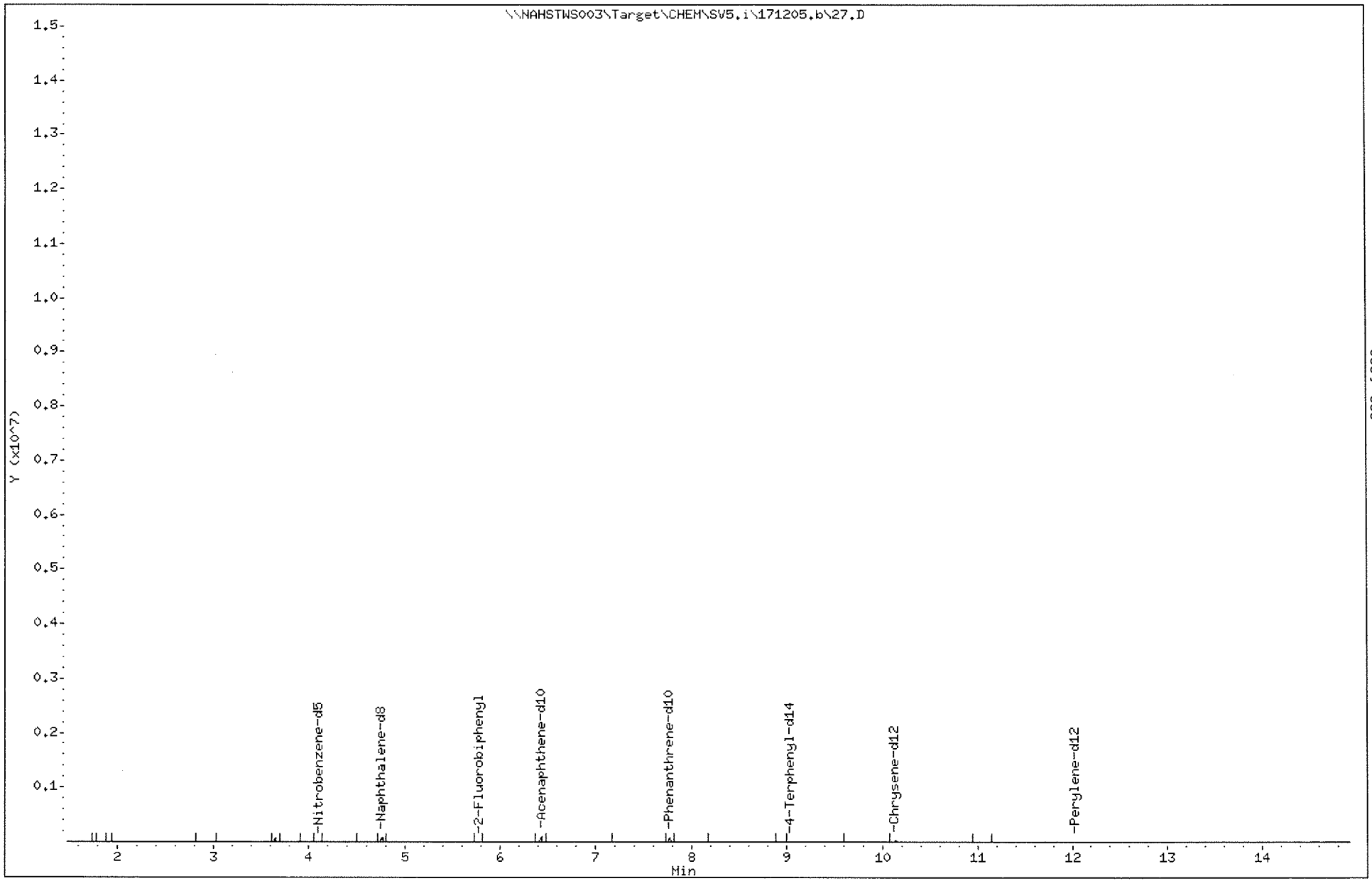
Sample Info: HS17120123-07;HS17120123-07

Purge Volume: 1000.0

Operator: GY

Column phase: RTX-5SIL MS

Column diameter: 0.28



Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\27.D

Date : 06-DEC-2017 02:19

Client ID: HS17120123-07

Instrument: SV5.i

Sample Info: HS17120123-07;HS17120123-07

Purge Volume: 1000.0

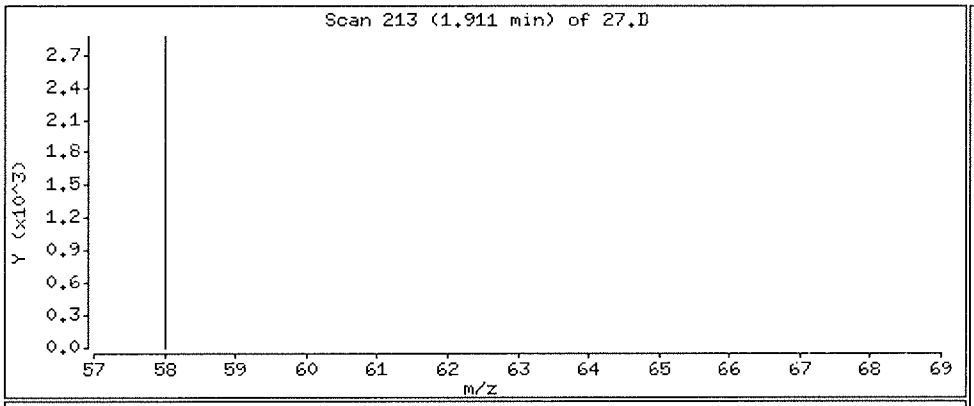
Operator: GY

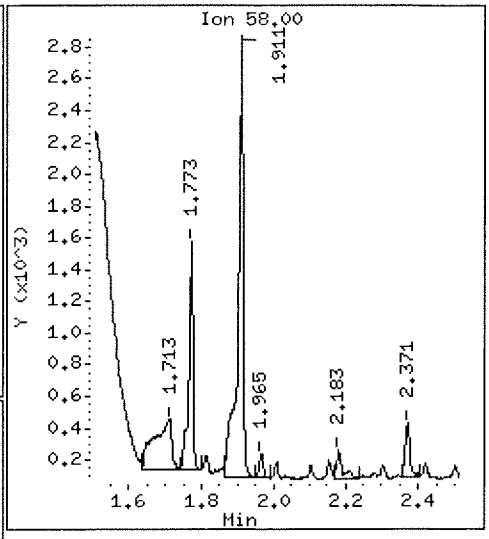
Column phase: RTX-5SIL MS

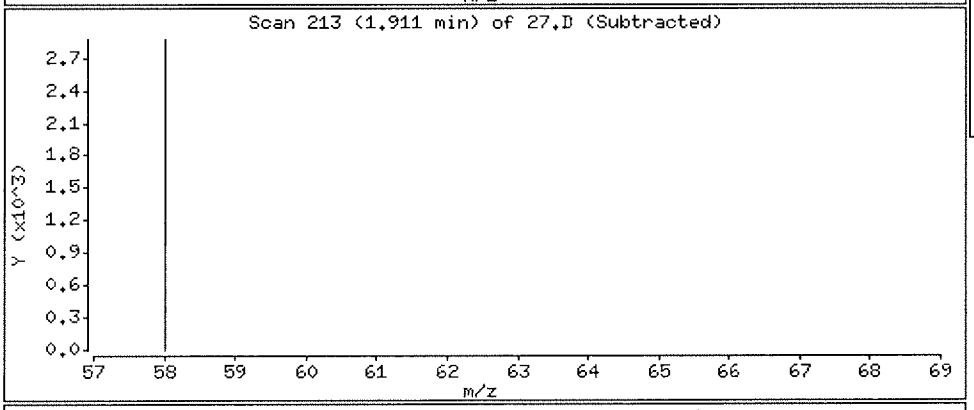
Column diameter: 0.28

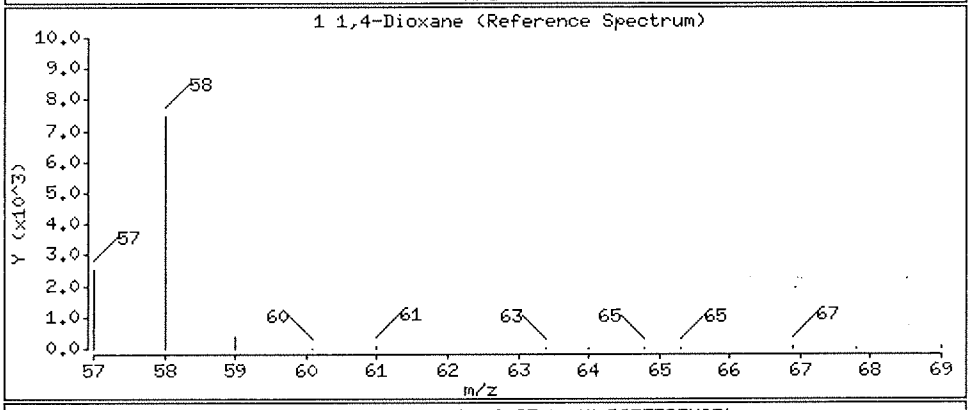
1 1,4-Dioxane

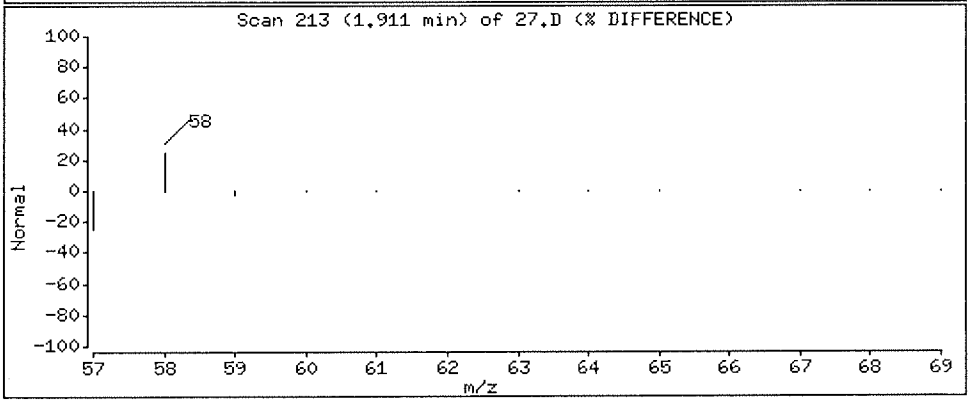
Concentration: 0.3317 ug/L











ALS Laboratory Group

GC/MS Semivolatiles EPA method 8270D

Data file : \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\28.D
Lab Smp Id: CCV Client Smp ID: CCV
Inj Date : 06-DEC-2017 02:39 MS Autotune Date: 22-JUN-2005 09:10
Operator : GY Inst ID: SV5.i
Smp Info : CCV;CCV
Misc Info : ;1;0;1
Comment :
Method : \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\DXSIM.m
Meth Date : 11-Jan-2018 17:48 SV5.i Quant Type: ISTD
Cal Date : 27-NOV-2017 19:22 Cal File: 09.D
Als bottle: 28 QC Sample: METHSPIKE
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 14DX.sub
Target Version: 4.14
Processing Host: NAHSTW7091

Concentration Formula: Amt * DF * Uf * Vt/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	ng unit correction factor
Vt	1000.000	Volume of final extract (uL)
Vo	1000.000	Volume of sample extracted (mL)
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (NG)	CONCENTRATIONS FINAL (ug/L)
* 45 Naphthalene-d8	136	4.767	4.767	(1.000)	75560	0.10000	(M)
$ 33 Nitrobenzene-d5	82	4.114	4.114	(0.863)	25054	0.06949	0.06949(M)
* 86 Acenaphthene-d10	164	6.442	6.442	(1.000)	34387	0.10000	
$ 69 2-Fluorobiphenyl	172	5.788	5.788	(0.898)	32895	0.10793	0.1079(M)
* 126 Phenanthrene-d10	188	7.779	7.779	(1.000)	44167	0.10000	
* 182 Chrysene-d12	240	10.149	10.156	(1.000)	17283	0.10000	(M)
$ 158 4-Terphenyl-d14	244	9.059	9.065	(0.893)	16038	0.10688	0.1069(M)
* 198 Perylene-d12	264	12.055	12.055	(1.000)	9865	0.10000	
1 1,4-Dioxane	58	1.993	2.009	(0.432)	5413	0.08646	0.08646(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\SV5.i\171205.b\28.D

Page 2

Date : 06-DEC-2017 02:39

Client ID: CCV

Instrument: SV5.i

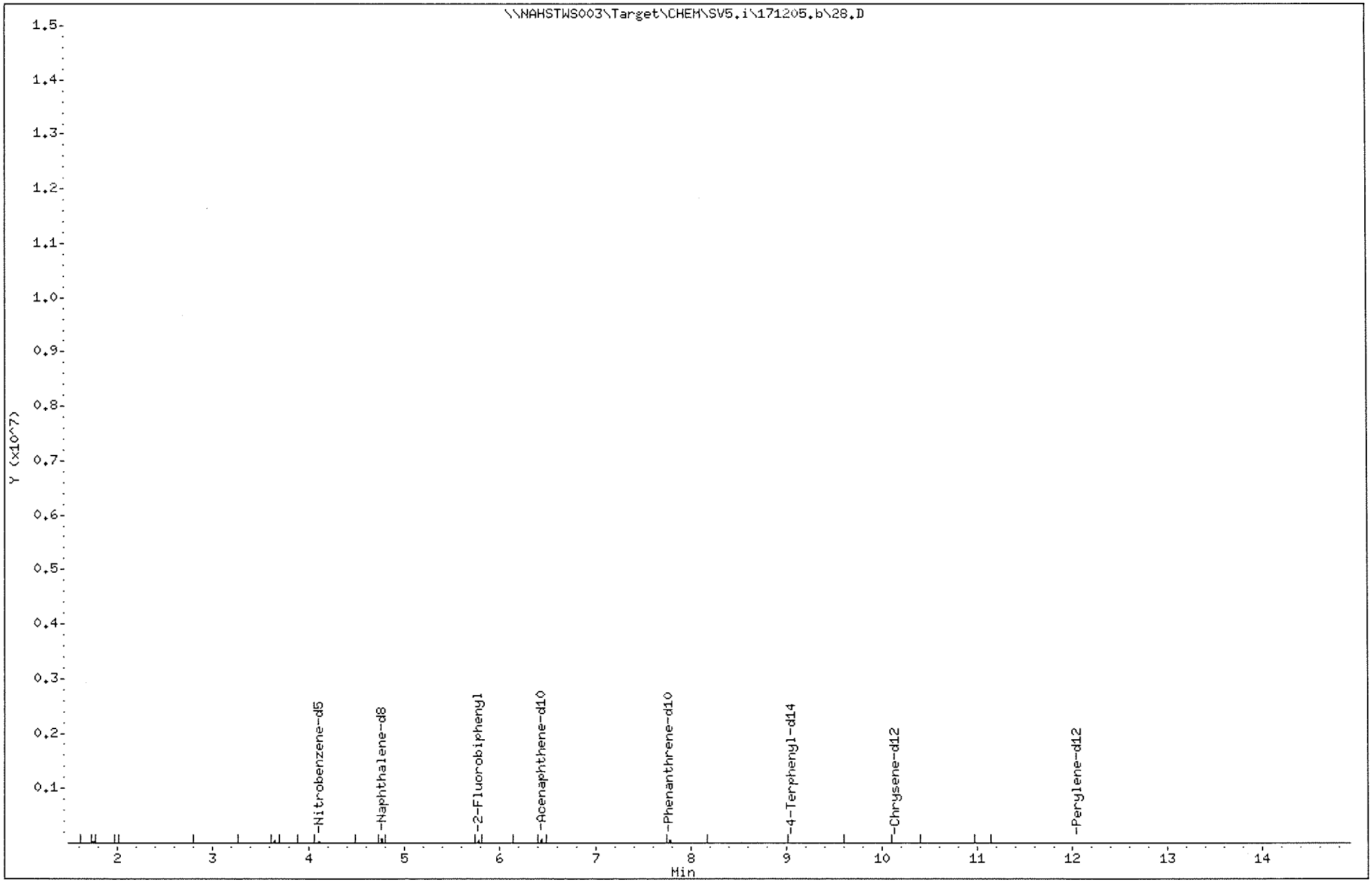
Sample Info: CCV;CCV

Purge Volume: 1000.0

Operator: GY

Column phase: RTX-5SIL MS

Column diameter: 0.28



PREP BATCH REPORT

Batch ID: **122922**
Prep Code: **3510_B_SIM**
InitSampWt/Vol 0
FinSampVol: 1
Start Date: **05-Dec-17 08:32 am**
End Date: **05-Dec-17 02:51 pm**
OriginalFac: 0.001
Technician: **Todi Lala**
PrepUnitFac: 1

SampID	Frac	Matrix	pH	Init Wt/Vol	FinalVol (mL)	PrepFac	SpkFac	Failsafe	TestDueDate	Comments
MBLK-122922	A		5	1000	1	0.001	1			ph adj 1/13
LCS-122922	A		5	1000	1	0.001	1			ph adj 1/13
LCSD-122922	A		5	1000	1	0.001	1			ph adj 1/13
HS17120123-07	B	Groundwa	6	1000	1	0.001	1	12-07-17	12-11-17	ph adj 1/13
HS17120123-06	B	Groundwa	6	1000	1	0.001	1	12-07-17	12-11-17	ph adj 1/13
HS17120123-05	B	Groundwa	6	1000	1	0.001	1	12-07-17	12-11-17	ph adj 1/13
HS17120123-04	B	Groundwa	6	1000	1	0.001	1	12-07-17	12-11-17	ph adj 1/13
HS17120123-03	B	Groundwa	5	1000	1	0.001	1	12-07-17	12-11-17	ph adj 1/13
HS17120123-02	B	Groundwa	5	990	1	0.00101	1.01	12-07-17	12-11-17	ph adj 1/13
HS17120123-01	B	Groundwa	7	1000	1	0.001	1	12-07-17	12-11-17	ph adj 1/13

00912025

10450 Stancliff Rd. Suite 210
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December 11, 2017

Jennifer Hoang
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS17120123**

Laboratory Results for: **LHAAP-67 501032**

Dear Jennifer,

ALS Environmental received 8 sample(s) on Dec 01, 2017 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Sonia West

Generated By: Jumoke.Lawal
Sonia West
Project Manager

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
Work Order: HS17120123

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS17120123-01	67WW07-112917	Groundwater		29-Nov-2017 07:55	01-Dec-2017 08:50	☐
HS17120123-02	67WW06-112917	Groundwater		29-Nov-2017 08:50	01-Dec-2017 08:50	☐
HS17120123-03	67WW10-112917	Groundwater		29-Nov-2017 09:40	01-Dec-2017 08:50	☐
HS17120123-04	67WW09A-112917	Groundwater		29-Nov-2017 10:35	01-Dec-2017 08:50	☐
HS17120123-05	67WW12-112917	Groundwater		29-Nov-2017 11:25	01-Dec-2017 08:50	☐
HS17120123-06	67WW12-112917 FD	Groundwater		29-Nov-2017 11:25	01-Dec-2017 08:50	☐
HS17120123-07	67WW16-112917	Groundwater		29-Nov-2017 12:25	01-Dec-2017 08:50	☐
HS17120123-08	Trip Blank	Water		29-Nov-2017 00:00	01-Dec-2017 08:50	☐

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: LHAAP-67 501032
Work Order: HS17120123

Work Order Comments

- Sample 67WW13-112817-MS/MSD was received but not listed on the chain of custody. This sample was added to HS17111395-03 with the parent sample.

GCMS Semivolatiles by Method SW8270SIM

Batch ID: 122922

Sample ID: 67WW06-112917 (HS17120123-02)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: 67WW07-112917 (HS17120123-01)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: 67WW09A-112917 (HS17120123-04)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: 67WW10-112917 (HS17120123-03)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: 67WW12-112917 (HS17120123-05)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: 67WW12-112917 FD (HS17120123-06)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: 67WW16-112917 (HS17120123-07)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: LCS-122922

- High %R for surrogate 2-Fluorobiphenyl, it is not associated with target compound.

Sample ID: MBLK-122922

- High %R for surrogate 2-Fluorobiphenyl, it is not associated with target compound.

GCMS Volatiles by Method SW8260

Batch ID: R306828

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 501032 WorkOrder:HS17120123
Sample ID: 67WW07-112917 Lab ID:HS17120123-01
Collection Date: 29-Nov-2017 07:55 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 17:47
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:47
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	08-Dec-2017 17:47
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	08-Dec-2017 17:47
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 17:47
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	08-Dec-2017 17:47
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	08-Dec-2017 17:47
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	08-Dec-2017 17:47
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 501032 WorkOrder:HS17120123
Sample ID: 67WW07-112917 Lab ID:HS17120123-01
Collection Date: 29-Nov-2017 07:55 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:47
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:47
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	08-Dec-2017 17:47
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	08-Dec-2017 17:47
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 17:47
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:47
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:47
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:47
Surr: 1,2-Dichloroethane-d4	*91.6*			**0**	*70-126*	*%REC*	*1*	*08-Dec-2017 17:47*
Surr: 4-Bromofluorobenzene	*101*			**0**	*81-113*	*%REC*	*1*	*08-Dec-2017 17:47*
Surr: Dibromofluoromethane	*90.3*			**0**	*77-123*	*%REC*	*1*	*08-Dec-2017 17:47*
Surr: Toluene-d8	*104*			**0**	*82-127*	*%REC*	*1*	*08-Dec-2017 17:47*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 05-Dec-2017		Analyst: ACN
1,4-Dioxane	**0.53**		**0.10**	**0.10**	**0.10**	**ug/L**	10	06-Dec-2017 00:16
Surr: 2-Fluorobiphenyl	*124*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 00:16*
Surr: 4-Terphenyl-d14	*90.0*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 00:16*
Surr: Nitrobenzene-d5	*74.3*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 00:16*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 501032 WorkOrder:HS17120123
Sample ID: 67WW06-112917 Lab ID:HS17120123-02
Collection Date: 29-Nov-2017 08:50 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:12
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 18:12
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 18:12
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:12
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:12
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 18:12
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 18:12
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 18:12
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	08-Dec-2017 18:12
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:12
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 18:12
1,2-Dichloroethane	**1.00**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	08-Dec-2017 18:12
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 18:12
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 18:12
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 18:12
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:12
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	08-Dec-2017 18:12
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	08-Dec-2017 18:12
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 18:12
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	08-Dec-2017 18:12
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	08-Dec-2017 18:12
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	08-Dec-2017 18:12
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastructure, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 501032 WorkOrder:HS17120123
Sample ID: 67WW06-112917 Lab ID:HS17120123-02
Collection Date: 29-Nov-2017 08:50 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:12
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:12
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	08-Dec-2017 18:12
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	08-Dec-2017 18:12
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 18:12
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:12
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:12
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:12
Surr: 1,2-Dichloroethane-d4	*91.2*			**0**	*70-126*	*%REC*	*1*	*08-Dec-2017 18:12*
Surr: 4-Bromofluorobenzene	*98.9*			**0**	*81-113*	*%REC*	*1*	*08-Dec-2017 18:12*
Surr: Dibromofluoromethane	*91.5*			**0**	*77-123*	*%REC*	*1*	*08-Dec-2017 18:12*
Surr: Toluene-d8	*104*			**0**	*82-127*	*%REC*	*1*	*08-Dec-2017 18:12*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 05-Dec-2017		Analyst: ACN
1,4-Dioxane	**1.7**		**0.10**	**0.10**	**0.10**	**ug/L**	10	06-Dec-2017 00:36
Surr: 2-Fluorobiphenyl	*124*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 00:36*
Surr: 4-Terphenyl-d14	*99.0*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 00:36*
Surr: Nitrobenzene-d5	*76.3*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 00:36*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 501032 WorkOrder:HS17120123
Sample ID: 67WW10-112917 Lab ID:HS17120123-03
Collection Date: 29-Nov-2017 09:40 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 18:36
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:36
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	08-Dec-2017 18:36
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	08-Dec-2017 18:36
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 18:36
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	08-Dec-2017 18:36
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	08-Dec-2017 18:36
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	08-Dec-2017 18:36
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 501032 WorkOrder:HS17120123
Sample ID: 67WW10-112917 Lab ID:HS17120123-03
Collection Date: 29-Nov-2017 09:40 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:36
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:36
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	08-Dec-2017 18:36
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	08-Dec-2017 18:36
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 18:36
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:36
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:36
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 18:36
Surr: 1,2-Dichloroethane-d4	*92.1*			**0**	*70-126*	*%REC*	*1*	*08-Dec-2017 18:36*
Surr: 4-Bromofluorobenzene	*100*			**0**	*81-113*	*%REC*	*1*	*08-Dec-2017 18:36*
Surr: Dibromofluoromethane	*90.4*			**0**	*77-123*	*%REC*	*1*	*08-Dec-2017 18:36*
Surr: Toluene-d8	*104*			**0**	*82-127*	*%REC*	*1*	*08-Dec-2017 18:36*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 05-Dec-2017		Analyst: ACN
1,4-Dioxane	**0.23**		**0.10**	**0.10**	**0.10**	**ug/L**	10	06-Dec-2017 00:57
Surr: 2-Fluorobiphenyl	*117*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 00:57*
Surr: 4-Terphenyl-d14	*77.4*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 00:57*
Surr: Nitrobenzene-d5	*69.5*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 00:57*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 501032 WorkOrder:HS17120123
Sample ID: 67WW09A-112917 Lab ID:HS17120123-04
Collection Date: 29-Nov-2017 10:35 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:01
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:01
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	08-Dec-2017 19:01
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	08-Dec-2017 19:01
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:01
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	08-Dec-2017 19:01
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	08-Dec-2017 19:01
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	08-Dec-2017 19:01
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastructure, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 501032 WorkOrder:HS17120123
Sample ID: 67WW09A-112917 Lab ID:HS17120123-04
Collection Date: 29-Nov-2017 10:35 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:01
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:01
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	08-Dec-2017 19:01
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	08-Dec-2017 19:01
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:01
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:01
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:01
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:01
Surr: 1,2-Dichloroethane-d4	*90.7*			**0**	*70-126*	*%REC*	*1*	*08-Dec-2017 19:01*
Surr: 4-Bromofluorobenzene	*101*			**0**	*81-113*	*%REC*	*1*	*08-Dec-2017 19:01*
Surr: Dibromofluoromethane	*89.3*			**0**	*77-123*	*%REC*	*1*	*08-Dec-2017 19:01*
Surr: Toluene-d8	*103*			**0**	*82-127*	*%REC*	*1*	*08-Dec-2017 19:01*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 05-Dec-2017		Analyst: ACN
1,4-Dioxane	**3.6**		**0.10**	**0.10**	**0.10**	**ug/L**	10	06-Dec-2017 01:17
Surr: 2-Fluorobiphenyl	*106*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 01:17*
Surr: 4-Terphenyl-d14	*78.5*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 01:17*
Surr: Nitrobenzene-d5	*68.4*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 01:17*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 501032 WorkOrder:HS17120123
Sample ID: 67WW12-112917 Lab ID:HS17120123-05
Collection Date: 29-Nov-2017 11:25 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:25
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:25
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:25
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:25
1,1-Dichloroethene	**2.2**		**0.20**	**0.50**	**1.0**	**ug/L**	1	08-Dec-2017 19:25
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:25
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:25
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:25
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	08-Dec-2017 19:25
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:25
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:25
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:25
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:25
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:25
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:25
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:25
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	08-Dec-2017 19:25
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	08-Dec-2017 19:25
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:25
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	08-Dec-2017 19:25
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	08-Dec-2017 19:25
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	08-Dec-2017 19:25
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastructure, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 501032 WorkOrder:HS17120123
Sample ID: 67WW12-112917 Lab ID:HS17120123-05
Collection Date: 29-Nov-2017 11:25 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:25
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:25
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	08-Dec-2017 19:25
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	08-Dec-2017 19:25
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:25
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:25
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:25
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:25
Surr: 1,2-Dichloroethane-d4	*91.1*			**0**	*70-126*	*%REC*	*1*	*08-Dec-2017 19:25*
Surr: 4-Bromofluorobenzene	*98.8*			**0**	*81-113*	*%REC*	*1*	*08-Dec-2017 19:25*
Surr: Dibromofluoromethane	*91.6*			**0**	*77-123*	*%REC*	*1*	*08-Dec-2017 19:25*
Surr: Toluene-d8	*103*			**0**	*82-127*	*%REC*	*1*	*08-Dec-2017 19:25*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 05-Dec-2017		Analyst: ACN
1,4-Dioxane	**0.60**		**0.10**	**0.10**	**0.10**	**ug/L**	10	06-Dec-2017 01:38
Surr: 2-Fluorobiphenyl	*125*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 01:38*
Surr: 4-Terphenyl-d14	*70.8*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 01:38*
Surr: Nitrobenzene-d5	*71.2*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 01:38*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 501032 WorkOrder:HS17120123
Sample ID: 67WW12-112917 FD Lab ID:HS17120123-06
Collection Date: 29-Nov-2017 11:25 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:50
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:50
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:50
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:50
1,1-Dichloroethene	**1.8**		**0.20**	**0.50**	**1.0**	**ug/L**	1	08-Dec-2017 19:50
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:50
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:50
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:50
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	08-Dec-2017 19:50
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:50
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:50
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:50
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:50
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:50
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:50
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:50
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	08-Dec-2017 19:50
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	08-Dec-2017 19:50
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:50
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	08-Dec-2017 19:50
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	08-Dec-2017 19:50
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	08-Dec-2017 19:50
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastructure, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 501032 WorkOrder:HS17120123
Sample ID: 67WW12-112917 FD Lab ID:HS17120123-06
Collection Date: 29-Nov-2017 11:25 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:50
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:50
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	08-Dec-2017 19:50
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	08-Dec-2017 19:50
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 19:50
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:50
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:50
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 19:50
Surr: 1,2-Dichloroethane-d4	*90.6*			**0**	*70-126*	*%REC*	*1*	*08-Dec-2017 19:50*
Surr: 4-Bromofluorobenzene	*98.6*			**0**	*81-113*	*%REC*	*1*	*08-Dec-2017 19:50*
Surr: Dibromofluoromethane	*89.4*			**0**	*77-123*	*%REC*	*1*	*08-Dec-2017 19:50*
Surr: Toluene-d8	*103*			**0**	*82-127*	*%REC*	*1*	*08-Dec-2017 19:50*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 05-Dec-2017		Analyst: ACN
1,4-Dioxane	**0.48**		**0.10**	**0.10**	**0.10**	**ug/L**	10	06-Dec-2017 01:58
Surr: 2-Fluorobiphenyl	*113*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 01:58*
Surr: 4-Terphenyl-d14	*86.0*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 01:58*
Surr: Nitrobenzene-d5	*69.7*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 01:58*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 501032 WorkOrder:HS17120123
Sample ID: 67WW16-112917 Lab ID:HS17120123-07
Collection Date: 29-Nov-2017 12:25 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 20:15
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 20:15
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	08-Dec-2017 20:15
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	08-Dec-2017 20:15
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 20:15
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	08-Dec-2017 20:15
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	08-Dec-2017 20:15
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	08-Dec-2017 20:15
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastructure, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 501032 WorkOrder:HS17120123
Sample ID: 67WW16-112917 Lab ID:HS17120123-07
Collection Date: 29-Nov-2017 12:25 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 20:15
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 20:15
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	08-Dec-2017 20:15
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	08-Dec-2017 20:15
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 20:15
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 20:15
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 20:15
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 20:15
Surr: 1,2-Dichloroethane-d4	*90.6*			**0**	*70-126*	*%REC*	*1*	*08-Dec-2017 20:15*
Surr: 4-Bromofluorobenzene	*99.8*			**0**	*81-113*	*%REC*	*1*	*08-Dec-2017 20:15*
Surr: Dibromofluoromethane	*90.2*			**0**	*77-123*	*%REC*	*1*	*08-Dec-2017 20:15*
Surr: Toluene-d8	*103*			**0**	*82-127*	*%REC*	*1*	*08-Dec-2017 20:15*
SEMIVOLATILES SIM		**Method:SW8270SIM**				Prep:SW3510 / 05-Dec-2017		Analyst: ACN
1,4-Dioxane	**0.33**		**0.10**	**0.10**	**0.10**	**ug/L**	10	06-Dec-2017 02:19
Surr: 2-Fluorobiphenyl	*112*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 02:19*
Surr: 4-Terphenyl-d14	*102*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 02:19*
Surr: Nitrobenzene-d5	*59.4*			**0**	*40-140*	*%REC*	*10*	*06-Dec-2017 02:19*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: LHAAP-67 501032 WorkOrder:HS17120123
Sample ID: Trip Blank Lab ID:HS17120123-08
Collection Date: 29-Nov-2017 00:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 17:22
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:22
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	08-Dec-2017 17:22
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	08-Dec-2017 17:22
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 17:22
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	08-Dec-2017 17:22
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	08-Dec-2017 17:22
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	08-Dec-2017 17:22
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
Sample ID: Trip Blank
Collection Date: 29-Nov-2017 00:00

ANALYTICAL REPORT
WorkOrder:HS17120123
Lab ID:HS17120123-08
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:22
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:22
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	08-Dec-2017 17:22
Methylene chloride	0.50	U	1.0	0.50	2.0	ug/L	1	08-Dec-2017 17:22
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-Dec-2017 17:22
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:22
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:22
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	08-Dec-2017 17:22
Surr: 1,2-Dichloroethane-d4	*91.5*			**0**	*70-126*	*%REC*	*1*	*08-Dec-2017 17:22*
Surr: 4-Bromofluorobenzene	*98.8*			**0**	*81-113*	*%REC*	*1*	*08-Dec-2017 17:22*
Surr: Dibromofluoromethane	*88.2*			**0**	*77-123*	*%REC*	*1*	*08-Dec-2017 17:22*
Surr: Toluene-d8	*104*			**0**	*82-127*	*%REC*	*1*	*08-Dec-2017 17:22*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

WEIGHT LOG

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
WorkOrder: HS17120123

Batch ID: 122922 **Method:** SEMIVOLATILES SIM **Prep:** 3510_B_SIM

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS17120123-01	1	1000	1 (mL)	0.001
HS17120123-02	1	990	1 (mL)	0.00101
HS17120123-03	1	1000	1 (mL)	0.001
HS17120123-04	1	1000	1 (mL)	0.001
HS17120123-05	1	1000	1 (mL)	0.001
HS17120123-06	1	1000	1 (mL)	0.001
HS17120123-07	1	1000	1 (mL)	0.001

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
WorkOrder: HS17120123

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 122922	**Test Name :** SEMIVOLATILES SIM			**Matrix:** Groundwater		
HS17120123-01	67WW07-112917	29 Nov 2017 07:55		05 Dec 2017 08:32	06 Dec 2017 00:16	10
HS17120123-02	67WW06-112917	29 Nov 2017 08:50		05 Dec 2017 08:32	06 Dec 2017 00:36	10
HS17120123-03	67WW10-112917	29 Nov 2017 09:40		05 Dec 2017 08:32	06 Dec 2017 00:57	10
HS17120123-04	67WW09A-112917	29 Nov 2017 10:35		05 Dec 2017 08:32	06 Dec 2017 01:17	10
HS17120123-05	67WW12-112917	29 Nov 2017 11:25		05 Dec 2017 08:32	06 Dec 2017 01:38	10
HS17120123-06	67WW12-112917 FD	29 Nov 2017 11:25		05 Dec 2017 08:32	06 Dec 2017 01:58	10
HS17120123-07	67WW16-112917	29 Nov 2017 12:25		05 Dec 2017 08:32	06 Dec 2017 02:19	10
Batch ID R306828	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS17120123-08	Trip Blank	29 Nov 2017 00:00			08 Dec 2017 17:22	1
Batch ID R306828	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Groundwater		
HS17120123-01	67WW07-112917	29 Nov 2017 07:55			08 Dec 2017 17:47	1
HS17120123-02	67WW06-112917	29 Nov 2017 08:50			08 Dec 2017 18:12	1
HS17120123-03	67WW10-112917	29 Nov 2017 09:40			08 Dec 2017 18:36	1
HS17120123-04	67WW09A-112917	29 Nov 2017 10:35			08 Dec 2017 19:01	1
HS17120123-05	67WW12-112917	29 Nov 2017 11:25			08 Dec 2017 19:25	1
HS17120123-06	67WW12-112917 FD	29 Nov 2017 11:25			08 Dec 2017 19:50	1
HS17120123-07	67WW16-112917	29 Nov 2017 12:25			08 Dec 2017 20:15	1

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
WorkOrder: HS17120123

QC BATCH REPORT

Batch ID: 122922 **Instrument: SV-5** **Method: SW8270SIM**

MBLK Sample ID: **MBLK-122922** Units: **ug/L** Analysis Date: **05-Dec-2017 18:27**
Client ID: Run ID: **SV-5_306676** SeqNo: **4339057** PrepDate: **05-Dec-2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.010	0.010								U
Surr: 2-Fluorobiphenyl	*0.1156*	*0*	*0.08*	*0*	*145*	*40 - 140*				S
Surr: 4-Terphenyl-d14	*0.09665*	*0*	*0.08*	*0*	*121*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.06716*	*0*	*0.08*	*0*	*84.0*	*40 - 140*				

LCS Sample ID: **LCS-122922** Units: **ug/L** Analysis Date: **05-Dec-2017 18:47**
Client ID: Run ID: **SV-5_306676** SeqNo: **4339058** PrepDate: **05-Dec-2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.08265	0.010	0.08	0	103	40 - 140				
Surr: 2-Fluorobiphenyl	*0.1238*	*0*	*0.08*	*0*	*155*	*40 - 140*				S
Surr: 4-Terphenyl-d14	*0.09844*	*0*	*0.08*	*0*	*123*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.07006*	*0*	*0.08*	*0*	*87.6*	*40 - 140*				

LCSD Sample ID: **LCSD-122922** Units: **ug/L** Analysis Date: **05-Dec-2017 19:08**
Client ID: Run ID: **SV-5_306676** SeqNo: **4339059** PrepDate: **05-Dec-2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.0875	0.010	0.08	0	109	40 - 140	0.08265	5.7	20	
Surr: 2-Fluorobiphenyl	*0.1027*	*0*	*0.08*	*0*	*128*	*40 - 140*	*0.1238*	*18.6*	*20*	
Surr: 4-Terphenyl-d14	*0.108*	*0*	*0.08*	*0*	*135*	*40 - 140*	*0.09844*	*9.23*	*20*	
Surr: Nitrobenzene-d5	*0.0718*	*0*	*0.08*	*0*	*89.8*	*40 - 140*	*0.07006*	*2.46*	*20*	

The following samples were analyzed in this batch: HS17120123-01 HS17120123-02 HS17120123-03 HS17120123-04 HS17120123-05 HS17120123-06 HS17120123-07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
WorkOrder: HS17120123

QC BATCH REPORT

Batch ID: R306828 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-171208** Units: **ug/L** Analysis Date: **08-Dec-2017 12:25**
Client ID: Run ID: **VOA2_306828** SeqNo: **4342590** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
WorkOrder: HS17120123

QC BATCH REPORT

Batch ID: R306828 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-171208** Units: **ug/L** Analysis Date: **08-Dec-2017 12:25**
Client ID: Run ID: **VOA2_306828** SeqNo: **4342590** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	0.50	1.0								U
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	0.50	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*44.8*	*1.0*	*50*	*0*	*89.6*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*49.31*	*1.0*	*50*	*0*	*98.6*	*82 - 115*				
Surr: Dibromofluoromethane	*45.2*	*1.0*	*50*	*0*	*90.4*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
WorkOrder: HS17120123

QC BATCH REPORT

Batch ID: R306828 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-171208** Units: **ug/L** Analysis Date: **08-Dec-2017 12:25**
Client ID: Run ID: **VOA2_306828** SeqNo: **4342590** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*51.16*	*1.0*	*50*	*0*	*102*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
WorkOrder: HS17120123

QC BATCH REPORT

Batch ID: R306828 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-171208** Units: **ug/L** Analysis Date: **08-Dec-2017 11:11**
Client ID: Run ID: **VOA2_306828** SeqNo: **4342587** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	49.41	1.0	50	0	98.8	77 - 118				
1,1,1-Trichloroethane	48.7	1.0	50	0	97.4	70 - 130				
1,1,2,2-Tetrachloroethane	49.52	1.0	50	0	99.0	70 - 120				
1,1,2-Trichlor-1,2,2-trifluoroethane	46.65	1.0	50	0	93.3	70 - 130				
1,1,2-Trichloroethane	48.52	1.0	50	0	97.0	77 - 113				
1,1-Dichloroethane	48.58	1.0	50	0	97.2	71 - 122				
1,1-Dichloroethene	43.31	1.0	50	0	86.6	70 - 130				
1,1-Dichloropropene	46.28	1.0	50	0	92.6	78 - 118				
1,2,3-Trichlorobenzene	57.06	1.0	50	0	114	70 - 130				
1,2,3-Trichloropropane	50.15	1.0	50	0	100	70 - 127				
1,2,4-Trichlorobenzene	57.88	1.0	50	0	116	77 - 126				
1,2,4-Trimethylbenzene	55.49	1.0	50	0	111	73 - 121				
1,2-Dibromo-3-chloropropane	58.01	1.0	50	0	116	70 - 130				
1,2-Dibromoethane	49.06	1.0	50	0	98.1	76 - 123				
1,2-Dichlorobenzene	47.28	1.0	50	0	94.6	77 - 113				
1,2-Dichloroethane	47.34	1.0	50	0	94.7	70 - 124				
1,2-Dichloropropane	48.66	1.0	50	0	97.3	72 - 119				
1,3,5-Trimethylbenzene	55.57	1.0	50	0	111	75 - 118				
1,3-Dichlorobenzene	46.79	1.0	50	0	93.6	78 - 118				
1,3-Dichloropropane	48.53	1.0	50	0	97.1	75 - 116				
1,4-Dichlorobenzene	45.38	1.0	50	0	90.8	79 - 113				
2,2-Dichloropropane	51.94	1.0	50	0	104	70 - 130				
2-Butanone	113.7	2.0	100	0	114	70 - 130				
2-Chlorotoluene	45.07	1.0	50	0	90.1	70 - 128				
2-Hexanone	109.5	2.0	100	0	110	70 - 130				
4-Chlorotoluene	54.15	1.0	50	0	108	74 - 126				
4-Isopropyltoluene	45.8	1.0	50	0	91.6	74 - 126				
4-Methyl-2-pentanone	102.7	2.0	100	0	103	70 - 130				
Acetone	114.1	2.0	100	0	114	70 - 130				
Benzene	47.64	1.0	50	0	95.3	74 - 120				
Bromobenzene	46.62	1.0	50	0	93.2	78 - 113				
Bromochloromethane	54.24	1.0	50	0	108	76 - 124				
Bromodichloromethane	52.07	1.0	50	0	104	74 - 122				
Bromoform	56.5	1.0	50	0	113	73 - 128				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
WorkOrder: HS17120123

QC BATCH REPORT

Batch ID: R306828 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-171208** Units: **ug/L** Analysis Date: **08-Dec-2017 11:11**
Client ID: Run ID: **VOA2_306828** SeqNo: **4342587** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	41.1	1.0	50	0	82.2	70 - 130				
Carbon disulfide	94.07	2.0	100	0	94.1	70 - 130				
Carbon tetrachloride	45.64	1.0	50	0	91.3	71 - 125				
Chlorobenzene	47.38	1.0	50	0	94.8	76 - 113				
Chloroethane	40.12	1.0	50	0	80.2	70 - 130				
Chloroform	47.57	1.0	50	0	95.1	71 - 121				
Chloromethane	42.03	1.0	50	0	84.1	70 - 129				
cis-1,2-Dichloroethene	50.03	1.0	50	0	100	75 - 122				
cis-1,3-Dichloropropene	53.99	1.0	50	0	108	73 - 127				
Dibromochloromethane	51.69	1.0	50	0	103	77 - 122				
Dibromomethane	52.66	1.0	50	0	105	78 - 121				
Dichlorodifluoromethane	41.36	1.0	50	0	82.7	70 - 130				
Ethylbenzene	48.07	1.0	50	0	96.1	77 - 117				
Hexachlorobutadiene	54.3	1.0	50	0	109	70 - 130				
Isopropylbenzene	50.56	1.0	50	0	101	73 - 127				
m,p-Xylene	92.75	2.0	100	0	92.7	77 - 122				
Methylene chloride	47.93	2.0	50	0	95.9	70 - 127				
Naphthalene	61.51	1.0	50	0	123	70 - 130				
n-Butylbenzene	49.6	1.0	50	0	99.2	72 - 130				
n-Propylbenzene	54.17	1.0	50	0	108	73 - 124				
o-Xylene	48.11	1.0	50	0	96.2	75 - 119				
sec-Butylbenzene	54.73	1.0	50	0	109	73 - 128				
Styrene	48.16	1.0	50	0	96.3	72 - 126				
tert-Butylbenzene	54.83	1.0	50	0	110	73 - 124				
Tetrachloroethene	48.24	1.0	50	0	96.5	76 - 119				
Toluene	45.96	1.0	50	0	91.9	77 - 118				
trans-1,2-Dichloroethene	50.27	1.0	50	0	101	72 - 127				
trans-1,3-Dichloropropene	55.23	1.0	50	0	110	77 - 119				
Trichloroethene	49.82	1.0	50	0	99.6	77 - 121				
Trichlorofluoromethane	42.95	1.0	50	0	85.9	70 - 130				
Vinyl chloride	44.98	1.0	50	0	90.0	70 - 130				
Surr: 1,2-Dichloroethane-d4	*46.57*	*1.0*	*50*	*0*	*93.1*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*50.9*	*1.0*	*50*	*0*	*102*	*82 - 115*				
Surr: Dibromofluoromethane	*43.17*	*1.0*	*50*	*0*	*86.3*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
WorkOrder: HS17120123

QC BATCH REPORT

Batch ID: R306828 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-171208** Units: **ug/L** Analysis Date: **08-Dec-2017 11:11**
Client ID: Run ID: **VOA2_306828** SeqNo: **4342587** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*49.83*	*1.0*	*50*	*0*	*99.7*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
WorkOrder: HS17120123

QC BATCH REPORT

Batch ID: R306828 **Instrument: VOA2** **Method: SW8260**

LCSD Sample ID: **VLCSDW-171208** Units: **ug/L** Analysis Date: **08-Dec-2017 11:36**
Client ID: Run ID: **VOA2_306828** SeqNo: **4342588** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	48.4	1.0	50	0	96.8	77 - 118	49.41	2.07	20	
1,1,1-Trichloroethane	48.71	1.0	50	0	97.4	70 - 130	48.7	0.0157	20	
1,1,2,2-Tetrachloroethane	48.38	1.0	50	0	96.8	70 - 120	49.52	2.33	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	45.52	1.0	50	0	91.0	70 - 130	46.65	2.46	20	
1,1,2-Trichloroethane	47.08	1.0	50	0	94.2	77 - 113	48.52	3.01	20	
1,1-Dichloroethane	47.38	1.0	50	0	94.8	71 - 122	48.58	2.5	20	
1,1-Dichloroethene	41.04	1.0	50	0	82.1	70 - 130	43.31	5.38	20	
1,1-Dichloropropene	44.93	1.0	50	0	89.9	78 - 118	46.28	2.96	20	
1,2,3-Trichlorobenzene	57.25	1.0	50	0	114	70 - 130	57.06	0.334	20	
1,2,3-Trichloropropane	49.65	1.0	50	0	99.3	70 - 127	50.15	1.02	20	
1,2,4-Trichlorobenzene	56.7	1.0	50	0	113	77 - 126	57.88	2.06	20	
1,2,4-Trimethylbenzene	54.25	1.0	50	0	109	73 - 121	55.49	2.25	20	
1,2-Dibromo-3-chloropropane	55.82	1.0	50	0	112	70 - 130	58.01	3.85	20	
1,2-Dibromoethane	48.2	1.0	50	0	96.4	76 - 123	49.06	1.77	20	
1,2-Dichlorobenzene	46.64	1.0	50	0	93.3	77 - 113	47.28	1.36	20	
1,2-Dichloroethane	48.32	1.0	50	0	96.6	70 - 124	47.34	2.03	20	
1,2-Dichloropropane	48.1	1.0	50	0	96.2	72 - 119	48.66	1.15	20	
1,3,5-Trimethylbenzene	53.92	1.0	50	0	108	75 - 118	55.57	3.01	20	
1,3-Dichlorobenzene	45.77	1.0	50	0	91.5	78 - 118	46.79	2.21	20	
1,3-Dichloropropane	48.01	1.0	50	0	96.0	75 - 116	48.53	1.09	20	
1,4-Dichlorobenzene	44.84	1.0	50	0	89.7	79 - 113	45.38	1.22	20	
2,2-Dichloropropane	49.75	1.0	50	0	99.5	70 - 130	51.94	4.3	20	
2-Butanone	106.7	2.0	100	0	107	70 - 130	113.7	6.38	20	
2-Chlorotoluene	43.59	1.0	50	0	87.2	70 - 128	45.07	3.34	20	
2-Hexanone	106	2.0	100	0	106	70 - 130	109.5	3.29	20	
4-Chlorotoluene	51.86	1.0	50	0	104	74 - 126	54.15	4.33	20	
4-Isopropyltoluene	44.37	1.0	50	0	88.7	74 - 126	45.8	3.16	20	
4-Methyl-2-pentanone	101	2.0	100	0	101	70 - 130	102.7	1.61	20	
Acetone	109	2.0	100	0	109	70 - 130	114.1	4.53	20	
Benzene	47.31	1.0	50	0	94.6	74 - 120	47.64	0.708	20	
Bromobenzene	45.39	1.0	50	0	90.8	78 - 113	46.62	2.68	20	
Bromochloromethane	53.29	1.0	50	0	107	76 - 124	54.24	1.78	20	
Bromodichloromethane	52.47	1.0	50	0	105	74 - 122	52.07	0.761	20	
Bromoform	54.37	1.0	50	0	109	73 - 128	56.5	3.85	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
WorkOrder: HS17120123

QC BATCH REPORT

Batch ID: R306828 **Instrument: VOA2** **Method: SW8260**

LCSD Sample ID: **VLCSDW-171208** Units: **ug/L** Analysis Date: **08-Dec-2017 11:36**
Client ID: Run ID: **VOA2_306828** SeqNo: **4342588** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	39.66	1.0	50	0	79.3	70 - 130	41.1	3.56	20	
Carbon disulfide	90.14	2.0	100	0	90.1	70 - 130	94.07	4.27	20	
Carbon tetrachloride	44.47	1.0	50	0	88.9	71 - 125	45.64	2.6	20	
Chlorobenzene	45.51	1.0	50	0	91.0	76 - 113	47.38	4.02	20	
Chloroethane	38.42	1.0	50	0	76.8	70 - 130	40.12	4.33	20	
Chloroform	45.89	1.0	50	0	91.8	71 - 121	47.57	3.59	20	
Chloromethane	40.8	1.0	50	0	81.6	70 - 129	42.03	2.98	20	
cis-1,2-Dichloroethene	48.29	1.0	50	0	96.6	75 - 122	50.03	3.53	20	
cis-1,3-Dichloropropene	53.81	1.0	50	0	108	73 - 127	53.99	0.335	20	
Dibromochloromethane	50.68	1.0	50	0	101	77 - 122	51.69	1.97	20	
Dibromomethane	52.42	1.0	50	0	105	78 - 121	52.66	0.468	20	
Dichlorodifluoromethane	38.58	1.0	50	0	77.2	70 - 130	41.36	6.97	20	
Ethylbenzene	46.78	1.0	50	0	93.6	77 - 117	48.07	2.74	20	
Hexachlorobutadiene	54.06	1.0	50	0	108	70 - 130	54.3	0.442	20	
Isopropylbenzene	48.86	1.0	50	0	97.7	73 - 127	50.56	3.41	20	
m,p-Xylene	90.06	2.0	100	0	90.1	77 - 122	92.75	2.94	20	
Methylene chloride	47.28	2.0	50	0	94.6	70 - 127	47.93	1.36	20	
Naphthalene	60.65	1.0	50	0	121	70 - 130	61.51	1.4	20	
n-Butylbenzene	48.16	1.0	50	0	96.3	72 - 130	49.6	2.95	20	
n-Propylbenzene	52.67	1.0	50	0	105	73 - 124	54.17	2.81	20	
o-Xylene	46.24	1.0	50	0	92.5	75 - 119	48.11	3.96	20	
sec-Butylbenzene	53.02	1.0	50	0	106	73 - 128	54.73	3.16	20	
Styrene	47.05	1.0	50	0	94.1	72 - 126	48.16	2.34	20	
tert-Butylbenzene	52.86	1.0	50	0	106	73 - 124	54.83	3.65	20	
Tetrachloroethene	46.26	1.0	50	0	92.5	76 - 119	48.24	4.18	20	
Toluene	44.46	1.0	50	0	88.9	77 - 118	45.96	3.31	20	
trans-1,2-Dichloroethene	48.74	1.0	50	0	97.5	72 - 127	50.27	3.09	20	
trans-1,3-Dichloropropene	54.67	1.0	50	0	109	77 - 119	55.23	1.02	20	
Trichloroethene	49.81	1.0	50	0	99.6	77 - 121	49.82	0.00972	20	
Trichlorofluoromethane	41.17	1.0	50	0	82.3	70 - 130	42.95	4.22	20	
Vinyl chloride	42.61	1.0	50	0	85.2	70 - 130	44.98	5.42	20	
Surr: 1,2-Dichloroethane-d4	*46.3*	*1.0*	*50*	*0*	*92.6*	*70 - 130*	*46.57*	*0.574*	*20*	
Surr: 4-Bromofluorobenzene	*50.7*	*1.0*	*50*	*0*	*101*	*82 - 115*	*50.9*	*0.389*	*20*	
Surr: Dibromofluoromethane	*43.26*	*1.0*	*50*	*0*	*86.5*	*73 - 126*	*43.17*	*0.192*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
WorkOrder: HS17120123

QC BATCH REPORT

Batch ID: R306828 **Instrument: VOA2** **Method: SW8260**

LCSD Sample ID: **VLCSDW-171208** Units: **ug/L** Analysis Date: **08-Dec-2017 11:36**
Client ID: Run ID: **VOA2_306828** SeqNo: **4342588** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*49.99*	*1.0*	*50*	*0*	*100.0*	*81 - 120*	*49.83*	*0.324*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
WorkOrder: HS17120123

QC BATCH REPORT

Batch ID: R306828 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS17120220-02MS** Units: **ug/L** Analysis Date: **08-Dec-2017 15:42**
Client ID: Run ID: **VOA2_306828** SeqNo: **4343750** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	48.98	1.0	50	0	98.0	70 - 120				
1,1,1-Trichloroethane	51.66	1.0	50	0	103	70 - 130				
1,1,2,2-Tetrachloroethane	47.3	1.0	50	0	94.6	70 - 123				
1,1,2-Trichlor-1,2,2-trifluoroethane	50.97	1.0	50	0	102	70 - 130				
1,1,2-Trichloroethane	46.84	1.0	50	0	93.7	70 - 117				
1,1-Dichloroethane	47.77	1.0	50	0	95.5	70 - 127				
1,1-Dichloroethene	45.75	1.0	50	0	91.5	70 - 130				
1,1-Dichloropropene	46.97	1.0	50	0	93.9	70 - 129				
1,2,3-Trichlorobenzene	54.52	1.0	50	0	109	70 - 130				
1,2,3-Trichloropropane	48.49	1.0	50	0	97.0	70 - 130				
1,2,4-Trichlorobenzene	55.35	1.0	50	0	111	70 - 125				
1,2,4-Trimethylbenzene	54.27	1.0	50	0	109	70 - 125				
1,2-Dibromo-3-chloropropane	55.3	1.0	50	0	111	70 - 130				
1,2-Dibromoethane	46.65	1.0	50	0	93.3	70 - 124				
1,2-Dichlorobenzene	45.12	1.0	50	0	90.2	70 - 115				
1,2-Dichloroethane	45.89	1.0	50	0	91.8	70 - 127				
1,2-Dichloropropane	47.47	1.0	50	0	94.9	70 - 122				
1,3,5-Trimethylbenzene	55.62	1.0	50	0	111	70 - 126				
1,3-Dichlorobenzene	44.7	1.0	50	0	89.4	70 - 119				
1,3-Dichloropropane	47.34	1.0	50	0	94.7	70 - 121				
1,4-Dichlorobenzene	44.07	1.0	50	0	88.1	70 - 114				
2,2-Dichloropropane	50.71	1.0	50	0	101	70 - 130				
2-Butanone	109.2	2.0	100	0	109	70 - 130				
2-Chlorotoluene	44.47	1.0	50	0	88.9	70 - 130				
2-Hexanone	107.9	2.0	100	0	108	70 - 130				
4-Chlorotoluene	52.85	1.0	50	0	106	70 - 130				
4-Isopropyltoluene	46.52	1.0	50	0	93.0	70 - 130				
4-Methyl-2-pentanone	103.9	2.0	100	0	104	70 - 130				
Acetone	113.4	2.0	100	0	113	70 - 130				
Benzene	48.21	1.0	50	0	96.4	70 - 127				
Bromobenzene	44.59	1.0	50	0	89.2	70 - 115				
Bromochloromethane	51.54	1.0	50	0	103	70 - 127				
Bromodichloromethane	50.93	1.0	50	0	102	70 - 124				
Bromoform	53.39	1.0	50	0	107	70 - 129				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
WorkOrder: HS17120123

QC BATCH REPORT

Batch ID: R306828 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS17120220-02MS** Units: **ug/L** Analysis Date: **08-Dec-2017 15:42**
Client ID: Run ID: **VOA2_306828** SeqNo: **4343750** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	41.49	1.0	50	0	83.0	70 - 130				
Carbon disulfide	96.57	2.0	100	0	96.6	70 - 130				
Carbon tetrachloride	48.78	1.0	50	0	97.6	70 - 130				
Chlorobenzene	46.6	1.0	50	0	93.2	70 - 114				
Chloroethane	41.03	1.0	50	0	82.1	70 - 130				
Chloroform	45.88	1.0	50	0	91.8	70 - 125				
Chloromethane	41.03	1.0	50	0	82.1	70 - 130				
cis-1,2-Dichloroethene	48.54	1.0	50	0	97.1	70 - 128				
cis-1,3-Dichloropropene	52.73	1.0	50	0	105	70 - 125				
Dibromochloromethane	49.49	1.0	50	0	99.0	70 - 124				
Dibromomethane	50.86	1.0	50	0	102	70 - 124				
Dichlorodifluoromethane	46.75	1.0	50	0	93.5	70 - 130				
Ethylbenzene	48.66	1.0	50	0	97.3	70 - 124				
Hexachlorobutadiene	55.43	1.0	50	0	111	70 - 130				
Isopropylbenzene	51.82	1.0	50	0	104	70 - 130				
m,p-Xylene	93.48	2.0	100	0	93.5	70 - 130				
Methylene chloride	46.05	2.0	50	0	92.1	70 - 128				
Naphthalene	57.32	1.0	50	0	115	70 - 130				
n-Butylbenzene	49.73	1.0	50	0	99.5	70 - 130				
n-Propylbenzene	55.26	1.0	50	0	111	70 - 130				
o-Xylene	47.64	1.0	50	0	95.3	70 - 124				
sec-Butylbenzene	56.23	1.0	50	0	112	70 - 130				
Styrene	46.74	1.0	50	0	93.5	70 - 130				
tert-Butylbenzene	55.76	1.0	50	0	112	70 - 130				
Tetrachloroethene	49.7	1.0	50	0	99.4	70 - 130				
Toluene	46.03	1.0	50	0	92.1	70 - 123				
trans-1,2-Dichloroethene	48.86	1.0	50	0	97.7	70 - 130				
trans-1,3-Dichloropropene	52.56	1.0	50	0	105	70 - 121				
Trichloroethene	50.93	1.0	50	0	102	70 - 129				
Trichlorofluoromethane	46.26	1.0	50	0	92.5	70 - 130				
Vinyl chloride	47.9	1.0	50	0	95.8	70 - 130				
Surr: 1,2-Dichloroethane-d4	*47.14*	*1.0*	*50*	*0*	*94.3*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*51.01*	*1.0*	*50*	*0*	*102*	*81 - 113*				
Surr: Dibromofluoromethane	*41.93*	*1.0*	*50*	*0*	*83.9*	*77 - 123*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
WorkOrder: HS17120123

QC BATCH REPORT

Batch ID: R306828 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS17120220-02MS** Units: **ug/L** Analysis Date: **08-Dec-2017 15:42**
Client ID: Run ID: **VOA2_306828** SeqNo: **4343750** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*50.59*	*1.0*	*50*	*0*	*101*	*82 - 127*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
WorkOrder: HS17120123

QC BATCH REPORT

Batch ID: R306828 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS17120220-02MSD** Units: **ug/L** Analysis Date: **08-Dec-2017 16:06**
Client ID: Run ID: **VOA2_306828** SeqNo: **4343751** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	47.42	1.0	50	0	94.8	70 - 120	48.98	3.24	20	
1,1,1-Trichloroethane	51.09	1.0	50	0	102	70 - 130	51.66	1.11	20	
1,1,2,2-Tetrachloroethane	47.71	1.0	50	0	95.4	70 - 123	47.3	0.852	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	48.77	1.0	50	0	97.5	70 - 130	50.97	4.41	20	
1,1,2-Trichloroethane	45.25	1.0	50	0	90.5	70 - 117	46.84	3.44	20	
1,1-Dichloroethane	47.36	1.0	50	0	94.7	70 - 127	47.77	0.865	20	
1,1-Dichloroethene	43.93	1.0	50	0	87.9	70 - 130	45.75	4.06	20	
1,1-Dichloropropene	47.34	1.0	50	0	94.7	70 - 129	46.97	0.773	20	
1,2,3-Trichlorobenzene	56.72	1.0	50	0	113	70 - 130	54.52	3.95	20	
1,2,3-Trichloropropane	48.53	1.0	50	0	97.1	70 - 130	48.49	0.0891	20	
1,2,4-Trichlorobenzene	54.84	1.0	50	0	110	70 - 125	55.35	0.91	20	
1,2,4-Trimethylbenzene	53.72	1.0	50	0	107	70 - 125	54.27	1.03	20	
1,2-Dibromo-3-chloropropane	55.33	1.0	50	0	111	70 - 130	55.3	0.064	20	
1,2-Dibromoethane	46.63	1.0	50	0	93.3	70 - 124	46.65	0.0443	20	
1,2-Dichlorobenzene	44.62	1.0	50	0	89.2	70 - 115	45.12	1.12	20	
1,2-Dichloroethane	44.76	1.0	50	0	89.5	70 - 127	45.89	2.47	20	
1,2-Dichloropropane	45.28	1.0	50	0	90.6	70 - 122	47.47	4.73	20	
1,3,5-Trimethylbenzene	55.24	1.0	50	0	110	70 - 126	55.62	0.673	20	
1,3-Dichlorobenzene	44.65	1.0	50	0	89.3	70 - 119	44.7	0.101	20	
1,3-Dichloropropane	46.29	1.0	50	0	92.6	70 - 121	47.34	2.25	20	
1,4-Dichlorobenzene	43.29	1.0	50	0	86.6	70 - 114	44.07	1.78	20	
2,2-Dichloropropane	50.7	1.0	50	0	101	70 - 130	50.71	0.00886	20	
2-Butanone	109.1	2.0	100	0	109	70 - 130	109.2	0.0387	20	
2-Chlorotoluene	43.28	1.0	50	0	86.6	70 - 130	44.47	2.71	20	
2-Hexanone	107.3	2.0	100	0	107	70 - 130	107.9	0.541	20	
4-Chlorotoluene	51.89	1.0	50	0	104	70 - 130	52.85	1.82	20	
4-Isopropyltoluene	45.5	1.0	50	0	91.0	70 - 130	46.52	2.22	20	
4-Methyl-2-pentanone	99.83	2.0	100	0	99.8	70 - 130	103.9	4	20	
Acetone	114.3	2.0	100	0	114	70 - 130	113.4	0.779	20	
Benzene	46.62	1.0	50	0	93.2	70 - 127	48.21	3.34	20	
Bromobenzene	44.07	1.0	50	0	88.1	70 - 115	44.59	1.19	20	
Bromochloromethane	50.82	1.0	50	0	102	70 - 127	51.54	1.42	20	
Bromodichloromethane	50.04	1.0	50	0	100	70 - 124	50.93	1.77	20	
Bromoform	52.55	1.0	50	0	105	70 - 129	53.39	1.59	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
WorkOrder: HS17120123

QC BATCH REPORT

Batch ID: R306828 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS17120220-02MSD** Units: **ug/L** Analysis Date: **08-Dec-2017 16:06**
Client ID: Run ID: **VOA2_306828** SeqNo: **4343751** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	40.47	1.0	50	0	80.9	70 - 130	41.49	2.5	20	
Carbon disulfide	95.65	2.0	100	0	95.7	70 - 130	96.57	0.958	20	
Carbon tetrachloride	46.46	1.0	50	0	92.9	70 - 130	48.78	4.86	20	
Chlorobenzene	45.42	1.0	50	0	90.8	70 - 114	46.6	2.58	20	
Chloroethane	41.05	1.0	50	0	82.1	70 - 130	41.03	0.0488	20	
Chloroform	45.77	1.0	50	0	91.5	70 - 125	45.88	0.236	20	
Chloromethane	41.05	1.0	50	0	82.1	70 - 130	41.03	0.0341	20	
cis-1,2-Dichloroethene	47.75	1.0	50	0	95.5	70 - 128	48.54	1.63	20	
cis-1,3-Dichloropropene	51.59	1.0	50	0	103	70 - 125	52.73	2.2	20	
Dibromochloromethane	48.35	1.0	50	0	96.7	70 - 124	49.49	2.33	20	
Dibromomethane	50.42	1.0	50	0	101	70 - 124	50.86	0.878	20	
Dichlorodifluoromethane	43.37	1.0	50	0	86.7	70 - 130	46.75	7.5	20	
Ethylbenzene	46.81	1.0	50	0	93.6	70 - 124	48.66	3.88	20	
Hexachlorobutadiene	56.27	1.0	50	0	113	70 - 130	55.43	1.49	20	
Isopropylbenzene	49.94	1.0	50	0	99.9	70 - 130	51.82	3.7	20	
m,p-Xylene	90.71	2.0	100	0	90.7	70 - 130	93.48	3.01	20	
Methylene chloride	44.71	2.0	50	0	89.4	70 - 128	46.05	2.96	20	
Naphthalene	58.01	1.0	50	0	116	70 - 130	57.32	1.21	20	
n-Butylbenzene	48.93	1.0	50	0	97.9	70 - 130	49.73	1.62	20	
n-Propylbenzene	54.01	1.0	50	0	108	70 - 130	55.26	2.28	20	
o-Xylene	46.12	1.0	50	0	92.2	70 - 124	47.64	3.23	20	
sec-Butylbenzene	55.24	1.0	50	0	110	70 - 130	56.23	1.77	20	
Styrene	46.18	1.0	50	0	92.4	70 - 130	46.74	1.22	20	
tert-Butylbenzene	54.53	1.0	50	0	109	70 - 130	55.76	2.22	20	
Tetrachloroethene	48.9	1.0	50	0	97.8	70 - 130	49.7	1.61	20	
Toluene	44.51	1.0	50	0	89.0	70 - 123	46.03	3.36	20	
trans-1,2-Dichloroethene	49.46	1.0	50	0	98.9	70 - 130	48.86	1.23	20	
trans-1,3-Dichloropropene	51.68	1.0	50	0	103	70 - 121	52.56	1.7	20	
Trichloroethene	49.05	1.0	50	0	98.1	70 - 129	50.93	3.77	20	
Trichlorofluoromethane	45.23	1.0	50	0	90.5	70 - 130	46.26	2.24	20	
Vinyl chloride	46.14	1.0	50	0	92.3	70 - 130	47.9	3.74	20	
Surr: 1,2-Dichloroethane-d4	*47.47*	*1.0*	*50*	*0*	*94.9*	*70 - 126*	*47.14*	*0.693*	*20*	
Surr: 4-Bromofluorobenzene	*50.22*	*1.0*	*50*	*0*	*100*	*81 - 113*	*51.01*	*1.57*	*20*	
Surr: Dibromofluoromethane	*43.93*	*1.0*	*50*	*0*	*87.9*	*77 - 123*	*41.93*	*4.67*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
WorkOrder: HS17120123

QC BATCH REPORT

Batch ID: R306828 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS17120220-02MSD** Units: **ug/L** Analysis Date: **08-Dec-2017 16:06**
Client ID: Run ID: **VOA2_306828** SeqNo: **4343751** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*50.03*	*1.0*	*50*	*0*	*100*	*82 - 127*	*50.59*	*1.12*	*20*	

The following samples were analyzed in this batch: HS17120123-01 HS17120123-02 HS17120123-03 HS17120123-04 HS17120123-05 HS17120123-06 HS17120123-07 HS17120123-08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group USA, Corp Date: 11-Dec-17

Client: Aptim Environmental & Infrastucture, Inc.
Project: LHAAP-67 501032
WorkOrder: **HS17120123**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

ALS Group USA, Corp Date: 11-Dec-17

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	17-027-0	27-Mar-2018
California	2919 2016-2018	31-Jul-2018
Illinois	004112	09-May-2018
Kentucky	123043	30-Apr-2018
Louisiana	03087 2017-2017	30-Jun-2018
North Carolina	624-2017	31-Dec-2017
North Dakota	R193 2017-2017	30-Apr-2018
Oklahoma	2017-088	31-Aug-2018
Texas	T104704231-17-19	30-Apr-2018

ALS Group USA, Corp Date: 11-Dec-17

Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS17120123
Date/Time Received: **01-Dec-2017 08:50**
Received by: **JRM**

Checklist completed by: *Raegen Giga* eSignature 4-Dec-2017 Date
Reviewed by: *Sonia West* eSignature 5-Dec-2017 Date

Matrices: **GW**
Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.9c/2.6c uc/c	IR 30	
Cooler(s)/Kit(s):	5962		
Date/Time sample(s) sent to storage:	12/01/2017 08:50		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes: Sample 67WW13-112817-MS/MSD was received but not listed on the chain of custody. This sample was added to HS17111395-03 with the parent sample.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

APTIM

Page 1 of 1

COC ID: 67-NOV2017-GW-ALSHT- | TURNAROUND TIME: normal | RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name	Longhorn AAP			Lab Name	ALS Laboratories			Email Invoice To	FedInvoices@CBIFederalServices.com		
Project Number	501032			Lab Contact	Sonia West						
	LHAAP-67			Email	Sonia.West@alsglobal.com			Email Report To	Sharon.Pennington@CBIFederalServices.com		
Address	1203-B East Grand Avenue			Address	10450 Stancliff Rd., Suite 210			Mail Reports To	Sharon Pennington		
	PMB 202							Address	2410 Cherahala Blvd.		
City	Marshall	State	TX	City	Houston	State	TX	City	Knoxville	State	TN
Postal Code	75670	Country	USA	Postal Code	77099	Country	USA	Postal Code	37932	Country	USA
Phone Number	713.243.7264			Phone Number	281.575.2132 or 281.530.5656						
Project Manager	Praveen Srivastav							Shipping Company			

SAMPLE DETAILS | ANALYSIS REQUESTED

Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	ANALYSIS	VOCs in Water by 8260B	Dissolved Gases in Water by RSK175	Anions in Water by E300.0	TOC in Water by E415.1	TIC in Water by E415.1	Sulfide in Water by E376.1	1,4-Dioxane in Water by 8270DSIM			
67WW07-112917	LHAAP-67	24.65	24.70		WG	11/29/17	0755	4		X						X			
67WW06-112917	LHAAP-67	24.66	24.87		WG	11/29/17	0850	4		X						X			
67WW10-112917	LHAAP-67	25.35	25.60		WG	11/29/17	0940	4		X						X			
67WW09A-112917	LHAAP-67	26.81	27.00		WG	11/29/17	1035	4		X						X			
67WW12-112917	LHAAP-67	26.03	26.26		WG	11/29/17	1125	4		X						X			
67WW12-112917FD	LHAAP-67	26.03	26.26		WG	11/29/17	1125	4		X						X			
67WW16-112917	LHAAP-67	24.81	25.00		WG	11/29/17	1225	4		X						X			
TRIP BLANK						11/29/17		2		X									

HS17120123

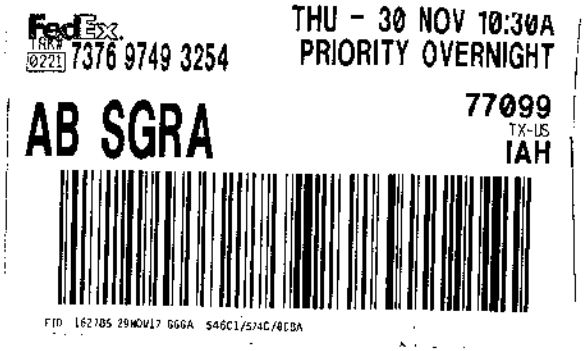
Aptim Environmental & Infrastucture, Inc.

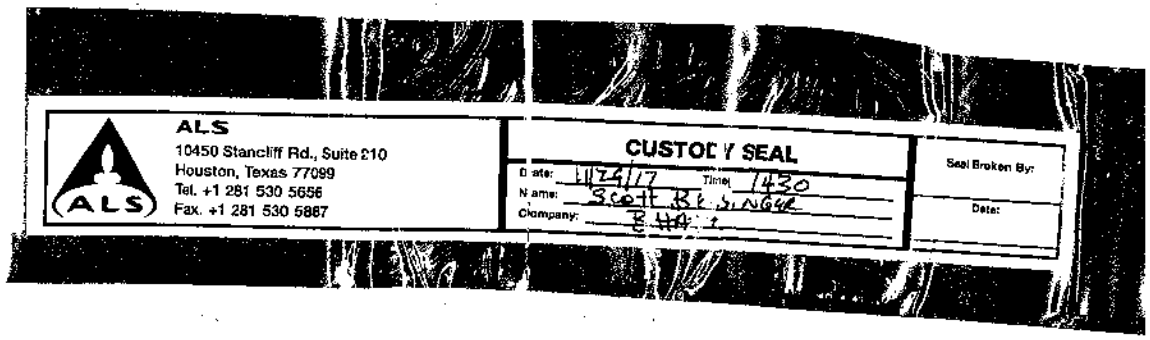
LHAAP-67 501032

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Dissolved Gases should include Carbon dioxide, Ethane, Ethene, and Methane. Anions should include chloride, nitrate, nitrite, and sulfate.	[illegible]/BHATT	11/29/17 1430	JM ALS/KC	12.1.17 0755

Cooler: 5962 2.9c 11-30 CF-0.3c

00912066


FedEx.
TRK# 0221 7376 9749 3254
THU - 30 NOV 10:30A
PRIORITY OVERNIGHT
AB SGRA
77099
TX-US
IAH
FID 162785 29NOV17 GGGA 546C1/574C/4EBA


ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887
CUSTODY SEAL
Date: 11/29/17
Time: 1430
Name: Scott Rk SINGH
Company: EHA
Seal Broken By:
Date:

00912067

ADR Data Validation Checklist
Semivolatile Organics by SW846 8270D

Project Name:	Longhorn AAP (LHAAP-12)	SDG/Report No.:	HS17120123
Project No.:	501032	Lab ID:	Empirical Labs
No. of Samples:	6 Originals & 1 FD	Matrix:	GW
1ST ADR / 2ND BY	SP		

Automated Data Review (ADR) was performed for all areas evaluate except Internal Standards. 2nd Review of these areas and retention times was performed manually and the results of the validation findings are identified in this report. It should also be noted that the ADR produces "Outlier Reports" for areas where anomalies are noted. If all QC criterions are met, no "Outlier Reports" are generated.

ADR Generated Reports:

EDD Nonconformance Report
Field QC and Associated Sample Report*
Outlier Reports
Sample Qualification Report with Reason Codes

SHAWVIEW Generated Reports:

QC Checkprint (QCVALDNT) Report

* Note: If field QC samples (i.e. ER, FB, etc.) are reported in another SDG, the SDG, blanks, detected contaminants, and associated samples are identified in the comment/discussion section provided below

All areas evaluated by **DoD_5.0** and/or SW846-8270 methods and the identification as to whether qualification is necessary is identified below:

Area Evaluated	ADR Outlier Reports	Qualification Necessary (ADR and Manual Validation)	
		YES	NO
1. Hold Time/Preservation.			X
2. DFTPP Tune			X
3. ICAL (RRF and/or 15%RSD)			X
4. CCAL opening (RRF and/or 20%D)			X
5. CCAL closing (%D<±50%)			X
6. Blanks (Method and/or Field QC)			X
7. LCS			X
8. Surrogates			X
9. MS/MSD			X
10. Field Duplicate		X	
11. Internal Standards			X
12. Form1 vs Database/ADR			X

The following section is intended to specify areas evaluated and to provide an explanation (as applicable) for those areas where changes in ADR qualifiers were identified during the manual review and to provide an explanation (as applicable) for the need of additional qualifiers identified during the manual review.

Comments/Discussion:

ADR Data Validation Checklist
Semivolatile Organics by SW846 8270D

Associated samples (7): 67WW07-112917, 67WW06-112917, 67WW10-112917, 67WW09A-112917, 67WW12-112917, 67WW12-112917-FD, and 67WW16-112917
1. Hold Time/Preservation (QAPP - Worksheet#19/SW846/ASTM methods & EPA/600/R-05/124) .
No Qualifications Necessary
Rec'd <6°C; collected 11/29/2017; prepped 12/05/2017; analyzed 12/06/2017
2. DFTPP Tune (instr. performance criteria).
No Qualifications Necessary
3. ICAL (DoD_5.0≤15%RSD or R^2>0.99 and/ SW846 8270 RRF's: J/UJ < recommended criteria)
No Qualifications Necessary
4. ICV (20%D only) / CCAL opening (DoD_5.0/SW846 8270 %D≤20% and SW846 8270 RRF's; J/UJ < recommended criteria)
No Qualifications Necessary
5. Closing CCV (DoD_5.0: %D<±50%) (if applicable by lab)
No Qualification Necessary
6. Blanks "UB" 5X/10X (EPA Region 3&4: Method and/or Field QC)
No Qualifications Necessary
MB MBLK-122922 – Result was nondetect.
7. LCS (QAPP – Worksheet#12/#28)
No Qualification Necessary
LCS LCS/LCSD-122922 – Criteria was met.
8. Surrogates (QAPP – Worksheet#12/#28);; (note: for water analysis, surrogate phenol-d6 is not listed in 5.0 and listed as advisory in 4.2)
No Qualifications Necessary
67WW02-112817 – 2-fluorobiphenyl (143%) slightly high %R but other 2 surrogates met criteria. No qualification.
9. MS/MSD (QAPP – Worksheet#12/#28; parent sample only)
No Qualifications Necessary
A client-specified MS/MSD was not included on this COC.
10. Field Duplicate (QAPP – Worksheet#35 - WATERS ≤20% / SOILS ≤50%)
(non-detect & result <RL or both <RL no qualifiers / non-detect & result >RL "J/UJ" qualifiers)

ADR Data Validation Checklist
Semivolatile Organics by SW846 8270D

Qualifications Necessary
67WW12-112917/67WW12-112917-FD – 0.60 ug/L / 0.48 ug/L; RPD= 22.22%; Qualify estimated, J-17
11.Internal Standards (DoD/QAPP – Worksheet#12/#28; -50% to +100% and RT ±0.5sec)
No Qualifications Necessary
12. Form 1 vs Database/ADR
Check laboratory's Form1 against Database; one sample per SDG per fraction; list sample number:
13. Multiple Results
No Qualifications Necessary

ADR Data Validation Checklist
Volatile Organics by SW846 8260C

Project Name:	LHAAP-67	SDG/Report No.:	HS17120123
Project No.:		Lab ID:	ALS-Houston
No. of Samples:	6 Originals & 1 FD	Matrix:	GW
1ST ADR / 2nd by	SP		

Automated Data Review (ADR) was performed for all areas evaluate except internal standards. 2ND Review of these areas was performed manually and the results of the validation findings are identified in this report. It should also be noted that the ADR produces "Outlier Reports" for areas where anomalies are noted. If all QC criterions are met, no "Outlier Reports" are generated.

ADR Generated Reports

EDD Nonconformance Report
Field QC and Associated Sample Report*
Outlier Reports
Sample Qualification Report with Reason Codes

EQUiS Generated Reports (Copies Attached):

QC Checkprint (QCVALDNT) Report

* Note: If field QC samples (i.e. TB, ER, FB, etc.) are reported in another SDG, the SDG, blanks, detected contaminants, and associated samples are identified in the comment/discussion section provided below

All areas evaluated by **DoD_5.0** and/or SW846 8260 methods and the identification as to whether qualification is necessary are identified below:

Area Evaluated	ADR Outlier Reports	Qualification Necessary (ADR and Manual Validation)	
		YES	NO
1. Hold Time/Preservation.			X
2. BFB Tune.			X
3. ICAL (RRF and/or %RSD)			X
4. CCAL opening (RRF and/or 20% D)			X
5. CCAL closing (%D<±50%)			X
6. Blanks (Method and/or Field QC)			X
7. LCS			X
8. Surrogates			X
9. MS/MSD			X
10. Field Duplicate			X
11. Internal Standards			X
12. Form1 vs Database/ADR			X

The following section is intended to specify areas evaluated and to provide an explanation (as applicable) for those areas where changes in ADR qualifiers were identified during the manual review and to provide an explanation (as applicable) for the need of additional qualifiers identified during the manual review.

Comments/Discussion:

Associated samples (7): 67WW07-112917, 67WW06-112917, 67WW10-112917, 67WW09A-112917, 67WW12-112917, 67WW12-112917-FD, and 67WW16-112917

ADR Data Validation Checklist
Volatile Organics by SW846 8260C

1. Hold Time/Preservation (QAPP - Worksheet#19/SW846/ASTM methods).
No Qualification Necessary
Rec'd <6°C; collected 11/29/2017; analyzed 12/8/2017
2. BFB Tune (instr. performance criteria)
No Qualification Necessary
3. ICAL (DoD: RSD≤15% or linear R^2≥0.99 and Avg RRF's; 2-butanone & acetone >0.05; J/UJ < recommended criteria)
No Qualification Necessary
4. ICV (20%D only) /CCAL opening (DoD: %D≤20% and/or SW846 8260 Table 4 Avg RRF's: J/UJ < recommended criteria)
No Qualification Necessary
5. Closing CCV (DoD_5.0: %D<±50%) (if applicable by lab)
No Qualification Necessary
6. Blanks "UB" 5X/10X (EPA Region 3&4: Method and/or Field QC)
No Qualification Necessary
TB 67TB03-112917 – Results are nondetect.
VBLKW-171208 – Results are nondetect.
7. LCS (QAPP – Worksheet#12/#28)
No Qualification Necessary
VLCSW/LCSDW-171208 – Criteria were met,
8. Surrogates (QAPP - Worksheet#12/#28)
No Qualification Necessary – All recoveries were within acceptance criteria.
9. MS/MSD (DoD/QAPP – Worksheet#12/#28; parent sample only)
No Qualification Necessary
An MS/MSD was not included with these samples.
Batch MS/MSD – Criteria were met.
10. Field Duplicate (QAPP – Worksheet#12 - WATERS ≤20% / SOILS ≤50%)

ADR Data Validation Checklist
Volatile Organics by SW846 8260C

(non-detect & result <RL or both <RL no qualifiers / non-detect & result >RL "J/UJ" qualifiers)

No Qualification Necessary – Criteria were met.

67WW12-112917/67WW12-112917-FD

VOCs	Method	Units	67WW12-112917	LQ	67WW12-112917-FD	LQ	%RPD
1,1-Dichloroethene	8260B	ug/kg	2.2		1.8		20.00
	8260B	ug/kg					
	8260B	ug/kg					

11.Internal Standards (DoD/QAPP – Worksheet#12/#28; -50% to +100% and RT ±0.5sec)

No Qualification Necessary

12. Form 1 vs Database/ADR

Check laboratory's Form1 against Database; one sample per SDG per fraction; list sample number:

13. Multiple Results

No Qualification Necessary

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F: +1 281 530 5887
www.alsglobal.com

Work Order Acknowledgement

Client:	Aptim Environmental & Infrastucture, Inc.	**Work Order:**	**HS17120123**
Project:	LHAAP-67 501032	**Date Received:**	01 Dec 2017
QC Level:	DOD IV **TAT:** 10 Business Days	**Date Due:**	15 Dec 2017

Sample Summary

Sample ID	Field ID	Matrix	Tag No	Type	Collection Date	Date Received	Hold
HS17120123-01	67WW07-112917	Groundwater		N	29-Nov-2017 07:55	01-Dec-2017 08:50	N
HS17120123-02	67WW06-112917	Groundwater		N	29-Nov-2017 08:50	01-Dec-2017 08:50	N
HS17120123-03	67WW10-112917	Groundwater		N	29-Nov-2017 09:40	01-Dec-2017 08:50	N
HS17120123-04	67WW09A-112917	Groundwater		N	29-Nov-2017 10:35	01-Dec-2017 08:50	N
HS17120123-05	67WW12-112917	Groundwater		N	29-Nov-2017 11:25	01-Dec-2017 08:50	N
HS17120123-06	67WW12-112917 FD	Groundwater		FD	29-Nov-2017 11:25	01-Dec-2017 08:50	N
HS17120123-07	67WW16-112917	Groundwater		N	29-Nov-2017 12:25	01-Dec-2017 08:50	N
HS17120123-08	Trip Blank	Water		TB	29-Nov-2017 00:00	01-Dec-2017 08:50	N

Invoice Summary

Invoice To: CB&I Federal Services, LLC **Purchase Order:**

Method	Test	Remarks	Matrix	Unit Price	Mult	Ext Price	Qty	Hold	Amount
8260_LL_W	Low Level Volatiles - SW8260C	VOC 8260	Aqueous	$39.00	1	$39.00	8	N	$312.00
8270SIM_W	Semivolatiles SIM	1,4 Dioxane SIM8270	Aqueous	$47.00	1	$47.00	7	N	$329.00
						Test Total:			$641.00

Total Estimated Cost: USD $641.00

Total Estimated Cost does not include Test Groups that are on Hold.

Analysis Summary

Sample: HS17120123-01 (67WW07-112917)

Test Group: 8260_LL_W VOC 8260

Method	Test	MS	Date Due	Sub	Subcontractor	Hold
SW8260	Low Level Volatiles by SW8260C	N	15-Dec-2017	N		N

Test Group: 8270SIM_W 1,4 Dioxane SIM8270

Method	Test	MS	Date Due	Sub	Subcontractor	Hold
SW8270SIM	Semivolatiles SIM	N	15-Dec-2017	N		N
SW3510	SV Aq Sep Fun Extract-LowLev - 3510C	N	15-Dec-2017	N		N

Sample: HS17120123-02 (67WW06-112917)

Test Group: 8260_LL_W VOC 8260

Work Order Acknowledgement

Method	Test	MS	Date Due	Sub	Subcontractor	Hold
Sample: HS17120123-02 (67WW06-112917)						
Test Group: 8260_LL_W VOC 8260						
SW8260	Low Level Volatiles by SW8260C	N	15-Dec-2017	N		N
Test Group: 8270SIM_W 1,4 Dioxane SIM8270						
SW8270SIM	Semivolatiles SIM	N	15-Dec-2017	N		N
SW3510	SV Aq Sep Fun Extract-LowLev - 3510C	N	15-Dec-2017	N		N
Sample: HS17120123-03 (67WW10-112917)						
Test Group: 8260_LL_W VOC 8260						
SW8260	Low Level Volatiles by SW8260C	N	15-Dec-2017	N		N
Test Group: 8270SIM_W 1,4 Dioxane SIM8270						
SW8270SIM	Semivolatiles SIM	N	15-Dec-2017	N		N
SW3510	SV Aq Sep Fun Extract-LowLev - 3510C	N	15-Dec-2017	N		N
Sample: HS17120123-04 (67WW09A-112917)						
Test Group: 8260_LL_W VOC 8260						
SW8260	Low Level Volatiles by SW8260C	N	15-Dec-2017	N		N
Test Group: 8270SIM_W 1,4 Dioxane SIM8270						
SW8270SIM	Semivolatiles SIM	N	15-Dec-2017	N		N
SW3510	SV Aq Sep Fun Extract-LowLev - 3510C	N	15-Dec-2017	N		N
Sample: HS17120123-05 (67WW12-112917)						
Test Group: 8260_LL_W VOC 8260						
SW8260	Low Level Volatiles by SW8260C	N	15-Dec-2017	N		N
Test Group: 8270SIM_W 1,4 Dioxane SIM8270						
SW8270SIM	Semivolatiles SIM	N	15-Dec-2017	N		N
SW3510	SV Aq Sep Fun Extract-LowLev - 3510C	N	15-Dec-2017	N		N
Sample: HS17120123-06 (67WW12-112917 FD)						
Test Group: 8260_LL_W VOC 8260						
SW8260	Low Level Volatiles by SW8260C	N	15-Dec-2017	N		N

Work Order Acknowledgement

Sample: HS17120123-06 (67WW12-112917 FD)

Test Group: 8270SIM_W 1,4 Dioxane SIM8270

Method	Test	MS	Date Due	Sub	Subcontractor	Hold
SW8270SIM	Semivolatiles SIM	N	15-Dec-2017	N		N
SW3510	SV Aq Sep Fun Extract-LowLev - 3510C	N	15-Dec-2017	N		N

Sample: HS17120123-07 (67WW16-112917)

Test Group: 8260_LL_W VOC 8260

Method	Test	MS	Date Due	Sub	Subcontractor	Hold
SW8260	Low Level Volatiles by SW8260C	N	15-Dec-2017	N		N

Test Group: 8270SIM_W 1,4 Dioxane SIM8270

Method	Test	MS	Date Due	Sub	Subcontractor	Hold
SW8270SIM	Semivolatiles SIM	N	15-Dec-2017	N		N
SW3510	SV Aq Sep Fun Extract-LowLev - 3510C	N	15-Dec-2017	N		N

Sample: HS17120123-08 (Trip Blank)

Test Group: 8260_LL_W VOC 8260

Method	Test	MS	Date Due	Sub	Subcontractor	Hold
SW8260	Low Level Volatiles by SW8260C	N	15-Dec-2017	N		N

APTIM

Page 1 of 1

COC ID: 67-NOV2017-GW-ALSHT- | TURNAROUND TIME: normal | RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name	Longhorn AAP			Lab Name	ALS Laboratories			Email Invoice To	FedInvoices@CBIFederalServices.com		
Project Number	501032			Lab Contact	Sonia West						
	LHAAP-67			Email	Sonia.West@alsglobal.com			Email Report To	Sharon.Pennington@CBIFederalServices.com		
Address	1203-B East Grand Avenue			Address	10450 Stancliff Rd., Suite 210			Mail Reports To	Sharon Pennington		
	PMB 202							Address	2410 Cherahala Blvd.		
City	Marshall	State	TX	City	Houston	State	TX	City	Knoxville	State	TN
Postal Code	75670	Country	USA	Postal Code	77099	Country	USA	Postal Code	37932	Country	USA
Phone Number	713.243.7264			Phone Number	281.575.2132 or 281.530.5656						
Project Manager	Praveen Srivastav							Shipping Company			

SAMPLE DETAILS | ANALYSIS REQUESTED

Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	ANALYSIS: VOCs in Water by 8260B	Dissolved Gases in Water by RSK175	Anions in Water by E300.0	TOC in Water by E415.1	TIC in Water by E415.1	Sulfide in Water by E376.1	1,4-Dioxane in Water by 8270DSIM
67WW07-112917	LHAAP-67	24.65	24.70		WG	11/29/17	0755	4	X						X
67WW06-112917	LHAAP-67	24.66	24.87		WG	11/29/17	0850	4	X						X
67WW10-112917	LHAAP-67	25.35	25.60		WG	11/29/17	0940	4	X						X
67WW09A-112917	LHAAP-67	26.81	27.00		WG	11/29/17	1035	4	X						X
67WW12-112917	LHAAP-67	26.03	26.26		WG	11/29/17	1125	4	X						X
67WW12-112917FD	LHAAP-67	26.03	26.26		WG	11/29/17	1125	4	X						X
67WW16-112917	LHAAP-67	24.81	25.00		WG	11/29/17	1225	4	X						X
TRIP BLANK						11/29/17		2	X						

HS17120123

Aptim Environmental & Infrastucture, Inc.

LHAAP-67 501032

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Dissolved Gases should include Carbon dioxide, Ethane, Ethene, and Methane. Anions should include chloride, nitrate, nitrite, and sulfate.	[illegible]/BHATT	11/29/17 1430	JM ALS-HOU	12-1-17 0850

Cooler: 5962 2.9c 10-30 CF-0.3c

00912077

00912078

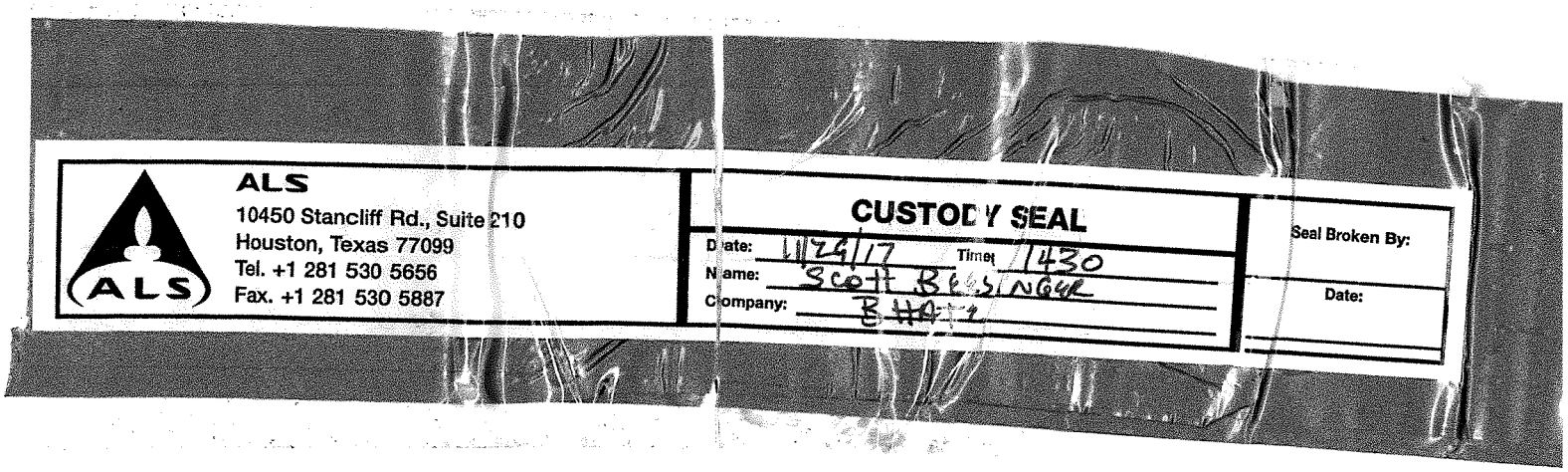
FedEx
TRK# 0221 7376 9749 3254

THU - 30 NOV 10:30A
PRIORITY OVERNIGHT

77099
TX-US
IAH

AB SGRA

FID 162785 29NOV17 GGGA 546C1/574C/0C8A



ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887

CUSTODY SEAL

Date: 11/29/17 Time: 1430
Name: Scott Bessinger
Company: BHI

Seal Broken By:

Date:

10515 Research Drive
Knoxville, TN 37932
Phone: (865) 573-8188
Fax: (865) 573-8133

Client: Sharon Pennington
APTIM
2410 Cherahala Blvd
Knoxville, TN 37932
United States

Phone: 865-690-3211

Fax:

Identifier: 008PE **Date Rec:** 05/02/2018 **Report Date:** 05/08/2018

Client Project #: 501032 **Client Project Name:** Longhorn AAP - LHAAP-67

Purchase Order #: 204818

Analysis Requested: Cancelled, CENSUS, Miscellaneous

Reviewed By:



NOTICE: This report is intended only for the addressee shown above and may contain confidential or privileged information. If the recipient of this material is not the intended recipient or if you have received this in error, please notify Microbial Insights, Inc. immediately. The data and other information in this report represent only the sample(s) analyzed and are rendered upon condition that it is not to be reproduced without approval from Microbial Insights, Inc. Thank you for your cooperation.

MICROBIAL INSIGHTS, INC.

10515 Research Dr., Knoxville, TN 37932
Tel. (865) 573-8188 Fax. (865) 573-8133

CENSUS

Client: **APTIM**
Project: Longhorn AAP - LHAAP-67

MI Project Number: **008PE**
Date Received: 05/02/2018

Sample Information

Client Sample ID:		**67WW13-18050 1**	**67WW08-18050 1**
Sample Date:		05/01/2018	05/01/2018
Units:		cells/mL	cells/mL
Analyst/Reviewer:		JS	JS
Dechlorinating Bacteria			
Dehalococcoides	*DHC*	**2.00E-01 (J)**	**2.00E-01 (J)**

Legend:
NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
< = Result not detected

Quality Assurance/Quality Control Data

Samples Received **5/2/2018**

Component	Date Prepared	Date Analyzed	Arrival Temperature	Positive Control	Extraction Blank	Negative Control
DHC	05/02/2018	05/07/2018	0 °C	102%	non-detect	non-detect

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Houston, TX 77099
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F: +1 281 530 5887
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WorkOrder: HS18050072

Longhorn Army Ammunition Plant -67/501032

Aptim Environmental & Infrastucture, Inc.

Sharon Pennington
2500 City West Blvd., Suite 1700
Houston TX 77042

29-May-2018

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May 23, 2018

Sharon Pennington
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS18050072**

Revision: **1**

Laboratory Results for: **Longhorn Army Ammunition Plant -67/501032**

Dear Sharon,

ALS Environmental received 4 sample(s) on May 02, 2018 for the analysis presented in the following report.

This is a REVISED REPORT. Please see the Case Narrative for discussion concerning this revision.

Regards,

Generated By: JUMOKE.LAWAL

RJ Modashia
Project Manager

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
Work Order: HS18050072

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18050072-01	67WW13-180501	Groundwater		01-May-2018 09:40	02-May-2018 08:30	☐
HS18050072-02	67WW13-180501-FD	Groundwater		01-May-2018 09:40	02-May-2018 08:30	☐
HS18050072-03	67WW08-180501	Groundwater		01-May-2018 12:10	02-May-2018 08:30	☐
HS18050072-04	67TB01-180501	Water	ALS 021518-50	01-May-2018 00:00	02-May-2018 08:30	☐

Revision:1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: Longhorn Army Ammunition Plant -67/501032
Work Order: HS18050072

Work Order Comments

- Revision 1: Took the Trip blank out of hold.

Work Order Comments

- The analysis for Methane, Methene, Ethane and CO2 by RSK175 was subcontracted to ALS Simi Valley, CA. Final report attached.

GCMS Volatiles by Method SW8260

Batch ID: R315639

Sample ID: 67WW08-180501 (HS18050072-03MS)

- The recovery of the Matrix Spike (MS) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The recovery of the MS may be due to sample matrix interference.

Sample ID: 67WW08-180501 (HS18050072-03MSD)

- The recovery of the Matrix Spike Duplicate (MSD) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The failed recovery of the MSD may be due to sample matrix interference.

Batch ID: R316705

Sample ID: 67TB01-180501 (HS18050072-04)

- Sample was analyzed outside of the holding time at the request of the client. Results should be considered estimated.

WetChemistry by Method SW9056

Batch ID: R316275

Sample ID: 67WW08-180501 (HS18050072-03MS)

- The MS and/or MSD recovery was outside of the control limits; however, the result in the parent sample is greater than 4x the spike amount. (Chloride)

Sample ID: 67WW08-180501 (HS18050072-03MSD)

- The MS and/or MSD recovery was outside of the control limits; however, the result in the parent sample is greater than 4x the spike amount. (Chloride)

WetChemistry by Method SW9060

Batch ID: R316293,R316322

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method E376.1

Batch ID: R315916

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SM3500FED

Batch ID: R315840

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Revision:1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
Sample ID: 67WW13-180501
Collection Date: 01-May-2018 09:40

ANALYTICAL REPORT
WorkOrder:HS18050072
Lab ID:HS18050072-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 21:15
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 21:15
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 21:15
1,1,2-Trichloroethane	**4.8**		**0.30**	**0.50**	**1.0**	**ug/L**	1	03-May-2018 21:15
1,1-Dichloroethane	**15**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-May-2018 21:15
1,1-Dichloroethene	**160**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-May-2018 21:15
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 21:15
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 21:15
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 21:15
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	03-May-2018 21:15
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 21:15
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 21:15
1,2-Dichloroethane	**27**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-May-2018 21:15
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 21:15
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 21:15
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 21:15
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 21:15
2-Butanone	0.50	U	0.50	0.50	2.0	ug/L	1	03-May-2018 21:15
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	03-May-2018 21:15
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 21:15
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	03-May-2018 21:15
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	03-May-2018 21:15
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 21:15
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 21:15
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 21:15
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 21:15
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 21:15
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 21:15
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	03-May-2018 21:15
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 21:15
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision:1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
Sample ID: 67WW13-180501
Collection Date: 01-May-2018 09:40

ANALYTICAL REPORT
WorkOrder:HS18050072
Lab ID:HS18050072-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
Chloroform	**0.76**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	03-May-2018 21:15
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 21:15
cis-1,2-Dichloroethene	**0.99**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	03-May-2018 21:15
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	03-May-2018 21:15
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 21:15
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	03-May-2018 21:15
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	03-May-2018 21:15
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	03-May-2018 21:15
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 21:15
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 21:15
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 21:15
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 21:15
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 21:15
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 21:15
Surr: 1,2-Dichloroethane-d4	*95.9*			**0**	*70-126*	*%REC*	*1*	*03-May-2018 21:15*
Surr: 4-Bromofluorobenzene	*106*			**0**	*81-113*	*%REC*	*1*	*03-May-2018 21:15*
Surr: Dibromofluoromethane	*104*			**0**	*77-123*	*%REC*	*1*	*03-May-2018 21:15*
Surr: Toluene-d8	*94.5*			**0**	*82-127*	*%REC*	*1*	*03-May-2018 21:15*
SULFIDE BY E376.1		**Method:E376.1**						Analyst: JHD
Sulfide	1.00	U	1.00	1.00	1.00	mg/L	1	08-May-2018 16:14
FERROUS IRON BY SM3500 FE D		**Method:SM3500FED**						Analyst: JHD
Ferrous Iron	0.0400	nU	0.0200	0.0400	0.0500	mg/L	1	02-May-2018 11:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision:1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
Sample ID: 67WW13-180501
Collection Date: 01-May-2018 09:40

ANALYTICAL REPORT
WorkOrder:HS18050072
Lab ID:HS18050072-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**1,650**		**4.00**	**10.0**	**10.0**	**mg/L**	20	04-May-2018 16:32
Nitrogen, Nitrate (As N)	**0.674**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	03-May-2018 05:44
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	03-May-2018 05:44
Sulfate	**405**		**4.00**	**10.0**	**10.0**	**mg/L**	20	04-May-2018 16:32
TOTAL INORGANIC CARBON BY SW9060A		**Method:SW9060**						Analyst: KMU
Total Inorganic Carbon	**340**		**1.0**	**1.0**	**1.0**	**mg/L**	1	16-May-2018 17:03
TOTAL ORGANIC CARBON BY SW9060A		**Method:SW9060**						Analyst: AJH
Organic Carbon, Total	**3.07**		**0.500**	**0.600**	**1.00**	**mg/L**	1	16-May-2018 00:10
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	14-May-2018 18:09

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision:1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
Sample ID: 67WW13-180501-FD
Collection Date: 01-May-2018 09:40

ANALYTICAL REPORT
WorkOrder:HS18050072
Lab ID:HS18050072-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:07
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 22:07
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 22:07
1,1,2-Trichloroethane	**4.7**		**0.30**	**0.50**	**1.0**	**ug/L**	1	03-May-2018 22:07
1,1-Dichloroethane	**15**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-May-2018 22:07
1,1-Dichloroethene	**170**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-May-2018 22:07
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 22:07
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 22:07
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 22:07
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	03-May-2018 22:07
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:07
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 22:07
1,2-Dichloroethane	**28**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-May-2018 22:07
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 22:07
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 22:07
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 22:07
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:07
2-Butanone	0.50	U	0.50	0.50	2.0	ug/L	1	03-May-2018 22:07
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	03-May-2018 22:07
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 22:07
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	03-May-2018 22:07
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	03-May-2018 22:07
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:07
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 22:07
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:07
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:07
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 22:07
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 22:07
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	03-May-2018 22:07
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 22:07
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision:1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant -67/501032 WorkOrder:HS18050072
Sample ID: 67WW13-180501-FD Lab ID:HS18050072-02
Collection Date: 01-May-2018 09:40 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
Chloroform	**0.78**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	03-May-2018 22:07
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:07
cis-1,2-Dichloroethene	**1.0**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-May-2018 22:07
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	03-May-2018 22:07
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:07
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	03-May-2018 22:07
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	03-May-2018 22:07
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	03-May-2018 22:07
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 22:07
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:07
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:07
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:07
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:07
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:07
Surr: 1,2-Dichloroethane-d4	*99.2*			**0**	*70-126*	*%REC*	*1*	*03-May-2018 22:07*
Surr: 4-Bromofluorobenzene	*106*			**0**	*81-113*	*%REC*	*1*	*03-May-2018 22:07*
Surr: Dibromofluoromethane	*101*			**0**	*77-123*	*%REC*	*1*	*03-May-2018 22:07*
Surr: Toluene-d8	*94.9*			**0**	*82-127*	*%REC*	*1*	*03-May-2018 22:07*
SULFIDE BY E376.1		**Method:E376.1**						Analyst: JHD
Sulfide	1.00	U	1.00	1.00	1.00	mg/L	1	08-May-2018 16:14
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**1,520**		**4.00**	**10.0**	**10.0**	**mg/L**	20	04-May-2018 16:46
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	03-May-2018 06:13
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	03-May-2018 06:13
Sulfate	**370**		**4.00**	**10.0**	**10.0**	**mg/L**	20	04-May-2018 16:46

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision:1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
Sample ID: 67WW13-180501-FD
Collection Date: 01-May-2018 09:40

ANALYTICAL REPORT
WorkOrder:HS18050072
Lab ID:HS18050072-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL INORGANIC CARBON BY SW9060A		**Method:SW9060**						Analyst: KMU
Total Inorganic Carbon	**350**		**1.0**	**1.0**	**1.0**	**mg/L**	1	16-May-2018 17:03
TOTAL ORGANIC CARBON BY SW9060A		**Method:SW9060**						Analyst: AJH
Organic Carbon, Total	**3.18**		**0.500**	**0.600**	**1.00**	**mg/L**	1	16-May-2018 00:28
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	14-May-2018 18:09

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision:1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant -67/501032 WorkOrder:HS18050072
Sample ID: 67WW08-180501 Lab ID:HS18050072-03
Collection Date: 01-May-2018 12:10 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:58
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 22:58
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 22:58
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
1,1-Dichloroethane	**14**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-May-2018 22:58
1,1-Dichloroethene	**300**		**2.0**	**5.0**	**10**	**ug/L**	10	03-May-2018 23:25
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 22:58
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 22:58
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 22:58
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	03-May-2018 22:58
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:58
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 22:58
1,2-Dichloroethane	**11**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-May-2018 22:58
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 22:58
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 22:58
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 22:58
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:58
2-Butanone	0.50	U	0.50	0.50	2.0	ug/L	1	03-May-2018 22:58
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	03-May-2018 22:58
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 22:58
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	03-May-2018 22:58
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	03-May-2018 22:58
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:58
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 22:58
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:58
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:58
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 22:58
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 22:58
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	03-May-2018 22:58
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 22:58
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision:1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
Sample ID: 67WW08-180501
Collection Date: 01-May-2018 12:10

ANALYTICAL REPORT
WorkOrder:HS18050072
Lab ID:HS18050072-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:58
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:58
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:58
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	03-May-2018 22:58
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:58
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	03-May-2018 22:58
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	03-May-2018 22:58
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	03-May-2018 22:58
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 22:58
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:58
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:58
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:58
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:58
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:58
Surr: 1,2-Dichloroethane-d4	*96.5*			**0**	*70-126*	*%REC*	*10*	*03-May-2018 23:25*
Surr: 1,2-Dichloroethane-d4	*96.8*			**0**	*70-126*	*%REC*	*1*	*03-May-2018 22:58*
Surr: 4-Bromofluorobenzene	*107*			**0**	*81-113*	*%REC*	*1*	*03-May-2018 22:58*
Surr: 4-Bromofluorobenzene	*104*			**0**	*81-113*	*%REC*	*10*	*03-May-2018 23:25*
Surr: Dibromofluoromethane	*103*			**0**	*77-123*	*%REC*	*10*	*03-May-2018 23:25*
Surr: Dibromofluoromethane	*101*			**0**	*77-123*	*%REC*	*1*	*03-May-2018 22:58*
Surr: Toluene-d8	*94.2*			**0**	*82-127*	*%REC*	*10*	*03-May-2018 23:25*
Surr: Toluene-d8	*96.0*			**0**	*82-127*	*%REC*	*1*	*03-May-2018 22:58*
SULFIDE BY E376.1		**Method:E376.1**						Analyst: JHD
Sulfide	1.00	U	1.00	1.00	1.00	mg/L	1	08-May-2018 16:14

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision:1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
Sample ID: 67WW08-180501
Collection Date: 01-May-2018 12:10

ANALYTICAL REPORT
WorkOrder:HS18050072
Lab ID:HS18050072-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
FERROUS IRON BY SM3500 FE D		**Method:SM3500FED**						Analyst: JHD
Ferrous Iron	**0.0630**	n	**0.0200**	**0.0400**	**0.0500**	**mg/L**	1	02-May-2018 11:00
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**1,530**		**4.00**	**10.0**	**10.0**	**mg/L**	20	04-May-2018 17:01
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	03-May-2018 07:55
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	03-May-2018 07:55
Sulfate	**407**		**4.00**	**10.0**	**10.0**	**mg/L**	20	04-May-2018 17:01
TOTAL INORGANIC CARBON BY SW9060A		**Method:SW9060**						Analyst: KMU
Total Inorganic Carbon	**150**		**1.0**	**1.0**	**1.0**	**mg/L**	1	16-May-2018 17:03
TOTAL ORGANIC CARBON BY SW9060A		**Method:SW9060**						Analyst: AJH
Organic Carbon, Total	**4.14**		**0.500**	**0.600**	**1.00**	**mg/L**	1	16-May-2018 00:45
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	14-May-2018 18:09

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision:1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant -67/501032 WorkOrder:HS18050072
Sample ID: 67TB01-180501 Lab ID:HS18050072-04
Collection Date: 01-May-2018 00:00 Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	HU	0.30	0.50	1.0	ug/L	1	22-May-2018 12:00
1,1,1-Trichloroethane	0.50	HU	0.20	0.50	1.0	ug/L	1	22-May-2018 12:00
1,1,2,2-Tetrachloroethane	0.50	HU	0.50	0.50	1.0	ug/L	1	22-May-2018 12:00
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	HU	0.50	0.50	1.0	ug/L	1	22-May-2018 12:00
1,1,2-Trichloroethane	0.50	HU	0.30	0.50	1.0	ug/L	1	22-May-2018 12:00
1,1-Dichloroethane	0.50	HU	0.20	0.50	1.0	ug/L	1	22-May-2018 12:00
1,1-Dichloroethene	0.50	HU	0.20	0.50	1.0	ug/L	1	22-May-2018 12:00
1,1-Dichloropropene	0.50	HU	0.30	0.50	1.0	ug/L	1	22-May-2018 12:00
1,2,3-Trichlorobenzene	0.50	HU	0.40	0.50	1.0	ug/L	1	22-May-2018 12:00
1,2,3-Trichloropropane	0.50	HU	0.50	0.50	1.0	ug/L	1	22-May-2018 12:00
1,2,4-Trichlorobenzene	0.50	HU	0.50	0.50	1.0	ug/L	1	22-May-2018 12:00
1,2,4-Trimethylbenzene	0.50	HU	0.30	0.50	1.0	ug/L	1	22-May-2018 12:00
1,2-Dibromo-3-chloropropane	0.50	HU	1.0	0.50	1.0	ug/L	1	22-May-2018 12:00
1,2-Dibromoethane	0.50	HU	0.20	0.50	1.0	ug/L	1	22-May-2018 12:00
1,2-Dichlorobenzene	0.50	HU	0.50	0.50	1.0	ug/L	1	22-May-2018 12:00
1,2-Dichloroethane	0.50	HU	0.20	0.50	1.0	ug/L	1	22-May-2018 12:00
1,2-Dichloropropane	0.50	HU	0.50	0.50	1.0	ug/L	1	22-May-2018 12:00
1,3,5-Trimethylbenzene	0.50	HU	0.30	0.50	1.0	ug/L	1	22-May-2018 12:00
1,3-Dichlorobenzene	0.50	HU	0.40	0.50	1.0	ug/L	1	22-May-2018 12:00
1,3-Dichloropropane	0.50	HU	0.30	0.50	1.0	ug/L	1	22-May-2018 12:00
1,4-Dichlorobenzene	0.50	HU	0.40	0.50	1.0	ug/L	1	22-May-2018 12:00
2,2-Dichloropropane	0.50	HU	0.20	0.50	1.0	ug/L	1	22-May-2018 12:00
2-Butanone	0.50	HU	0.50	0.50	2.0	ug/L	1	22-May-2018 12:00
2-Chlorotoluene	0.50	HU	0.30	0.50	1.0	ug/L	1	22-May-2018 12:00
2-Hexanone	1.0	HU	1.0	1.0	2.0	ug/L	1	22-May-2018 12:00
4-Chlorotoluene	0.50	HU	0.40	0.50	1.0	ug/L	1	22-May-2018 12:00
4-Isopropyltoluene	0.50	HU	0.30	0.50	1.0	ug/L	1	22-May-2018 12:00
4-Methyl-2-pentanone	1.0	HU	0.70	1.0	2.0	ug/L	1	22-May-2018 12:00
Acetone	1.0	HU	2.0	1.0	2.0	ug/L	1	22-May-2018 12:00
Benzene	0.50	HU	0.20	0.50	1.0	ug/L	1	22-May-2018 12:00
Bromobenzene	0.50	HU	0.40	0.50	1.0	ug/L	1	22-May-2018 12:00
Bromochloromethane	0.50	HU	0.20	0.50	1.0	ug/L	1	22-May-2018 12:00
Bromodichloromethane	0.50	HU	0.20	0.50	1.0	ug/L	1	22-May-2018 12:00
Bromoform	0.50	HU	0.40	0.50	1.0	ug/L	1	22-May-2018 12:00
Bromomethane	0.50	HU	0.40	0.50	1.0	ug/L	1	22-May-2018 12:00
Carbon disulfide	1.0	HU	0.60	1.0	2.0	ug/L	1	22-May-2018 12:00
Carbon tetrachloride	0.50	HU	0.50	0.50	1.0	ug/L	1	22-May-2018 12:00
Chlorobenzene	0.50	HU	0.30	0.50	1.0	ug/L	1	22-May-2018 12:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision:1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
Sample ID: 67TB01-180501
Collection Date: 01-May-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18050072
Lab ID:HS18050072-04
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	HU	0.30	0.50	1.0	ug/L	1	22-May-2018 12:00
Chloroform	0.50	HU	0.20	0.50	1.0	ug/L	1	22-May-2018 12:00
Chloromethane	0.50	HU	0.20	0.50	1.0	ug/L	1	22-May-2018 12:00
cis-1,2-Dichloroethene	0.50	HU	0.20	0.50	1.0	ug/L	1	22-May-2018 12:00
cis-1,3-Dichloropropene	0.50	HU	0.10	0.50	1.0	ug/L	1	22-May-2018 12:00
Dibromochloromethane	0.50	HU	0.30	0.50	1.0	ug/L	1	22-May-2018 12:00
Dibromomethane	0.50	HU	0.20	0.50	1.0	ug/L	1	22-May-2018 12:00
Dichlorodifluoromethane	0.50	HU	0.30	0.50	1.0	ug/L	1	22-May-2018 12:00
Ethylbenzene	0.50	HU	0.30	0.50	1.0	ug/L	1	22-May-2018 12:00
Hexachlorobutadiene	0.50	HU	1.0	0.50	1.0	ug/L	1	22-May-2018 12:00
Isopropylbenzene	0.50	HU	0.30	0.50	1.0	ug/L	1	22-May-2018 12:00
m,p-Xylene	1.0	HU	0.50	1.0	2.0	ug/L	1	22-May-2018 12:00
Methylene chloride	1.0	HU	1.0	1.0	2.0	ug/L	1	22-May-2018 12:00
n-Butylbenzene	0.50	HU	0.40	0.50	1.0	ug/L	1	22-May-2018 12:00
n-Propylbenzene	0.50	HU	0.30	0.50	1.0	ug/L	1	22-May-2018 12:00
Naphthalene	0.50	HU	0.30	0.50	1.0	ug/L	1	22-May-2018 12:00
o-Xylene	0.50	HU	0.30	0.50	1.0	ug/L	1	22-May-2018 12:00
sec-Butylbenzene	0.50	HU	0.30	0.50	1.0	ug/L	1	22-May-2018 12:00
Styrene	0.50	HU	0.30	0.50	1.0	ug/L	1	22-May-2018 12:00
tert-Butylbenzene	0.50	HU	0.30	0.50	1.0	ug/L	1	22-May-2018 12:00
Tetrachloroethene	0.50	HU	0.30	0.50	1.0	ug/L	1	22-May-2018 12:00
Toluene	0.50	HU	0.20	0.50	1.0	ug/L	1	22-May-2018 12:00
trans-1,2-Dichloroethene	0.50	HU	0.20	0.50	1.0	ug/L	1	22-May-2018 12:00
trans-1,3-Dichloropropene	0.50	HU	0.20	0.50	1.0	ug/L	1	22-May-2018 12:00
Trichloroethene	0.50	HU	0.20	0.50	1.0	ug/L	1	22-May-2018 12:00
Trichlorofluoromethane	0.50	HU	0.30	0.50	1.0	ug/L	1	22-May-2018 12:00
Vinyl chloride	0.50	HU	0.20	0.50	1.0	ug/L	1	22-May-2018 12:00
Surr: 1,2-Dichloroethane-d4	*98.3*			**0**	*70-126*	*%REC*	*1*	*22-May-2018 12:00*
Surr: 4-Bromofluorobenzene	*99.3*			**0**	*81-113*	*%REC*	*1*	*22-May-2018 12:00*
Surr: Dibromofluoromethane	*106*			**0**	*77-123*	*%REC*	*1*	*22-May-2018 12:00*
Surr: Toluene-d8	*108*			**0**	*82-127*	*%REC*	*1*	*22-May-2018 12:00*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision:1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R315639	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Groundwater		
HS18050072-01	67WW13-180501	01 May 2018 09:40			03 May 2018 21:15	1
HS18050072-02	67WW13-180501-FD	01 May 2018 09:40			03 May 2018 22:07	1
HS18050072-03	67WW08-180501	01 May 2018 12:10			03 May 2018 23:25	10
HS18050072-03	67WW08-180501	01 May 2018 12:10			03 May 2018 22:58	1
Batch ID R315840	**Test Name :** FERROUS IRON BY SM3500 FE D			**Matrix:** Groundwater		
HS18050072-01	67WW13-180501	01 May 2018 09:40			02 May 2018 11:00	1
HS18050072-03	67WW08-180501	01 May 2018 12:10			02 May 2018 11:00	1
Batch ID R315916	**Test Name :** SULFIDE BY E376.1			**Matrix:** Groundwater		
HS18050072-01	67WW13-180501	01 May 2018 09:40			08 May 2018 16:14	1
HS18050072-02	67WW13-180501-FD	01 May 2018 09:40			08 May 2018 16:14	1
HS18050072-03	67WW08-180501	01 May 2018 12:10			08 May 2018 16:14	1
Batch ID R316140	**Test Name :** SUBCONTRACT ANALYSIS - RSK			**Matrix:** Groundwater		
HS18050072-01	67WW13-180501	01 May 2018 09:40			14 May 2018 18:09	1
HS18050072-02	67WW13-180501-FD	01 May 2018 09:40			14 May 2018 18:09	1
HS18050072-03	67WW08-180501	01 May 2018 12:10			14 May 2018 18:09	1
Batch ID R316275	**Test Name :** ANIONS BY SW9056A			**Matrix:** Groundwater		
HS18050072-01	67WW13-180501	01 May 2018 09:40			04 May 2018 16:32	20
HS18050072-01	67WW13-180501	01 May 2018 09:40			03 May 2018 05:44	1
HS18050072-02	67WW13-180501-FD	01 May 2018 09:40			04 May 2018 16:46	20
HS18050072-02	67WW13-180501-FD	01 May 2018 09:40			03 May 2018 06:13	1
HS18050072-03	67WW08-180501	01 May 2018 12:10			04 May 2018 17:01	20
HS18050072-03	67WW08-180501	01 May 2018 12:10			03 May 2018 07:55	1
Batch ID R316293	**Test Name :** TOTAL ORGANIC CARBON BY SW9060A			**Matrix:** Groundwater		
HS18050072-01	67WW13-180501	01 May 2018 09:40			16 May 2018 00:10	1
HS18050072-02	67WW13-180501-FD	01 May 2018 09:40			16 May 2018 00:28	1
HS18050072-03	67WW08-180501	01 May 2018 12:10			16 May 2018 00:45	1
Batch ID R316322	**Test Name :** TOTAL INORGANIC CARBON BY SW9060A			**Matrix:** Groundwater		
HS18050072-01	67WW13-180501	01 May 2018 09:40			16 May 2018 17:03	1
HS18050072-02	67WW13-180501-FD	01 May 2018 09:40			16 May 2018 17:03	1
HS18050072-03	67WW08-180501	01 May 2018 12:10			16 May 2018 17:03	1
Batch ID R316705	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS18050072-04	67TB01-180501	01 May 2018 00:00			22 May 2018 12:00	1

Revision:1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R315639 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180503** Units: **ug/L** Analysis Date: **03-May-2018 20:50**
Client ID: Run ID: **VOA2_315639** SeqNo: **4547615** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	0.50	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R315639 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180503** Units: **ug/L** Analysis Date: **03-May-2018 20:50**
Client ID: Run ID: **VOA2_315639** SeqNo: **4547615** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	0.50	1.0								U
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*47.47*	*1.0*	*50*	*0*	*94.9*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*53.23*	*1.0*	*50*	*0*	*106*	*82 - 115*				
Surr: Dibromofluoromethane	*49.83*	*1.0*	*50*	*0*	*99.7*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R315639 **Instrument:** VOA2 **Method:** SW8260

MBLK Sample ID: **VBLKW-180503** Units: **ug/L** Analysis Date: **03-May-2018 20:50**
Client ID: Run ID: **VOA2_315639** SeqNo: **4547615** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*47.85*	*1.0*	*50*	*0*	*95.7*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R315639 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180503** Units: **ug/L** Analysis Date: **03-May-2018 20:01**
Client ID: Run ID: **VOA2_315639** SeqNo: **4547650** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	45.06	1.0	50	0	90.1	77 - 118				
1,1,1-Trichloroethane	49.16	1.0	50	0	98.3	70 - 130				
1,1,2,2-Tetrachloroethane	53.32	1.0	50	0	107	70 - 120				
1,1,2-Trichlor-1,2,2-trifluoroethane	48.19	1.0	50	0	96.4	70 - 130				
1,1,2-Trichloroethane	44.98	1.0	50	0	90.0	77 - 113				
1,1-Dichloroethane	47.13	1.0	50	0	94.3	71 - 122				
1,1-Dichloroethene	50.26	1.0	50	0	101	70 - 130				
1,1-Dichloropropene	52.98	1.0	50	0	106	78 - 118				
1,2,3-Trichlorobenzene	50.44	1.0	50	0	101	70 - 130				
1,2,3-Trichloropropane	45.33	1.0	50	0	90.7	70 - 127				
1,2,4-Trichlorobenzene	50.78	1.0	50	0	102	77 - 126				
1,2,4-Trimethylbenzene	49.8	1.0	50	0	99.6	73 - 121				
1,2-Dibromo-3-chloropropane	48.26	1.0	50	0	96.5	70 - 130				
1,2-Dibromoethane	47.85	1.0	50	0	95.7	76 - 123				
1,2-Dichlorobenzene	49.03	1.0	50	0	98.1	77 - 113				
1,2-Dichloroethane	47.21	1.0	50	0	94.4	70 - 124				
1,2-Dichloropropane	53.48	1.0	50	0	107	72 - 119				
1,3,5-Trimethylbenzene	50.1	1.0	50	0	100	75 - 118				
1,3-Dichlorobenzene	54.15	1.0	50	0	108	78 - 118				
1,3-Dichloropropane	45.4	1.0	50	0	90.8	75 - 116				
1,4-Dichlorobenzene	53.15	1.0	50	0	106	79 - 113				
2,2-Dichloropropane	46.26	1.0	50	0	92.5	70 - 130				
2-Butanone	92.85	2.0	100	0	92.9	70 - 130				
2-Chlorotoluene	54.22	1.0	50	0	108	70 - 128				
2-Hexanone	91.99	2.0	100	0	92.0	70 - 130				
4-Chlorotoluene	55.15	1.0	50	0	110	74 - 126				
4-Isopropyltoluene	46.97	1.0	50	0	93.9	74 - 126				
4-Methyl-2-pentanone	89.22	2.0	100	0	89.2	70 - 130				
Acetone	101.3	2.0	100	0	101	70 - 130				
Benzene	49.26	1.0	50	0	98.5	74 - 120				
Bromobenzene	53.01	1.0	50	0	106	78 - 113				
Bromochloromethane	50.94	1.0	50	0	102	76 - 124				
Bromodichloromethane	53.59	1.0	50	0	107	74 - 122				
Bromoform	50.34	1.0	50	0	101	73 - 128				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R315639 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180503** Units: **ug/L** Analysis Date: **03-May-2018 20:01**
Client ID: Run ID: **VOA2_315639** SeqNo: **4547650** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	58.29	1.0	50	0	117	70 - 130				
Carbon disulfide	94.89	2.0	100	0	94.9	70 - 130				
Carbon tetrachloride	52.18	1.0	50	0	104	71 - 125				
Chlorobenzene	49.46	1.0	50	0	98.9	76 - 113				
Chloroethane	46.39	1.0	50	0	92.8	70 - 130				
Chloroform	46.27	1.0	50	0	92.5	71 - 121				
Chloromethane	54.61	1.0	50	0	109	70 - 129				
cis-1,2-Dichloroethene	46.75	1.0	50	0	93.5	75 - 122				
cis-1,3-Dichloropropene	47.53	1.0	50	0	95.1	73 - 127				
Dibromochloromethane	46.36	1.0	50	0	92.7	77 - 122				
Dibromomethane	48.37	1.0	50	0	96.7	78 - 121				
Dichlorodifluoromethane	50.27	1.0	50	0	101	70 - 130				
Ethylbenzene	53.22	1.0	50	0	106	77 - 117				
Hexachlorobutadiene	52.04	1.0	50	0	104	70 - 130				
Isopropylbenzene	49.7	1.0	50	0	99.4	73 - 127				
m,p-Xylene	99.48	2.0	100	0	99.5	77 - 122				
Methylene chloride	52.4	2.0	50	0	105	70 - 127				
Naphthalene	51.99	1.0	50	0	104	70 - 130				
n-Butylbenzene	49.38	1.0	50	0	98.8	72 - 130				
n-Propylbenzene	49.64	1.0	50	0	99.3	73 - 124				
o-Xylene	54.6	1.0	50	0	109	75 - 119				
sec-Butylbenzene	48.16	1.0	50	0	96.3	73 - 128				
Styrene	49.3	1.0	50	0	98.6	72 - 126				
tert-Butylbenzene	49.95	1.0	50	0	99.9	73 - 124				
Tetrachloroethene	45.07	1.0	50	0	90.1	76 - 119				
Toluene	49.61	1.0	50	0	99.2	77 - 118				
trans-1,2-Dichloroethene	49.22	1.0	50	0	98.4	72 - 127				
trans-1,3-Dichloropropene	51.71	1.0	50	0	103	77 - 119				
Trichloroethene	46.71	1.0	50	0	93.4	77 - 121				
Trichlorofluoromethane	49.66	1.0	50	0	99.3	70 - 130				
Vinyl chloride	47.99	1.0	50	0	96.0	70 - 130				
Surr: 1,2-Dichloroethane-d4	*48.81*	*1.0*	*50*	*0*	*97.6*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*48.81*	*1.0*	*50*	*0*	*97.6*	*82 - 115*				
Surr: Dibromofluoromethane	*47.44*	*1.0*	*50*	*0*	*94.9*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R315639 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180503** Units: **ug/L** Analysis Date: **03-May-2018 20:01**
Client ID: Run ID: **VOA2_315639** SeqNo: **4547650** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*41.3*	*1.0*	*50*	*0*	*82.6*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R315639 **Instrument:** VOA2 **Method:** SW8260

MS Sample ID: **HS18050072-03MS** Units: **ug/L** Analysis Date: **03-May-2018 23:50**
Client ID: **67WW08-180501** Run ID: **VOA2_315639** SeqNo: **4547637** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	51.87	1.0	50	0	104	70 - 120				
1,1,1-Trichloroethane	57.34	1.0	50	0	115	70 - 130				
1,1,2,2-Tetrachloroethane	58.18	1.0	50	0	116	70 - 123				
1,1,2-Trichlor-1,2,2-trifluoroethane	57.62	1.0	50	0	115	70 - 130				
1,1,2-Trichloroethane	51.86	1.0	50	0	104	70 - 117				
1,1-Dichloroethane	67.53	1.0	50	14.15	107	70 - 127				
1,1-Dichloroethene	327.8	1.0	50	264.6	126	70 - 130				EO
1,1-Dichloropropene	64.63	1.0	50	0	129	70 - 129				S
1,2,3-Trichlorobenzene	52.62	1.0	50	0	105	70 - 130				
1,2,3-Trichloropropane	48.48	1.0	50	0	97.0	70 - 130				
1,2,4-Trichlorobenzene	55.73	1.0	50	0	111	70 - 125				
1,2,4-Trimethylbenzene	58.14	1.0	50	0	116	70 - 125				
1,2-Dibromo-3-chloropropane	50.96	1.0	50	0	102	70 - 130				
1,2-Dibromoethane	53.21	1.0	50	0	106	70 - 124				
1,2-Dichlorobenzene	56.24	1.0	50	0	112	70 - 115				
1,2-Dichloroethane	62.66	1.0	50	11.31	103	70 - 127				
1,2-Dichloropropane	62.38	1.0	50	0	125	70 - 122				S
1,3,5-Trimethylbenzene	58.7	1.0	50	0	117	70 - 126				
1,3-Dichlorobenzene	61.07	1.0	50	0	122	70 - 119				S
1,3-Dichloropropane	50.85	1.0	50	0	102	70 - 121				
1,4-Dichlorobenzene	60.07	1.0	50	0	120	70 - 114				S
2,2-Dichloropropane	51.06	1.0	50	0	102	70 - 130				
2-Butanone	97.62	2.0	100	0	97.6	70 - 130				
2-Chlorotoluene	62.27	1.0	50	0	125	70 - 130				
2-Hexanone	103.2	2.0	100	0	103	70 - 130				
4-Chlorotoluene	63.23	1.0	50	0	126	70 - 130				
4-Isopropyltoluene	55.08	1.0	50	0	110	70 - 130				
4-Methyl-2-pentanone	100.5	2.0	100	0	101	70 - 130				
Acetone	104.4	2.0	100	0	104	70 - 130				
Benzene	58.45	1.0	50	0	117	70 - 127				
Bromobenzene	60.38	1.0	50	0	121	70 - 115				S
Bromochloromethane	55.35	1.0	50	0	111	70 - 127				
Bromodichloromethane	62.03	1.0	50	0	124	70 - 124				S
Bromoform	55.78	1.0	50	0	112	70 - 129				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R315639 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18050072-03MS** Units: **ug/L** Analysis Date: **03-May-2018 23:50**
Client ID: **67WW08-180501** Run ID: **VOA2_315639** SeqNo: **4547637** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	66.62	1.0	50	0	133	70 - 130				S
Carbon disulfide	111.9	2.0	100	0	112	70 - 130				
Carbon tetrachloride	63.09	1.0	50	0	126	70 - 130				
Chlorobenzene	58.7	1.0	50	0	117	70 - 114				S
Chloroethane	56.84	1.0	50	0	114	70 - 130				
Chloroform	52.17	1.0	50	0	104	70 - 125				
Chloromethane	58.37	1.0	50	0	117	70 - 130				
cis-1,2-Dichloroethene	52.76	1.0	50	0	106	70 - 128				
cis-1,3-Dichloropropene	53.73	1.0	50	0	107	70 - 125				
Dibromochloromethane	52.81	1.0	50	0	106	70 - 124				
Dibromomethane	55.21	1.0	50	0	110	70 - 124				
Dichlorodifluoromethane	62.02	1.0	50	0	124	70 - 130				
Ethylbenzene	64.59	1.0	50	0	129	70 - 124				S
Hexachlorobutadiene	58.22	1.0	50	0	116	70 - 130				
Isopropylbenzene	61.15	1.0	50	0	122	70 - 130				
m,p-Xylene	121.5	2.0	100	0	121	70 - 130				
Methylene chloride	58.7	2.0	50	0	117	70 - 128				
Naphthalene	54.68	1.0	50	0	109	70 - 130				
n-Butylbenzene	57.56	1.0	50	0	115	70 - 130				
n-Propylbenzene	59.36	1.0	50	0	119	70 - 130				
o-Xylene	64.96	1.0	50	0	130	70 - 124				S
sec-Butylbenzene	56.21	1.0	50	0	112	70 - 130				
Styrene	56.31	1.0	50	0	113	70 - 130				
tert-Butylbenzene	59.34	1.0	50	0	119	70 - 130				
Tetrachloroethene	55.58	1.0	50	0	111	70 - 130				
Toluene	60.77	1.0	50	0	122	70 - 123				
trans-1,2-Dichloroethene	57.98	1.0	50	0	116	70 - 130				
trans-1,3-Dichloropropene	56.85	1.0	50	0	114	70 - 121				
Trichloroethene	55.57	1.0	50	0	111	70 - 129				
Trichlorofluoromethane	61.11	1.0	50	0	122	70 - 130				
Vinyl chloride	59.15	1.0	50	0	118	70 - 130				
Surr: 1,2-Dichloroethane-d4	*49.13*	*1.0*	*50*	*0*	*98.3*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*54.1*	*1.0*	*50*	*0*	*108*	*81 - 113*				
Surr: Dibromofluoromethane	*48.36*	*1.0*	*50*	*0*	*96.7*	*77 - 123*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R315639 **Instrument:** VOA2 **Method:** SW8260

MS Sample ID: **HS18050072-03MS** Units: **ug/L** Analysis Date: **03-May-2018 23:50**
Client ID: **67WW08-180501** Run ID: **VOA2_315639** SeqNo: **4547637** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*45.6*	*1.0*	*50*	*0*	*91.2*	*82 - 127*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R315639 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18050072-03MSD** Units: **ug/L** Analysis Date: **04-May-2018 00:14**
Client ID: **67WW08-180501** Run ID: **VOA2_315639** SeqNo: **4547638** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	50.94	1.0	50	0	102	70 - 120	51.87	1.81	20	
1,1,1-Trichloroethane	55.32	1.0	50	0	111	70 - 130	57.34	3.59	20	
1,1,2,2-Tetrachloroethane	57.72	1.0	50	0	115	70 - 123	58.18	0.789	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	55.03	1.0	50	0	110	70 - 130	57.62	4.6	20	
1,1,2-Trichloroethane	51.63	1.0	50	0	103	70 - 117	51.86	0.459	20	
1,1-Dichloroethane	65.35	1.0	50	14.15	102	70 - 127	67.53	3.29	20	
1,1-Dichloroethene	314.1	1.0	50	264.6	99.0	70 - 130	327.8	4.25	20	EO
1,1-Dichloropropene	64.67	1.0	50	0	129	70 - 129	64.63	0.062	20	S
1,2,3-Trichlorobenzene	55.02	1.0	50	0	110	70 - 130	52.62	4.44	20	
1,2,3-Trichloropropane	47.43	1.0	50	0	94.9	70 - 130	48.48	2.19	20	
1,2,4-Trichlorobenzene	55.98	1.0	50	0	112	70 - 125	55.73	0.451	20	
1,2,4-Trimethylbenzene	57.32	1.0	50	0	115	70 - 125	58.14	1.42	20	
1,2-Dibromo-3-chloropropane	52.44	1.0	50	0	105	70 - 130	50.96	2.86	20	
1,2-Dibromoethane	52.52	1.0	50	0	105	70 - 124	53.21	1.31	20	
1,2-Dichlorobenzene	55.5	1.0	50	0	111	70 - 115	56.24	1.32	20	
1,2-Dichloroethane	60.32	1.0	50	11.31	98.0	70 - 127	62.66	3.8	20	
1,2-Dichloropropane	61.75	1.0	50	0	124	70 - 122	62.38	1.01	20	S
1,3,5-Trimethylbenzene	57.76	1.0	50	0	116	70 - 126	58.7	1.61	20	
1,3-Dichlorobenzene	60.83	1.0	50	0	122	70 - 119	61.07	0.382	20	S
1,3-Dichloropropane	51.08	1.0	50	0	102	70 - 121	50.85	0.453	20	
1,4-Dichlorobenzene	59.68	1.0	50	0	119	70 - 114	60.07	0.654	20	S
2,2-Dichloropropane	49.21	1.0	50	0	98.4	70 - 130	51.06	3.7	20	
2-Butanone	95.67	2.0	100	0	95.7	70 - 130	97.62	2.02	20	
2-Chlorotoluene	62.65	1.0	50	0	125	70 - 130	62.27	0.617	20	
2-Hexanone	103	2.0	100	0	103	70 - 130	103.2	0.249	20	
4-Chlorotoluene	61.55	1.0	50	0	123	70 - 130	63.23	2.68	20	
4-Isopropyltoluene	53.95	1.0	50	0	108	70 - 130	55.08	2.08	20	
4-Methyl-2-pentanone	100.7	2.0	100	0	101	70 - 130	100.5	0.158	20	
Acetone	102.5	2.0	100	0	102	70 - 130	104.4	1.85	20	
Benzene	57.9	1.0	50	0	116	70 - 127	58.45	0.942	20	
Bromobenzene	59.4	1.0	50	0	119	70 - 115	60.38	1.63	20	S
Bromochloromethane	54.35	1.0	50	0	109	70 - 127	55.35	1.81	20	
Bromodichloromethane	60.98	1.0	50	0	122	70 - 124	62.03	1.69	20	
Bromoform	55.69	1.0	50	0	111	70 - 129	55.78	0.175	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R315639 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18050072-03MSD** Units: **ug/L** Analysis Date: **04-May-2018 00:14**
Client ID: **67WW08-180501** Run ID: **VOA2_315639** SeqNo: **4547638** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	62.06	1.0	50	0	124	70 - 130	66.62	7.09	20	
Carbon disulfide	108.3	2.0	100	0	108	70 - 130	111.9	3.23	20	
Carbon tetrachloride	61.32	1.0	50	0	123	70 - 130	63.09	2.85	20	
Chlorobenzene	58.76	1.0	50	0	118	70 - 114	58.7	0.1	20	S
Chloroethane	52.91	1.0	50	0	106	70 - 130	56.84	7.16	20	
Chloroform	51.34	1.0	50	0	103	70 - 125	52.17	1.59	20	
Chloromethane	58.03	1.0	50	0	116	70 - 130	58.37	0.592	20	
cis-1,2-Dichloroethene	51.51	1.0	50	0	103	70 - 128	52.76	2.39	20	
cis-1,3-Dichloropropene	53.84	1.0	50	0	108	70 - 125	53.73	0.199	20	
Dibromochloromethane	52.94	1.0	50	0	106	70 - 124	52.81	0.249	20	
Dibromomethane	54.15	1.0	50	0	108	70 - 124	55.21	1.94	20	
Dichlorodifluoromethane	58.61	1.0	50	0	117	70 - 130	62.02	5.65	20	
Ethylbenzene	63.94	1.0	50	0	128	70 - 124	64.59	1.01	20	S
Hexachlorobutadiene	58.67	1.0	50	0	117	70 - 130	58.22	0.778	20	
Isopropylbenzene	61.18	1.0	50	0	122	70 - 130	61.15	0.0348	20	
m,p-Xylene	120.3	2.0	100	0	120	70 - 130	121.5	0.946	20	
Methylene chloride	56.33	2.0	50	0	113	70 - 128	58.7	4.13	20	
Naphthalene	54.81	1.0	50	0	110	70 - 130	54.68	0.247	20	
n-Butylbenzene	56.45	1.0	50	0	113	70 - 130	57.56	1.94	20	
n-Propylbenzene	57.51	1.0	50	0	115	70 - 130	59.36	3.18	20	
o-Xylene	65.77	1.0	50	0	132	70 - 124	64.96	1.24	20	S
sec-Butylbenzene	55.03	1.0	50	0	110	70 - 130	56.21	2.13	20	
Styrene	56.16	1.0	50	0	112	70 - 130	56.31	0.254	20	
tert-Butylbenzene	58.68	1.0	50	0	117	70 - 130	59.34	1.12	20	
Tetrachloroethene	55.22	1.0	50	0	110	70 - 130	55.58	0.658	20	
Toluene	60.27	1.0	50	0	121	70 - 123	60.77	0.829	20	
trans-1,2-Dichloroethene	54.95	1.0	50	0	110	70 - 130	57.98	5.38	20	
trans-1,3-Dichloropropene	55.94	1.0	50	0	112	70 - 121	56.85	1.61	20	
Trichloroethene	55.15	1.0	50	0	110	70 - 129	55.57	0.752	20	
Trichlorofluoromethane	58.47	1.0	50	0	117	70 - 130	61.11	4.43	20	
Vinyl chloride	56.81	1.0	50	0	114	70 - 130	59.15	4.04	20	
Surr: 1,2-Dichloroethane-d4	*48.63*	*1.0*	*50*	*0*	*97.3*	*70 - 126*	*49.13*	*1.03*	*20*	
Surr: 4-Bromofluorobenzene	*55.21*	*1.0*	*50*	*0*	*110*	*81 - 113*	*54.1*	*2.03*	*20*	
Surr: Dibromofluoromethane	*47.83*	*1.0*	*50*	*0*	*95.7*	*77 - 123*	*48.36*	*1.1*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R315639 **Instrument:** VOA2 **Method:** SW8260

MSD Sample ID: **HS18050072-03MSD** Units: **ug/L** Analysis Date: **04-May-2018 00:14**
Client ID: **67WW08-180501** Run ID: **VOA2_315639** SeqNo: **4547638** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*45.61*	*1.0*	*50*	*0*	*91.2*	*82 - 127*	*45.6*	*0.015*	*20*	

The following samples were analyzed in this batch: HS18050072-01 HS18050072-02 HS18050072-03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R316705 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180522** Units: **ug/L** Analysis Date: **22-May-2018 11:35**
Client ID: Run ID: **VOA2_316705** SeqNo: **4571897** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	0.50	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R316705 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180522** Units: **ug/L** Analysis Date: **22-May-2018 11:35**
Client ID: Run ID: **VOA2_316705** SeqNo: **4571897** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	0.50	1.0								U
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*49.57*	*1.0*	*50*	*0*	*99.1*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*50.27*	*1.0*	*50*	*0*	*101*	*82 - 115*				
Surr: Dibromofluoromethane	*53.32*	*1.0*	*50*	*0*	*107*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R316705 **Instrument:** VOA2 **Method:** SW8260

MBLK Sample ID: **VBLKW-180522** Units: **ug/L** Analysis Date: **22-May-2018 11:35**
Client ID: Run ID: **VOA2_316705** SeqNo: **4571897** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*54.28*	*1.0*	*50*	*0*	*109*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R316705 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180522** Units: **ug/L** Analysis Date: **22-May-2018 10:46**
Client ID: Run ID: **VOA2_316705** SeqNo: **4571895** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	49.08	1.0	50	0	98.2	77 - 118				
1,1,1-Trichloroethane	49.98	1.0	50	0	100.0	70 - 130				
1,1,2,2-Tetrachloroethane	45.2	1.0	50	0	90.4	70 - 120				
1,1,2-Trichlor-1,2,2-trifluoroethane	48.81	1.0	50	0	97.6	70 - 130				
1,1,2-Trichloroethane	50.24	1.0	50	0	100	77 - 113				
1,1-Dichloroethane	48.52	1.0	50	0	97.0	71 - 122				
1,1-Dichloroethene	51.8	1.0	50	0	104	70 - 130				
1,1-Dichloropropene	45.11	1.0	50	0	90.2	78 - 118				
1,2,3-Trichlorobenzene	48.23	1.0	50	0	96.5	70 - 130				
1,2,3-Trichloropropane	52.3	1.0	50	0	105	70 - 127				
1,2,4-Trichlorobenzene	47.96	1.0	50	0	95.9	77 - 126				
1,2,4-Trimethylbenzene	53.42	1.0	50	0	107	73 - 121				
1,2-Dibromo-3-chloropropane	53.76	1.0	50	0	108	70 - 130				
1,2-Dibromoethane	51.19	1.0	50	0	102	76 - 123				
1,2-Dichlorobenzene	47.37	1.0	50	0	94.7	77 - 113				
1,2-Dichloroethane	48.77	1.0	50	0	97.5	70 - 124				
1,2-Dichloropropane	48.74	1.0	50	0	97.5	72 - 119				
1,3,5-Trimethylbenzene	45.31	1.0	50	0	90.6	75 - 118				
1,3-Dichlorobenzene	46.17	1.0	50	0	92.3	78 - 118				
1,3-Dichloropropane	49.96	1.0	50	0	99.9	75 - 116				
1,4-Dichlorobenzene	45.97	1.0	50	0	91.9	79 - 113				
2,2-Dichloropropane	38.27	1.0	50	0	76.5	70 - 130				
2-Butanone	107.3	2.0	100	0	107	70 - 130				
2-Chlorotoluene	53.18	1.0	50	0	106	70 - 128				
2-Hexanone	104.2	2.0	100	0	104	70 - 130				
4-Chlorotoluene	53.8	1.0	50	0	108	74 - 126				
4-Isopropyltoluene	47.09	1.0	50	0	94.2	74 - 126				
4-Methyl-2-pentanone	99.3	2.0	100	0	99.3	70 - 130				
Acetone	114.8	2.0	100	0	115	70 - 130				
Benzene	47.72	1.0	50	0	95.4	74 - 120				
Bromobenzene	46.48	1.0	50	0	93.0	78 - 113				
Bromochloromethane	52.2	1.0	50	0	104	76 - 124				
Bromodichloromethane	49.75	1.0	50	0	99.5	74 - 122				
Bromoform	53	1.0	50	0	106	73 - 128				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R316705 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180522** Units: **ug/L** Analysis Date: **22-May-2018 10:46**
Client ID: Run ID: **VOA2_316705** SeqNo: **4571895** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	43.05	1.0	50	0	86.1	70 - 130				
Carbon disulfide	94.93	2.0	100	0	94.9	70 - 130				
Carbon tetrachloride	46.74	1.0	50	0	93.5	71 - 125				
Chlorobenzene	47.76	1.0	50	0	95.5	76 - 113				
Chloroethane	58.39	1.0	50	0	117	70 - 130				
Chloroform	48.02	1.0	50	0	96.0	71 - 121				
Chloromethane	52.1	1.0	50	0	104	70 - 129				
cis-1,2-Dichloroethene	50.33	1.0	50	0	101	75 - 122				
cis-1,3-Dichloropropene	50.57	1.0	50	0	101	73 - 127				
Dibromochloromethane	51.04	1.0	50	0	102	77 - 122				
Dibromomethane	52.6	1.0	50	0	105	78 - 121				
Dichlorodifluoromethane	42.99	1.0	50	0	86.0	70 - 130				
Ethylbenzene	47.25	1.0	50	0	94.5	77 - 117				
Hexachlorobutadiene	47.25	1.0	50	0	94.5	70 - 130				
Isopropylbenzene	49.35	1.0	50	0	98.7	73 - 127				
m,p-Xylene	116	2.0	100	0	116	77 - 122				
Methylene chloride	45.52	2.0	50	0	91.0	70 - 127				
Naphthalene	50.05	1.0	50	0	100	70 - 130				
n-Butylbenzene	48.43	1.0	50	0	96.9	72 - 130				
n-Propylbenzene	45.81	1.0	50	0	91.6	73 - 124				
o-Xylene	49.06	1.0	50	0	98.1	75 - 119				
sec-Butylbenzene	47.9	1.0	50	0	95.8	73 - 128				
Styrene	50	1.0	50	0	100.0	72 - 126				
tert-Butylbenzene	46.99	1.0	50	0	94.0	73 - 124				
Tetrachloroethene	48.8	1.0	50	0	97.6	76 - 119				
Toluene	46.25	1.0	50	0	92.5	77 - 118				
trans-1,2-Dichloroethene	51.43	1.0	50	0	103	72 - 127				
trans-1,3-Dichloropropene	51.91	1.0	50	0	104	77 - 119				
Trichloroethene	51.74	1.0	50	0	103	77 - 121				
Trichlorofluoromethane	54.04	1.0	50	0	108	70 - 130				
Vinyl chloride	49.31	1.0	50	0	98.6	70 - 130				
Surr: 1,2-Dichloroethane-d4	*51.59*	*1.0*	*50*	*0*	*103*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*53.06*	*1.0*	*50*	*0*	*106*	*82 - 115*				
Surr: Dibromofluoromethane	*49.82*	*1.0*	*50*	*0*	*99.6*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R316705 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180522** Units: **ug/L** Analysis Date: **22-May-2018 10:46**
Client ID: Run ID: **VOA2_316705** SeqNo: **4571895** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*51.12*	*1.0*	*50*	*0*	*102*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R316705 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18050893-25MS** Units: **ug/L** Analysis Date: **22-May-2018 12:49**
Client ID: Run ID: **VOA2_316705** SeqNo: **4571900** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	50.97	1.0	50	0	102	70 - 120				
1,1,1-Trichloroethane	54.27	1.0	50	0	109	70 - 130				
1,1,2,2-Tetrachloroethane	45.86	1.0	50	0	91.7	70 - 123				
1,1,2-Trichlor-1,2,2-trifluoroethane	53.75	1.0	50	0	108	70 - 130				
1,1,2-Trichloroethane	50.3	1.0	50	0	101	70 - 117				
1,1-Dichloroethane	50.87	1.0	50	0	102	70 - 127				
1,1-Dichloroethene	57.59	1.0	50	0	115	70 - 130				
1,1-Dichloropropene	48.06	1.0	50	0	96.1	70 - 129				
1,2,3-Trichlorobenzene	47.74	1.0	50	0	95.5	70 - 130				
1,2,3-Trichloropropane	52.65	1.0	50	0	105	70 - 130				
1,2,4-Trichlorobenzene	47.94	1.0	50	0	95.9	70 - 125				
1,2,4-Trimethylbenzene	55.18	1.0	50	0	110	70 - 125				
1,2-Dibromo-3-chloropropane	52.84	1.0	50	0	106	70 - 130				
1,2-Dibromoethane	50.43	1.0	50	0	101	70 - 124				
1,2-Dichlorobenzene	48.16	1.0	50	0	96.3	70 - 115				
1,2-Dichloroethane	49.85	1.0	50	0	99.7	70 - 127				
1,2-Dichloropropane	49.61	1.0	50	0	99.2	70 - 122				
1,3,5-Trimethylbenzene	46.62	1.0	50	0	93.2	70 - 126				
1,3-Dichlorobenzene	47.17	1.0	50	0	94.3	70 - 119				
1,3-Dichloropropane	49.26	1.0	50	0	98.5	70 - 121				
1,4-Dichlorobenzene	45.99	1.0	50	0	92.0	70 - 114				
2,2-Dichloropropane	40.49	1.0	50	0	81.0	70 - 130				
2-Butanone	105.8	2.0	100	0	106	70 - 130				
2-Chlorotoluene	54.45	1.0	50	0	109	70 - 130				
2-Hexanone	104.4	2.0	100	0	104	70 - 130				
4-Chlorotoluene	55.11	1.0	50	0	110	70 - 130				
4-Isopropyltoluene	49.15	1.0	50	0	98.3	70 - 130				
4-Methyl-2-pentanone	101.7	2.0	100	0	102	70 - 130				
Acetone	110.8	2.0	100	0	111	70 - 130				
Benzene	50.1	1.0	50	0	100	70 - 127				
Bromobenzene	46.55	1.0	50	0	93.1	70 - 115				
Bromochloromethane	52.92	1.0	50	0	106	70 - 127				
Bromodichloromethane	50.54	1.0	50	0	101	70 - 124				
Bromoform	52.01	1.0	50	0	104	70 - 129				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R316705 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18050893-25MS** Units: **ug/L** Analysis Date: **22-May-2018 12:49**
Client ID: Run ID: **VOA2_316705** SeqNo: **4571900** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	45.39	1.0	50	0	90.8	70 - 130				
Carbon disulfide	103.5	2.0	100	0	103	70 - 130				
Carbon tetrachloride	51.62	1.0	50	0	103	70 - 130				
Chlorobenzene	49.26	1.0	50	0	98.5	70 - 114				
Chloroethane	58.99	1.0	50	0	118	70 - 130				
Chloroform	49.53	1.0	50	0	99.1	70 - 125				
Chloromethane	52.03	1.0	50	0	104	70 - 130				
cis-1,2-Dichloroethene	52.46	1.0	50	0	105	70 - 128				
cis-1,3-Dichloropropene	51.11	1.0	50	0	102	70 - 125				
Dibromochloromethane	51.98	1.0	50	0	104	70 - 124				
Dibromomethane	52.73	1.0	50	0	105	70 - 124				
Dichlorodifluoromethane	47.36	1.0	50	0	94.7	70 - 130				
Ethylbenzene	49.36	1.0	50	0	98.7	70 - 124				
Hexachlorobutadiene	48.45	1.0	50	0	96.9	70 - 130				
Isopropylbenzene	51.91	1.0	50	0	104	70 - 130				
m,p-Xylene	120.1	2.0	100	0	120	70 - 130				
Methylene chloride	45.17	2.0	50	0	90.3	70 - 128				
Naphthalene	49.9	1.0	50	0	99.8	70 - 130				
n-Butylbenzene	49.76	1.0	50	0	99.5	70 - 130				
n-Propylbenzene	48.29	1.0	50	0	96.6	70 - 130				
o-Xylene	51.07	1.0	50	0	102	70 - 124				
sec-Butylbenzene	50.3	1.0	50	0	101	70 - 130				
Styrene	51.27	1.0	50	0	103	70 - 130				
tert-Butylbenzene	49.5	1.0	50	0	99.0	70 - 130				
Tetrachloroethene	51.94	1.0	50	0	104	70 - 130				
Toluene	48.69	1.0	50	0	97.4	70 - 123				
trans-1,2-Dichloroethene	56.63	1.0	50	0	113	70 - 130				
trans-1,3-Dichloropropene	51.18	1.0	50	0	102	70 - 121				
Trichloroethene	54.48	1.0	50	0	109	70 - 129				
Trichlorofluoromethane	59.1	1.0	50	0	118	70 - 130				
Vinyl chloride	56.64	1.0	50	0	113	70 - 130				
Surr: 1,2-Dichloroethane-d4	*51.65*	*1.0*	*50*	*0*	*103*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*52.64*	*1.0*	*50*	*0*	*105*	*81 - 113*				
Surr: Dibromofluoromethane	*50.6*	*1.0*	*50*	*0*	*101*	*77 - 123*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R316705 **Instrument:** VOA2 **Method:** SW8260

MS Sample ID: **HS18050893-25MS** Units: **ug/L** Analysis Date: **22-May-2018 12:49**
Client ID: Run ID: **VOA2_316705** SeqNo: **4571900** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*51.33*	*1.0*	*50*	*0*	*103*	*82 - 127*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R316705 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18050893-25MSD** Units: **ug/L** Analysis Date: **22-May-2018 13:13**
Client ID: Run ID: **VOA2_316705** SeqNo: **4571924** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	49.8	1.0	50	0	99.6	70 - 120	50.97	2.31	20	
1,1,1-Trichloroethane	52.57	1.0	50	0	105	70 - 130	54.27	3.2	20	
1,1,2,2-Tetrachloroethane	46.99	1.0	50	0	94.0	70 - 123	45.86	2.43	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	51.7	1.0	50	0	103	70 - 130	53.75	3.89	20	
1,1,2-Trichloroethane	50.01	1.0	50	0	100	70 - 117	50.3	0.584	20	
1,1-Dichloroethane	48.95	1.0	50	0	97.9	70 - 127	50.87	3.84	20	
1,1-Dichloroethene	54.56	1.0	50	0	109	70 - 130	57.59	5.4	20	
1,1-Dichloropropene	47.73	1.0	50	0	95.5	70 - 129	48.06	0.676	20	
1,2,3-Trichlorobenzene	49.09	1.0	50	0	98.2	70 - 130	47.74	2.8	20	
1,2,3-Trichloropropane	52.87	1.0	50	0	106	70 - 130	52.65	0.413	20	
1,2,4-Trichlorobenzene	48.63	1.0	50	0	97.3	70 - 125	47.94	1.42	20	
1,2,4-Trimethylbenzene	55.13	1.0	50	0	110	70 - 125	55.18	0.0925	20	
1,2-Dibromo-3-chloropropane	54.65	1.0	50	0	109	70 - 130	52.84	3.38	20	
1,2-Dibromoethane	51.66	1.0	50	0	103	70 - 124	50.43	2.42	20	
1,2-Dichlorobenzene	47.44	1.0	50	0	94.9	70 - 115	48.16	1.5	20	
1,2-Dichloroethane	48.89	1.0	50	0	97.8	70 - 127	49.85	1.93	20	
1,2-Dichloropropane	48.49	1.0	50	0	97.0	70 - 122	49.61	2.3	20	
1,3,5-Trimethylbenzene	46.35	1.0	50	0	92.7	70 - 126	46.62	0.579	20	
1,3-Dichlorobenzene	46.46	1.0	50	0	92.9	70 - 119	47.17	1.51	20	
1,3-Dichloropropane	49.76	1.0	50	0	99.5	70 - 121	49.26	1.02	20	
1,4-Dichlorobenzene	45.86	1.0	50	0	91.7	70 - 114	45.99	0.293	20	
2,2-Dichloropropane	38.68	1.0	50	0	77.4	70 - 130	40.49	4.57	20	
2-Butanone	111.5	2.0	100	0	112	70 - 130	105.8	5.28	20	
2-Chlorotoluene	53.84	1.0	50	0	108	70 - 130	54.45	1.13	20	
2-Hexanone	111.2	2.0	100	0	111	70 - 130	104.4	6.27	20	
4-Chlorotoluene	54.66	1.0	50	0	109	70 - 130	55.11	0.833	20	
4-Isopropyltoluene	49.05	1.0	50	0	98.1	70 - 130	49.15	0.191	20	
4-Methyl-2-pentanone	106.1	2.0	100	0	106	70 - 130	101.7	4.22	20	
Acetone	115.2	2.0	100	0	115	70 - 130	110.8	3.91	20	
Benzene	49.34	1.0	50	0	98.7	70 - 127	50.1	1.53	20	
Bromobenzene	46.55	1.0	50	0	93.1	70 - 115	46.55	0	20	
Bromochloromethane	51.59	1.0	50	0	103	70 - 127	52.92	2.55	20	
Bromodichloromethane	49.14	1.0	50	0	98.3	70 - 124	50.54	2.8	20	
Bromoform	52.65	1.0	50	0	105	70 - 129	52.01	1.22	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R316705 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18050893-25MSD** Units: **ug/L** Analysis Date: **22-May-2018 13:13**
Client ID: Run ID: **VOA2_316705** SeqNo: **4571924** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	42.46	1.0	50	0	84.9	70 - 130	45.39	6.69	20	
Carbon disulfide	100.2	2.0	100	0	100	70 - 130	103.5	3.23	20	
Carbon tetrachloride	48.77	1.0	50	0	97.5	70 - 130	51.62	5.67	20	
Chlorobenzene	48.65	1.0	50	0	97.3	70 - 114	49.26	1.26	20	
Chloroethane	57.49	1.0	50	0	115	70 - 130	58.99	2.58	20	
Chloroform	47.93	1.0	50	0	95.9	70 - 125	49.53	3.3	20	
Chloromethane	51.65	1.0	50	0	103	70 - 130	52.03	0.729	20	
cis-1,2-Dichloroethene	50.7	1.0	50	0	101	70 - 128	52.46	3.41	20	
cis-1,3-Dichloropropene	50.44	1.0	50	0	101	70 - 125	51.11	1.33	20	
Dibromochloromethane	51.21	1.0	50	0	102	70 - 124	51.98	1.49	20	
Dibromomethane	53.04	1.0	50	0	106	70 - 124	52.73	0.584	20	
Dichlorodifluoromethane	43.58	1.0	50	0	87.2	70 - 130	47.36	8.3	20	
Ethylbenzene	49.29	1.0	50	0	98.6	70 - 124	49.36	0.128	20	
Hexachlorobutadiene	49.29	1.0	50	0	98.6	70 - 130	48.45	1.72	20	
Isopropylbenzene	51.01	1.0	50	0	102	70 - 130	51.91	1.75	20	
m,p-Xylene	119.4	2.0	100	0	119	70 - 130	120.1	0.606	20	
Methylene chloride	45.44	2.0	50	0	90.9	70 - 128	45.17	0.606	20	
Naphthalene	51.81	1.0	50	0	104	70 - 130	49.9	3.75	20	
n-Butylbenzene	49.15	1.0	50	0	98.3	70 - 130	49.76	1.22	20	
n-Propylbenzene	47.04	1.0	50	0	94.1	70 - 130	48.29	2.63	20	
o-Xylene	50.21	1.0	50	0	100	70 - 124	51.07	1.71	20	
sec-Butylbenzene	49.76	1.0	50	0	99.5	70 - 130	50.3	1.07	20	
Styrene	50.41	1.0	50	0	101	70 - 130	51.27	1.69	20	
tert-Butylbenzene	48.75	1.0	50	0	97.5	70 - 130	49.5	1.53	20	
Tetrachloroethene	51.09	1.0	50	0	102	70 - 130	51.94	1.63	20	
Toluene	48.07	1.0	50	0	96.1	70 - 123	48.69	1.27	20	
trans-1,2-Dichloroethene	54.2	1.0	50	0	108	70 - 130	56.63	4.38	20	
trans-1,3-Dichloropropene	51.61	1.0	50	0	103	70 - 121	51.18	0.85	20	
Trichloroethene	52.93	1.0	50	0	106	70 - 129	54.48	2.87	20	
Trichlorofluoromethane	56.81	1.0	50	0	114	70 - 130	59.1	3.96	20	
Vinyl chloride	53.52	1.0	50	0	107	70 - 130	56.64	5.65	20	
Surr: 1,2-Dichloroethane-d4	*50.74*	*1.0*	*50*	*0*	*101*	*70 - 126*	*51.65*	*1.77*	*20*	
Surr: 4-Bromofluorobenzene	*53.36*	*1.0*	*50*	*0*	*107*	*81 - 113*	*52.64*	*1.36*	*20*	
Surr: Dibromofluoromethane	*49.06*	*1.0*	*50*	*0*	*98.1*	*77 - 123*	*50.6*	*3.08*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R316705 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18050893-25MSD** Units: **ug/L** Analysis Date: **22-May-2018 13:13**
Client ID: Run ID: **VOA2_316705** SeqNo: **4571924** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*51.78*	*1.0*	*50*	*0*	*104*	*82 - 127*	*51.33*	*0.875*	*20*	

The following samples were analyzed in this batch: HS18050072-04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R315840 **Instrument: UV-2450** **Method: SM3500FED**

MBLK Sample ID: **MBLK-315840** Units: **mg/L** Analysis Date: **02-May-2018 11:00**
Client ID: Run ID: **UV-2450_315840** SeqNo: **4551975** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ferrous Iron	0.0400	0.0500				80 - 120				U

LCS Sample ID: **LCS-315840** Units: **mg/L** Analysis Date: **02-May-2018 11:00**
Client ID: Run ID: **UV-2450_315840** SeqNo: **4551976** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ferrous Iron	0.235	0.0500	0.25	0	94.0	80 - 120				

MS Sample ID: **HS18050072-03MS** Units: **mg/L** Analysis Date: **02-May-2018 11:00**
Client ID: **67WW08-180501** Run ID: **UV-2450_315840** SeqNo: **4551978** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ferrous Iron	0.336	0.0500	0.25	0.063	109	75 - 125				

MSD Sample ID: **HS18050072-03MSD** Units: **mg/L** Analysis Date: **02-May-2018 11:00**
Client ID: **67WW08-180501** Run ID: **UV-2450_315840** SeqNo: **4551979** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ferrous Iron	0.33	0.0500	0.25	0.063	107	75 - 125	0.336	1.8	20	

The following samples were analyzed in this batch: HS18050072-01 HS18050072-03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R315916 **Instrument: WetChem_HS** **Method: E376.1**

MBLK Sample ID: **MBLK-315916** Units: **mg/L** Analysis Date: **08-May-2018 16:14**
Client ID: Run ID: **WetChem_HS_315916** SeqNo: **4553880** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	1.00	1.00								U

LCS Sample ID: **LCS-315916** Units: **mg/L** Analysis Date: **08-May-2018 16:14**
Client ID: Run ID: **WetChem_HS_315916** SeqNo: **4553881** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	21.64	1.00	25	0	86.6	80 - 120				

LCSD Sample ID: **LCSD-315916** Units: **mg/L** Analysis Date: **08-May-2018 16:14**
Client ID: Run ID: **WetChem_HS_315916** SeqNo: **4553882** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	21.84	1.00	25	0	87.4	80 - 120	21.64	0.92	20	

MS Sample ID: **HS18050072-03MS** Units: **mg/L** Analysis Date: **08-May-2018 16:14**
Client ID: **67WW08-180501** Run ID: **WetChem_HS_315916** SeqNo: **4553883** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	22.44	1.00	25	0.24	88.8	80 - 120				

MSD Sample ID: **HS18050072-03MSD** Units: **mg/L** Analysis Date: **08-May-2018 16:14**
Client ID: **67WW08-180501** Run ID: **WetChem_HS_315916** SeqNo: **4553884** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	22.84	1.00	25	0.24	90.4	80 - 120	22.44	1.77	20	

The following samples were analyzed in this batch: HS18050072-01 HS18050072-02 HS18050072-03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R316275 **Instrument: ICS2100** **Method: SW9056**

MBLK Sample ID: **WBLKW1-050318** Units: **mg/L** Analysis Date: **03-May-2018 19:28**
Client ID: Run ID: **ICS2100_316275** SeqNo: **4562763** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	0.500	0.500								U
Nitrogen, Nitrate (As N)	0.100	0.100								U
Nitrogen, Nitrite (As N)	0.100	0.100								U
Sulfate	0.249	0.500								J

LCS Sample ID: **WLCSW1-050318** Units: **mg/L** Analysis Date: **03-May-2018 19:42**
Client ID: Run ID: **ICS2100_316275** SeqNo: **4562764** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.42	0.500	20	0	97.1	80 - 120				
Nitrogen, Nitrate (As N)	3.825	0.100	4	0	95.6	80 - 120				
Nitrogen, Nitrite (As N)	4.188	0.100	4	0	105	80 - 120				
Sulfate	19.32	0.500	20	0	96.6	80 - 120				

LCSD Sample ID: **WLCSDW1-050318** Units: **mg/L** Analysis Date: **03-May-2018 20:16**
Client ID: Run ID: **ICS2100_316275** SeqNo: **4562765** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.57	0.500	20	0	97.8	80 - 120	19.42	0.759	20	
Nitrogen, Nitrate (As N)	3.835	0.100	4	0	95.9	80 - 120	3.825	0.261	20	
Nitrogen, Nitrite (As N)	4.271	0.100	4	0	107	80 - 120	4.188	1.96	20	
Sulfate	19.47	0.500	20	0	97.4	80 - 120	19.32	0.748	20	

MS Sample ID: **HS18050072-03MS** Units: **mg/L** Analysis Date: **03-May-2018 06:57**
Client ID: **67WW08-180501** Run ID: **ICS2100_316275** SeqNo: **4562739** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	1814	5.00	100	1622	192	80 - 120				SEO
Nitrogen, Nitrate (As N)	21.33	1.00	20	0	107	80 - 120				
Nitrogen, Nitrite (As N)	21.41	1.00	20	0	107	80 - 120				
Sulfate	557.9	5.00	100	433.6	124	80 - 120				SO

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R316275 **Instrument: ICS2100** **Method: SW9056**

MS Sample ID: **HS18050072-03MS** Units: **mg/L** Analysis Date: **04-May-2018 17:15**
Client ID: **67WW08-180501** Run ID: **ICS2100_316275** SeqNo: **4562804** PrepDate: DF: **20**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	1818	10.0	200	1529	145	80 - 120				SO
Nitrogen, Nitrate (As N)	41.85	2.00	40	0	105	80 - 120				
Nitrogen, Nitrite (As N)	44.69	2.00	40	0	112	80 - 120				
Sulfate	643.2	10.0	200	406.7	118	80 - 120				

MSD Sample ID: **HS18050072-03MSD** Units: **mg/L** Analysis Date: **03-May-2018 07:12**
Client ID: **67WW08-180501** Run ID: **ICS2100_316275** SeqNo: **4562740** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	1633	5.00	100	1622	11.0	80 - 120	1814	10.5	20	SEO
Nitrogen, Nitrate (As N)	20.06	1.00	20	0	100	80 - 120	21.33	6.15	20	
Nitrogen, Nitrite (As N)	20.49	1.00	20	0	102	80 - 120	21.41	4.41	20	
Sulfate	509.6	5.00	100	433.6	76.0	80 - 120	557.9	9.05	20	SO

MSD Sample ID: **HS18050072-03MSD** Units: **mg/L** Analysis Date: **04-May-2018 17:52**
Client ID: **67WW08-180501** Run ID: **ICS2100_316275** SeqNo: **4562805** PrepDate: DF: **20**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	1681	10.0	200	1529	75.9	80 - 120	1818	7.86	20	SO
Nitrogen, Nitrate (As N)	38.54	2.00	40	0	96.4	80 - 120	41.85	8.21	20	
Nitrogen, Nitrite (As N)	41.24	2.00	40	0	103	80 - 120	44.69	8.02	20	
Sulfate	591.8	10.0	200	406.7	92.6	80 - 120	643.2	8.31	20	

The following samples were analyzed in this batch: HS18050072-01 HS18050072-02 HS18050072-03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R316293 **Instrument: TOC_02** **Method: SW9060**

MBLK Sample ID: **WBLKW1-051518** Units: **mg/L** Analysis Date: **15-May-2018 23:22**
Client ID: Run ID: **TOC_02_316293** SeqNo: **4563260** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	0.600	1.00								U

LCS Sample ID: **WLCSW2-051518** Units: **mg/L** Analysis Date: **15-May-2018 23:40**
Client ID: Run ID: **TOC_02_316293** SeqNo: **4563261** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	9.636	1.00	10	0	96.4	80 - 120				

LCSD Sample ID: **WLCSDW2-051518** Units: **mg/L** Analysis Date: **15-May-2018 23:55**
Client ID: Run ID: **TOC_02_316293** SeqNo: **4563262** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	9.675	1.00	10	0	96.8	80 - 120	9.636	0.404	20	

MS Sample ID: **HS18050471-01MS** Units: **mg/L** Analysis Date: **16-May-2018 02:58**
Client ID: Run ID: **TOC_02_316293** SeqNo: **4563273** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	11.36	1.00	10	1.26	101	80 - 120				

MS Sample ID: **HS18050072-03MS** Units: **mg/L** Analysis Date: **16-May-2018 01:02**
Client ID: **67WW08-180501** Run ID: **TOC_02_316293** SeqNo: **4563266** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	13.85	1.00	10	4.142	97.1	80 - 120				

MSD Sample ID: **HS18050471-01MSD** Units: **mg/L** Analysis Date: **16-May-2018 03:13**
Client ID: Run ID: **TOC_02_316293** SeqNo: **4563274** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	11.26	1.00	10	1.26	100	80 - 120	11.36	0.884	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R316293 **Instrument:** TOC_02 **Method:** SW9060

MSD Sample ID: **HS18050072-03MSD** Units: **mg/L** Analysis Date: **16-May-2018 01:18**
Client ID: **67WW08-180501** Run ID: **TOC_02_316293** SeqNo: **4563267** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	14.01	1.00	10	4.142	98.7	80 - 120	13.85	1.15	20	

The following samples were analyzed in this batch: HS18050072-01 HS18050072-02 HS18050072-03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R316322 **Instrument: TOC_02** **Method: SW9060**

MBLK Sample ID: **MBLK-R316322** Units: **mg/L** Analysis Date: **16-May-2018 17:03**
Client ID: Run ID: **TOC_02_316322** SeqNo: **4563826** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Inorganic Carbon	1.0	1.0								U

LCS Sample ID: **LCS-R316322** Units: **mg/L** Analysis Date: **16-May-2018 17:03**
Client ID: Run ID: **TOC_02_316322** SeqNo: **4563825** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Inorganic Carbon	10.28	1.0	10	0	103	80 - 120				

LCSD Sample ID: **LCSD-R316322** Units: **mg/L** Analysis Date: **16-May-2018 17:03**
Client ID: Run ID: **TOC_02_316322** SeqNo: **4563824** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Inorganic Carbon	10.16	1.0	10	0	102	80 - 120	10.28	1.17	20	

The following samples were analyzed in this batch: HS18050072-01 HS18050072-02 HS18050072-03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Revision: 1

ALS Group Houston, Corp Date: 23-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: **HS18050072**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919 2016-2018	31-Jul-2018
Oklahoma	2017-088	31-Aug-2018
North Carolina	624-2018	31-Dec-2018
Louisiana	03087 2017-2018	30-Jun-2018
Arkansas	88-0356	27-Mar-2019
Kansas	E-10352 2017-218	31-Jul-2018
Texas	T10470231	30-Apr-2019
North Dakota	R193	30-Apr-2019

Date: 23-May-18

Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS18050072

Date/Time Received: **02-May-2018 08:30**
Received by: **RPG**

Checklist completed by: *Jared R. Makan* eSignature — 2-May-2018 Date

Reviewed by: *RJ Modashia* eSignature — 2-May-2018 Date

Matrices: **Water**

Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.0c/2.4c UC/C	IR25	
Cooler(s)/Kit(s):	42360		
Date/Time sample(s) sent to storage:	05/02/2018 11:30		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

APTIM

Page 1 of _____

COC ID: 67-MAY2018-GW-ALSHT-1805 01 | TURNAROUND TIME: normal | RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name	Longhorn AAP			Lab Name	ALS Laboratories			Email Invoice To	FedInvoices@CBIFederalServices.com		
Project Number	501032			Lab Contact	RJ Modashia						
	LHAAP-67			Email	RJ.Modashia@alsglobal.com			Email Report To	Sharon.Pennington@CBIFederalServices.com		
Address	1203-B East Grand Avenue			Address	10450 Stancliff Rd., Suite 210			Mail Reports To	Sharon Pennington		
	PMB 202							Address	2410 Cherahala Blvd.		
City	Marshall	State	TX	City	Houston	State	TX	City	Knoxville	State	TN
Postal Code	75670	Country	USA	Postal Code	77099	Country	USA	Postal Code	37932	Country	USA
Phone Number	713.243.7264			Phone Number	281.575.2279 or 281.530.5656						
Project Manager	Praveen Srivastav							Shipping Company			

SAMPLE DETAILS / ANALYSIS REQUESTED

Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	ANALYSIS	VOCs in Water by 8260B	Carbon Dioxide in Water by RSK175	Methane, Ethane, Ethene in Water by RSK175	Anions in Water by E300.0	TOC in Water by E415.1	TIC in Water by E415.1	Sulfide in Water by E376.1	Ferrous Iron in Water by SM3500-FE B		
67ww13-180501	LHAAP 67	21.10	21.31		WG	5/1/18	0940	16		X	X	X	X	X	X	X	X		
67ww13-180501-FD	LHAAP 67	21.10	21.31		WG	5/1/18	0940	15		X	X	X	X	X	X	X			
67ww08-180501	LHAAP 67	22.92	23.12		WG	5/1/18	1210	16		X	X	X	X	X	X	X	X		
67ww08-180501-MS	LHAAP 67	22.92	23.12		WG	5/1/18	1210	15		X	X	X	X	X	X	X			
67ww08-180501-MSD	LHAAP 67	22.92	23.12		WG	5/1/18	1210	15		X	X	X	X	X	X	X			

HS18050072

Aptim Environmental & Infrastucture, Inc.

Longhorn Army Ammunition Plant -67/501032

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Anions should include chloride, nitrate, nitrite, and sulfate.	Steve Riesinger / B HATE	5/1/18 1430		
	RCJ	5/2/18 08	SV	

MAX 25 TEMP 5.0

00912132

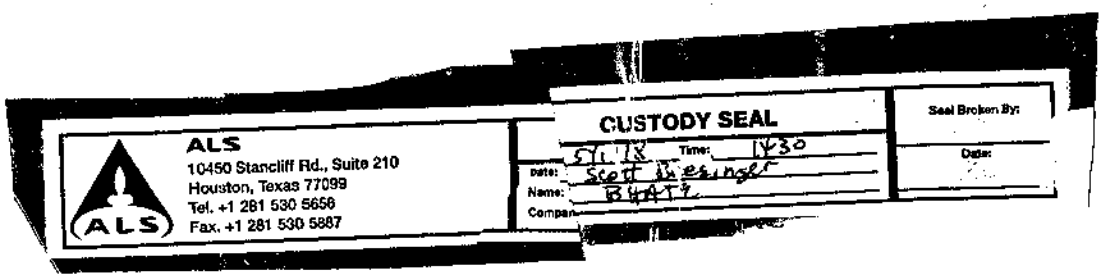
TRK# 4380 9528 6315

RETURNS MON – SAT
PRIORITY OVERNIGHT

FedEx
TRK# 4380 9528 6315

WED – 02 MAY 10:30A
PRIORITY OVERNIGHT

77090



00912133

Volatile Organics Raw Data

Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
-67/501032
ALS WO# HS18050072

FORM 2
WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050072

	CLIENT SAMPLE NO.	SMC1 #	SMC2 (TOL) #	SMC3 (DCE) #	OTHER #	TOT OUT
01	VLCSW-180503	95	82*	98	98	1
02	VBLKW-180503	100	96	95	106	0
03	HS18050072-01	104	94	96	106	0
04	HS18050072-01	102	98	97	104	0
05	HS18050072-02	101	95	99	106	0
06	HS18050072-02	100	96	97	106	0
07	HS18050072-03	101	96	97	107	0
08	HS18050072-03	102	94	96	104	0
09	HS18050072-03	97	91	98	108	0
10	HS18050072-03	96	91	97	110	0
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						

		QC LIMITS
SMC1	= Dibromofluoromethane	(85-115)
SMC2 (TOL)	= Toluene-d8	(85-115)
SMC3 (DCE)	= 1,2-Dichloroethane-d4	(70-120)
OTHER	= 4-Bromofluorobenzene	(75-120)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

FORM 3
WATER VOLATILE METHOD SPIKE RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050072

Matrix Spike - Sample No.: VSTD-ICV

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT ()	% REC #	QC. LIMITS REC.
Dichlorodifluoromethane	50.00	49.36	99	80-120
1,2-Dichloroethylene (t	100.00	91.59	92	80-120
Chloromethane	50.00	52.25	104	80-120
Vinyl Chloride	50.00	45.87	92	80-120
Bromomethane	50.00	53.70	107	80-120
Chloroethane	50.00	45.07	90	80-120
Trichlorofluoromethane	50.00	48.18	96	80-120
Acetone	100.00	95.08	95	80-120
1,1-Dichloroethene	50.00	48.15	96	80-120
Methylene Chloride	50.00	48.36	97	80-120
Methyl tert-butyl ether	50.00	43.91	88	80-120
Carbon Disulfide	100.00	89.82	90	80-120
trans-1,2-Dichloroethen	50.00	47.07	94	80-120
1,1-Dichloroethane	50.00	45.30	91	80-120
2-Butanone	100.00	89.62	90	80-120
2,2-Dichloropropane	50.00	44.52	89	80-120
cis-1,2-Dichloroethene	50.00	44.52	89	80-120
Chloroform	50.00	44.00	88	80-120
Bromochloromethane	50.00	48.45	97	80-120
1,1,1-Trichloroethane	50.00	46.34	93	80-120
1,1-Dichloropropene	50.00	50.52	101	80-120
1,2-Dichloroethane	50.00	43.40	87	80-120
Carbon Tetrachloride	50.00	49.39	99	80-120
Benzene	50.00	46.78	94	80-120
Trichloroethene	50.00	44.58	89	80-120
Bromodichloromethane	50.00	50.33	101	80-120
1,2-Dichloropropane	50.00	50.99	102	80-120
Dibromomethane	50.00	46.88	94	80-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM III VOA

FORM 3
WATER VOLATILE METHOD SPIKE RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050072

Matrix Spike - Sample No.: VSTD-ICV

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT ()	% REC #	QC. LIMITS REC.
4-Methyl-2-Pentanone	100.00	85.66	86	80-120
cis-1,3-Dichloropropene	50.00	45.46	91	80-120
Toluene	50.00	47.45	95	80-120
trans-1,3-Dichloroprope	50.00	49.20	98	80-120
2-Hexanone	100.00	87.54	88	80-120
1,1,2-Trichloroethane	50.00	43.02	86	80-120
1,3-Dichloropropane	50.00	42.96	86	80-120
Dibromochloromethane	50.00	44.16	88	80-120
Tetrachloroethene	50.00	43.49	87	80-120
1,2-Dibromoethane	50.00	44.87	90	80-120
1-Chlorohexane	50.00	50.48	101	80-120
Chlorobenzene	50.00	46.66	93	80-120
1,1,1,2-Tetrachloroetha	50.00	42.63	85	80-120
Ethylbenzene	50.00	51.26	102	80-120
m,p-Xylenes	100.00	94.35	94	80-120
o-Xylene	50.00	51.54	103	80-120
Styrene	50.00	46.72	93	80-120
Bromoform	50.00	47.91	96	80-120
Isopropylbenzene	50.00	47.26	94	80-120
1,1,2,2-Tetrachloroetha	50.00	50.90	102	80-120
1,2,3-Trichloropropane	50.00	43.00	86	80-120
n-Propylbenzene	50.00	46.87	94	80-120
Bromobenzene	50.00	50.62	101	80-120
1,3,5-Trimethylbenzene	50.00	47.26	94	80-120
2-Chlorotoluene	50.00	51.54	103	80-120
4-Chlorotoluene	50.00	52.16	104	80-120
tert-Butylbenzene	50.00	48.00	96	80-120
1,2,4-Trimethylbenzene	50.00	47.55	95	80-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER VOLATILE METHOD SPIKE RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050072

Matrix Spike - Sample No.: VSTD-ICV

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT ()	% REC #	QC. LIMITS REC.
sec-Butylbenzene	50.00	45.61	91	80-120
p-Isopropyltoluene	50.00	45.09	90	80-120
1,3-Dichlorobenzene	50.00	50.92	102	80-120
1,4-Dichlorobenzene	50.00	50.28	100	80-120
n-Butylbenzene	50.00	47.12	94	80-120
1,2-Dichlorobenzene	50.00	47.45	95	80-120
1,2-Dibromo-3-Chloropro	50.00	45.95	92	80-120
1,2,4-Trichlorobenzene	50.00	47.74	95	80-120
Hexachlorobutadiene	50.00	48.73	97	80-120
Naphthalene	50.00	48.65	97	80-120
1,2,3-Trichlorobenzene	50.00	47.17	94	80-120
Methyl acetate	50.00	42.90	86	80-120
Freon TF	50.00	47.10	94	80-120
Methylcyclohexane	50.00	51.23	102	80-120
Cyclohexane	50.00	44.45	89	80-120
Xylenes (total)	150.00	145.90	97	80-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

_____

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050072

Lab File ID: D050301 BFB Injection Date: 05/03/18

Instrument ID: VOA2 BFB Injection Time: 1444

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	19.9
75	30.0 - 60.0% of mass 95	48.5
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	5.9
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	81.1
175	5.0 - 9.0% of mass 174	5.9 (7.3)1
176	95.0 - 101.0% of mass 174	81.5 (100.5)1
177	5.0 - 9.0% of mass 176	4.7 (5.8)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD00.5	VSTD00.5	D050302	05/03/18	1509
02	VSTD001	VSTD001	D050303	05/03/18	1533
03	VSTD002	VSTD002	D050304	05/03/18	1557
04	VSTD005	VSTD005	D050305	05/03/18	1622
05	VSTD020	VSTD020	D050307	05/03/18	1711
06	VSTD050	VSTD050	D050308	05/03/18	1735
07	VSTD100	VSTD100	D050309	05/03/18	1759
08	VSTD200	VSTD200	D050310	05/03/18	1824
09	VSTD050	VSTD050	D050312	05/03/18	1913
10					
11					
12					
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15					
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18					
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20					
21					
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FORM V VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050072

Instrument ID: VOA2 Calibration Date(s): 05/03/18 05/03/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1509 1824

LAB FILE ID: RF0.5: D050302 RF1: D050303 RF2: D050304
RF5: D050305 RF20: D050307 RF50: D050308

COMPOUND	RF0.5	RF1	RF2	RF5	RF20	RF50
Iodomethane	1039	1703	3627	12718	85447	253706
Dichlorodifluoromethane	0.404	0.432	0.446	0.440	0.545	0.526
1,2-Dichloroethylene (total)	0.541	0.554	0.527	0.533	0.538	0.545
Chloromethane	5368	8828	14978	37682	126710	300183
tert-Amyl alcohol	0.047	0.060	0.059	0.045	0.053	0.055
Vinyl Chloride	0.730	0.685	0.651	0.694	0.725	0.714
Bromomethane	1605	2669	5536	13257	44864	110189
Chloroethane	0.413	0.445	0.419	0.416	0.445	0.404
tert-Butyl ethyl ether	0.932	1.144	1.187	0.901	1.063	1.104
Trichlorofluoromethane	0.661	0.586	0.705	0.645	0.720	0.714
Acrolein	0.102	0.132	0.133	0.120	0.125	0.140
Acetone	4576	5807	8632	15853	57988	139292
1,1-Dichloroethene	0.381	0.386	0.434	0.428	0.463	0.455
Isobutyl Alcohol	60	336	640	1533	7298	20376
Acetonitrile	0.074	0.072	0.074	0.066	0.071	0.073
Allyl Chloride	2.007	2.117	1.654	1.767	1.835	1.956
Acrylonitrile	0.172	0.275	0.237	0.223	0.266	0.287
Methylene Chloride	6782	8408	13230	24699	78777	187237
Methyl tert-butyl ether	1.814	1.862	1.657	1.580	1.651	1.592
Carbon Disulfide	1.115	0.966	0.950	0.926	0.991	0.982
trans-1,2-Dichloroethene	0.437	0.475	0.475	0.474	0.490	0.501
Vinyl Acetate	0.758	0.846	0.751	0.721	0.785	0.725
1,1-Dichloroethane	1.192	1.244	1.077	1.018	1.100	1.138
2-Butanone	0.349	0.328	0.333	0.290	0.328	0.331
Methacrylonitrile	0.512	0.541	0.564	0.532	0.562	0.510
2,2-Dichloropropane	0.781	0.770	0.816	0.808	0.805	0.798
cis-1,2-Dichloroethene	0.645	0.632	0.579	0.592	0.587	0.588
Chloroform	1.016	1.057	1.022	0.976	0.978	0.969
Bromochloromethane	0.247	0.262	0.276	0.292	0.294	0.301
tert-Amyl methyl ether	2.132	2.288	2.091	1.945	1.968	1.891
1,1,1-Trichloroethane	0.826	0.796	0.838	0.791	0.857	0.850
1,1-Dichloropropene	3453	5535	11130	23867	95104	228015
1,2-Dichloroethane	0.568	0.603	0.531	0.507	0.494	0.528
Carbon Tetrachloride	3750	7407	13745	26834	98344	248330
3,3-Dimethyl-1-butanol	0.048	0.050	0.045	0.036	0.044	0.044
Benzene	9592	17322	31967	78464	287547	707094
Trichloroethene	0.411	0.371	0.387	0.376	0.372	0.373
Bromodichloromethane	4340	5700	11510	28466	107909	264966
Methyl Methacrylate	0.734	0.715	0.687	0.661	0.709	0.698
2-Chloroethylvinyl ether	905	1856	3075	7324	25923	64934
1,2-Dichloropropane	2648	5436	10101	24467	88806	209841
tert-Butyl formate	7885	15830	28598	72643	259735	621559
Dibromomethane	0.213	0.199	0.197	0.214	0.227	0.220
4-Methyl-2-Pentanone	0.553	0.597	0.555	0.497	0.530	0.505

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805007

Instrument ID: VOA2 Calibration Date(s): 05/03/18 05/03/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1509 1824

LAB FILE ID: RF0.5: D050302 RF1: D050303 RF2: D050304
RF5: D050305 RF20: D050307 RF50: D050308

COMPOUND	RF0.5	RF1	RF2	RF5	RF20	RF50
cis-1,3-Dichloropropene	0.628	0.597	0.582	0.569	0.601	0.597
1,3,5-Trichlorobenzene	3330	4780	9328	25225	101124	255649
Ethyl Methacrylate	3576	6961	12117	29973	113052	273575
Toluene	12531	19763	37383	85052	305231	737863
trans-1,3-Dichloropropene	0.435	0.476	0.405	0.463	0.516	0.521
2-Hexanone	0.306	0.360	0.359	0.316	0.335	0.335
1,1,2-Trichloroethane	0.344	0.367	0.329	0.321	0.314	0.302
1,3-Dichloropropane	0.667	0.711	0.690	0.627	0.623	0.609
Dibromochloromethane	0.498	0.500	0.472	0.456	0.466	0.461
Tetrachloroethene	0.365	0.344	0.331	0.325	0.321	0.326
1,2-Dibromoethane	0.392	0.403	0.405	0.386	0.401	0.394
1-Chlorohexane	7521	8700	12754	23658	80870	197103
Chlorobenzene	5971	11477	21810	53052	191716	468684
1,1,1,2-Tetrachloroethane	0.492	0.460	0.466	0.418	0.406	0.400
Ethylbenzene	4279	6813	12094	28803	104289	254766
m,p-Xylenes	9890	16751	30090	71246	254356	618161
o-Xylene	5573	8904	16581	36735	133003	327540
Styrene	6545	12700	24473	59492	221487	530720
Bromoform	0.310	0.298	0.321	0.304	0.329	0.341
Isopropylbenzene	10116	16528	34621	85500	319237	798340
1,1,2,2-Tetrachloroethane	2856	5943	11517	26454	101875	245169
Ethanol	6351	9937	17290	39466	141481	337276
1,2,3-Trichloropropane	1.280	1.392	1.385	1.161	1.207	1.196
trans-1,4-Dichloro-2-butene	329	997	2239	5829	25416	67404
n-Propylbenzene	10919	18580	35938	91943	344653	867423
Bromobenzene	2587	5060	10085	24040	90437	219477
1,3,5-Trimethylbenzene	8472	13632	26898	72031	262599	646681
2-Chlorotoluene	7268	13654	25911	63329	227046	557940
4-Chlorotoluene	7649	14970	28631	70028	246557	613721
tert-Butylbenzene	6425	10459	21424	54271	217374	548979
1,2,4-Trimethylbenzene	9243	15508	29236	73311	266353	653475
sec-Butylbenzene	3.987	3.354	3.204	3.308	3.411	3.464
p-Isopropyltoluene	3.437	2.766	2.792	2.824	2.887	2.961
1,3-Dichlorobenzene	4492	8336	16026	40521	150868	376385
1,4-Dichlorobenzene	4583	8348	15310	37289	140378	358289
n-Butylbenzene	2.659	1.935	1.950	2.096	2.228	2.328
1,2-Dichlorobenzene	4211	8148	16238	39941	147607	360211
1,2-Dibromo-3-Chloropropane	0.183	0.203	0.193	0.205	0.205	0.218
1,2,4-Trichlorobenzene	933	2124	5311	18351	82961	220480
Hexachlorobutadiene	1173	1547	2675	7913	35348	94759
Naphthalene	1502	2027	6987	37348	211094	557285
1,2,3-Trichlorobenzene	908	1226	4373	16511	68130	189136
Methyl acetate	0.831	0.810	0.740	0.588	0.664	0.679
Freon TF	0.437	0.388	0.437	0.395	0.454	0.456

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805007

Instrument ID: VOA2 Calibration Date(s): 05/03/18 05/03/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1509 1824

LAB FILE ID: RF0.5: D050302 RF1: D050303 RF2: D050304
RF5: D050305 RF20: D050307 RF50: D050308

COMPOUND	RF0.5	RF1	RF2	RF5	RF20	RF50
1,2,3-Trimethylbenzene	7341	13401	25837	67325	244268	610922
Methylcyclohexane	4302	5103	10255	23474	103251	257221
1,4-Dioxane	264	833	1971	3687	16397	41483
n-Butanol	2226	3822	2622	6166	49874	136921
Methyl Acrylate	0.944	1.055	0.870	0.778	1.046	1.075
Ethyl Acrylate	2.066	1.772	1.749	1.614	1.822	1.786
n-Hexane	0.785	0.548	0.628	0.620	0.726	0.739
Cyclohexane	1.207	0.966	0.918	0.894	0.982	1.021
Isopropyl alcohol	0.048	0.060	0.056	0.043	0.047	0.047
Tert-butyl alcohol	0.072	0.095	0.090	0.067	0.076	0.078
Xylenes (total)	15463	25655	46671	107981	387359	945701
Propionitrile	0.230	0.243	0.196	0.172	0.214	0.217
2-Nitropropane	1.447	1.591	1.507	1.382	1.529	1.465
Ethyl Acetate	1.528	1.706	1.244	1.328	1.498	1.453
Diethyl ether	1.162	1.030	0.979	1.022	1.058	1.029
Tetrahydrofuran	0.283	0.285	0.254	0.219	0.252	0.246
4-Methyl-2-pentanol	11157	27677	52750	114797	479871	1148970
Diisopropyl ether	2.555	2.810	2.387	2.429	2.425	2.343
2-Methylnaphthalene	1488	1106	1303	2250	22892	175016
Dichlorofluoromethane	1.090	1.052	1.014	1.000	1.003	1.021
1-Methylnaphthalene	1461	1294	1112	2448	32361	191529
Isobutylene	1923	3986	7612	19047	85282	192852
Dibromofluoromethane	0.509	0.507	0.504	0.468	0.440	0.428
Toluene-d8	1.530	1.500	1.434	1.284	1.194	1.119
1,2-Dichloroethane-d4	0.580	0.613	0.593	0.597	0.586	0.578
4-Bromofluorobenzene	3747	5914	9818	22611	84072	209998

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805007

Instrument ID: VOA2 Calibration Date(s): 05/03/18 05/03/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1509 1824

LAB FILE ID: RF100: D050309 RF200: D050310

COMPOUND	RF100	RF200
Iodomethane	539884	1107059
Dichlorodifluoromethane	0.444	0.451
1,2-Dichloroethylene (total)	0.457	0.452
Chloromethane	568675	1151819
tert-Amyl alcohol	0.049	0.045
Vinyl Chloride	0.580	0.563
Bromomethane	195236	393135
Chloroethane	0.334	0.306
tert-Butyl ethyl ether	0.979	0.907
Trichlorofluoromethane	0.579	0.576
Acrolein	0.127	0.129
Acetone	271315	528566
1,1-Dichloroethene	0.375	0.370
Isobutyl Alcohol	39132	78573
Acetonitrile	0.066	0.065
Allyl Chloride	1.665	1.653
Acrylonitrile	0.254	0.248
Methylene Chloride	357904	700340
Methyl tert-butyl ether	1.367	1.305
Carbon Disulfide	0.820	0.810
trans-1,2-Dichloroethene	0.415	0.418
Vinyl Acetate	0.605	0.590
1,1-Dichloroethane	0.950	0.926
2-Butanone	0.283	0.275
Methacrylonitrile	0.400	0.409
2,2-Dichloropropane	0.653	0.644
cis-1,2-Dichloroethene	0.499	0.487
Chloroform	0.809	0.777
Bromochloromethane	0.254	0.242
tert-Amyl methyl ether	1.604	1.549
1,1,1-Trichloroethane	0.698	0.682
1,1-Dichloropropene	414154	833344
1,2-Dichloroethane	0.442	0.431
Carbon Tetrachloride	442424	915389
3,3-Dimethyl-1-butanol	0.038	0.036
Benzene	1310358	2489028
Trichloroethene	0.307	0.298
Bromodichloromethane	506559	973804
Methyl Methacrylate	0.609	0.572
2-Chloroethylvinyl ether	121973	239446
1,2-Dichloropropane	399023	776185
tert-Butyl formate	1201286	2430273
Dibromomethane	0.190	0.185
4-Methyl-2-Pentanone	0.419	0.400

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805007

Instrument ID: VOA2 Calibration Date(s): 05/03/18 05/03/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1509 1824

LAB FILE ID: RF100: D050309 RF200: D050310

COMPOUND	RF100	RF200
cis-1,3-Dichloropropene	0.502	0.483
1,3,5-Trichlorobenzene	489341	956640
Ethyl Methacrylate	525740	1003951
Toluene	1341705	2529854
trans-1,3-Dichloropropene	0.452	0.439
2-Hexanone	0.291	0.276
1,1,2-Trichloroethane	0.258	0.250
1,3-Dichloropropane	0.514	0.498
Dibromochloromethane	0.395	0.382
Tetrachloroethene	0.264	0.264
1,2-Dibromoethane	0.344	0.338
1-Chlorohexane	357525	718137
Chlorobenzene	866287	1624119
1,1,1,2-Tetrachloroethane	0.339	0.329
Ethylbenzene	467843	910753
m,p-Xylenes	1111264	2097243
o-Xylene	600836	1145479
Styrene	989537	1842268
Bromoform	0.292	0.285
Isopropylbenzene	1425337	2644449
1,1,2,2-Tetrachloroethane	466431	876848
Ethanol	646974	1224853
1,2,3-Trichloropropane	1.036	1.021
trans-1,4-Dichloro-2-butene	136541	284073
n-Propylbenzene	1543805	2901658
Bromobenzene	412976	799442
1,3,5-Trimethylbenzene	1139524	2124046
2-Chlorotoluene	1021479	1947674
4-Chlorotoluene	1111961	2106816
tert-Butylbenzene	978524	1861971
1,2,4-Trimethylbenzene	1183915	2226929
sec-Butylbenzene	2.767	2.647
p-Isopropyltoluene	2.344	2.268
1,3-Dichlorobenzene	700407	1341793
1,4-Dichlorobenzene	682017	1317537
n-Butylbenzene	1.878	1.831
1,2-Dichlorobenzene	662574	1235939
1,2-Dibromo-3-Chloropropane	0.194	0.195
1,2,4-Trichlorobenzene	443762	872141
Hexachlorobutadiene	180941	371184
Naphthalene	1122352	2143250
1,2,3-Trichlorobenzene	389916	762077
Methyl acetate	0.600	0.558
Freon TF	0.364	0.369

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805007

Instrument ID: VOA2 Calibration Date(s): 05/03/18 05/03/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1509 1824

LAB FILE ID: RF100: D050309 RF200: D050310

COMPOUND	RF100	RF200
1,2,3-Trimethylbenzene	1118865	2094213
Methylcyclohexane	460825	944922
1,4-Dioxane	82311	154038
n-Butanol	253643	514687
Methyl Acrylate	0.909	0.870
Ethyl Acrylate	1.482	1.464
n-Hexane	0.586	0.618
Cyclohexane	0.809	0.796
Isopropyl alcohol	0.041	0.041
Tert-butyl alcohol	0.067	0.064
Xylenes (total)	1712100	3242722
Propionitrile	0.186	0.174
2-Nitropropane	1.216	1.142
Ethyl Acetate	1.213	1.164
Diethyl ether	0.851	0.807
Tetrahydrofuran	0.209	0.201
4-Methyl-2-pentanol	2101655	3724604
Diisopropyl ether	1.976	1.880
2-Methylnaphthalene	456277	979451
Dichlorofluoromethane	0.840	0.820
1-Methylnaphthalene	451735	899897
Isobutylene	319111	568310
Dibromofluoromethane	0.353	0.349
Toluene-d8		
1,2-Dichloroethane-d4	0.493	0.481
4-Bromofluorobenzene		

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805007

Instrument ID: VOA2 Calibration Date(s): 05/03/18 05/03/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1509 1824

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2	MAX %RSD OR R^2
Iodomethane	LINR	4.484e-002	2.71502514		0.9995489	0.9900000
Dichlorodifluoromethane	AVRG		0.46097408		10.487	15.000
1,2-Dichloroethylene (total)	AVRG		0.51842147		7.736	15.000
Chloromethane	LINR	-5.09e-002	1.32129418		0.9977956	0.9900000
tert-Amyl alcohol	AVRG		5.173e-002		11.837	20.000
Vinyl Chloride	AVRG		0.66765927		9.680	15.000
Bromomethane	LINR	-6.36e-002	3.86045034		0.9953797	0.9900000
Chloroethane	AVRG		0.39773676		12.715	15.000
tert-Butyl ethyl ether	AVRG		1.02722099		10.932	20.000
Trichlorofluoromethane	AVRG		0.64817876		9.542	15.000
Acrolein	AVRG		0.12596963		8.964	15.000
Acetone	LINR	-0.1256966	5.73726334		0.9978992	0.9900000
1,1-Dichloroethene	AVRG		0.41151906		9.146	15.000
Isobutyl Alcohol	LINR	-0.3676101	383.125820		0.9978691	0.9900000
Acetonitrile	AVRG		7.022e-002		5.487	15.000
Allyl Chloride	AVRG		1.83172796		9.745	15.000
Acrylonitrile	AVRG		0.24542243		14.602	15.000
Methylene Chloride	LINR	-7.43e-002	2.17272008		0.9976688	0.9900000
Methyl tert-butyl ether	AVRG		1.60365955		12.052	15.000
Carbon Disulfide	AVRG		0.94508219		10.362	15.000
trans-1,2-Dichloroethene	AVRG		0.46059127		7.137	15.000
Vinyl Acetate	AVRG		0.72258624		12.001	15.000
1,1-Dichloroethane	AVRG		1.08054392		10.345	15.000
2-Butanone	AVRG		0.31461387		8.764	15.000
Methacrylonitrile	AVRG		0.50375377		12.794	15.000
2,2-Dichloropropane	AVRG		0.75944048		9.218	15.000
cis-1,2-Dichloroethene	AVRG		0.57625167		9.804	15.000
Chloroform	AVRG		0.95064464		10.698	15.000
Bromochloromethane	AVRG		0.27096600		8.431	15.000
tert-Amyl methyl ether	AVRG		1.93351680		13.112	20.000
1,1,1-Trichloroethane	AVRG		0.79223152		8.527	15.000
1,1-Dichloropropene	LINR	-6.e-002	2.89651646		0.9959964	0.9900000
1,2-Dichloroethane	AVRG		0.51322878		11.392	15.000
Carbon Tetrachloride	LINR	-5.42e-002	2.64805336		0.9960972	0.9900000
3,3-Dimethyl-1-butanol	AVRG		4.25e-002		12.751	20.000
Benzene	2ORDR	-1.61e-002	0.75966767	5.175e-002	0.9985340	0.9900000
Trichloroethene	AVRG		0.36187530		10.828	15.000
Bromodichloromethane	LINR	-6.04e-002	2.45972428		0.9963785	0.9900000
Methyl Methacrylate	AVRG		0.67304816		8.344	15.000
2-Chloroethylvinyl ether	LINR	-0.1184881	20.0916921		0.9967337	0.9900000
1,2-Dichloropropane	LINR	-6.42e-002	3.09758138		0.9966009	0.9900000
tert-Butyl formate	LINR	-9.15e-003	0.61816137		0.9971832	0.9900000
Dibromomethane	AVRG		0.20558746		7.281	15.000
4-Methyl-2-Pentanone	AVRG		0.50701519		13.439	15.000

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805007

Instrument ID: VOA2 Calibration Date(s): 05/03/18 05/03/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1509 1824

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2	MAX %RSD OR R^2
cis-1,3-Dichloropropene	AVRG		0.56984615		8.959	15.000
1,3,5-Trichlorobenzene	LINR	-3.9e-002	1.00050151		0.9978694	0.9900000
Ethyl Methacrylate	LINR	-6.34e-002	2.38444588		0.9962287	0.9900000
Toluene	2ORDR	-2.33e-002	0.68042617	3.888e-002	0.9981914	0.9900000
trans-1,3-Dichloropropene	AVRG		0.46348582		8.623	15.000
2-Hexanone	AVRG		0.32254818		9.502	15.000
1,1,2-Trichloroethane	AVRG		0.31073110		12.922	15.000
1,3-Dichloropropane	AVRG		0.61747109		12.510	15.000
Dibromochloromethane	AVRG		0.45387477		9.596	15.000
Tetrachloroethene	AVRG		0.31743676		11.347	15.000
1,2-Dibromoethane	AVRG		0.38288326		6.954	15.000
1-Chlorohexane	LINR	-7.78e-002	3.38146252		0.9965163	0.9900000
Chlorobenzene	2ORDR	-1.76e-002	1.05535512	9.503e-002	0.9985703	0.9900000
1,1,1,2-Tetrachloroethane	AVRG		0.41383940		14.148	15.000
Ethylbenzene	LINR	-6.37e-002	2.37652315		0.9963176	0.9900000
m,p-Xylenes	2ORDR	-4.61e-002	1.62910236	0.11644326	0.9979366	0.9900000
o-Xylene	LINR	-7.14e-002	1.88341043		0.9955446	0.9900000
Styrene	2ORDR	-1.66e-002	0.91907832	7.704e-002	0.9987702	0.9900000
Bromoform	AVRG		0.31028262		6.166	15.000
Isopropylbenzene	2ORDR	-1.35e-002	0.61219833	4.312e-002	0.9980034	0.9900000
1,1,2,2-Tetrachloroethane	LINR	-6.33e-002	1.08783517		0.9964276	0.9900000
Ethanol	LINR	-1.3907984	24.5752275		0.9960164	0.9900000
1,2,3-Trichloropropane	AVRG		1.20981439		11.569	15.000
trans-1,4-Dichloro-2-butene	LINR	1.889e-003	7.63665027		0.9991438	0.9900000
n-Propylbenzene	2ORDR	-1.62e-002	0.25918211	6.054e-003	0.9977179	0.9900000
Bromobenzene	LINR	-5.51e-002	1.19854881		0.9971311	0.9900000
1,3,5-Trimethylbenzene	2ORDR	-1.8e-002	0.34390054	1.248e-002	0.9975707	0.9900000
2-Chlorotoluene	LINR	-6.78e-002	0.49089865		0.9957186	0.9900000
4-Chlorotoluene	LINR	-7.15e-002	0.45318841		0.9950559	0.9900000
tert-Butylbenzene	2ORDR	-1.43e-002	0.41489035	1.326e-002	0.9975782	0.9900000
1,2,4-Trimethylbenzene	2ORDR	-2.02e-002	0.34408915	9.628e-003	0.9980980	0.9900000
sec-Butylbenzene	AVRG		3.26777765		12.803	15.000
p-Isopropyltoluene	AVRG		2.78498921		13.087	15.000
1,3-Dichlorobenzene	LINR	-5.77e-002	0.71219496		0.9964721	0.9900000
1,4-Dichlorobenzene	LINR	-4.74e-002	0.72600374		0.9975276	0.9900000
n-Butylbenzene	AVRG		2.11320351		13.282	15.000
1,2-Dichlorobenzene	2ORDR	-1.72e-002	0.61389838	3.228e-002	0.9984848	0.9900000
1,2-Dibromo-3-Chloropropane	AVRG		0.19955323		5.276	15.000
1,2,4-Trichlorobenzene	LINR	-1.22e-002	1.09332014		0.9989495	0.9900000
Hexachlorobutadiene	LINR	-1.31e-002	2.58758974		0.9982690	0.9900000
Naphthalene	LINR	-1.38e-002	0.44174117		0.9981198	0.9900000
1,2,3-Trichlorobenzene	LINR	-6.01e-003	1.24920058		0.9992440	0.9900000
Methyl acetate	AVRG		0.68397474		14.955	15.000
Freon TF	AVRG		0.41257733		9.133	15.000

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805007

Instrument ID: VOA2 Calibration Date(s): 05/03/18 05/03/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1509 1824

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2	MAX %RSD OR R^2
1,2,3-Trimethylbenzene	2ORDR	-1.57e-002	0.36416097	1.101e-002	0.9983836	0.9900000
Methylcyclohexane	LINR	-4.76e-002	2.55413756		0.9958840	0.9900000
1,4-Dioxane	LINR	-0.9695163	193.990115		0.9962536	0.9900000
n-Butanol	LINR	-0.3974535	58.4985802		0.9967782	0.9900000
Methyl Acrylate	AVRG		0.94329900		11.308	15.000
Ethyl Acrylate	AVRG		1.71954051		11.463	15.000
n-Hexane	AVRG		0.65633884		12.701	15.000
Cyclohexane	AVRG		0.94914273		13.782	15.000
Isopropyl alcohol	AVRG		4.792e-002		14.354	15.000
Tert-butyl alcohol	AVRG		7.605e-002		14.747	15.000
Xylenes (total)	2ORDR	-6.15e-002	1.70997763	9.942e-002	0.9981132	0.9900000
Propionitrile	AVRG		0.20416097		12.739	15.000
2-Nitropropane	AVRG		1.40994783		11.090	15.000
Ethyl Acetate	AVRG		1.39199285		13.352	15.000
Diethyl ether	AVRG		0.99226317		11.510	15.000
Tetrahydrofuran	AVRG		0.24360882		13.089	15.000
4-Methyl-2-pentanol	2ORDR	-0.1331993	7.80435929	0.55931950	0.9989887	0.9900000
Diisopropyl ether	AVRG		2.35080817		12.732	15.000
2-Methylnaphthalene	2ORDR	8.408e-002	1.11226695	-3.85e-002	0.9959665	0.9900000
Dichlorofluoromethane	AVRG		0.97980181		9.931	15.000
1-Methylnaphthalene	2ORDR	7.181e-002	1.04882471	-1.6e-003	0.9971863	0.9900000
Isobutylene	2ORDR	-5.28e-003	1.51815013	0.77437361	0.9968175	0.9900000
Dibromofluoromethane	AVRG		0.44457931		14.694	15.000
Toluene-d8	AVRG		1.34353855		12.600	15.000
1,2-Dichloroethane-d4	AVRG		0.56520111		8.771	15.000
4-Bromofluorobenzene	LINR	-7.02e-003	2.31107908		0.9999711	0.9900000

FORM VI VOA

MSVOA02 -Logbook

Batch: 31743
Date: 05-03-2018
Method: 8260
Comments:

Analyst: Cesar Lira
Reviewer:
Laboratory: Houston

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
1	BFB	TUNE	05-03-2018 02:44 pm	1.00	50 mL	50 mL	D050301.D	Liquid	Y	NA
	Auto find/purged									
2	VSTD00.5	ICAL1	05-03-2018 03:09 pm	1.00	50 mL	50 mL	D050302.D	Liquid	Y	NA
	0.5 uL cal std/250 ml DI									
3	VSTD001	ICAL2	05-03-2018 03:33 pm	1.00	50 mL	50 mL	D050303.D	Liquid	Y	NA
	1 uL cal std/250 ml DI									
4	VSTD002	ICAL3	05-03-2018 03:57 pm	1.00	50 mL	50 mL	D050304.D	Liquid	Y	NA
	2 uL cal std/250 ml DI									
5	VSTD005	ICAL4	05-03-2018 04:22 pm	1.00	50 mL	50 mL	D050305.D	Liquid	Y	NA
	5 uL cal std/250 ml DI									
6	VSTD020	ICAL5	05-03-2018 05:11 pm	1.00	50 mL	50 mL	D050307.D	Liquid	Y	NA
	4 uL cal std/50 ml DI									
7	VSTD050	ICAL6	05-03-2018 05:35 pm	1.00	50 mL	50 mL	D050308.D	Liquid	Y	NA
	10 uL cal std/50 ml DI									
8	VSTD100	ICAL7	05-03-2018 05:59 pm	1.00	50 mL	50 mL	D050309.D	Liquid	Y	NA
	20 uL cal std/50 ml DI									
9	VSTD200	ICAL8	05-03-2018 06:24 pm	1.00	50 mL	50 mL	D050310.D	Liquid	Y	NA
	40 uL cal std/50 ml DI									
10	BLK	SAMP	05-03-2018 06:48 pm	1.00	50 mL	50 mL	D050311.D	Liquid	Y	NA
	Cleanup blk									
11	VSTD-ICV	ICV	05-03-2018 07:13 pm	1.00	50 mL	50 mL	D050312.D	Liquid	Y	NA
	10 uL ICV std/50 ml DI									
12	VLCSW-180426	LCS	05-03-2018 07:37 pm	1.00	50 mL	50 mL	D050313.D	Liquid	Y	NA
	10 uL cal std/50 ml DI									
13	VLCSW-180503	LCS	05-03-2018 08:01 pm	1.00	50 mL	50 mL	D050314.D	Liquid	Y	NA
	10 uL cal std/50 ml DI									
14	VBLKM-180426	SAMP	05-03-2018 08:26 pm	50.00	1 mL	50 mL	D050315.D	Liquid	Y	NA
	Medium level BLK									
15	VBLKW-180503	MBLK	05-03-2018 08:50 pm	1.00	50 mL	50 mL	D050316.D	Liquid	Y	NA
16	HS18050072-01	SAMP	05-03-2018 09:15 pm	1.00	50 mL	50 mL	D050317.D	Liquid	Y	<2
17	HS18050072-01	SAMP	05-03-2018 09:42 pm	10.00	5 mL	50 mL	D050318.D	Liquid	Y	<2
18	HS18050072-02	SAMP	05-03-2018 10:07 pm	1.00	50 mL	50 mL	D050319.D	Liquid	Y	<2
19	HS18050072-02	SAMP	05-03-2018 10:34 pm	10.00	5 mL	50 mL	D050320.D	Liquid	Y	<2
20	HS18050072-03	SAMP	05-03-2018 10:58 pm	1.00	50 mL	50 mL	D050321.D	Liquid	Y	<2
21	HS18050072-03	SAMP	05-03-2018 11:25 pm	10.00	5 mL	50 mL	D050322.D	Liquid	Y	<2
22	HS18050072-03MS	MS	05-03-2018 11:50 pm	1.00	50 mL	50 mL	D050323.D	Liquid	Y	<2
	8 uL cal std/40 ml sample									
23	HS18050072-03MSD	MSD	05-04-2018 12:14 am	1.00	50 mL	50 mL	D050324.D	Liquid	Y	<2
	8 uL cal std/40 ml sample									
24	HS18050042-04	SAMP	05-04-2018 12:41 am	50.00	1 mL	50 mL	D050325.D	Liquid	Y	<2
25	BLK	SAMP	05-04-2018 01:06 am	1.00	50 mL	50 mL	D050326.D	Liquid	Y	NA
	Cleanup blk									
26	HS18050160-01	SAMP	05-04-2018 01:30 am	1.00	50 mL	50 mL	D050327.D	Liquid	Y	<2
27	HS18050160-02	SAMP	05-04-2018 01:55 am	1.00	50 mL	50 mL	D050328.D	Liquid	Y	<2
28	CCV_END	CCV_END	05-04-2018 02:19 am	1.00	50 mL	50 mL	D050329.D	Liquid	Y	<2
	10 uL cal std/50 ml DI									

MSVOA02 -Logbook

Chemical	Value
SURR ID	30603-16-03
IS ID	30603-16-04
ICV STD ID	30603-16-02
LCS/MS ID	30603-16-01
CAL STD ID	30603-16-1
BFB ID	30603-16-03

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050301.D

Date : 03-MAY-2018 14:44

Client ID: BFB

Instrument: VOA2.i

Sample Info: BFB;BFB;3;;BFB

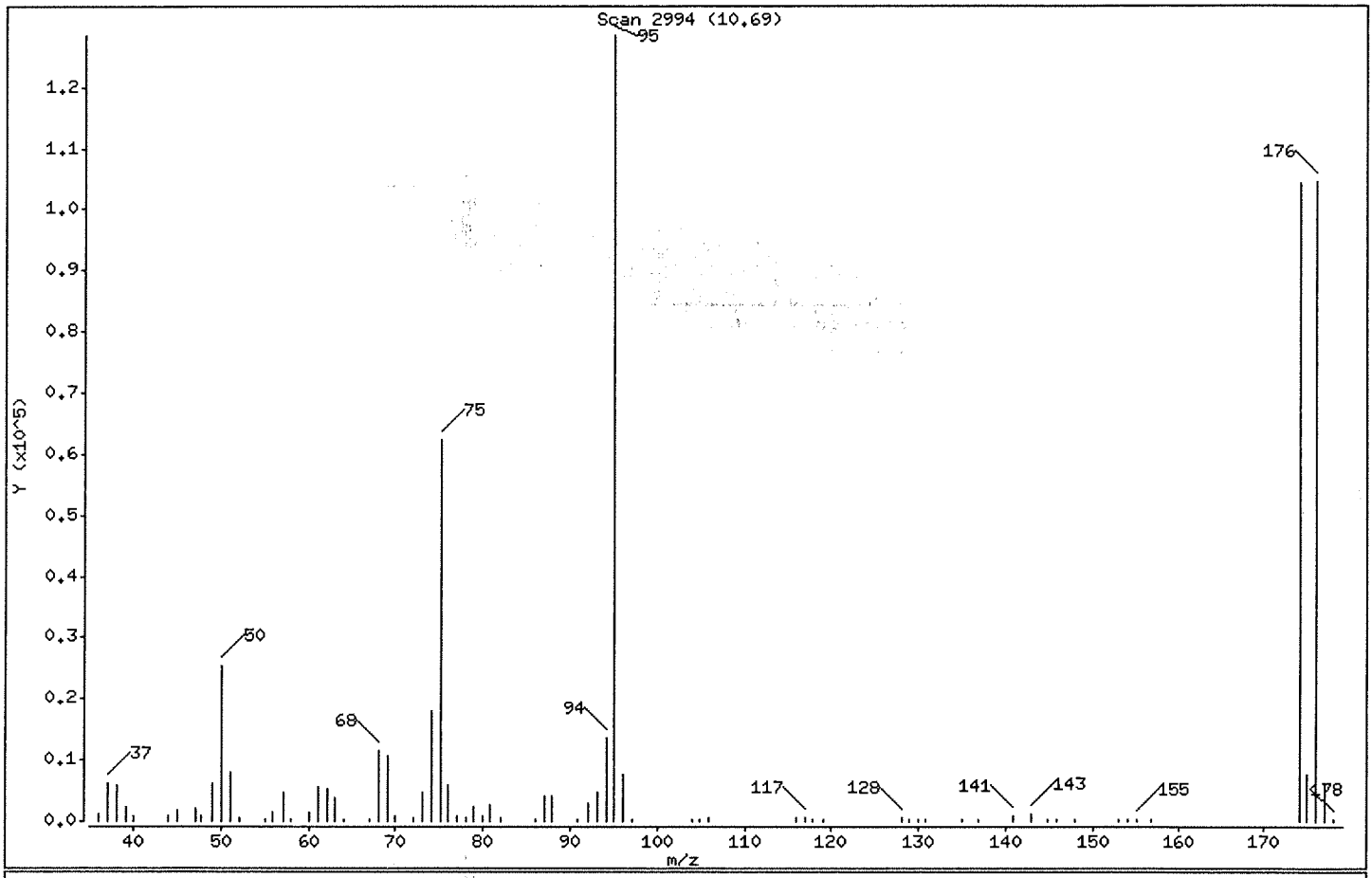
Volume Injected (uL): 2.0

Operator: AP

Column phase: DB624

Column diameter: 0.18

1 bfb



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	19.88
75	30.00 - 60.00% of mass 95	48.46
96	5.00 - 9.00% of mass 95	5.93
173	Less than 2.00% of mass 174	0.00 (0.00)
174	Greater than 50.00% of mass 95	81.09
175	5.00 - 9.00% of mass 174	5.90 (7.28)
176	95.00 - 101.00% of mass 174	81.48 (100.48)
177	5.00 - 9.00% of mass 176	4.72 (5.79)

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050301.D

Date : 03-MAY-2018 14:44

Client ID: BFB

Instrument: VOA2.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: AP

Column phase: DB624

Column diameter: 0.18

Data File: D050301.D
Spectrum: Scan 2994 (10.69)
Location of Maximum: 95.10
Number of points: 74

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	1181	62.10	5283	87.00	4215	130.80	279
37.10	6315	63.10	3798	88.00	4209	134.90	409
38.10	5931	64.00	407	90.90	331	136.90	154
39.10	2461	67.00	315	92.10	2908	140.90	1006
40.00	850	68.10	11428	93.10	4796	142.90	1068
44.00	798	69.10	10528	94.10	13450	144.80	157
45.10	1633	70.00	970	95.10	128488	145.80	384
47.10	2119	72.00	532	96.00	7620	148.00	354
47.80	740	73.10	4768	97.10	169	152.90	168
49.10	6062	74.10	17992	104.00	380	154.00	278
50.10	25544	75.10	62264	104.80	196	155.10	362
51.10	7860	76.00	5798	105.90	642	156.80	206
52.10	465	77.00	836	115.90	508	174.00	104192
55.00	284	78.00	708	117.00	683	175.00	7585
56.00	1438	79.00	2383	117.90	364	176.00	104688
57.10	4709	80.00	747	119.00	411	177.00	6063
58.10	253	80.90	2726	128.00	498	178.10	156
60.10	1433	82.10	456	129.00	315		
61.10	5566	86.00	153	130.00	358		

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050301.D

Date : 03-MAY-2018 14:44

Client ID: BFB

Instrument: VOA2.i

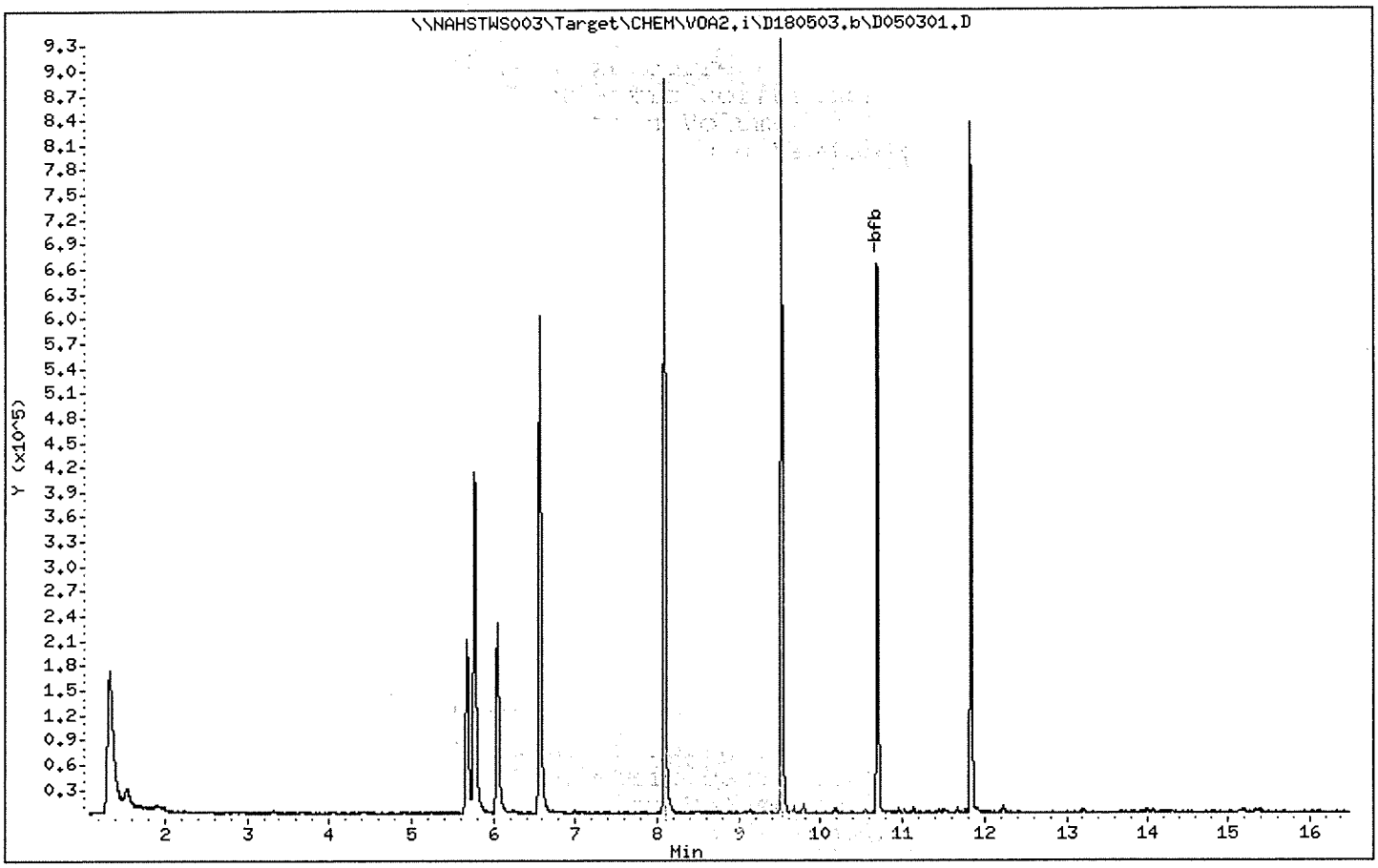
Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: AP

Column phase: DB624

Column diameter: 0.18



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050302.D Page 1
Report Date: 15-May-2018 13:28

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050302.D
Lab Smp Id: VSTD00.5 Client Smp ID: VSTD00.5
Inj Date : 03-MAY-2018 15:09
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD00.5;VSTD00.5;1;1;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\8260LL.m
Meth Date : 15-May-2018 13:28 VOA2.i Quant Type: ISTD
Cal Date : 03-MAY-2018 18:24 Cal File: D050310.D
Als bottle: 2 Calibration Sample, Level: 1
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

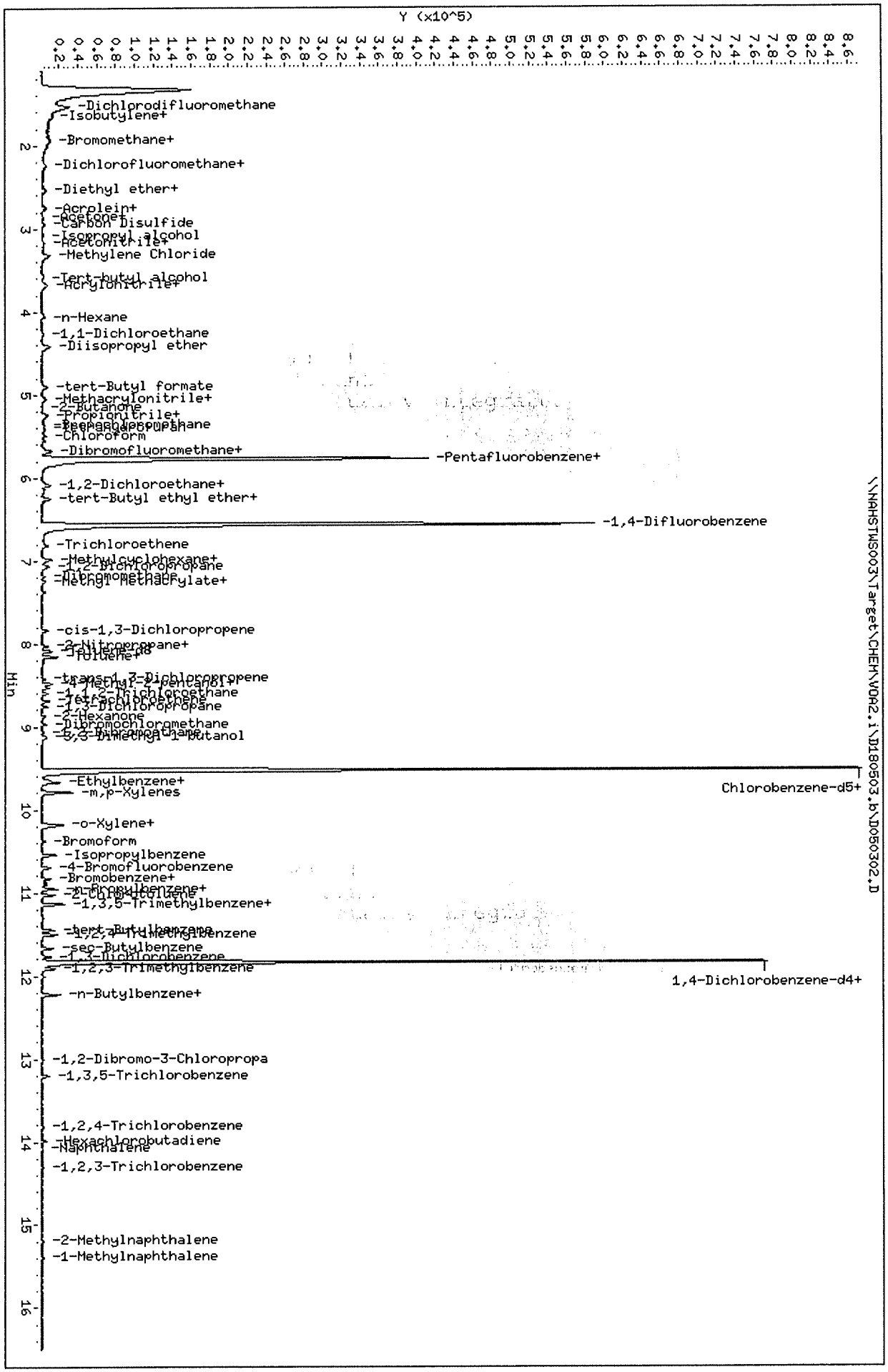
Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1	Pentafluorobenzene	168	5.773	5.773	(1.000)	365637	50.0000	(M)
2	Dichlorodifluoromethane	85	1.441	1.441	(0.250)	1476	0.50000	0.43 (aM)
186	Isobutylene	56	1.646	1.646	(0.285)	1923	0.50000	0.13 (aAM)
4	Propionitrile	54	5.237	5.237	(0.907)	8416	5.00000	5.63 (aM)
5	Vinyl Chloride	62	1.662	1.662	(0.288)	2668	0.50000	0.54 (aM)
7	Chloroethane	64	2.025	2.025	(0.351)	1509	0.50000	0.51 (aM)
159	Dichlorofluoromethane	67	2.230	2.230	(0.386)	3984	0.50000	0.55 (aM)
8	Trichlorofluoromethane	101	2.240	2.240	(0.388)	2418	0.50000	0.51 (aM)
13	Acetonitrile	39	3.164	3.164	(0.548)	2724	5.00000	5.30 (aM)
14	Allyl Chloride	41	3.167	3.167	(0.549)	7338	0.50000	0.54 (TaM)
15	Iodomethane	142	2.891	2.891	(0.501)	1039	1.00000	2.62 (M)
16	Acrylonitrile	53	3.726	3.726	(0.645)	1262	1.00000	0.70 (aM)
18	Methyl tert-butyl ether	73	3.681	3.681	(0.638)	6632	0.50000	0.56 (aM)
19	Carbon Disulfide	76	2.943	2.943	(0.510)	8155	1.00000	1.17 (aM)
20	trans-1,2-Dichloroethene	96	3.678	3.678	(0.637)	1597	0.50000	0.47 (aM)
21	Vinyl Acetate	43	5.253	5.253	(0.910)	5543	1.00000	1.04 (M)
22	1,1-Dichloroethane	63	4.268	4.268	(0.739)	4358	0.50000	0.55 (aM)
24	2-Butanone	43	5.150	5.150	(0.892)	2552	1.00000	1.10 (aM)
25	Methacrylonitrile	41	5.035	5.035	(0.872)	1872	0.50000	0.50 (aM)
26	2,2-Dichloropropane	77	5.032	5.032	(0.872)	2856	0.50000	0.51 (aM)
27	cis-1,2-Dichloroethene	96	5.057	5.057	(0.876)	2359	0.50000	0.55 (aM)

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
	28 Chloroform	83	5.487	5.487	(0.951)	3717	0.50000	0.53(Ta)
	29 Bromochloromethane	128	5.369	5.369	(0.930)	902	0.50000	0.45(aM)
$	30 Dibromofluoromethane	113	5.683	5.683	(0.984)	1861	0.50000	0.57(aM)
	31 1,1,1-Trichloroethane	97	5.648	5.648	(0.978)	3020	0.50000	0.52(aM)
	33 1,2-Dichloroethane	62	6.142	6.142	(0.935)	3058	0.50000	0.55(Ta)
$	35 1,2-Dichloroethane-d4	65	6.049	6.049	(1.048)	2122	0.50000	0.51(aM)
*	36 1,4-Difluorobenzene	114	6.566	6.566	(1.000)	537826	50.0000	
	38 Trichloroethene	130	6.813	6.813	(1.038)	2212	0.50000	0.56(aM)
	40 Methyl Methacrylate	41	7.255	7.255	(1.257)	2682	0.50000	0.54(aM)
	43 2-Nitropropane	43	8.026	8.026	(1.390)	5290	0.50000	0.51(aM)
	44 Dibromomethane	93	7.188	7.188	(1.095)	1146	0.50000	0.51(aM)
	45 4-Methyl-2-Pentanone	43	8.026	8.026	(0.843)	5325	1.00000	1.09(aM)
	46 cis-1,3-Dichloropropene	75	7.833	7.833	(1.193)	3378	0.50000	0.55(aM)
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	481196	50.0000	
$	48 Toluene-d8	98	8.090	8.090	(0.849)	7360	0.50000	0.56(Ta)
	51 trans-1,3-Dichloropropene	75	8.417	8.417	(1.282)	2338	0.50000	0.46(aM)
	52 2-Hexanone	43	8.873	8.873	(0.932)	2949	1.00000	0.95(Ta)
	53 1,1,2-Trichloroethane	83	8.594	8.594	(0.902)	1656	0.50000	0.55(aM)
	54 1,3-Dichloropropane	76	8.754	8.754	(0.919)	3211	0.50000	0.54(aM)
	55 Dibromochloromethane	129	8.975	8.975	(0.942)	2399	0.50000	0.54(aM)
	56 Tetrachloroethene	164	8.687	8.687	(0.912)	1755	0.50000	0.57(aM)
	57 1,2-Dibromoethane	107	9.068	9.068	(0.952)	1886	0.50000	0.51(aM)
	60 1,1,1,2-Tetrachloroethane	131	9.640	9.640	(1.012)	2370	0.50000	0.59(aM)
	66 Bromoform	173	10.375	10.375	(1.089)	1493	0.50000	0.49(aM)
$	69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	3747	0.50000	0.54(a)
*	70 1,4-Dichlorobenzene-d4	152	11.835	11.835	(1.000)	204386	50.0000	
	71 1,2,3-Trichloropropane	75	10.904	10.904	(0.921)	2617	0.50000	0.52(aM)
	81 sec-Butylbenzene	105	11.668	11.668	(0.986)	8149	0.50000	0.61(aM)
	82 p-Isopropyltoluene	119	11.819	11.819	(0.999)	7025	0.50000	0.61(aM)
	87 n-Butylbenzene	91	12.226	12.226	(1.033)	5435	0.50000	0.62(Ta)
	146 Methyl acetate	43	3.241	3.241	(0.561)	3040	0.50000	0.60(aM)
	138 Freon TF	101	2.747	2.747	(0.476)	1597	0.50000	0.52(aM)
	139 Diethyl ether	59	2.538	2.538	(0.440)	4250	0.50000	0.58(aM)
	131 Methyl Acrylate	55	5.266	5.266	(0.912)	3453	0.50000	0.50(aM)
	133 Ethyl Acrylate	55	6.986	6.986	(1.210)	7555	0.50000	0.60(aM)
	141 Cyclohexane	56	5.670	5.670	(0.982)	4412	0.50000	0.63(aM)
	142 Tetrahydrofuran	42	5.423	5.423	(0.939)	2069	1.00000	1.16(aM)
	149 Isopropyl alcohol	45	3.071	3.071	(0.532)	3529	10.0000	10.06(TaM)
	175 tert-Butyl ethyl ether	59	6.248	6.248	(1.082)	3408	0.50000	0.45(Ta)
	157 2-Methylnaphthalene	142	15.191	15.191	(1.284)	1488	0.50000	4.60(M)
	156 Diisopropyl ether	45	4.409	4.409	(0.764)	9343	0.50000	0.54(aM)
	171 1-Methylnaphthalene	142	15.390	15.390	(1.300)	1461	0.50000	3.96(M)
	130 Ethyl Acetate	43	5.253	5.253	(0.910)	5588	0.50000	0.54(aM)

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount Below Limit Of Quantitation(BLOQ).
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050302.D
Date : 03-MAY-2018 15:09
Client ID: VSTD00.5
Sample Info: VSTD00.5;VSTD00.5;1;1;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

\\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050302.D

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050303.D
Lab Smp Id: VSTD001 Client Smp ID: VSTD001
Inj Date : 03-MAY-2018 15:33
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD001;VSTD001;1;2;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\8260LL.m
Meth Date : 15-May-2018 13:28 VOA2.i Quant Type: ISTD
Cal Date : 03-MAY-2018 15:09 Cal File: D050302.D
Als bottle: 3 Calibration Sample, Level: 2
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

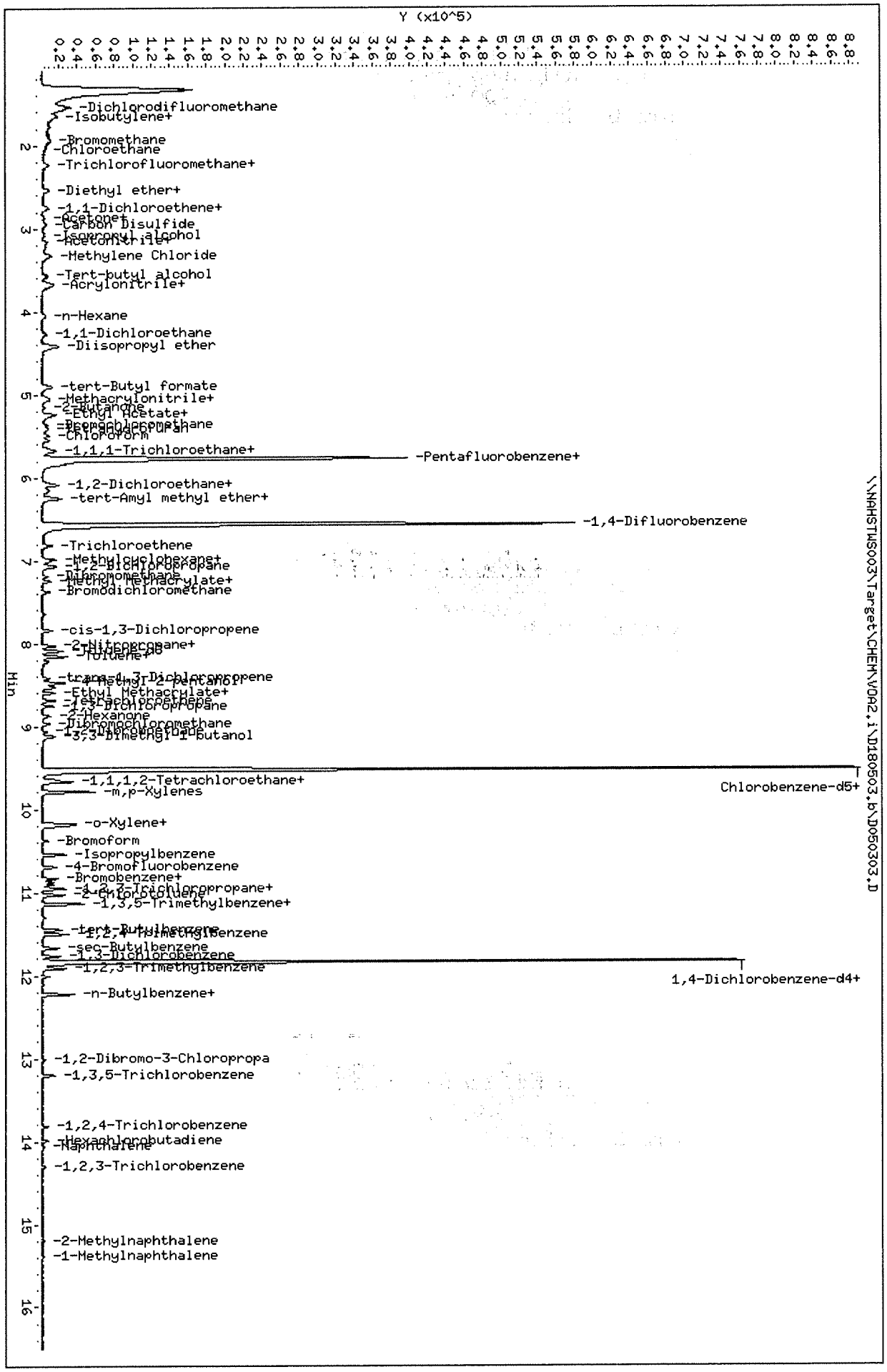
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1	Pentafluorobenzene	168	5.773	5.773	(1.000)	354711	50.0000	
2	Dichlorodifluoromethane	85	1.441	1.441	(0.250)	3064	1.00000	0.93(aM)
186	Isobutylene	56	1.649	1.649	(0.286)	3986	1.00000	0.59(aAM)
4	Propionitrile	54	5.240	5.240	(0.908)	17235	10.0000	11.89(M)
5	Vinyl Chloride	62	1.681	1.681	(0.291)	4863	1.00000	1.02(M)
7	Chloroethane	64	2.044	2.044	(0.354)	3155	1.00000	1.11(M)
159	Dichlorofluoromethane	67	2.217	2.217	(0.384)	7461	1.00000	1.07(M)
8	Trichlorofluoromethane	101	2.240	2.240	(0.388)	4158	1.00000	0.90(Ta)
9	Acrolein	56	2.679	2.679	(0.464)	1867	2.00000	2.08(M)
11	1,1-Dichloroethene	96	2.744	2.744	(0.475)	2742	1.00000	0.93(Ta)
13	Acetonitrile	39	3.158	3.158	(0.547)	5080	10.0000	10.19(M)
14	Allyl Chloride	41	3.158	3.158	(0.547)	15019	1.00000	1.15(TM)
15	Iodomethane	142	2.894	2.894	(0.501)	1703	2.00000	2.89(M)
16	Acrylonitrile	53	3.709	3.709	(0.643)	3906	2.00000	2.24(M)
18	Methyl tert-butyl ether	73	3.674	3.674	(0.636)	13209	1.00000	1.16(M)
19	Carbon Disulfide	76	2.946	2.946	(0.510)	13708	2.00000	2.04(M)
20	trans-1,2-Dichloroethene	96	3.668	3.668	(0.635)	3370	1.00000	1.03(M)
21	Vinyl Acetate	43	5.240	5.240	(0.908)	12000	2.00000	2.34(M)
22	1,1-Dichloroethane	63	4.258	4.258	(0.738)	8823	1.00000	1.15(M)
24	2-Butanone	43	5.150	5.150	(0.892)	4648	2.00000	2.08(M)
25	Methacrylonitrile	41	5.028	5.028	(0.871)	3837	1.00000	1.07(aM)

			QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
		Compounds							
	26	2,2-Dichloropropane	77	5.032	5.032	(0.872)	5461	1.00000	1.01(M)
	27	cis-1,2-Dichloroethene	96	5.067	5.067	(0.878)	4487	1.00000	1.09(M)
	28	Chloroform	83	5.490	5.490	(0.951)	7496	1.00000	1.11(T)
	29	Bromochloromethane	128	5.365	5.365	(0.929)	1860	1.00000	0.96(aM)
$	30	Dibromofluoromethane	113	5.680	5.680	(0.984)	3596	1.00000	1.14(M)
	31	1,1,1-Trichloroethane	97	5.641	5.641	(0.977)	5644	1.00000	1.00
	33	1,2-Dichloroethane	62	6.145	6.145	(0.936)	6343	1.00000	1.17
$	35	1,2-Dichloroethane-d4	65	6.058	6.058	(1.049)	4352	1.00000	1.08(T)
*	36	1,4-Difluorobenzene	114	6.565	6.565	(1.000)	525571	50.0000	
	37	Benzene	78	6.084	6.084	(0.927)	17322	1.00000	0.44(aM)
	38	Trichloroethene	130	6.816	6.816	(1.038)	3901	1.00000	1.02
	40	Methyl Methacrylate	41	7.249	7.249	(1.256)	5074	1.00000	1.06(Ta)
	43	2-Nitropropane	43	8.025	8.025	(1.390)	11288	1.00000	1.12(Ta)
	44	Dibromomethane	93	7.194	7.194	(1.096)	2089	1.00000	0.96(aM)
	45	4-Methyl-2-Pentanone	43	8.025	8.025	(0.843)	11288	2.00000	2.35
	46	cis-1,3-Dichloropropene	75	7.836	7.836	(1.194)	6272	1.00000	1.04(M)
*	47	Chlorobenzene-d5	117	9.524	9.524	(1.000)	472535	50.0000	
$	48	Toluene-d8	98	8.090	8.090	(0.849)	14176	1.00000	1.11(T)
	51	trans-1,3-Dichloropropene	75	8.417	8.417	(1.282)	5005	1.00000	1.02(M)
	52	2-Hexanone	43	8.869	8.869	(0.931)	6814	2.00000	2.23
	53	1,1,2-Trichloroethane	83	8.587	8.587	(0.902)	3473	1.00000	1.18
	54	1,3-Dichloropropane	76	8.751	8.751	(0.919)	6719	1.00000	1.15(M)
	55	Dibromochloromethane	129	8.962	8.962	(0.941)	4727	1.00000	1.10(T)
	56	Tetrachloroethene	164	8.686	8.686	(0.912)	3255	1.00000	1.08
	57	1,2-Dibromoethane	107	9.065	9.065	(0.952)	3810	1.00000	1.05(T)
	59	Chlorobenzene	112	9.553	9.553	(1.003)	11477	1.00000	0.40(a)
	60	1,1,1,2-Tetrachloroethane	131	9.640	9.640	(1.012)	4344	1.00000	1.11
	64	Styrene	104	10.195	10.195	(1.070)	12700	1.00000	0.40(a)
	66	Bromoform	173	10.374	10.374	(1.089)	2821	1.00000	0.96(aM)
	67	Isopropylbenzene	105	10.541	10.541	(1.107)	16528	1.00000	0.39(a)
$	69	4-Bromofluorobenzene	95	10.692	10.692	(1.123)	5914	1.00000	1.09
*	70	1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	201132	50.0000	
	71	1,2,3-Trichloropropane	75	10.901	10.901	(0.921)	5598	1.00000	1.15(T)
	73	n-Propylbenzene	91	10.955	10.955	(0.926)	18580	1.00000	0.38(Ta)
	78	tert-Butylbenzene	119	11.453	11.453	(0.968)	10459	1.00000	0.36(a)
	79	1,2,4-Trimethylbenzene	105	11.497	11.497	(0.972)	15508	1.00000	0.32(a)
	81	sec-Butylbenzene	105	11.664	11.664	(0.986)	13490	1.00000	1.02
	82	p-Isopropyltoluene	119	11.815	11.815	(0.998)	11128	1.00000	0.99(a)
	87	n-Butylbenzene	91	12.223	12.223	(1.033)	7784	1.00000	0.91(a)
	89	1,2-Dibromo-3-Chloropropane	75	13.012	13.012	(1.100)	816	1.00000	1.01(M)
	146	Methyl acetate	43	3.215	3.215	(0.557)	5750	1.00000	1.18(aM)
	138	Freon TF	101	2.750	2.750	(0.476)	2755	1.00000	0.94(aM)
	139	Diethyl ether	59	2.538	2.538	(0.440)	7306	1.00000	1.03
	131	Methyl Acrylate	55	5.263	5.263	(0.912)	7482	1.00000	1.11(aM)
	133	Ethyl Acrylate	55	7.011	7.011	(1.215)	12572	1.00000	1.03(M)
	136	n-Hexane	57	4.050	4.050	(0.702)	3889	1.00000	0.83(TaM)
	141	Cyclohexane	56	5.680	5.680	(0.984)	6853	1.00000	1.01(aM)
	142	Tetrahydrofuran	42	5.420	5.420	(0.939)	4047	2.00000	2.34(M)
	148	Tert-butyl alcohol	59	3.568	3.568	(0.618)	13509	20.0000	25.03(M)
	149	Isopropyl alcohol	45	3.055	3.055	(0.529)	8482	20.0000	24.94(M)
	151	4-Methyl-2-pentanol	45	8.475	8.475	(0.890)	27677	20.0000	16.29(a)
	166	1,2,3-Trimethylbenzene	105	11.915	11.915	(1.007)	13401	1.00000	0.43(a)
	173	3,3-Dimethyl-1-butanol	57	9.123	9.123	(0.958)	9408	20.0000	23.42
	174	tert-Amyl methyl ether	73	6.254	6.254	(1.083)	16234	1.00000	1.18(T)

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
175 tert-Butyl ethyl ether	59	6.232	6.232	(1.079)	8113	1.00000	1.11(T)
176 tert-Amyl alcohol	59	6.232	6.232	(1.079)	8530	20.0000	23.24
157 2-Methylnaphthalene	142	15.197	15.197	(1.284)	1106	1.00000	4.50(M)
156 Diisopropyl ether	45	4.419	4.419	(0.765)	19935	1.00000	1.19(M)
171 1-Methylnaphthalene	142	15.387	15.387	(1.300)	1294	1.00000	3.92(M)
130 Ethyl Acetate	43	5.240	5.240	(0.908)	12103	1.00000	1.22(aM)

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
A - Target compound detected but, quantitated amount
exceeded maximum amount.
M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050303.D
Date : 03-MAY-2018 15:33
Client ID: VSTD001
Sample Info: VSTD001;VSTD001;1;2;
Purge Volume: 5.0
Column phase: DB624

\\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050303.D
Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050304.D
Lab Smp Id: VSTD002 Client Smp ID: VSTD002
Inj Date : 03-MAY-2018 15:57
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD002;VSTD002;1;3;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\8260LL.m
Meth Date : 15-May-2018 13:29 VOA2.i Quant Type: ISTD
Cal Date : 03-MAY-2018 15:33 Cal File: D050303.D
Als bottle: 4 Calibration Sample, Level: 3
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

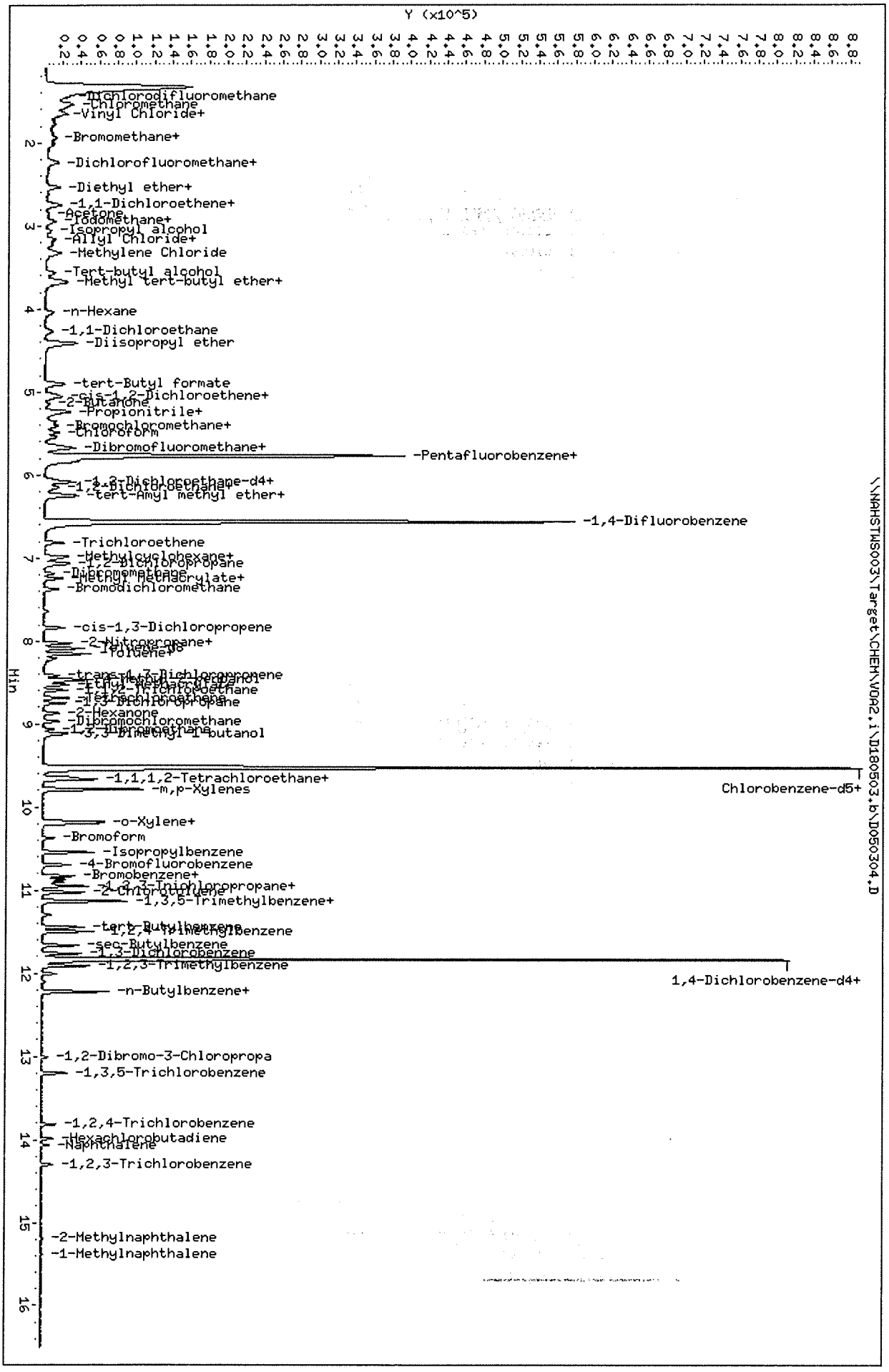
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1	Pentafluorobenzene	168	5.773	5.773	(1.000)	351829	50.0000	
2	Dichlorodifluoromethane	85	1.441	1.441	(0.250)	6283	2.00000	1.93(M)
186	Isobutylene	56	1.649	1.649	(0.286)	7612	2.00000	1.39(aAM)
4	Propionitrile	54	5.230	5.230	(0.906)	27561	20.0000	19.18
5	Vinyl Chloride	62	1.665	1.665	(0.289)	9159	2.00000	1.94
7	Chloroethane	64	2.034	2.034	(0.352)	5903	2.00000	2.10(M)
159	Dichlorofluoromethane	67	2.217	2.217	(0.384)	14267	2.00000	2.06(T)
8	Trichlorofluoromethane	101	2.246	2.246	(0.389)	9918	2.00000	2.17(TM)
9	Acrolein	56	2.689	2.689	(0.466)	3755	4.00000	4.23(M)
11	1,1-Dichloroethene	96	2.734	2.734	(0.474)	6101	2.00000	2.10
12	Isobutyl Alcohol	74	6.164	6.164	(1.068)	640	40.0000	16.46(M)
13	Acetonitrile	39	3.164	3.164	(0.548)	10383	20.0000	21.01(M)
14	Allyl Chloride	41	3.164	3.164	(0.548)	23276	2.00000	1.80(T)
15	Iodomethane	142	2.904	2.904	(0.503)	3627	4.00000	3.64(M)
16	Acrylonitrile	53	3.693	3.693	(0.640)	6674	4.00000	3.86(M)
18	Methyl tert-butyl ether	73	3.674	3.674	(0.636)	23321	2.00000	2.06(T)
19	Carbon Disulfide	76	2.939	2.939	(0.509)	26740	4.00000	4.02(M)
20	trans-1,2-Dichloroethene	96	3.671	3.671	(0.636)	6689	2.00000	2.06
21	Vinyl Acetate	43	5.240	5.240	(0.908)	21143	4.00000	4.15(M)
22	1,1-Dichloroethane	63	4.258	4.258	(0.738)	15154	2.00000	1.99(T)
24	2-Butanone	43	5.147	5.147	(0.892)	9382	4.00000	4.23(M)

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
25	Methacrylonitrile	41	5.025	5.025	(0.870)	7934	2.00000	2.23 (M)
26	2,2-Dichloropropane	77	5.025	5.025	(0.870)	11479	2.00000	2.14 (M)
27	cis-1,2-Dichloroethene	96	5.054	5.054	(0.875)	8148	2.00000	2.00
28	Chloroform	83	5.484	5.484	(0.950)	14379	2.00000	2.14
29	Bromochloromethane	128	5.368	5.368	(0.930)	3889	2.00000	2.03
$ 30	Dibromofluoromethane	113	5.683	5.683	(0.984)	7086	2.00000	2.26
31	1,1,1-Trichloroethane	97	5.647	5.647	(0.978)	11799	2.00000	2.11
33	1,2-Dichloroethane	62	6.135	6.135	(0.934)	11245	2.00000	2.06
34	Carbon Tetrachloride	117	5.792	5.792	(0.882)	13745	2.00000	0.72 (aM)
$ 35	1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	8352	2.00000	2.10 (T)
* 36	1,4-Difluorobenzene	114	6.568	6.568	(1.000)	529397	50.0000	
37	Benzene	78	6.087	6.087	(0.927)	31967	2.00000	1.49 (M)
38	Trichloroethene	130	6.816	6.816	(1.038)	8194	2.00000	2.13
40	Methyl Methacrylate	41	7.242	7.242	(1.255)	9670	2.00000	2.04 (T)
43	2-Nitropropane	43	8.029	8.029	(1.391)	21213	2.00000	2.13 (Ta)
44	Dibromomethane	93	7.191	7.191	(1.095)	4178	2.00000	1.91
45	4-Methyl-2-Pentanone	43	8.029	8.029	(0.843)	21213	4.00000	4.37
46	cis-1,3-Dichloropropene	75	7.839	7.839	(1.193)	12326	2.00000	2.04
* 47	Chlorobenzene-d5	117	9.524	9.524	(1.000)	477636	50.0000	
$ 48	Toluene-d8	98	8.089	8.089	(0.849)	27399	2.00000	2.13
50	Toluene	91	8.150	8.150	(0.856)	37383	2.00000	1.50
51	trans-1,3-Dichloropropene	75	8.420	8.420	(1.282)	8582	2.00000	1.74
52	2-Hexanone	43	8.863	8.863	(0.931)	13732	4.00000	4.45
53	1,1,2-Trichloroethane	83	8.596	8.596	(0.903)	6291	2.00000	2.11
54	1,3-Dichloropropane	76	8.751	8.751	(0.919)	13192	2.00000	2.23
55	Dibromochloromethane	129	8.969	8.969	(0.942)	9011	2.00000	2.07 (T)
56	Tetrachloroethene	164	8.686	8.686	(0.912)	6322	2.00000	2.08
57	1,2-Dibromoethane	107	9.065	9.065	(0.952)	7733	2.00000	2.11 (T)
59	Chlorobenzene	112	9.550	9.550	(1.003)	21810	2.00000	1.53 (M)
60	1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.012)	8900	2.00000	2.25
62	m,p-Xylenes	106	9.787	9.787	(1.028)	30090	4.00000	2.84
64	Styrene	104	10.195	10.195	(1.070)	24473	2.00000	1.53
66	Bromoform	173	10.374	10.374	(1.089)	6142	2.00000	2.07 (T)
67	Isopropylbenzene	105	10.544	10.544	(1.107)	34621	2.00000	1.55
$ 69	4-Bromofluorobenzene	95	10.695	10.695	(1.123)	9818	2.00000	2.02
* 70	1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	205603	50.0000	
71	1,2,3-Trichloropropane	75	10.900	10.900	(0.921)	11390	2.00000	2.28
72	trans-1,4-Dichloro-2-butene	53	10.926	10.926	(1.147)	2239	2.00000	1.88 (M)
73	n-Propylbenzene	91	10.949	10.949	(0.925)	35938	2.00000	1.46
75	1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	26898	2.00000	1.36
78	tert-Butylbenzene	119	11.449	11.449	(0.967)	21424	2.00000	1.45
79	1,2,4-Trimethylbenzene	105	11.497	11.497	(0.972)	29236	2.00000	1.44
81	sec-Butylbenzene	105	11.664	11.664	(0.986)	26348	2.00000	1.96
82	p-Isopropyltoluene	119	11.815	11.815	(0.998)	22966	2.00000	2.00
84	1,4-Dichlorobenzene	146	11.854	11.854	(1.002)	15310	2.00000	0.33 (a)
87	n-Butylbenzene	91	12.223	12.223	(1.033)	16033	2.00000	1.84
88	1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	16238	2.00000	1.57
89	1,2-Dibromo-3-Chloropropane	75	13.015	13.015	(1.100)	1591	2.00000	1.93 (M)
90	1,2,4-Trichlorobenzene	180	13.817	13.817	(1.168)	5311	2.00000	0.80 (Ta)
91	Hexachlorobutadiene	225	13.984	13.984	(1.182)	2675	2.00000	1.02 (M)
93	1,2,3-Trichlorobenzene	182	14.302	14.302	(1.209)	4373	2.00000	1.02 (T)
146	Methyl acetate	43	3.228	3.228	(0.559)	10408	2.00000	2.16 (aM)
138	Freon TF	101	2.753	2.753	(0.477)	6152	2.00000	2.11 (M)
139	Diethyl ether	59	2.532	2.532	(0.439)	13773	2.00000	1.97

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
131 Methyl Acrylate	55	5.259	5.259	(0.911)	12241	2.00000	1.84 (Ta)
133 Ethyl Acrylate	55	7.011	7.011	(1.215)	24617	2.00000	2.03 (M)
136 n-Hexane	57	4.033	4.033	(0.699)	8834	2.00000	1.91 (TM)
141 Cyclohexane	56	5.676	5.676	(0.983)	12920	2.00000	1.93 (aH)
142 Tetrahydrofuran	42	5.423	5.423	(0.939)	7150	4.00000	4.17 (M)
148 Tert-butyl alcohol	59	3.558	3.558	(0.616)	25194	40.0000	47.07 (M)
149 Isopropyl alcohol	45	3.055	3.055	(0.529)	15833	40.0000	46.95 (M)
151 4-Methyl-2-pentanol	45	8.468	8.468	(0.889)	52750	40.0000	36.77
166 1,2,3-Trimethylbenzene	105	11.911	11.911	(1.007)	25837	2.00000	1.51
170 1,3,5-Trichlorobenzene	180	13.204	13.204	(1.116)	9328	2.00000	0.31 (a)
172 tert-Butyl formate	59	4.903	4.903	(0.849)	28598	4.00000	2.05
173 3,3-Dimethyl-1-butanol	57	9.110	9.110	(0.957)	17156	40.0000	42.25
174 tert-Amyl methyl ether	73	6.251	6.251	(1.083)	29431	2.00000	2.16
175 tert-Butyl ethyl ether	59	6.235	6.235	(1.080)	16711	2.00000	2.31
176 tert-Amyl alcohol	59	6.235	6.235	(1.080)	16711	40.0000	45.91
157 2-Methylnaphthalene	142	15.200	15.200	(1.284)	1303	2.00000	4.55 (M)
156 Diisopropyl ether	45	4.412	4.412	(0.764)	33596	2.00000	2.03 (T)
171 1-Methylnaphthalene	142	15.393	15.393	(1.301)	1112	2.00000	3.87 (M)
130 Ethyl Acetate	43	5.240	5.240	(0.908)	17515	2.00000	1.78 (Ta)

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount Below Limit Of Quantitation(BLOQ).
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050304.D
Date : 03-MAY-2018 15:57
Client ID: VSTD002
Sample Info: VSTD002;VSTD002;1;3;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050305.D Page 1
Report Date: 15-May-2018 13:29

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050305.D
Lab Smp Id: VSTD005 Client Smp ID: VSTD005
Inj Date : 03-MAY-2018 16:22
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD005;VSTD005;1;4;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\8260LL.m
Meth Date : 15-May-2018 13:29 VOA2.i Quant Type: ISTD
Cal Date : 03-MAY-2018 15:57 Cal File: D050304.D
Als bottle: 5 Calibration Sample, Level: 4
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

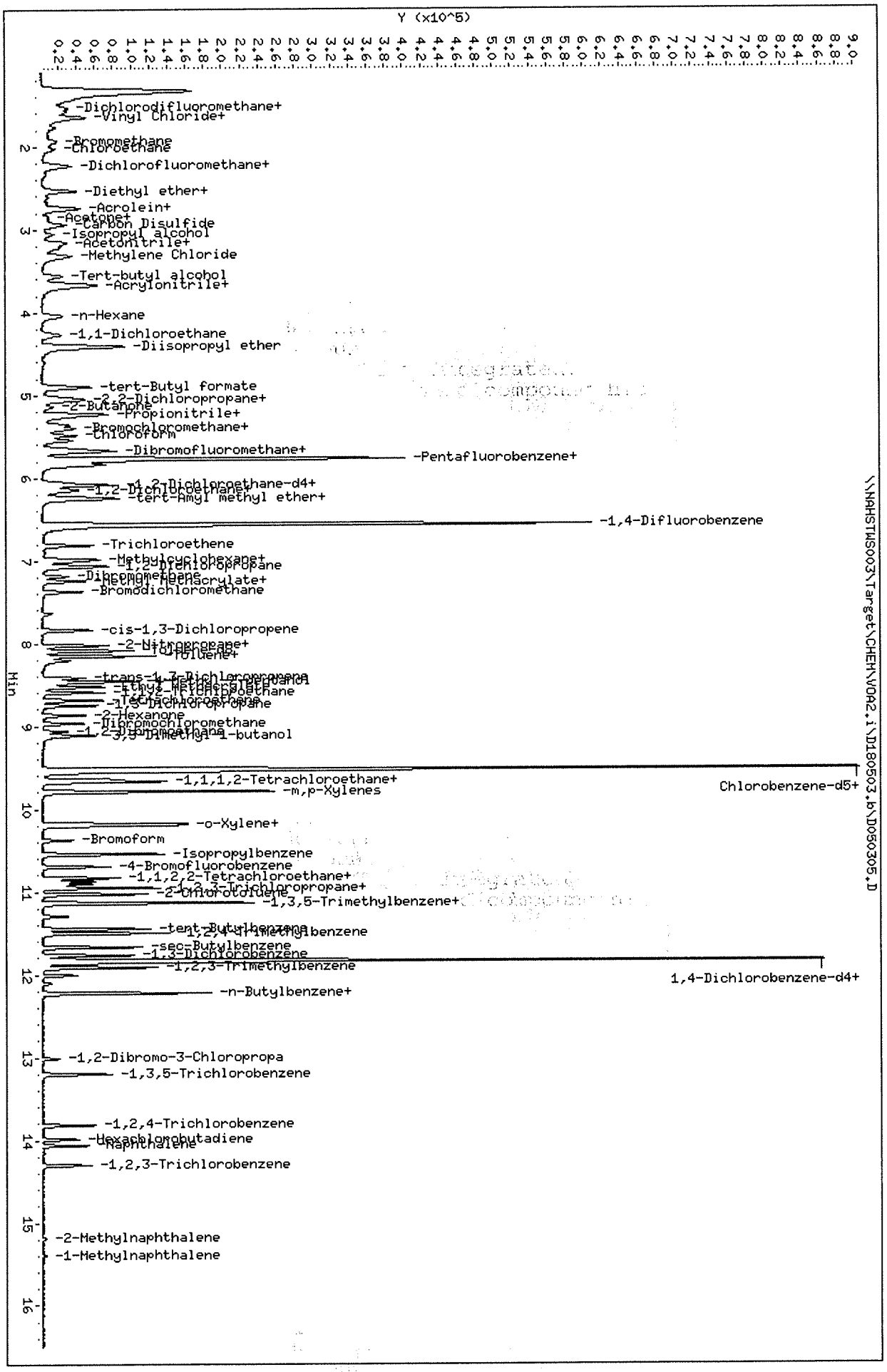
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1	Pentafluorobenzene	168	5.773	5.773	(1.000)	355247	50.0000	
2	Dichlorodifluoromethane	85	1.434	1.434	(0.249)	15620	5.00000	4.76(T)
186	Isobutylene	56	1.633	1.633	(0.283)	19047	5.00000	3.91(aAM)
3	Chloromethane	50	1.585	1.585	(0.275)	37682	5.00000	4.46(TaM)
4	Propionitrile	54	5.224	5.224	(0.905)	61255	50.0000	42.22
5	Vinyl Chloride	62	1.668	1.668	(0.289)	24657	5.00000	5.19
6	Bromomethane	94	1.935	1.935	(0.335)	13257	5.00000	4.02(TM)
7	Chloroethane	64	2.028	2.028	(0.351)	14783	5.00000	5.23
159	Dichlorofluoromethane	67	2.211	2.211	(0.383)	35525	5.00000	5.10
8	Trichlorofluoromethane	101	2.243	2.243	(0.389)	22918	5.00000	4.97(T)
9	Acrolein	56	2.673	2.673	(0.463)	8514	10.0000	9.51(T)
10	Acetone	43	2.843	2.843	(0.493)	15853	10.0000	6.51
11	1,1-Dichloroethene	96	2.737	2.737	(0.474)	15196	5.00000	5.19
12	Isobutyl Alcohol	74	6.164	6.164	(1.068)	1533	100.000	64.28(M)
13	Acetonitrile	39	3.157	3.157	(0.547)	23472	50.0000	47.04
14	Allyl Chloride	41	3.161	3.161	(0.548)	62767	5.00000	4.82
15	Iodomethane	142	2.881	2.881	(0.499)	12718	10.0000	7.10(TM)
16	Acrylonitrile	53	3.690	3.690	(0.639)	15865	10.0000	9.09
17	Methylene Chloride	84	3.318	3.318	(0.575)	24699	5.00000	3.83(M)
18	Methyl tert-butyl ether	73	3.671	3.671	(0.636)	56145	5.00000	4.92(T)
19	Carbon Disulfide	76	2.939	2.939	(0.509)	65772	10.0000	9.79

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.655	3.655	(0.633)	16842	5.00000	5.14
	21 Vinyl Acetate	43	5.230	5.230	(0.906)	51251	10.0000	9.98(M)
	22 1,1-Dichloroethane	63	4.264	4.264	(0.739)	36157	5.00000	4.70
	24 2-Butanone	43	5.141	5.141	(0.891)	20596	10.0000	9.21
	25 Methacrylonitrile	41	5.025	5.025	(0.870)	18910	5.00000	5.28(M)
	26 2,2-Dichloropropane	77	5.038	5.038	(0.873)	28700	5.00000	5.31
	27 cis-1,2-Dichloroethene	96	5.057	5.057	(0.876)	21026	5.00000	5.13
	28 Chloroform	83	5.487	5.487	(0.951)	34691	5.00000	5.13
	29 Bromochloromethane	128	5.365	5.365	(0.929)	10369	5.00000	5.38
$	30 Dibromofluoromethane	113	5.676	5.676	(0.983)	16609	5.00000	5.25
	31 1,1,1-Trichloroethane	97	5.644	5.644	(0.978)	28090	5.00000	4.99
	32 1,1-Dichloropropene	75	5.846	5.846	(0.891)	23867	5.00000	3.32(M)
	33 1,2-Dichloroethane	62	6.135	6.135	(0.935)	27716	5.00000	4.94
	34 Carbon Tetrachloride	117	5.827	5.827	(0.888)	26834	5.00000	3.79(M)
$	35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	21203	5.00000	5.28
*	36 1,4-Difluorobenzene	114	6.565	6.565	(1.000)	546395	50.0000	
	37 Benzene	78	6.087	6.087	(0.927)	78464	5.00000	4.70
	38 Trichloroethene	130	6.812	6.812	(1.038)	20549	5.00000	5.19
	39 Bromodichloromethane	83	7.371	7.371	(1.123)	28466	5.00000	3.38(M)
	40 Methyl Methacrylate	41	7.246	7.246	(1.255)	23471	5.00000	4.90
	41 2-Chloroethylvinyl ether	63	8.150	8.150	(1.241)	7324	10.0000	7.54(M)
	42 1,2-Dichloropropane	63	7.059	7.059	(1.075)	24467	5.00000	3.72(M)
	43 2-Nitropropane	43	8.025	8.025	(1.390)	49112	5.00000	4.90(Ta)
	44 Dibromomethane	93	7.188	7.188	(1.095)	11683	5.00000	5.20
	45 4-Methyl-2-Pentanone	43	8.025	8.025	(0.843)	49112	10.0000	9.80
	46 cis-1,3-Dichloropropene	75	7.833	7.833	(1.193)	31108	5.00000	4.99
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	493885	50.0000	
$	48 Toluene-d8	98	8.086	8.086	(0.849)	63402	5.00000	4.77
	49 Ethyl Methacrylate	69	8.523	8.523	(1.298)	29973	5.00000	3.37(M)
	50 Toluene	91	8.154	8.154	(0.856)	85052	5.00000	4.75
	51 trans-1,3-Dichloropropene	75	8.414	8.414	(1.282)	25298	5.00000	4.99
	52 2-Hexanone	43	8.866	8.866	(0.931)	31218	10.0000	9.79
	53 1,1,2-Trichloroethane	83	8.593	8.593	(0.902)	15837	5.00000	5.15
	54 1,3-Dichloropropane	76	8.747	8.747	(0.918)	30990	5.00000	5.08
	55 Dibromochloromethane	129	8.966	8.966	(0.941)	22537	5.00000	5.02
	56 Tetrachloroethene	164	8.686	8.686	(0.912)	16049	5.00000	5.11
	57 1,2-Dibromoethane	107	9.062	9.062	(0.951)	19075	5.00000	5.04
	58 1-Chlorohexane	55	9.550	9.550	(1.455)	23658	5.00000	3.43
	59 Chlorobenzene	112	9.550	9.550	(1.003)	53052	5.00000	4.84
	60 1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.012)	20642	5.00000	5.04
	61 Ethylbenzene	106	9.668	9.668	(1.015)	28803	5.00000	3.74
	62 m,p-Xylenes	106	9.787	9.787	(1.028)	71246	10.0000	9.56
	63 o-Xylene	106	10.175	10.175	(1.068)	36735	5.00000	3.43
	64 Styrene	104	10.195	10.195	(1.070)	59492	5.00000	4.76
	66 Bromoform	173	10.371	10.371	(1.089)	15010	5.00000	4.89(T)
	67 Isopropylbenzene	105	10.541	10.541	(1.107)	85500	5.00000	4.68
	68 1,1,2,2-Tetrachloroethane	83	10.868	10.868	(0.918)	26454	5.00000	3.32
$	69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	22611	5.00000	4.93
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	221638	50.0000	
	71 1,2,3-Trichloropropane	75	10.904	10.904	(0.921)	25742	5.00000	4.80
	72 trans-1,4-Dichloro-2-butene	53	10.929	10.929	(1.148)	5829	5.00000	4.60(M)
	73 n-Propylbenzene	91	10.952	10.952	(0.925)	91943	5.00000	4.61
	74 Bromobenzene	156	10.833	10.833	(0.915)	24040	5.00000	3.74
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	72031	5.00000	4.75

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
76	2-Chlorotoluene	91	11.026	11.026	(0.932)	63329	5.00000	3.62
77	4-Chlorotoluene	91	11.135	11.135	(0.941)	70028	5.00000	3.58
78	tert-Butylbenzene	119	11.446	11.446	(0.967)	54271	5.00000	4.40
79	1,2,4-Trimethylbenzene	105	11.497	11.497	(0.972)	73311	5.00000	4.73
81	sec-Butylbenzene	105	11.667	11.667	(0.986)	73326	5.00000	5.06
82	p-Isopropyltoluene	119	11.815	11.815	(0.998)	62581	5.00000	5.06
83	1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	40521	5.00000	3.62
84	1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	37289	5.00000	3.73
87	n-Butylbenzene	91	12.219	12.219	(1.033)	46462	5.00000	4.96
88	1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	39941	5.00000	4.72
89	1,2-Dibromo-3-Chloropropane	75	13.012	13.012	(1.100)	4547	5.00000	5.14
90	1,2,4-Trichlorobenzene	180	13.817	13.817	(1.168)	18351	5.00000	3.91
91	Hexachlorobutadiene	225	13.987	13.987	(1.182)	7913	5.00000	3.96
92	Naphthalene	128	14.061	14.061	(1.188)	37348	5.00000	3.03
93	1,2,3-Trichlorobenzene	182	14.299	14.299	(1.208)	16511	5.00000	4.35
146	Methyl acetate	43	3.222	3.222	(0.558)	20901	5.00000	4.30(a)
138	Freon TF	101	2.750	2.750	(0.476)	14028	5.00000	4.78
139	Diethyl ether	59	2.535	2.535	(0.439)	36312	5.00000	5.15
147	Methylcyclohexane	83	6.986	6.986	(1.064)	23474	5.00000	3.10
135	1,4-Dioxane	88	7.236	7.236	(1.253)	3687	100.000	52.19(T)
132	n-Butanol	56	6.986	6.986	(1.210)	6166	100.000	30.89
131	Methyl Acrylate	55	5.256	5.256	(0.911)	27627	5.00000	4.12(T)
133	Ethyl Acrylate	55	7.005	7.005	(1.213)	57327	5.00000	4.69
136	n-Hexane	57	4.043	4.043	(0.700)	22030	5.00000	4.72(M)
141	Cyclohexane	56	5.676	5.676	(0.983)	31758	5.00000	4.70(aH)
142	Tetrahydrofuran	42	5.416	5.416	(0.938)	15564	10.0000	8.99
148	Tert-butyl alcohol	59	3.565	3.565	(0.618)	47528	100.000	87.95
149	Isopropyl alcohol	45	3.052	3.052	(0.529)	30766	100.000	90.35(M)
151	4-Methyl-2-pentanol	45	8.462	8.462	(0.888)	114797	100.000	85.55
166	1,2,3-Trimethylbenzene	105	11.911	11.911	(1.007)	67325	5.00000	4.79
167	Ethanol	45	2.528	2.528	(0.438)	39466	100.000	66.96(TM)
170	1,3,5-Trichlorobenzene	180	13.205	13.205	(1.116)	25225	5.00000	3.74
172	tert-Butyl formate	59	4.900	4.900	(0.849)	72643	10.0000	5.86
173	3,3-Dimethyl-1-butanol	57	9.113	9.113	(0.957)	35321	100.000	84.13
174	tert-Amyl methyl ether	73	6.251	6.251	(1.083)	69096	5.00000	5.02
175	tert-Butyl ethyl ether	59	6.228	6.228	(1.079)	31996	5.00000	4.38
176	tert-Amyl alcohol	59	6.228	6.228	(1.079)	31996	100.000	87.05
157	2-Methylnaphthalene	142	15.191	15.191	(1.284)	2250	5.00000	4.76(M)
156	Diisopropyl ether	45	4.409	4.409	(0.764)	86277	5.00000	5.16(T)
171	1-Methylnaphthalene	142	15.387	15.387	(1.300)	2448	5.00000	4.16(M)
130	Ethyl Acetate	43	5.230	5.230	(0.906)	47191	5.00000	4.77(a)

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount Below Limit Of Quantitation(BLOQ).
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050305.D
Date : 03-MAY-2018 16:22
Client ID: VSTD005
Sample Info: VSTD005;VSTD005;1;4;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050307.D Page 1
Report Date: 15-May-2018 13:29

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050307.D
Lab Smp Id: VSTD020 Client Smp ID: VSTD020
Inj Date : 03-MAY-2018 17:11
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD020;VSTD020;1;6;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\8260LL.m
Meth Date : 15-May-2018 13:29 VOA2.i Quant Type: ISTD
Cal Date : 03-MAY-2018 16:22 Cal File: D050305.D
Als bottle: 7 Calibration Sample, Level: 5
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1 Pentafluorobenzene	168	5.773	5.773	(1.000)	333949	50.0000	
2 Dichlorodifluoromethane	85	1.444	1.444	(0.250)	72754	20.0000	23.63
186 Isobutylene	56	1.643	1.643	(0.285)	85282	20.0000	21.64(AM)
3 Chloromethane	50	1.585	1.585	(0.275)	126710	20.0000	22.51
4 Propionitrile	54	5.227	5.227	(0.906)	286261	200.000	209.93
5 Vinyl Chloride	62	1.669	1.669	(0.289)	96801	20.0000	21.70
6 Bromomethane	94	1.938	1.938	(0.336)	44864	20.0000	22.75
7 Chloroethane	64	2.034	2.034	(0.352)	59415	20.0000	22.36
159 Dichlorofluoromethane	67	2.221	2.221	(0.385)	133991	20.0000	20.47
8 Trichlorofluoromethane	101	2.240	2.240	(0.388)	96118	20.0000	22.20
9 Acrolein	56	2.679	2.679	(0.464)	33496	40.0000	39.81
10 Acetone	43	2.840	2.840	(0.492)	57988	40.0000	43.52
11 1,1-Dichloroethene	96	2.740	2.740	(0.475)	61904	20.0000	22.52
12 Isobutyl Alcohol	74	6.158	6.158	(1.067)	7298	400.000	400.25(AM)
13 Acetonitrile	39	3.158	3.158	(0.547)	95293	200.000	203.18
14 Allyl Chloride	41	3.167	3.167	(0.549)	245115	20.0000	20.03
15 Iodomethane	142	2.894	2.894	(0.501)	85447	40.0000	36.97(M)
16 Acrylonitrile	53	3.687	3.687	(0.639)	71088	40.0000	43.36
17 Methylene Chloride	84	3.321	3.321	(0.575)	78777	20.0000	21.90
18 Methyl tert-butyl ether	73	3.677	3.677	(0.637)	220525	20.0000	20.58
19 Carbon Disulfide	76	2.946	2.946	(0.510)	264746	40.0000	41.94

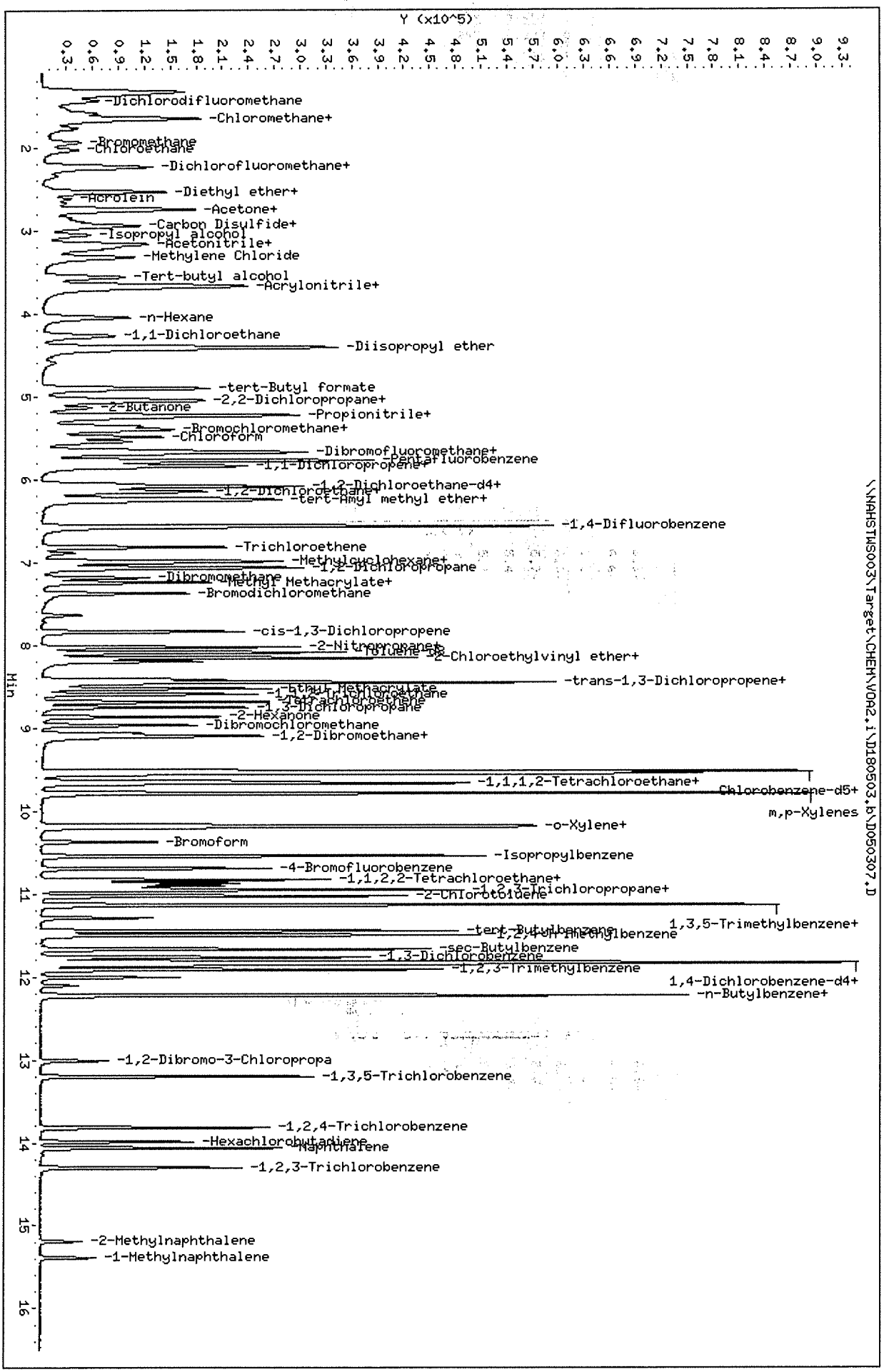
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050307.D Page 2
Report Date: 15-May-2018 13:29

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.652	3.652	(0.633)	65410	20.0000	21.26
	21 Vinyl Acetate	43	5.237	5.237	(0.907)	209746	40.0000	43.46(M)
	22 1,1-Dichloroethane	63	4.271	4.271	(0.740)	146942	20.0000	20.36
	24 2-Butanone	43	5.134	5.134	(0.889)	87549	40.0000	41.66
	25 Methacrylonitrile	41	5.035	5.035	(0.872)	75094	20.0000	22.31(M)
	26 2,2-Dichloropropane	77	5.032	5.032	(0.872)	107564	20.0000	21.20
	27 cis-1,2-Dichloroethene	96	5.064	5.064	(0.877)	78386	20.0000	20.36
	28 Chloroform	83	5.484	5.484	(0.950)	130588	20.0000	20.56
	29 Bromochloromethane	128	5.356	5.356	(0.928)	39232	20.0000	21.67
$	30 Dibromofluoromethane	113	5.680	5.680	(0.984)	58750	20.0000	19.78
	31 1,1,1-Trichloroethane	97	5.648	5.648	(0.978)	114505	20.0000	21.64
	32 1,1-Dichloropropene	75	5.850	5.850	(0.891)	95104	20.0000	23.36(M)
	33 1,2-Dichloroethane	62	6.139	6.139	(0.935)	103197	20.0000	19.24
	34 Carbon Tetrachloride	117	5.827	5.827	(0.888)	98344	20.0000	22.21(M)
$	35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	78233	20.0000	20.72
*	36 1,4-Difluorobenzene	114	6.565	6.565	(1.000)	522344	50.0000	
	37 Benzene	78	6.087	6.087	(0.927)	287547	20.0000	20.88(M)
	38 Trichloroethene	130	6.813	6.813	(1.038)	77783	20.0000	20.57
	39 Bromodichloromethane	83	7.374	7.374	(1.123)	107909	20.0000	22.38(M)
	40 Methyl Methacrylate	41	7.239	7.239	(1.254)	94702	20.0000	21.06
	41 2-Chloroethylvinyl ether	63	8.154	8.154	(1.242)	25923	40.0000	43.93(T)
	42 1,2-Dichloropropane	63	7.063	7.063	(1.076)	88806	20.0000	23.12
	43 2-Nitropropane	43	8.022	8.022	(1.390)	204222	20.0000	21.68
	44 Dibromomethane	93	7.185	7.185	(1.094)	47465	20.0000	22.09
	45 4-Methyl-2-Pentanone	43	8.022	8.022	(0.842)	204222	40.0000	41.80
	46 cis-1,3-Dichloropropene	75	7.839	7.839	(1.194)	125553	20.0000	21.09
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	481709	50.0000	
$	48 Toluene-d8	98	8.090	8.090	(0.849)	230140	20.0000	17.77
	49 Ethyl Methacrylate	69	8.526	8.526	(1.299)	113052	20.0000	22.63(M)
	50 Toluene	91	8.154	8.154	(0.856)	305231	20.0000	21.17
	51 trans-1,3-Dichloropropene	75	8.417	8.417	(1.282)	107767	20.0000	22.25
	52 2-Hexanone	43	8.863	8.863	(0.931)	129263	40.0000	41.59
	53 1,1,2-Trichloroethane	83	8.593	8.593	(0.902)	60411	20.0000	20.17
	54 1,3-Dichloropropane	76	8.751	8.751	(0.919)	119970	20.0000	20.16
	55 Dibromochloromethane	129	8.966	8.966	(0.941)	89751	20.0000	20.52
	56 Tetrachloroethene	164	8.687	8.687	(0.912)	61918	20.0000	20.24
	57 1,2-Dibromoethane	107	9.062	9.062	(0.951)	77195	20.0000	20.92
	58 1-Chlorohexane	55	9.550	9.550	(1.455)	80870	20.0000	22.28
	59 Chlorobenzene	112	9.550	9.550	(1.003)	191716	20.0000	20.87
	60 1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.012)	78272	20.0000	19.63
	61 Ethylbenzene	106	9.668	9.668	(1.015)	104289	20.0000	22.53
	62 m,p-Xylenes	106	9.787	9.787	(1.028)	254356	40.0000	42.32(H)
	63 o-Xylene	106	10.175	10.175	(1.068)	133003	20.0000	22.43
	64 Styrene	104	10.195	10.195	(1.070)	221487	20.0000	21.11
	66 Bromoform	173	10.371	10.371	(1.089)	63484	20.0000	21.23
	67 Isopropylbenzene	105	10.544	10.544	(1.107)	319237	20.0000	20.55
	68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.919)	101875	20.0000	22.62
$	69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	84072	20.0000	19.81
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	214893	50.0000	
	71 1,2,3-Trichloropropane	75	10.901	10.901	(0.921)	103738	20.0000	19.95
	72 trans-1,4-Dichloro-2-butene	53	10.923	10.923	(1.147)	25416	20.0000	20.24
	73 n-Propylbenzene	91	10.952	10.952	(0.925)	344653	20.0000	20.75
	74 Bromobenzene	156	10.830	10.830	(0.915)	90437	20.0000	22.46
	75 1,3,5-Trimethylbenzene	105	11.129	11.129	(0.940)	262599	20.0000	21.04

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
76	2-Chlorotoluene	91	11.026	11.026	(0.932)	227046	20.0000	22.54
77	4-Chlorotoluene	91	11.135	11.135	(0.941)	246557	20.0000	22.42
78	tert-Butylbenzene	119	11.446	11.446	(0.967)	217374	20.0000	20.94
79	1,2,4-Trimethylbenzene	105	11.498	11.498	(0.972)	266353	20.0000	21.05
81	sec-Butylbenzene	105	11.664	11.664	(0.986)	293193	20.0000	20.87
82	p-Isopropyltoluene	119	11.815	11.815	(0.998)	248179	20.0000	20.73
83	1,3-Dichlorobenzene	146	11.764	11.764	(0.994)	150868	20.0000	22.11
84	1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	140378	20.0000	21.34
87	n-Butylbenzene	91	12.220	12.220	(1.033)	191529	20.0000	21.08
88	1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	147607	20.0000	20.98
89	1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	17636	20.0000	20.56
90	1,2,4-Trichlorobenzene	180	13.814	13.814	(1.167)	82961	20.0000	20.49
91	Hexachlorobutadiene	225	13.988	13.988	(1.182)	35348	20.0000	20.62
92	Naphthalene	128	14.061	14.061	(1.188)	211094	20.0000	21.00
93	1,2,3-Trichlorobenzene	182	14.302	14.302	(1.209)	68130	20.0000	19.50
146	Methyl acetate	43	3.219	3.219	(0.558)	88770	20.0000	19.43
138	Freon TF	101	2.753	2.753	(0.477)	60702	20.0000	22.02
139	Diethyl ether	59	2.535	2.535	(0.439)	141312	20.0000	21.32
147	Methylcyclohexane	83	6.986	6.986	(1.064)	103251	20.0000	22.86
135	1,4-Dioxane	88	7.239	7.239	(1.254)	16397	400.000	427.77(T)
132	n-Butanol	56	6.995	6.995	(1.212)	49874	400.000	416.95
131	Methyl Acrylate	55	5.259	5.259	(0.911)	139711	20.0000	22.17
133	Ethyl Acrylate	55	7.005	7.005	(1.213)	243460	20.0000	21.19
136	n-Hexane	57	4.050	4.050	(0.702)	96968	20.0000	22.12(M)
141	Cyclohexane	56	5.680	5.680	(0.984)	131153	20.0000	20.68(H)
142	Tetrahydrofuran	42	5.407	5.407	(0.937)	67310	40.0000	41.36
148	Tert-butyl alcohol	59	3.555	3.555	(0.616)	203116	400.000	399.86
149	Isopropyl alcohol	45	3.052	3.052	(0.529)	125631	400.000	392.49(M)
151	4-Methyl-2-pentanol	45	8.449	8.449	(0.887)	479871	400.000	409.82
166	1,2,3-Trimethylbenzene	105	11.911	11.911	(1.007)	244268	20.0000	20.62
167	Ethanol	45	2.532	2.532	(0.439)	141481	400.000	451.03(TM)
170	1,3,5-Trichlorobenzene	180	13.201	13.201	(1.116)	101124	20.0000	21.59
172	tert-Butyl formate	59	4.906	4.906	(0.850)	259735	20.0000	23.58
173	3,3-Dimethyl-1-butanol	57	9.097	9.097	(0.955)	169227	400.000	413.27
174	tert-Amyl methyl ether	73	6.254	6.254	(1.083)	262853	20.0000	20.35
175	tert-Butyl ethyl ether	59	6.228	6.228	(1.079)	142010	20.0000	20.69
176	tert-Amyl alcohol	59	6.228	6.228	(1.079)	142010	400.000	411.03
157	2-Methylnaphthalene	142	15.188	15.188	(1.283)	22892	20.0000	10.10
156	Diisopropyl ether	45	4.412	4.412	(0.764)	323953	20.0000	20.63(T)
171	1-Methylnaphthalene	142	15.387	15.387	(1.300)	32361	20.0000	11.48
130	Ethyl Acetate	43	5.237	5.237	(0.907)	200124	20.0000	21.52

QC Flag Legend

T - Target compound detected outside RT window.
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050307.D
Date : 03-MAY-2018 17:11
Client ID: VSTD020
Sample Info: VSTD020;VSTD020;1;6;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050308.D
Lab Smp Id: VSTD050 Client Smp ID: VSTD050
Inj Date : 03-MAY-2018 17:35
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD050;VSTD050;1;7;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\8260LL.m
Meth Date : 15-May-2018 13:29 VOA2.i Quant Type: ISTD
Cal Date : 03-MAY-2018 17:11 Cal File: D050307.D
Als bottle: 8 Calibration Sample, Level: 6
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1	Pentafluorobenzene	168	5.773	5.773	(1.000)	331519	50.0000	
2	Dichlorodifluoromethane	85	1.434	1.434	(0.249)	174301	50.0000	57.02
186	Isobutylene	56	1.643	1.643	(0.285)	192852	50.0000	56.99(AM)
3	Chloromethane	50	1.588	1.588	(0.275)	300183	50.0000	57.27
4	Propionitrile	54	5.230	5.230	(0.906)	719753	500.000	531.70
5	Vinyl Chloride	62	1.669	1.669	(0.289)	236673	50.0000	53.46
6	Bromomethane	94	1.932	1.932	(0.335)	110189	50.0000	60.97
7	Chloroethane	64	2.025	2.025	(0.351)	133790	50.0000	50.73
159	Dichlorofluoromethane	67	2.214	2.214	(0.384)	338440	50.0000	52.09
8	Trichlorofluoromethane	101	2.240	2.240	(0.388)	236777	50.0000	55.09
9	Acrolein	56	2.676	2.676	(0.464)	92520	100.000	110.77
10	Acetone	43	2.846	2.846	(0.493)	139292	100.000	114.24
11	1,1-Dichloroethene	96	2.734	2.734	(0.474)	150785	50.0000	55.26
12	Isobutyl Alcohol	74	6.155	6.155	(1.066)	20376	1000.00	1159.01(AM)
13	Acetonitrile	39	3.157	3.157	(0.547)	242881	500.000	521.68
14	Allyl Chloride	41	3.167	3.167	(0.549)	648415	50.0000	53.38
15	Iodomethane	142	2.894	2.894	(0.501)	253706	100.000	106.13
16	Acrylonitrile	53	3.687	3.687	(0.639)	190226	100.000	116.90
17	Methylene Chloride	84	3.318	3.318	(0.575)	187237	50.0000	57.63
18	Methyl tert-butyl ether	73	3.674	3.674	(0.636)	527921	50.0000	49.64
19	Carbon Disulfide	76	2.942	2.942	(0.510)	651402	100.000	103.95

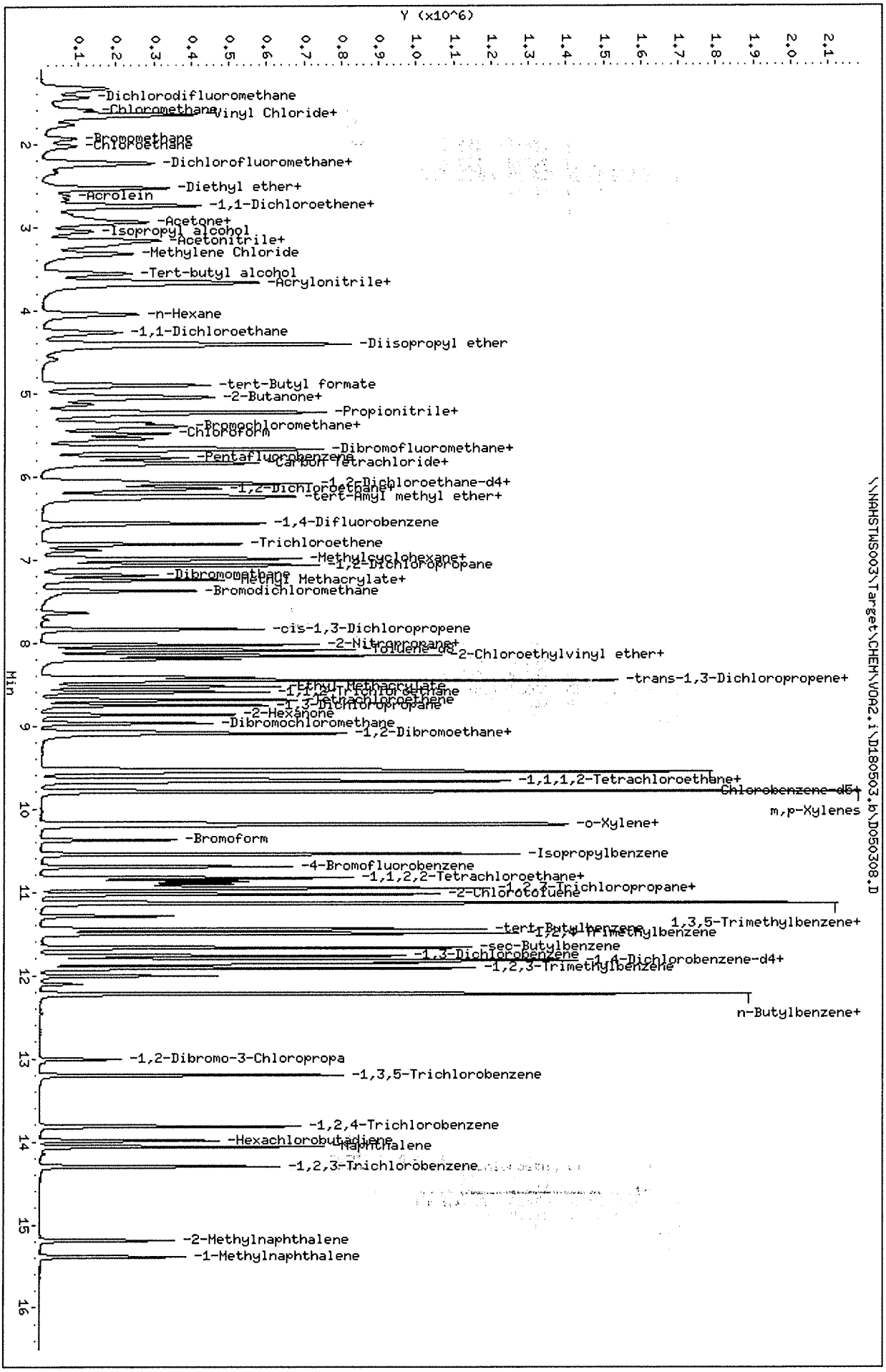
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050308.D Page 2
Report Date: 15-May-2018 13:29

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.648	3.648	(0.632)	166104	50.0000	54.39
	21 Vinyl Acetate	43	5.237	5.237	(0.907)	480456	100.000	100.28 (MH)
	22 1,1-Dichloroethane	63	4.265	4.265	(0.739)	377230	50.0000	52.65
	24 2-Butanone	43	5.131	5.131	(0.889)	219636	100.000	105.29
	25 Methacrylonitrile	41	5.031	5.031	(0.872)	169097	50.0000	50.62 (M)
	26 2,2-Dichloropropane	77	5.028	5.028	(0.871)	264733	50.0000	52.57
	27 cis-1,2-Dichloroethene	96	5.057	5.057	(0.876)	195125	50.0000	51.06
	28 Chloroform	83	5.484	5.484	(0.950)	321386	50.0000	50.98
	29 Bromochloromethane	128	5.362	5.362	(0.929)	99724	50.0000	55.50
$	30 Dibromofluoromethane	113	5.680	5.680	(0.984)	141910	50.0000	48.14
	31 1,1,1-Trichloroethane	97	5.648	5.648	(0.978)	281878	50.0000	53.66
	32 1,1-Dichloropropene	75	5.847	5.847	(0.890)	228015	50.0000	59.93 (M)
	33 1,2-Dichloroethane	62	6.139	6.139	(0.935)	277158	50.0000	51.46
	34 Carbon Tetrachloride	117	5.827	5.827	(0.887)	248330	50.0000	59.95 (M)
$	35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	191488	50.0000	51.09
*	36 1,4-Difluorobenzene	114	6.569	6.569	(1.000)	524667	50.0000	
	37 Benzene	78	6.090	6.090	(0.927)	707094	50.0000	55.08 (M)
	38 Trichloroethene	130	6.816	6.816	(1.038)	195621	50.0000	51.51
	39 Bromodichloromethane	83	7.374	7.374	(1.123)	264966	50.0000	59.09 (M)
	40 Methyl Methacrylate	41	7.242	7.242	(1.255)	231468	50.0000	51.86
	41 2-Chloroethylvinyl ether	63	8.154	8.154	(1.241)	64934	100.000	118.40 (TA)
	42 1,2-Dichloropropane	63	7.063	7.063	(1.075)	209841	50.0000	58.73
	43 2-Nitropropane	43	8.025	8.025	(1.390)	485726	50.0000	51.95
	44 Dibromomethane	93	7.188	7.188	(1.094)	115200	50.0000	53.40
	45 4-Methyl-2-Pentanone	43	8.025	8.025	(0.843)	485726	100.000	99.53
	46 cis-1,3-Dichloropropene	75	7.836	7.836	(1.193)	313444	50.0000	52.41
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	481225	50.0000	
$	48 Toluene-d8	98	8.090	8.090	(0.849)	538725	50.0000	41.66
	49 Ethyl Methacrylate	69	8.529	8.529	(1.298)	273575	50.0000	58.99 (MH)
	50 Toluene	91	8.157	8.157	(0.856)	737863	50.0000	55.57
	51 trans-1,3-Dichloropropene	75	8.417	8.417	(1.281)	273586	50.0000	56.25
	52 2-Hexanone	43	8.863	8.863	(0.931)	322816	100.000	103.98
	53 1,1,2-Trichloroethane	83	8.593	8.593	(0.902)	145539	50.0000	48.66
	54 1,3-Dichloropropane	76	8.754	8.754	(0.919)	293115	50.0000	49.32
	55 Dibromochloromethane	129	8.969	8.969	(0.942)	222072	50.0000	50.83
	56 Tetrachloroethene	164	8.686	8.686	(0.912)	156845	50.0000	51.33
	57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	189817	50.0000	51.50
	58 1-Chlorohexane	55	9.550	9.550	(1.454)	197103	50.0000	59.62
	59 Chlorobenzene	112	9.553	9.553	(1.003)	468684	50.0000	55.01
	60 1,1,1,2-Tetrachloroethane	131	9.646	9.646	(1.013)	192603	50.0000	48.35
	61 Ethylbenzene	106	9.668	9.668	(1.015)	254766	50.0000	59.72
	62 m,p-Xylenes	106	9.790	9.790	(1.028)	618161	100.000	111.93 (H)
	63 o-Xylene	106	10.175	10.175	(1.068)	327540	50.0000	60.52
	64 Styrene	104	10.198	10.198	(1.071)	530720	50.0000	54.53
	66 Bromoform	173	10.374	10.374	(1.089)	164105	50.0000	54.95
	67 Isopropylbenzene	105	10.544	10.544	(1.107)	798340	50.0000	56.03
	68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.919)	245169	50.0000	58.90
$	69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	209998	50.0000	50.07
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	214836	50.0000	
	71 1,2,3-Trichloropropane	75	10.901	10.901	(0.921)	257005	50.0000	49.44
	72 trans-1,4-Dichloro-2-butene	53	10.926	10.926	(1.147)	67404	50.0000	53.57
	73 n-Propylbenzene	91	10.952	10.952	(0.925)	867423	50.0000	56.44
	74 Bromobenzene	156	10.830	10.830	(0.915)	219477	50.0000	58.46
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	646681	50.0000	56.51

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
76	2-Chlorotoluene	91	11.029	11.029	(0.932)	557940	50.0000	60.35
77	4-Chlorotoluene	91	11.138	11.138	(0.941)	613721	50.0000	61.15
78	tert-Butylbenzene	119	11.446	11.446	(0.967)	548979	50.0000	56.62
79	1,2,4-Trimethylbenzene	105	11.501	11.501	(0.972)	653475	50.0000	55.77
81	sec-Butylbenzene	105	11.668	11.668	(0.986)	744238	50.0000	53.00
82	p-Isopropyltoluene	119	11.818	11.818	(0.999)	636088	50.0000	53.15
83	1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	376385	50.0000	59.50
84	1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	358289	50.0000	58.16
87	n-Butylbenzene	91	12.219	12.219	(1.033)	500236	50.0000	55.09
88	1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	360211	50.0000	55.14
89	1,2-Dibromo-3-Chloropropane	75	13.006	13.006	(1.099)	46867	50.0000	54.66
90	1,2,4-Trichlorobenzene	180	13.817	13.817	(1.168)	220480	50.0000	55.49
91	Hexachlorobutadiene	225	13.988	13.988	(1.182)	94759	50.0000	56.41
92	Naphthalene	128	14.061	14.061	(1.188)	557285	50.0000	56.60
93	1,2,3-Trichlorobenzene	182	14.302	14.302	(1.209)	189136	50.0000	54.68
146	Methyl acetate	43	3.218	3.218	(0.558)	225094	50.0000	49.63
138	Freon TF	101	2.753	2.753	(0.477)	151101	50.0000	55.23
139	Diethyl ether	59	2.532	2.532	(0.439)	341165	50.0000	51.85
147	Methylcyclohexane	83	6.989	6.989	(1.064)	257221	50.0000	60.23
135	1,4-Dioxane	88	7.233	7.233	(1.253)	41483	1000.00	1165.22
132	n-Butanol	56	6.992	6.992	(1.211)	136921	1000.00	1188.15
131	Methyl Acrylate	55	5.259	5.259	(0.911)	356392	50.0000	56.98
133	Ethyl Acrylate	55	7.005	7.005	(1.213)	592287	50.0000	51.94
136	n-Hexane	57	4.046	4.046	(0.701)	245050	50.0000	56.31
141	Cyclohexane	56	5.676	5.676	(0.983)	338500	50.0000	53.78
142	Tetrahydrofuran	42	5.404	5.404	(0.936)	163205	100.000	101.04
148	Tert-butyl alcohol	59	3.559	3.559	(0.616)	517595	1000.00	1026.42
149	Isopropyl alcohol	45	3.055	3.055	(0.529)	311082	1000.00	979.01
151	4-Methyl-2-pentanol	45	8.452	8.452	(0.887)	1148970	1000.00	1084.44
166	1,2,3-Trimethylbenzene	105	11.915	11.915	(1.007)	610922	50.0000	55.44
167	Ethanol	45	2.529	2.529	(0.438)	337276	1000.00	1180.55
170	1,3,5-Trichlorobenzene	180	13.201	13.201	(1.116)	255649	50.0000	57.57
172	tert-Butyl formate	59	4.903	4.903	(0.849)	621559	50.0000	57.49
173	3,3-Dimethyl-1-butanol	57	9.094	9.094	(0.955)	428870	1000.00	1048.40
174	tert-Amyl methyl ether	73	6.254	6.254	(1.083)	626960	50.0000	48.90
175	tert-Butyl ethyl ether	59	6.232	6.232	(1.079)	366192	50.0000	53.76
176	tert-Amyl alcohol	59	6.232	6.232	(1.079)	366192	1000.00	1067.68
157	2-Methylnaphthalene	142	15.191	15.191	(1.284)	175016	50.0000	48.23
156	Diisopropyl ether	45	4.415	4.415	(0.765)	776838	50.0000	49.83(T)
171	1-Methylnaphthalene	142	15.387	15.387	(1.300)	191529	50.0000	50.27
130	Ethyl Acetate	43	5.237	5.237	(0.907)	481716	50.0000	52.19

QC Flag Legend

T - Target compound detected outside RT window.
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050308.D
Date : 03-MAY-2018 17:35
Client ID: VSTD050
Sample Info: VSTD050;VSTD050;1;7;
Purge Volume: 5.0
Column phase: DB624

\\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050308.D

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050309.D
Lab Smp Id: VSTD100 Client Smp ID: VSTD100
Inj Date : 03-MAY-2018 17:59
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD100;VSTD100;1;8;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\8260LL.m
Meth Date : 15-May-2018 13:29 VOA2.i Quant Type: ISTD
Cal Date : 03-MAY-2018 17:35 Cal File: D050308.D
Als bottle: 9 Calibration Sample, Level: 7
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

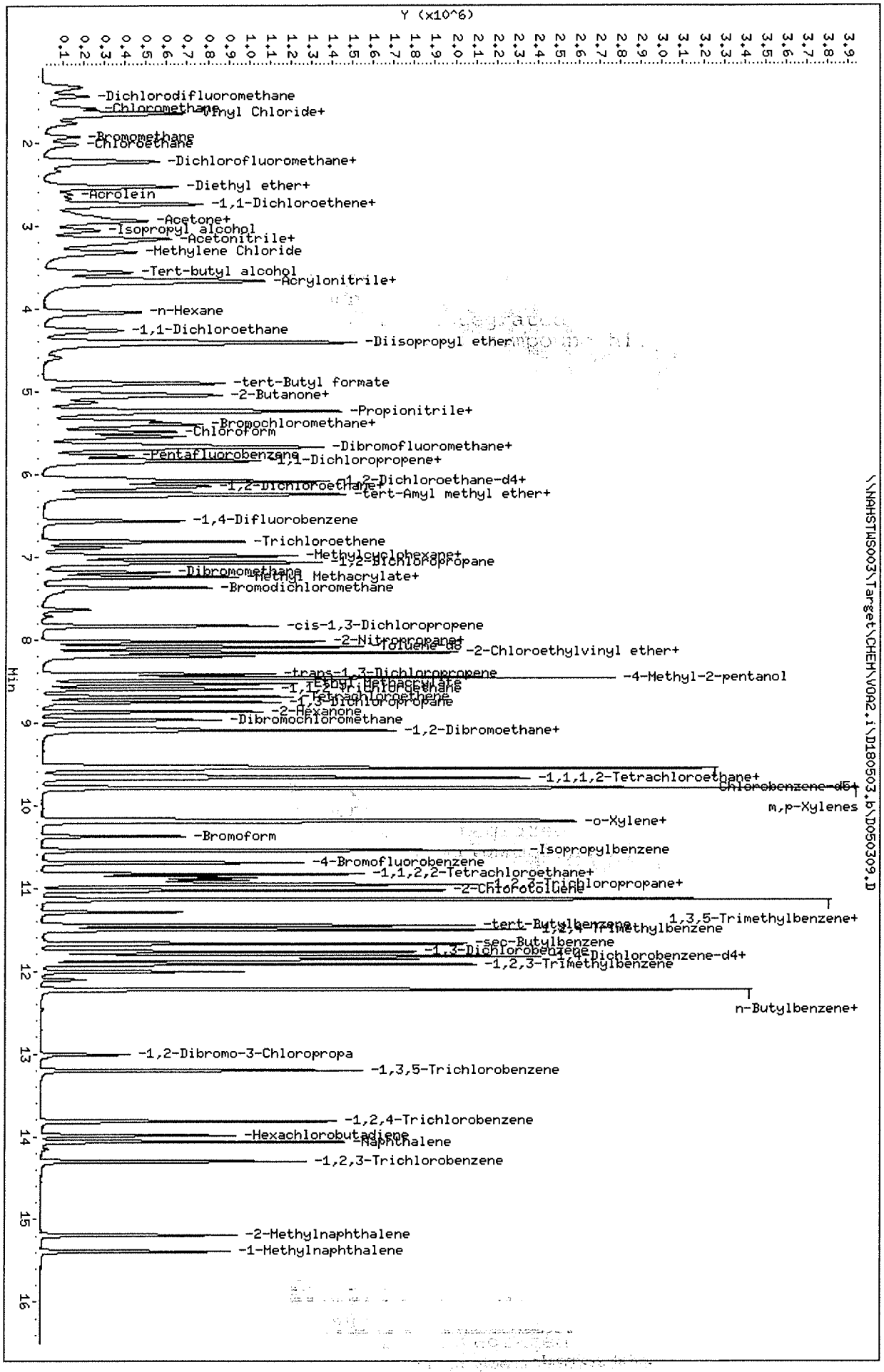
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1	Pentafluorobenzene	168	5.776	5.776	(1.000)	374590	50.0000	
2	Dichlorodifluoromethane	85	1.438	1.438	(0.249)	332927	100.000	96.40
186	Isobutylene	56	1.640	1.640	(0.284)	319111	100.000	92.50(AM)
3	Chloromethane	50	1.585	1.585	(0.275)	568675	100.000	97.74
4	Propionitrile	54	5.243	5.243	(0.908)	1392691	1000.00	910.53
5	Vinyl Chloride	62	1.669	1.669	(0.289)	434306	100.000	86.82
6	Bromomethane	94	1.929	1.929	(0.334)	195236	100.000	97.42
7	Chloroethane	64	2.015	2.015	(0.349)	250631	100.000	84.11
159	Dichlorofluoromethane	67	2.214	2.214	(0.383)	628957	100.000	85.68
8	Trichlorofluoromethane	101	2.233	2.233	(0.387)	433529	100.000	89.27
9	Acrolein	56	2.679	2.679	(0.464)	190501	200.000	201.85
10	Acetone	43	2.846	2.846	(0.493)	271315	200.000	201.48
11	1,1-Dichloroethene	96	2.734	2.734	(0.473)	280836	100.000	91.09
12	Isobutyl Alcohol	74	6.164	6.164	(1.067)	39132	2000.00	1982.80(AM)
13	Acetonitrile	39	3.158	3.158	(0.547)	494997	1000.00	940.95
14	Allyl Chloride	41	3.164	3.164	(0.548)	1247353	100.000	90.89
15	Iodomethane	142	2.891	2.891	(0.501)	539884	200.000	197.89
16	Acrylonitrile	53	3.687	3.687	(0.638)	381103	200.000	207.27
17	Methylene Chloride	84	3.318	3.318	(0.574)	357904	100.000	100.07
18	Methyl tert-butyl ether	73	3.674	3.674	(0.636)	1024368	100.000	85.26
19	Carbon Disulfide	76	2.943	2.943	(0.509)	1229416	200.000	173.63

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.649	3.649	(0.632)	311023	100.000	90.13
	21 Vinyl Acetate	43	5.243	5.243	(0.908)	906297	200.000	167.41(H)
	22 1,1-Dichloroethane	63	4.265	4.265	(0.738)	711545	100.000	87.89
	24 2-Butanone	43	5.134	5.134	(0.889)	424592	200.000	180.13
	25 Methacrylonitrile	41	5.028	5.028	(0.871)	299774	100.000	79.43(M)
	26 2,2-Dichloropropane	77	5.032	5.032	(0.871)	489476	100.000	86.03
	27 cis-1,2-Dichloroethene	96	5.064	5.064	(0.877)	373910	100.000	86.61
	28 Chloroform	83	5.487	5.487	(0.950)	606313	100.000	85.13
	29 Bromochloromethane	128	5.359	5.359	(0.928)	190091	100.000	93.63
$	30 Dibromofluoromethane	113	5.677	5.677	(0.983)	264354	100.000	79.36
	31 1,1,1-Trichloroethane	97	5.648	5.648	(0.978)	522569	100.000	88.04
	32 1,1-Dichloropropene	75	5.847	5.847	(0.890)	414154	100.000	97.62(M)
	33 1,2-Dichloroethane	62	6.139	6.139	(0.935)	526775	100.000	86.09
	34 Carbon Tetrachloride	117	5.831	5.831	(0.888)	442424	100.000	95.56
$	35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	369413	100.000	87.24
*	36 1,4-Difluorobenzene	114	6.569	6.569	(1.000)	596058	50.0000	
	37 Benzene	78	6.091	6.091	(0.927)	1310358	100.000	95.20(M)
	38 Trichloroethene	130	6.816	6.816	(1.038)	365873	100.000	84.81
	39 Bromodichloromethane	83	7.374	7.374	(1.123)	506559	100.000	101.50(M)
	40 Methyl Methacrylate	41	7.246	7.246	(1.254)	456124	100.000	90.45
	41 2-Chloroethylvinyl ether	63	8.157	8.157	(1.242)	121973	200.000	199.64(A)
	42 1,2-Dichloropropane	63	7.063	7.063	(1.075)	399023	100.000	100.47
	43 2-Nitropropane	43	8.029	8.029	(1.390)	911206	100.000	86.26
	44 Dibromomethane	93	7.185	7.185	(1.094)	226717	100.000	92.50
	45 4-Methyl-2-Pentanone	43	8.029	8.029	(0.843)	911206	200.000	165.29
	46 cis-1,3-Dichloropropene	75	7.839	7.839	(1.193)	597906	100.000	88.01
*	47 Chlorobenzene-d5	117	9.527	9.527	(1.000)	543642	50.0000	
$	48 Toluene-d8	98	8.090	8.090	(0.849)	991630	100.000	67.88
	49 Ethyl Methacrylate	69	8.533	8.533	(1.299)	525740	100.000	101.98(H)
	50 Toluene	91	8.157	8.157	(0.856)	1341705	100.000	94.64
	51 trans-1,3-Dichloropropene	75	8.417	8.417	(1.281)	538986	100.000	97.54
	52 2-Hexanone	43	8.866	8.866	(0.931)	632983	200.000	180.49
	53 1,1,2-Trichloroethane	83	8.593	8.593	(0.902)	280452	100.000	83.01
	54 1,3-Dichloropropane	76	8.754	8.754	(0.919)	558908	100.000	83.24
	55 Dibromochloromethane	129	8.969	8.969	(0.941)	429087	100.000	86.94
	56 Tetrachloroethene	164	8.687	8.687	(0.912)	286649	100.000	83.05
	57 1,2-Dibromoethane	107	9.068	9.068	(0.952)	373969	100.000	89.83
	58 1-Chlorohexane	55	9.553	9.553	(1.454)	357525	100.000	97.52
	59 Chlorobenzene	112	9.553	9.553	(1.003)	866287	100.000	95.26
	60 1,1,1,2-Tetrachloroethane	131	9.646	9.646	(1.012)	368391	100.000	81.87
	61 Ethylbenzene	106	9.672	9.672	(1.015)	467843	100.000	99.07
	62 m,p-Xylenes	106	9.790	9.790	(1.028)	1111264	200.000	188.52(H)
	63 o-Xylene	106	10.175	10.175	(1.068)	600836	100.000	100.50
	64 Styrene	104	10.201	10.201	(1.071)	989537	100.000	95.57
	66 Bromoform	173	10.374	10.374	(1.089)	317645	100.000	94.15
	67 Isopropylbenzene	105	10.548	10.548	(1.107)	1425337	100.000	94.39
	68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.918)	466431	100.000	101.51
$	69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	397843	100.000	84.21
*	70 1,4-Dichlorobenzene-d4	152	11.838	11.838	(1.000)	242356	50.0000	
	71 1,2,3-Trichloropropane	75	10.904	10.904	(0.921)	502234	100.000	85.64
	72 trans-1,4-Dichloro-2-butene	53	10.930	10.930	(1.147)	136541	100.000	95.99
	73 n-Propylbenzene	91	10.955	10.955	(0.925)	1543805	100.000	94.02
	74 Bromobenzene	156	10.833	10.833	(0.915)	412976	100.000	99.36
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.940)	1139524	100.000	93.74

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
76	2-Chlorotoluene	91	11.029	11.029	(0.932)	1021479	100.000	100.06
77	4-Chlorotoluene	91	11.141	11.141	(0.941)	1111961	100.000	100.38
78	tert-Butylbenzene	119	11.449	11.449	(0.967)	978524	100.000	93.84
79	1,2,4-Trimethylbenzene	105	11.501	11.501	(0.972)	1183915	100.000	94.52
81	sec-Butylbenzene	105	11.668	11.668	(0.986)	1341419	100.000	84.68
82	p-Isopropyltoluene	119	11.818	11.818	(0.998)	1136103	100.000	84.16
83	1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	700407	100.000	100.02
84	1,4-Dichlorobenzene	146	11.860	11.860	(1.002)	682017	100.000	99.78
87	n-Butylbenzene	91	12.223	12.223	(1.033)	910440	100.000	88.88
88	1,2-Dichlorobenzene	146	12.226	12.226	(1.033)	662574	100.000	95.11
89	1,2-Dibromo-3-Chloropropane	75	13.006	13.006	(1.099)	93801	100.000	96.97
90	1,2,4-Trichlorobenzene	180	13.818	13.818	(1.167)	443762	100.000	99.48
91	Hexachlorobutadiene	225	13.988	13.988	(1.182)	180941	100.000	95.93
92	Naphthalene	128	14.065	14.065	(1.188)	1122352	100.000	101.59
93	1,2,3-Trichlorobenzene	182	14.302	14.302	(1.208)	389916	100.000	100.18
146	Methyl acetate	43	3.219	3.219	(0.557)	449787	100.000	87.77
138	Freon TF	101	2.747	2.747	(0.476)	272994	100.000	88.32
139	Diethyl ether	59	2.529	2.529	(0.438)	637267	100.000	85.72
147	Methylcyclohexane	83	6.986	6.986	(1.064)	460825	100.000	96.35
135	1,4-Dioxane	88	7.236	7.236	(1.253)	82311	2000.00	2082.85
132	n-Butanol	56	6.989	6.989	(1.210)	253643	2000.00	1960.66
131	Methyl Acrylate	55	5.256	5.256	(0.910)	680733	100.000	96.32
133	Ethyl Acrylate	55	7.008	7.008	(1.213)	1110120	100.000	86.17
136	n-Hexane	57	4.050	4.050	(0.701)	438653	100.000	89.20
141	Cyclohexane	56	5.680	5.680	(0.983)	606188	100.000	85.24
142	Tetrahydrofuran	42	5.410	5.410	(0.937)	312893	200.000	171.44
148	Tert-butyl alcohol	59	3.565	3.565	(0.617)	1005010	2000.00	1763.84
149	Isopropyl alcohol	45	3.052	3.052	(0.528)	614630	2000.00	1711.90
151	4-Methyl-2-pentanol	45	8.462	8.462	(0.888)	2101655	2000.00	1919.82
166	1,2,3-Trimethylbenzene	105	11.918	11.918	(1.007)	1118865	100.000	95.00
167	Ethanol	45	2.529	2.529	(0.438)	646974	2000.00	2052.71
170	1,3,5-Trichlorobenzene	180	13.201	13.201	(1.115)	489341	100.000	99.05
172	tert-Butyl formate	59	4.906	4.906	(0.849)	1201286	100.000	98.66
173	3,3-Dimethyl-1-butanol	57	9.097	9.097	(0.955)	820198	2000.00	1774.83
174	tert-Amyl methyl ether	73	6.254	6.254	(1.083)	1201468	100.000	82.94
175	tert-Butyl ethyl ether	59	6.238	6.238	(1.080)	733501	100.000	95.31
176	tert-Amyl alcohol	59	6.238	6.238	(1.080)	733501	2000.00	1892.71
157	2-Methylnaphthalene	142	15.191	15.191	(1.283)	456277	100.000	102.08
156	Diisopropyl ether	45	4.419	4.419	(0.765)	1480641	100.000	84.07
171	1-Methylnaphthalene	142	15.387	15.387	(1.300)	451735	100.000	101.05
130	Ethyl Acetate	43	5.243	5.243	(0.908)	908831	100.000	87.14

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D0503O9.D
Date : 03-MAY-2018 17:59
Client ID: VSTD100
Sample Info: VSTD100;VSTD100;1;8;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

\\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D0503O9.D

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050310.D
Lab Smp Id: VSTD200 Client Smp ID: VSTD200
Inj Date : 03-MAY-2018 18:24
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD200;VSTD200;1;9;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\8260LL.m
Meth Date : 15-May-2018 13:29 VOA2.i Quant Type: ISTD
Cal Date : 03-MAY-2018 17:59 Cal File: D050309.D
Als bottle: 10 Calibration Sample, Level: 8
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1	Pentafluorobenzene	168	5.779	5.779	(1.000)	378085	50.0000	
2	Dichlorodifluoromethane	85	1.435	1.435	(0.248)	682464	200.000	195.78
186	Isobutylene	56	1.643	1.643	(0.284)	568310	200.000	201.31(AM)
3	Chloromethane	50	1.579	1.579	(0.273)	1151819	200.000	198.71(A)
4	Propionitrile	54	5.266	5.266	(0.911)	2640496	2000.00	1710.38
5	Vinyl Chloride	62	1.666	1.666	(0.288)	851334	200.000	168.62
6	Bromomethane	94	1.922	1.922	(0.333)	393135	200.000	197.52(M)
7	Chloroethane	64	2.009	2.009	(0.348)	462745	200.000	153.86
159	Dichlorofluoromethane	67	2.211	2.211	(0.383)	1239880	200.000	167.34(A)
8	Trichlorofluoromethane	101	2.230	2.230	(0.386)	870635	200.000	177.63
9	Acrolein	56	2.676	2.676	(0.463)	389753	400.000	409.17(A)
10	Acetone	43	2.846	2.846	(0.493)	528566	400.000	394.75
11	1,1-Dichloroethene	96	2.731	2.731	(0.473)	560388	200.000	180.08
12	Isobutyl Alcohol	74	6.184	6.184	(1.070)	78573	4000.00	3962.64(TAMH)
13	Acetonitrile	39	3.154	3.154	(0.546)	984745	2000.00	1854.61
14	Allyl Chloride	41	3.158	3.158	(0.546)	2500252	200.000	180.51
15	Iodomethane	142	2.891	2.891	(0.500)	1107059	400.000	399.73
16	Acrylonitrile	53	3.687	3.687	(0.638)	749395	400.000	403.81(A)
17	Methylene Chloride	84	3.321	3.321	(0.575)	700340	200.000	197.51
18	Methyl tert-butyl ether	73	3.678	3.678	(0.636)	1974063	200.000	162.79
19	Carbon Disulfide	76	2.943	2.943	(0.509)	2448959	400.000	342.68

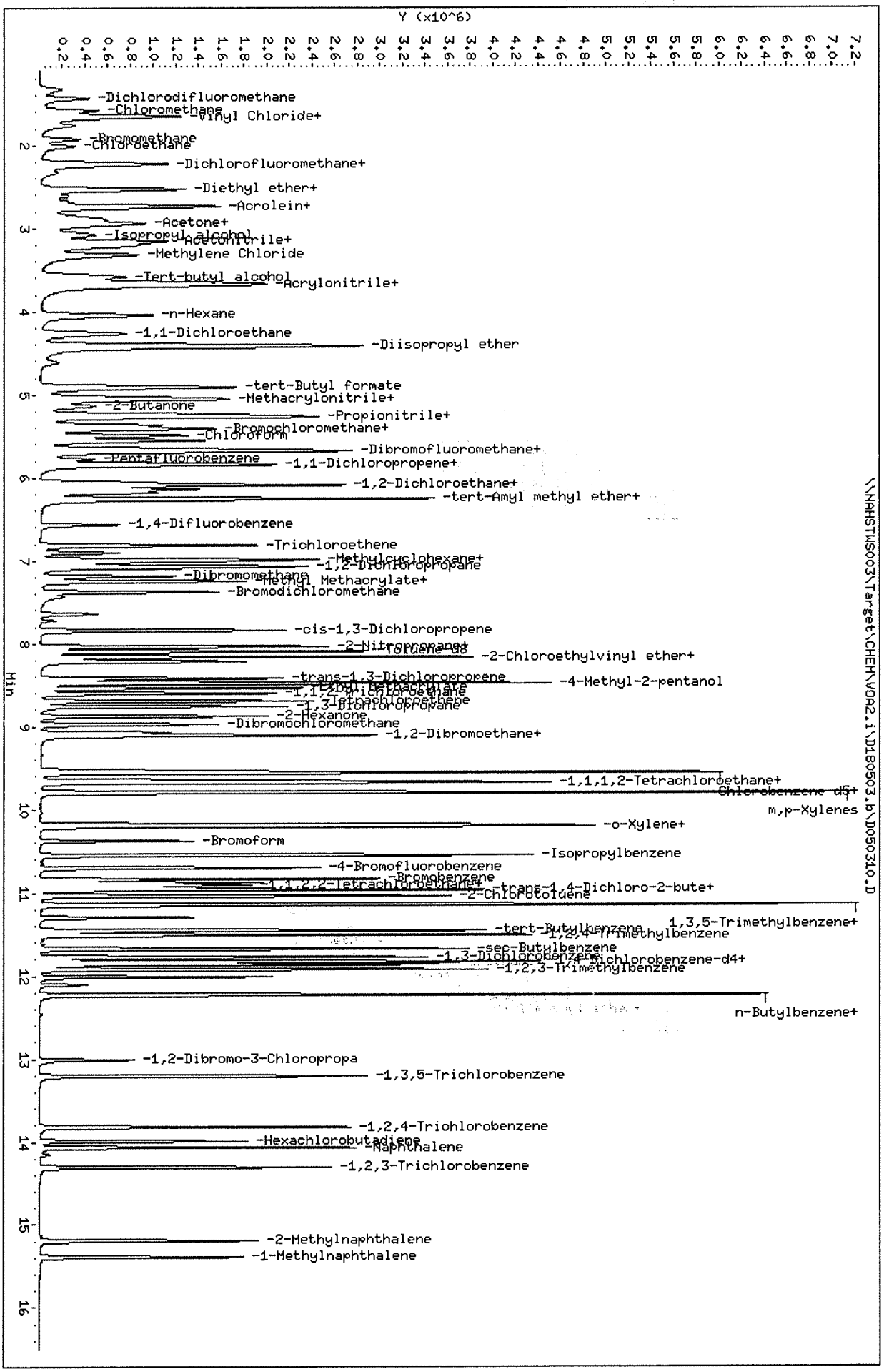
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050310.D Page 2
Report Date: 15-May-2018 13:29

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.649	3.649	(0.631)	631656	200.000	181.36
	21 Vinyl Acetate	43	5.247	5.247	(0.908)	1784044	400.000	326.50(AMH)
	22 1,1-Dichloroethane	63	4.262	4.262	(0.737)	1401165	200.000	171.48
	24 2-Butanone	43	5.138	5.138	(0.889)	831171	400.000	349.37
	25 Methacrylonitrile	41	5.032	5.032	(0.871)	618154	200.000	162.27
	26 2,2-Dichloropropane	77	5.028	5.028	(0.870)	973868	200.000	169.58
	27 cis-1,2-Dichloroethene	96	5.061	5.061	(0.876)	736547	200.000	169.03
	28 Chloroform	83	5.491	5.491	(0.950)	1175595	200.000	163.53
	29 Bromochloromethane	128	5.369	5.369	(0.929)	366573	200.000	178.90
$	30 Dibromofluoromethane	113	5.680	5.680	(0.983)	527795	200.000	156.99
	31 1,1,1-Trichloroethane	97	5.648	5.648	(0.977)	1031733	200.000	172.22
	32 1,1-Dichloropropene	75	5.850	5.850	(0.891)	833344	200.000	197.74
	33 1,2-Dichloroethane	62	6.142	6.142	(0.935)	1037626	200.000	168.14
	34 Carbon Tetrachloride	117	5.828	5.828	(0.887)	915389	200.000	198.88
$	35 1,2-Dichloroethane-d4	65	6.055	6.055	(1.048)	727600	200.000	170.24
*	36 1,4-Difluorobenzene	114	6.569	6.569	(1.000)	601209	50.0000	
	37 Benzene	78	6.091	6.091	(0.927)	2489028	200.000	200.79(AM)
	38 Trichloroethene	130	6.816	6.816	(1.038)	715503	200.000	164.43
	39 Bromodichloromethane	83	7.377	7.377	(1.123)	973804	200.000	196.18(M)
	40 Methyl Methacrylate	41	7.249	7.249	(1.254)	864803	200.000	169.92
	41 2-Chloroethylvinyl ether	63	8.160	8.160	(1.242)	239446	400.000	394.17(A)
	42 1,2-Dichloropropane	63	7.066	7.066	(1.076)	776185	200.000	196.74
	43 2-Nitropropane	43	8.035	8.035	(1.390)	1726428	200.000	161.92
	44 Dibromomethane	93	7.191	7.191	(1.095)	444516	200.000	179.81
	45 4-Methyl-2-Pentanone	43	8.035	8.035	(0.843)	1726428	400.000	315.26
	46 cis-1,3-Dichloropropene	75	7.839	7.839	(1.193)	1160850	200.000	169.41
*	47 Chlorobenzene-d5	117	9.527	9.527	(1.000)	540042	50.0000	
$	48 Toluene-d8	98	8.093	8.093	(0.849)	1932659	200.000	133.18
	49 Ethyl Methacrylate	69	8.536	8.536	(1.299)	1003951	200.000	195.91(H)
	50 Toluene	91	8.164	8.164	(0.857)	2529854	200.000	200.86(A)
	51 trans-1,3-Dichloropropene	75	8.417	8.417	(1.281)	1056675	200.000	189.60
	52 2-Hexanone	43	8.873	8.873	(0.931)	1192916	400.000	342.41
	53 1,1,2-Trichloroethane	83	8.597	8.597	(0.902)	540871	200.000	161.15
	54 1,3-Dichloropropane	76	8.757	8.757	(0.919)	1075317	200.000	161.23
	55 Dibromochloromethane	129	8.972	8.972	(0.942)	826047	200.000	168.50
	56 Tetrachloroethene	164	8.693	8.693	(0.912)	569404	200.000	166.07
	57 1,2-Dibromoethane	107	9.069	9.069	(0.952)	730093	200.000	176.54
	58 1-Chlorohexane	55	9.559	9.559	(1.455)	718137	200.000	198.06
	59 Chlorobenzene	112	9.559	9.559	(1.003)	1624119	200.000	200.78(A)
	60 1,1,1,2-Tetrachloroethane	131	9.653	9.653	(1.013)	711740	200.000	159.23
	61 Ethylbenzene	106	9.675	9.675	(1.015)	910753	200.000	197.20
	62 m,p-Xylenes	106	9.800	9.800	(1.029)	2097243	400.000	401.83(AH)
	63 o-Xylene	106	10.182	10.182	(1.069)	1145479	200.000	196.17
	64 Styrene	104	10.204	10.204	(1.071)	1842268	200.000	200.76(A)
	66 Bromoform	173	10.378	10.378	(1.089)	616656	200.000	184.00
	67 Isopropylbenzene	105	10.551	10.551	(1.107)	2644449	200.000	200.90(A)
	68 1,1,2,2-Tetrachloroethane	83	10.878	10.878	(0.919)	876848	200.000	196.21
$	69 4-Bromofluorobenzene	95	10.699	10.699	(1.123)	780010	200.000	166.54
*	70 1,4-Dichlorobenzene-d4	152	11.838	11.838	(1.000)	239213	50.0000	
	71 1,2,3-Trichloropropane	75	10.907	10.907	(0.921)	976742	200.000	168.75(M)
	72 trans-1,4-Dichloro-2-butene	53	10.936	10.936	(1.148)	284073	200.000	200.94(A)
	73 n-Propylbenzene	91	10.965	10.965	(0.926)	2901658	200.000	200.92(A)
	74 Bromobenzene	156	10.837	10.837	(0.915)	799442	200.000	197.52
	75 1,3,5-Trimethylbenzene	105	11.138	11.138	(0.941)	2124046	200.000	200.98(A)

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
76	2-Chlorotoluene	91	11.036	11.036	(0.932)	1947674	200.000	196.45
77	4-Chlorotoluene	91	11.145	11.145	(0.941)	2106816	200.000	195.99
78	tert-Butylbenzene	119	11.456	11.456	(0.968)	1861971	200.000	200.92(A)
79	1,2,4-Trimethylbenzene	105	11.507	11.507	(0.972)	2226929	200.000	200.87(A)
81	sec-Butylbenzene	105	11.674	11.674	(0.986)	2532725	200.000	162.00
82	p-Isopropyltoluene	119	11.825	11.825	(0.999)	2170564	200.000	162.90
83	1,3-Dichlorobenzene	146	11.774	11.774	(0.995)	1341793	200.000	196.85
84	1,4-Dichlorobenzene	146	11.863	11.863	(1.002)	1317537	200.000	197.56
87	n-Butylbenzene	91	12.226	12.226	(1.033)	1751641	200.000	173.25
88	1,2-Dichlorobenzene	146	12.229	12.229	(1.033)	1235939	200.000	200.80(A)
89	1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	186246	200.000	195.08
90	1,2,4-Trichlorobenzene	180	13.821	13.821	(1.168)	872141	200.000	198.69
91	Hexachlorobutadiene	225	13.991	13.991	(1.182)	371184	200.000	200.10(A)
92	Naphthalene	128	14.065	14.065	(1.188)	2143250	200.000	197.20
93	1,2,3-Trichlorobenzene	182	14.302	14.302	(1.208)	762077	200.000	198.68
146	Methyl acetate	43	3.222	3.222	(0.558)	843947	200.000	163.17(A)
138	Freon TF	101	2.741	2.741	(0.474)	557869	200.000	178.81
139	Diethyl ether	59	2.526	2.526	(0.437)	1221158	200.000	162.75
147	Methylcyclohexane	83	6.989	6.989	(1.064)	944922	200.000	198.33
135	1,4-Dioxane	88	7.243	7.243	(1.253)	154038	4000.00	3903.26
132	n-Butanol	56	6.989	6.989	(1.209)	514687	4000.00	3961.83
131	Methyl Acrylate	55	5.276	5.276	(0.913)	1316174	200.000	184.52
133	Ethyl Acrylate	55	7.015	7.015	(1.214)	2214115	200.000	170.28
136	n-Hexane	57	4.043	4.043	(0.700)	935510	200.000	188.49
141	Cyclohexane	56	5.683	5.683	(0.983)	1204468	200.000	167.82(A)
142	Tetrahydrofuran	42	5.417	5.417	(0.937)	607056	400.000	329.54
148	Tert-butyl alcohol	59	3.584	3.584	(0.620)	1937310	4000.00	3368.65
149	Isopropyl alcohol	45	3.081	3.081	(0.533)	1234989	4000.00	3407.97
151	4-Methyl-2-pentanol	45	8.478	8.478	(0.890)	3724604	4000.00	4014.88(A)
166	1,2,3-Trimethylbenzene	105	11.921	11.921	(1.007)	2094213	200.000	200.80(A)
167	Ethanol	45	2.529	2.529	(0.438)	1224853	4000.00	3911.18
170	1,3,5-Trichlorobenzene	180	13.208	13.208	(1.116)	956640	200.000	198.10
172	tert-Butyl formate	59	4.907	4.907	(0.849)	2430273	200.000	198.21
173	3,3-Dimethyl-1-butanol	57	9.110	9.110	(0.956)	1544037	4000.00	3363.42
174	tert-Amyl methyl ether	73	6.257	6.257	(1.083)	2342540	200.000	160.22
175	tert-Butyl ethyl ether	59	6.254	6.254	(1.082)	1372011	200.000	176.63
176	tert-Amyl alcohol	59	6.254	6.254	(1.082)	1372011	4000.00	3507.59
157	2-Methylnaphthalene	142	15.191	15.191	(1.283)	979451	200.000	199.63
156	Diisopropyl ether	45	4.422	4.422	(0.765)	2843943	200.000	159.98
171	1-Methylnaphthalene	142	15.387	15.387	(1.300)	899897	200.000	199.73
130	Ethyl Acetate	43	5.247	5.247	(0.908)	1760857	200.000	167.28

QC Flag Legend

T - Target compound detected outside RT window.
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050310.D
Date : 03-MAY-2018 18:24
Client ID: VSTD200
Sample Info: VSTD200;VSTD200;1;9;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

\\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050310.D

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050312.D Page 1
Report Date: 29-May-2018 13:27

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050312.D
Lab Smp Id: VSTD-ICV Client Smp ID: VSTD-ICV
Inj Date : 03-MAY-2018 19:13
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD050;VSTD050;2;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\8260LL.m
Meth Date : 29-May-2018 13:26 Cesar.Lira Quant Type: ISTD
Cal Date : 03-MAY-2018 18:24 Cal File: D050310.D
Als bottle: 12 QC Sample: METHSPIKE
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1	Pentafluorobenzene	168	5.776	5.776	(1.000)	362697	50.0000	
2	Dichlorodifluoromethane	85	1.437	1.441	(0.249)	165068	49.3642	49.36
186	Isobutylene	56	1.646	1.646	(0.285)	184738	48.4439	48.44(AM)
3	Chloromethane	50	1.585	1.592	(0.274)	300879	52.2573	52.25
4	Propionitrile	54	5.234	5.234	(0.906)	665715	449.512	449.51
5	Vinyl Chloride	62	1.669	1.678	(0.289)	222184	45.8758	45.87
6	Bromomethane	94	1.932	1.932	(0.334)	106891	53.7064	53.70
7	Chloroethane	64	2.022	2.034	(0.350)	130054	45.0769	45.07
159	Dichlorofluoromethane	67	2.217	2.217	(0.384)	317549	44.6785	44.67
8	Trichlorofluoromethane	101	2.240	2.246	(0.388)	226579	48.1893	48.18
9	Acrolein	56	2.676	2.679	(0.463)	96328	105.418	105.41
10	Acetone	43	2.843	2.846	(0.492)	128165	95.0830	95.08
11	1,1-Dichloroethene	96	2.740	2.740	(0.474)	143756	48.1573	48.15
12	Isobutyl Alcohol	74	6.155	6.155	(1.066)	17257	893.069	893.06(A)
13	Acetonitrile	39	3.164	3.161	(0.548)	234546	460.473	460.47
14	Allyl Chloride	41	3.164	3.167	(0.548)	599181	45.0945	45.09
15	Iodomethane	142	2.898	2.904	(0.502)	213701	82.2268	82.22
16	Acrylonitrile	53	3.677	3.684	(0.637)	181562	101.985	101.98
17	Methylene Chloride	84	3.324	3.324	(0.576)	173894	48.3679	48.36
18	Methyl tert-butyl ether	73	3.677	3.677	(0.637)	510889	43.9178	43.91
19	Carbon Disulfide	76	2.939	2.943	(0.509)	615819	89.8275	89.82

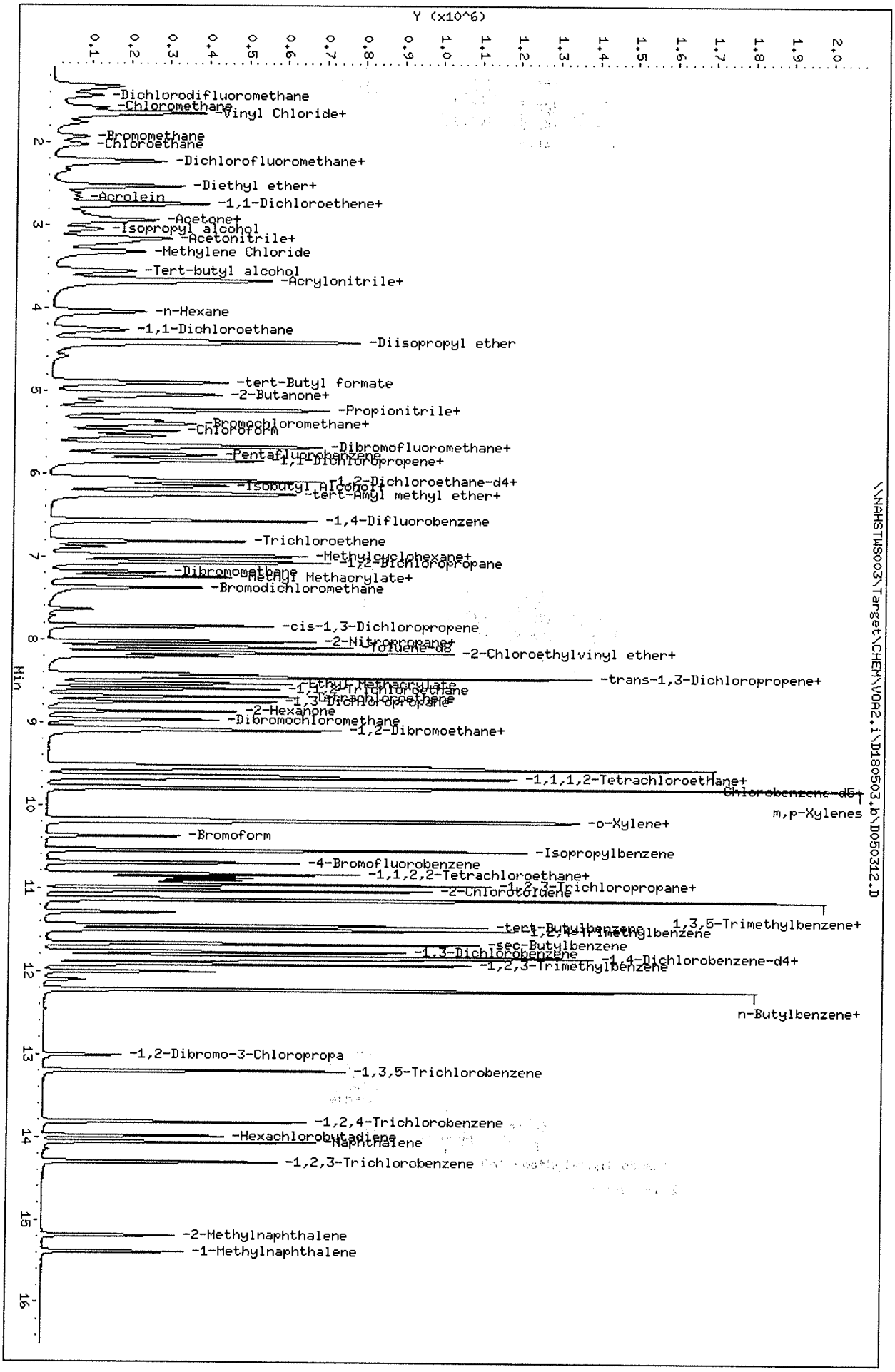
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050312.D Page 2
Report Date: 29-May-2018 13:27

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.655	3.658	(0.633)	157271	47.0716	47.07
	21 Vinyl Acetate	43	5.237	5.237	(0.907)	456681	87.1263	87.12
	22 1,1-Dichloroethane	63	4.268	4.271	(0.739)	355143	45.3093	45.30
	24 2-Butanone	43	5.131	5.131	(0.888)	204535	89.6222	89.62
	25 Methacrylonitrile	41	5.035	5.035	(0.872)	153003	41.8705	41.87(M)
	26 2,2-Dichloropropane	77	5.028	5.035	(0.871)	245262	44.5208	44.52
	27 cis-1,2-Dichloroethene	96	5.060	5.064	(0.876)	186111	44.5232	44.52
	28 Chloroform	83	5.487	5.490	(0.950)	303425	44.0007	44.00
	29 Bromochloromethane	128	5.359	5.356	(0.928)	95250	48.4592	48.45
$	30 Dibromofluoromethane	113	5.673	5.683	(0.982)	136368	42.2853	42.28(R)
	31 1,1,1-Trichloroethane	97	5.648	5.648	(0.978)	266361	46.3494	46.34
	32 1,1-Dichloropropene	75	5.847	5.850	(0.890)	214059	50.5293	50.52
	33 1,2-Dichloroethane	62	6.139	6.139	(0.935)	258000	43.4008	43.40
	34 Carbon Tetrachloride	117	5.830	5.827	(0.888)	227916	49.3946	49.39
$	35 1,2-Dichloroethane-d4	65	6.049	6.052	(1.047)	183796	44.8290	44.82
*	36 1,4-Difluorobenzene	114	6.569	6.569	(1.000)	579136	50.0000	
	37 Benzene	78	6.090	6.087	(0.927)	672428	46.7857	46.78
	38 Trichloroethene	130	6.816	6.816	(1.038)	186862	44.5812	44.58
	39 Bromodichloromethane	83	7.374	7.374	(1.123)	251217	50.3300	50.33
	40 Methyl Methacrylate	41	7.242	7.243	(1.254)	222003	45.4714	45.47
	41 2-Chloroethylvinyl ether	63	8.154	8.157	(1.241)	61558	100.856	100.85(TA)
	42 1,2-Dichloropropane	63	7.066	7.066	(1.076)	202693	50.9980	50.99
	43 2-Nitropropane	43	8.025	8.025	(1.389)	461626	45.1350	45.13
	44 Dibromomethane	93	7.188	7.188	(1.094)	111650	46.8869	46.88
	45 4-Methyl-2-Pentanone	43	8.025	8.025	(0.843)	461626	85.6662	85.66
	46 cis-1,3-Dichloropropene	75	7.836	7.836	(1.193)	300084	45.4647	45.46
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	531410	50.0000	
$	48 Toluene-d8	98	8.090	8.090	(0.849)	507094	35.5123	35.51(R)
	49 Ethyl Methacrylate	69	8.529	8.526	(1.298)	264063	51.1913	51.19
	50 Toluene	91	8.157	8.157	(0.856)	705921	47.4593	47.45
	51 trans-1,3-Dichloropropene	75	8.414	8.417	(1.281)	264128	49.2003	49.20
	52 2-Hexanone	43	8.863	8.866	(0.931)	300117	87.5460	87.54
	53 1,1,2-Trichloroethane	83	8.593	8.593	(0.902)	142088	43.0242	43.02
	54 1,3-Dichloropropane	76	8.751	8.751	(0.919)	281985	42.9684	42.96
	55 Dibromochloromethane	129	8.969	8.969	(0.942)	213035	44.1627	44.16
	56 Tetrachloroethene	164	8.686	8.687	(0.912)	146726	43.4901	43.49
	57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	182594	44.8704	44.87
	58 1-Chlorohexane	55	9.553	9.550	(1.454)	186264	50.4882	50.48
	59 Chlorobenzene	112	9.553	9.553	(1.003)	445223	46.6630	46.66
	60 1,1,1,2-Tetrachloroethane	131	9.643	9.646	(1.012)	187543	42.6392	42.63
	61 Ethylbenzene	106	9.668	9.668	(1.015)	243499	51.2609	51.26
	62 m,p-Xylenes	106	9.790	9.790	(1.028)	584632	94.3550	94.35
	63 o-Xylene	106	10.175	10.175	(1.068)	311039	51.5491	51.54
	64 Styrene	104	10.198	10.198	(1.071)	509022	46.7235	46.72
	66 Bromoform	173	10.374	10.374	(1.089)	158014	47.9158	47.91
	67 Isopropylbenzene	105	10.544	10.548	(1.107)	756399	47.2608	47.26
	68 1,1,2,2-Tetrachloroethane	83	10.868	10.869	(0.918)	236246	50.9002	50.90
$	69 4-Bromofluorobenzene	95	10.692	10.695	(1.123)	199928	43.1231	43.12
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	237673	50.0000	
	71 1,2,3-Trichloropropane	75	10.901	10.904	(0.921)	247304	43.0034	43.00
	72 trans-1,4-Dichloro-2-butene	53	10.926	10.930	(1.147)	62945	45.3221	45.32
	73 n-Propylbenzene	91	10.955	10.955	(0.926)	810035	46.8731	46.87
	74 Bromobenzene	156	10.830	10.830	(0.915)	211705	50.6248	50.62
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	609120	47.2695	47.26

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
76	2-Chlorotoluene	91	11.026	11.029	(0.932)	531978	51.5484	51.54
77	4-Chlorotoluene	91	11.138	11.141	(0.941)	584652	52.1636	52.16
78	tert-Butylbenzene	119	11.446	11.449	(0.967)	521569	48.0002	48.00
79	1,2,4-Trimethylbenzene	105	11.501	11.501	(0.972)	624965	47.5590	47.55
81	sec-Butylbenzene	105	11.664	11.668	(0.986)	708510	45.6125	45.61
82	p-Isopropyltoluene	119	11.815	11.815	(0.998)	597026	45.0983	45.09
83	1,3-Dichlorobenzene	146	11.764	11.764	(0.994)	359158	50.9257	50.92
84	1,4-Dichlorobenzene	146	11.857	11.860	(1.002)	344787	50.2887	50.28
87	n-Butylbenzene	91	12.219	12.220	(1.033)	473387	47.1265	47.12
88	1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	347431	47.4566	47.45
89	1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	43595	45.9587	45.95
90	1,2,4-Trichlorobenzene	180	13.814	13.818	(1.167)	210232	47.7454	47.74
91	Hexachlorobutadiene	225	13.988	13.988	(1.182)	90734	48.7371	48.73
92	Naphthalene	128	14.061	14.061	(1.188)	530998	48.6554	48.65
93	1,2,3-Trichlorobenzene	182	14.299	14.299	(1.208)	180668	47.1789	47.17
146	Methyl acetate	43	3.218	3.219	(0.557)	212898	42.9099	42.90
138	Freon TF	101	2.753	2.760	(0.477)	140969	47.1025	47.10
139	Diethyl ether	59	2.529	2.532	(0.438)	328375	45.6215	45.62
147	Methylcyclohexane	83	6.986	6.989	(1.064)	243117	51.2323	51.23
135	1,4-Dioxane	88	7.236	7.236	(1.253)	37960	966.678	966.67
132	n-Butanol	56	6.995	6.989	(1.211)	127957	1012.02	1012.02
131	Methyl Acrylate	55	5.256	5.256	(0.910)	338895	49.5270	49.52
133	Ethyl Acrylate	55	7.005	7.005	(1.213)	564340	45.2433	45.24
136	n-Hexane	57	4.050	4.046	(0.701)	228525	47.9989	47.99
141	Cyclohexane	56	5.683	5.680	(0.984)	306092	44.4576	44.45
142	Tetrahydrofuran	42	5.407	5.407	(0.936)	150992	85.4451	85.44
148	Tert-butyl alcohol	59	3.555	3.552	(0.616)	474418	859.931	859.93
149	Isopropyl alcohol	45	3.048	3.048	(0.528)	283849	816.518	816.51(TM)
151	4-Methyl-2-pentanol	45	8.452	8.452	(0.887)	1067627	890.184	890.18
166	1,2,3-Trimethylbenzene	105	11.915	11.915	(1.007)	583214	47.2112	47.21
167	Ethanol	45	2.529	2.529	(0.438)	326659	1037.13	1037.13
170	1,3,5-Trichlorobenzene	180	13.201	13.201	(1.116)	244341	49.4788	49.47
172	tert-Butyl formate	59	4.903	4.906	(0.849)	612588	51.7457	51.74
173	3,3-Dimethyl-1-butanol	57	9.091	9.094	(0.955)	390487	864.427	864.42
174	tert-Amyl methyl ether	73	6.254	6.257	(1.083)	604871	43.1262	43.12
175	tert-Butyl ethyl ether	59	6.228	6.228	(1.078)	339957	45.6232	45.62
176	tert-Amyl alcohol	59	6.228	6.228	(1.078)	339957	905.984	905.98
157	2-Methylnaphthalene	142	15.191	15.191	(1.284)	164109	41.6862	41.68
156	Diisopropyl ether	45	4.415	4.415	(0.764)	753508	44.1872	44.18(T)
171	1-Methylnaphthalene	142	15.387	15.387	(1.300)	177570	42.7258	42.72
130	Ethyl Acetate	43	5.237	5.237	(0.907)	456681	45.2274	45.22
M 94	1,2-Dichloroethylene (total)	96				343382	91.5948	91.59
M 95	Xylenes (total)	106				895671	145.904	145.90

QC Flag Legend

T - Target compound detected outside RT window.
A - Target compound detected but, quantitated amount exceeded maximum amount.
R - Spike/Surrogate failed recovery limits.
M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050312.D
Date : 03-MAY-2018 19:13
Client ID: VSTD-ICV
Sample Info: VSTD050;VSTD050;2;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050072

Lab File ID: D050301 BFB Injection Date: 05/03/18

Instrument ID: VOA2 BFB Injection Time: 1444

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	19.9
75	30.0 - 60.0% of mass 95	48.5
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	5.9
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	81.1
175	5.0 - 9.0% of mass 174	5.9 (7.3)1
176	95.0 - 101.0% of mass 174	81.5 (100.5)1
177	5.0 - 9.0% of mass 176	4.7 (5.8)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VLCSW-180503	VLCSW-180503	D050314	05/03/18	2001
02	VBLKW-180503	VBLKW-180503	D050316	05/03/18	2050
03	HS18050072-0	HS18050072-01	D050317	05/03/18	2115
04	HS18050072-0	HS18050072-01	D050318	05/03/18	2142
05	HS18050072-0	HS18050072-02	D050319	05/03/18	2207
06	HS18050072-0	HS18050072-02	D050320	05/03/18	2234
07	HS18050072-0	HS18050072-03	D050321	05/03/18	2258
08	HS18050072-0	HS18050072-03	D050322	05/03/18	2325
09	HS18050072-0	HS18050072-03M	D050323	05/03/18	2350
10	HS18050072-0	HS18050072-03M	D050324	05/04/18	0014
11	CCV_END	CCV_END	D050329	05/04/18	0219
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050072

Instrument ID: VOA2 Calibration Date: 05/04/18 Time: 0219

Lab File ID: D050329 Init. Calib. Date(s): 05/03/18 05/03/18

Init. Calib. Times: 1509 1824

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Iodomethane	112.14105	100.00000	0.4047802	0.1	12.14	50.00	LINR
Dichlorodifluoromethane	0.4610000	0.5425872	0.5425872	0.1	17.70	50.00	AVRG
1,2-Dichloroethylene (total)	0.5180000	0.5310870	0.5310870	0.1	2.53	50.00	AVRG
Chloromethane	58.781278	50.000000	0.9283119	0.1	17.56	50.00	LINR
tert-Amyl alcohol	5.2e-002	4.7e-002	4.7e-002	0.005	-9.62	50.00	AVRG
Vinyl Chloride	0.6680000	0.6915418	0.6915418	0.1	3.52	50.00	AVRG
Bromomethane	61.088772	50.000000	0.3329578	0.1	22.18	50.00	LINR
Chloroethane	0.3980000	0.4116104	0.4116104	0.1	3.42	50.00	AVRG
tert-Butyl ethyl ether	1.0270000	0.9408365	0.9408365	0.1	-8.39	50.00	AVRG
Trichlorofluoromethane	0.6480000	0.6725259	0.6725259	0.1	3.78	50.00	AVRG
Acrolein	0.1260000	0.1276136	0.1276136	0.01	1.28	50.00	AVRG
Acetone	106.42105	100.00000	0.1964454	0.1	6.42	50.00	LINR
1,1-Dichloroethene	0.4120000	0.4363023	0.4363023	0.1	5.90	50.00	AVRG
Isobutyl Alcohol	922.54224	1000.0000	2.46e-003	0.001	-7.74	50.00	LINR
Acetonitrile	7.e-002	6.85e-002	6.85e-002	0.01	-2.14	50.00	AVRG
Allyl Chloride	1.8320000	1.8158838	1.8158838	0.05	-0.88	50.00	AVRG
Acrylonitrile	0.2450000	0.2658557	0.2658557	0.05	8.51	50.00	AVRG
Methylene Chloride	53.654010	50.000000	0.5281055	0.1	7.31	50.00	LINR
Methyl tert-butyl ether	1.6040000	1.5573285	1.5573285	0.1	-2.91	50.00	AVRG
Carbon Disulfide	0.9450000	0.9303072	0.9303072	0.1	-1.55	50.00	AVRG
trans-1,2-Dichloroethene	0.4610000	0.4842267	0.4842267	0.1	5.04	50.00	AVRG
Vinyl Acetate	0.7230000	0.6758586	0.6758586	0.1	-6.52	50.00	AVRG
1,1-Dichloroethane	1.0810000	1.0914612	1.0914612	0.2	0.97	50.00	AVRG
2-Butanone	0.3150000	0.2997090	0.2997090	0.1	-4.85	50.00	AVRG
Methacrylonitrile	0.5040000	0.3935380	0.3935380	0.01	-21.92	50.00	AVRG
2,2-Dichloropropane	0.7590000	0.6295601	0.6295601	0.1	-17.05	50.00	AVRG
cis-1,2-Dichloroethene	0.5760000	0.5779473	0.5779473	0.1	0.34	50.00	AVRG
Chloroform	0.9500000	0.9431356	0.9431356	0.2	-0.72	50.00	AVRG
Bromochloromethane	0.2710000	0.2935918	0.2935918	0.1	8.34	50.00	AVRG
tert-Amyl methyl ether	1.9340000	1.8115084	1.8115084	0.05	-6.33	50.00	AVRG
1,1,1-Trichloroethane	0.7920000	0.7914911	0.7914911	0.1	-0.06	50.00	AVRG
1,1-Dichloropropene	52.650035	50.000000	0.3842615	0.1	5.30	50.00	LINR
1,2-Dichloroethane	0.5130000	0.5003542	0.5003542	0.1	-2.46	50.00	AVRG
Carbon Tetrachloride	50.104388	50.000000	0.3989057	0.1	0.21	50.00	LINR
3,3-Dimethyl-1-butanol	4.3e-002	3.62e-002	3.62e-002	0.005	-15.81	50.00	AVRG
Benzene	51.161034	50.000000	1.2599708	0.5	2.32	50.00	2RDR
Trichloroethene	0.3620000	0.3434509	0.3434509	0.2	-5.12	50.00	AVRG
Bromodichloromethane	55.620285	50.000000	0.4767942	0.2	11.24	50.00	LINR
Methyl Methacrylate	0.6730000	0.6620440	0.6620440	0.05	-1.63	50.00	AVRG
2-Chloroethylvinyl ether	105.64988	100.00000	5.55e-002	0.05	5.65	50.00	LINR
1,2-Dichloropropane	56.360781	50.000000	0.3846175	0.1	12.72	50.00	LINR
tert-Butyl formate	57.842732	50.000000	1.8862437	0.1	15.68	50.00	LINR

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805007

Instrument ID: VOA2 Calibration Date: 05/04/18 Time: 0219

Lab File ID: D050329 Init. Calib. Date(s): 05/03/18 05/03/18

Init. Calib. Times: 1509 1824

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Dibromomethane	0.2060000	0.2074692	0.2074692	0.1	0.71	50.00	AVRG
4-Methyl-2-Pentanone	0.5070000	0.4573112	0.4573112	0.1	-9.80	50.00	AVRG
cis-1,3-Dichloropropene	0.5700000	0.5490012	0.5490012	0.2	-3.68	50.00	AVRG
1,3,5-Trichlorobenzene	49.256933	50.000000	1.0236197	0.1	-1.49	50.00	LINR
Ethyl Methacrylate	53.014751	50.000000	0.4712551	0.01	6.03	50.00	LINR
Toluene	51.067438	50.000000	1.4200518	0.4	2.13	50.00	2RDR
trans-1,3-Dichloropropene	0.4630000	0.4711670	0.4711670	0.1	1.76	50.00	AVRG
2-Hexanone	0.3220000	0.2968845	0.2968845	0.1	-7.80	50.00	AVRG
1,1,2-Trichloroethane	0.3110000	0.2888456	0.2888456	0.1	-7.12	50.00	AVRG
1,3-Dichloropropane	0.6170000	0.5820941	0.5820941	0.1	-5.66	50.00	AVRG
Dibromochloromethane	0.4540000	0.4354185	0.4354185	0.1	-4.09	50.00	AVRG
Tetrachloroethene	0.3180000	0.2822024	0.2822024	0.2	-11.26	50.00	AVRG
1,2-Dibromoethane	0.3830000	0.3768255	0.3768255	0.1	-1.61	50.00	AVRG
1-Chlorohexane	48.979298	50.000000	0.3126991	0.1	-2.04	50.00	LINR
Chlorobenzene	51.240372	50.000000	0.9127478	0.5	2.48	50.00	2RDR
1,1,1,2-Tetrachloroethane	0.4140000	0.3817812	0.3817812	0.1	-7.78	50.00	AVRG
Ethylbenzene	53.168942	50.000000	0.4742708	0.1	6.34	50.00	LINR
m,p-Xylenes	101.49065	100.00000	0.5877497	0.1	1.49	50.00	2RDR
o-Xylene	55.425994	50.000000	0.6264776	0.3	10.85	50.00	LINR
Styrene	50.435969	50.000000	1.0271321	0.3	0.87	50.00	2RDR
Bromoform	0.3100000	0.3145779	0.3145779	0.1	1.48	50.00	AVRG
Isopropylbenzene	48.511469	50.000000	1.4573482	0.1	-2.98	50.00	2RDR
1,1,2,2-Tetrachloroethane	54.554838	50.000000	1.0611866	0.3	9.11	50.00	LINR
Ethanol	1102.3335	1000.0000	4.77e-002	0.001	10.23	50.00	LINR
1,2,3-Trichloropropane	1.2100000	1.0700537	1.0700537	0.1	-11.56	50.00	AVRG
trans-1,4-Dichloro-2-butene	42.900505	50.000000	0.1121069	0.05	-14.20	50.00	LINR
n-Propylbenzene	48.504014	50.000000	3.5165172	0.1	-2.99	50.00	2RDR
Bromobenzene	54.698038	50.000000	0.9587105	0.1	9.40	50.00	LINR
1,3,5-Trimethylbenzene	49.081985	50.000000	2.6514847	0.1	-1.84	50.00	2RDR
2-Chlorotoluene	54.168454	50.000000	2.3450228	0.1	8.34	50.00	LINR
4-Chlorotoluene	54.529284	50.000000	2.5643041	0.1	9.06	50.00	LINR
tert-Butylbenzene	48.380191	50.000000	2.2105384	0.1	-3.24	50.00	2RDR
1,2,4-Trimethylbenzene	49.572743	50.000000	2.7312982	0.1	-0.85	50.00	2RDR
sec-Butylbenzene	3.2680000	2.9942573	2.9942573	0.1	-8.38	50.00	AVRG
p-Isopropyltoluene	2.7850000	2.5210635	2.5210635	0.1	-9.48	50.00	AVRG
1,3-Dichlorobenzene	54.309549	50.000000	1.6061688	0.6	8.62	50.00	LINR
1,4-Dichlorobenzene	52.693501	50.000000	1.5169267	0.4	5.39	50.00	LINR
n-Butylbenzene	2.1130000	1.9254552	1.9254552	0.05	-8.88	50.00	AVRG
1,2-Dichlorobenzene	50.212026	50.000000	1.5393362	0.4	0.42	50.00	2RDR
1,2-Dibromo-3-Chloropropane	0.2000000	0.1865322	0.1865322	0.05	-6.73	50.00	AVRG
1,2,4-Trichlorobenzene	48.664302	50.000000	0.9013524	0.2	-2.67	50.00	LINR
Hexachlorobutadiene	45.389084	50.000000	0.3558824	0.1	-9.22	50.00	LINR

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805007

Instrument ID: VOA2 Calibration Date: 05/04/18 Time: 0219

Lab File ID: D050329 Init. Calib. Date(s): 05/03/18 05/03/18

Init. Calib. Times: 1509 1824

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE	
Naphthalene	49.317823	50.000000	2.2641463	0.2	-1.36	50.00	LINR	
1,2,3-Trichlorobenzene	47.841426	50.000000	0.7707610	0.1	-4.32	50.00	LINR	
Methyl acetate	0.6840000	0.6310379	0.6310379	0.1	-7.74	50.00	AVRG	
Freon TF	0.4120000	0.3969974	0.3969974	0.1	-3.64	50.00	AVRG	
1,2,3-Trimethylbenzene	50.088089	50.000000	2.5909469	0.1	0.18	50.00	2RDR	
Methylcyclohexane	49.317771	50.000000	0.4048008	0.1	-1.36	50.00	LINR	
1,4-Dioxane	947.31121	1000.0000	5.13e-003	0.001	-5.27	50.00	LINR	
n-Butanol	1004.0436	1000.0000	1.75e-002	0.001	0.40	50.00	LINR	
Methyl Acrylate	0.9430000	0.9884952	0.9884952	0.1	4.82	50.00	AVRG	
Ethyl Acrylate	1.7190000	1.6098236	1.6098236	0.1	-6.35	50.00	AVRG	
n-Hexane	0.6560000	0.5645251	0.5645251	0.1	-13.94	50.00	AVRG	
Cyclohexane	0.9490000	0.8661928	0.8661928	0.1	-8.72	50.00	AVRG	
Isopropyl alcohol	4.8e-002	3.98e-002	3.98e-002	0.005	-17.08	50.00	AVRG	
Tert-butyl alcohol	7.6e-002	6.84e-002	6.84e-002	0.005	-10.0	50.00	AVRG	
Xylenes (total)	0.0000000	150.00000	0.5475884	0.1	0.00	50.00	2RDR	<-
Propionitrile	0.2040000	0.1970624	0.1970624	0.01	-3.40	50.00	AVRG	
2-Nitropropane	1.4100000	1.3586268	1.3586268	0.1	-3.64	50.00	AVRG	
Ethyl Acetate	1.3920000	1.3517172	1.3517172	0.01	-2.89	50.00	AVRG	
Diethyl ether	0.9920000	0.9663650	0.9663650	0.05	-2.58	50.00	AVRG	
Tetrahydrofuran	0.2440000	0.2200625	0.2200625	0.05	-9.81	50.00	AVRG	
4-Methyl-2-pentanol	890.01151	1000.0000	0.1004351	0.005	-11.00	50.00	2RDR	
Diisopropyl ether	2.3510000	2.2678068	2.2678068	0.05	-3.54	50.00	AVRG	
2-Methylnaphthalene	35.778452	50.000000	0.5793695	0.05	-28.44	50.00	2RDR	
Dichlorofluoromethane	0.9800000	0.9756073	0.9756073	0.1	-0.45	50.00	AVRG	
1-Methylnaphthalene	38.753494	50.000000	0.6712068	0.1	-22.49	50.00	2RDR	
Isobutylene	56.936580	50.000000	0.5812357	0.1	13.87	50.00	2RDR	
Dibromofluoromethane	0.4450000	0.4206543	0.4206543	0.1	-5.47	50.00	AVRG	
Toluene-d8	1.3440000	1.0838422	1.0838422	0.1	-19.36	50.00	AVRG	
1,2-Dichloroethane-d4	0.5650000	0.5462359	0.5462359	0.1	-3.32	50.00	AVRG	
4-Bromofluorobenzene	47.039236	50.000000	0.4101116	0.1	-5.92	50.00	LINR	

FORM VII VOA

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050072

Lab File ID (Standard): D050329 Date Analyzed: 05/04/18

Instrument ID: VOA2 Time Analyzed: 0219

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

		IS1 AREA #	IS1 RT #	IS2(DFB) AREA #	IS2(DFB) RT #	IS3(CBZ) AREA #	IS3(CBZ) RT #
	12 HOUR STD	327516	5.78	533660	6.57	486509	9.52
	UPPER LIMIT	655032	6.28	1067320	7.07	973018	10.02
	LOWER LIMIT	163758	5.28	266830	6.07	243255	9.02
	CLIENT SAMPLE NO.						
01	VLCSW-180503	341349	5.77	542593	6.57	498855	9.52
02	VBLKW-180503	333645	5.77	482537	6.57	431532	9.52
03	HS18050072-01	331186	5.78	482297	6.57	434943	9.52
04	HS18050072-01	331769	5.77	465037	6.56	390278	9.52
05	HS18050072-02	331557	5.77	476152	6.57	437878	9.52
06	HS18050072-02	334088	5.77	464797	6.57	395248	9.52
07	HS18050072-03	335326	5.77	480992	6.57	431215	9.52
08	HS18050072-03	333677	5.77	474895	6.56	417195	9.52
09	HS18050072-03	315378	5.78	484791	6.57	436634	9.52
10	HS18050072-03	315674	5.78	477912	6.57	429047	9.52
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

IS1 = Pentafluorobenzene
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050072

Lab File ID (Standard): D050329 Date Analyzed: 05/04/18

Instrument ID: VOA2 Time Analyzed: 0219

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

		IS4 (DCB) AREA	#	RT	#	AREA	#	RT	#	AREA	#	RT	#
	12 HOUR STD	217319		11.83									
	UPPER LIMIT	434638		12.33									
	LOWER LIMIT	108660		11.33									
	CLIENT SAMPLE NO.												
01	VLCSW-180503	223099		11.83									
02	VBLKW-180503	185344		11.83									
03	HS18050072-01	188869		11.83									
04	HS18050072-01	169704		11.83									
05	HS18050072-02	187836		11.83									
06	HS18050072-02	173211		11.83									
07	HS18050072-03	183837		11.83									
08	HS18050072-03	179033		11.83									
09	HS18050072-03	199731		11.83									
10	HS18050072-03	198154		11.83									
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													

IS4 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

MSVOA02 -Logbook

Batch: 31743
Date: 05-03-2018
Method: 8260
Comments:

Analyst: Cesar Lira
Reviewer:
Laboratory: Houston

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
1	BFB	TUNE	05-03-2018 02:44 pm	1.00	50 mL	50 mL	D050301.D	Liquid	Y	NA
2	*Auto find/purged* VSTD00.5	ICAL1	05-03-2018 03:09 pm	1.00	50 mL	50 mL	D050302.D	Liquid	Y	NA
3	*0.5 uL cal std/250 ml DI* VSTD001	ICAL2	05-03-2018 03:33 pm	1.00	50 mL	50 mL	D050303.D	Liquid	Y	NA
4	*1 uL cal std/250 ml DI* VSTD002	ICAL3	05-03-2018 03:57 pm	1.00	50 mL	50 mL	D050304.D	Liquid	Y	NA
5	*2 uL cal std/250 ml DI* VSTD005	ICAL4	05-03-2018 04:22 pm	1.00	50 mL	50 mL	D050305.D	Liquid	Y	NA
6	*5 uL cal std/250 ml DI* VSTD020	ICAL5	05-03-2018 05:11 pm	1.00	50 mL	50 mL	D050307.D	Liquid	Y	NA
7	*4 uL cal std/50 ml DI* VSTD050	ICAL6	05-03-2018 05:35 pm	1.00	50 mL	50 mL	D050308.D	Liquid	Y	NA
8	*10 uL cal std/50 ml DI* VSTD100	ICAL7	05-03-2018 05:59 pm	1.00	50 mL	50 mL	D050309.D	Liquid	Y	NA
9	*20 uL cal std/50 ml DI* VSTD200	ICAL8	05-03-2018 06:24 pm	1.00	50 mL	50 mL	D050310.D	Liquid	Y	NA
10	*40 uL cal std/50 ml DI* BLK	SAMP	05-03-2018 06:48 pm	1.00	50 mL	50 mL	D050311.D	Liquid	Y	NA
11	*Cleanup blk* VSTD-ICV	ICV	05-03-2018 07:13 pm	1.00	50 mL	50 mL	D050312.D	Liquid	Y	NA
12	*10 uL ICV std/50 ml DI* VLCSW-180426	LCS	05-03-2018 07:37 pm	1.00	50 mL	50 mL	D050313.D	Liquid	Y	NA
13	*10 uL cal std/50 ml DI* VLCSW-180503	LCS	05-03-2018 08:01 pm	1.00	50 mL	50 mL	D050314.D	Liquid	Y	NA
14	*10 uL cal std/50 ml DI* VBLKM-180426	SAMP	05-03-2018 08:26 pm	50.00	1 mL	50 mL	D050315.D	Liquid	Y	NA
15	*Medium level BLK* VBLKW-180503	MBLK	05-03-2018 08:50 pm	1.00	50 mL	50 mL	D050316.D	Liquid	Y	NA
16	HS18050072-01	SAMP	05-03-2018 09:15 pm	1.00	50 mL	50 mL	D050317.D	Liquid	Y	<2
17	HS18050072-01	SAMP	05-03-2018 09:42 pm	10.00	5 mL	50 mL	D050318.D	Liquid	Y	<2
18	HS18050072-02	SAMP	05-03-2018 10:07 pm	1.00	50 mL	50 mL	D050319.D	Liquid	Y	<2
19	HS18050072-02	SAMP	05-03-2018 10:34 pm	10.00	5 mL	50 mL	D050320.D	Liquid	Y	<2
20	HS18050072-03	SAMP	05-03-2018 10:58 pm	1.00	50 mL	50 mL	D050321.D	Liquid	Y	<2
21	HS18050072-03	SAMP	05-03-2018 11:25 pm	10.00	5 mL	50 mL	D050322.D	Liquid	Y	<2
22	HS18050072-03MS	MS	05-03-2018 11:50 pm	1.00	50 mL	50 mL	D050323.D	Liquid	Y	<2
23	*8 uL cal std/40 ml sample* HS18050072-03MSD	MSD	05-04-2018 12:14 am	1.00	50 mL	50 mL	D050324.D	Liquid	Y	<2
24	*8 uL cal std/40 ml sample* HS18050042-04	SAMP	05-04-2018 12:41 am	50.00	1 mL	50 mL	D050325.D	Liquid	Y	<2
25	BLK	SAMP	05-04-2018 01:06 am	1.00	50 mL	50 mL	D050326.D	Liquid	Y	NA
26	*Cleanup blk* HS18050160-01	SAMP	05-04-2018 01:30 am	1.00	50 mL	50 mL	D050327.D	Liquid	Y	<2
27	HS18050160-02	SAMP	05-04-2018 01:55 am	1.00	50 mL	50 mL	D050328.D	Liquid	Y	<2
28	CCV_END	CCV_END	05-04-2018 02:19 am	1.00	50 mL	50 mL	D050329.D	Liquid	Y	<2
	10 uL cal std/50 ml DI									

MSVOA02 -Logbook

Chemical	Value
SURR ID	30603-16-03
IS ID	30603-16-04
ICV STD ID	30603-16-02
LCS/MS ID	30603-16-01
CAL STD ID	30603-16-1
BFB ID	30603-16-03

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050301.D

Date : 03-MAY-2018 14:44

Client ID: BFB

Instrument: VOA2.i

Sample Info: BFB;BFB;3;;BFB

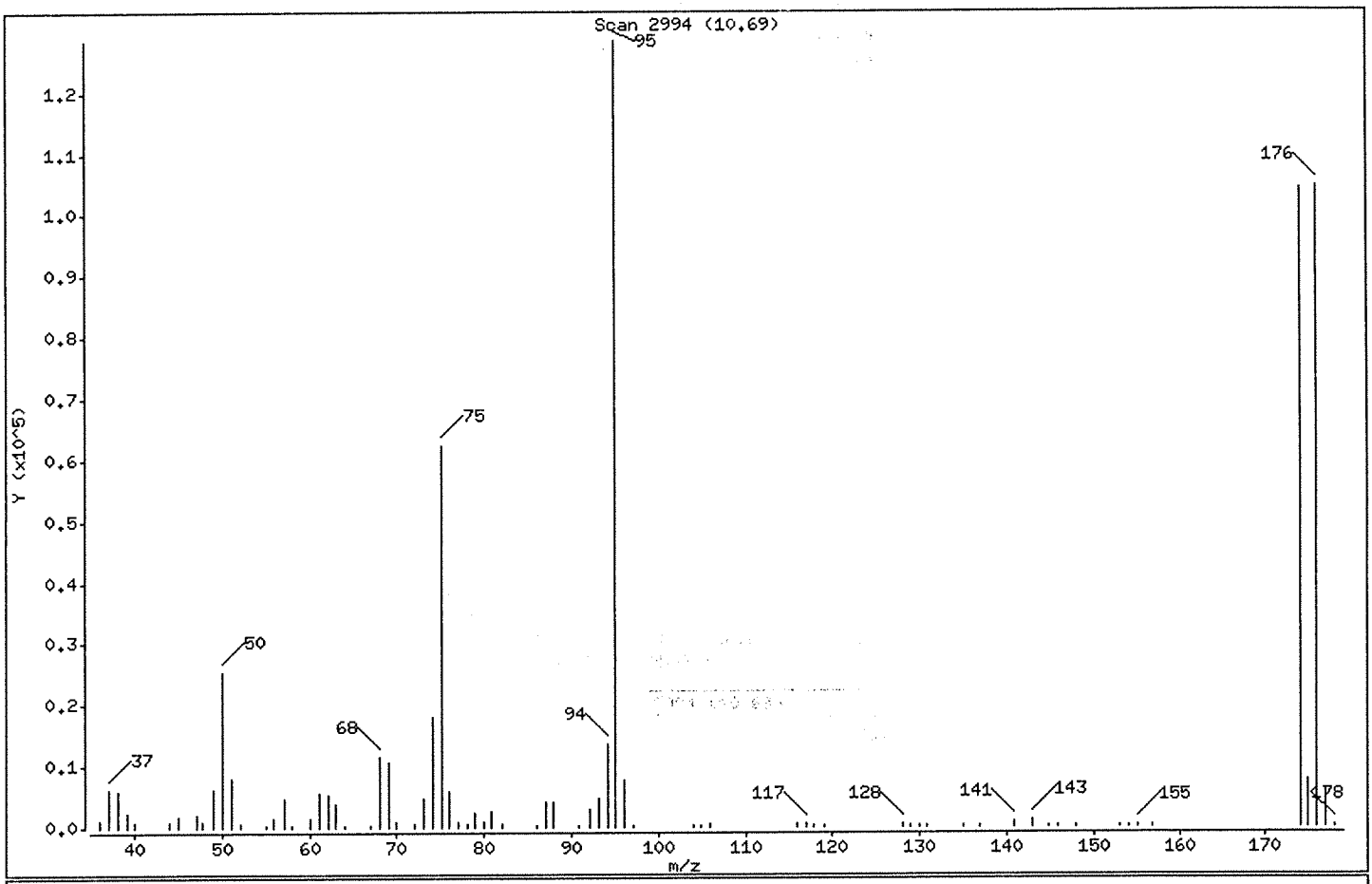
Volume Injected (uL): 2.0

Operator: AP

Column phase: DB624

Column diameter: 0.18

1 bfb



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	19.88
75	30.00 - 60.00% of mass 95	48.46
96	5.00 - 9.00% of mass 95	5.93
173	Less than 2.00% of mass 174	0.00 (0.00)
174	Greater than 50.00% of mass 95	81.09
175	5.00 - 9.00% of mass 174	5.90 (7.28)
176	95.00 - 101.00% of mass 174	81.48 (100.48)
177	5.00 - 9.00% of mass 176	4.72 (5.79)

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050301.D

Date : 03-MAY-2018 14:44

Client ID: BFB

Instrument: VOA2.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: AP

Column phase: DB624

Column diameter: 0.18

Data File: D050301.D
Spectrum: Scan 2994 (10.69)
Location of Maximum: 95.10
Number of points: 74

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	1181	62.10	5283	87.00	4215	130.80	279
37.10	6315	63.10	3798	88.00	4209	134.90	409
38.10	5931	64.00	407	90.90	331	136.90	154
39.10	2461	67.00	315	92.10	2908	140.90	1006
40.00	850	68.10	11428	93.10	4796	142.90	1068
44.00	798	69.10	10528	94.10	13450	144.80	157
45.10	1633	70.00	970	95.10	128488	145.80	384
47.10	2119	72.00	532	96.00	7620	148.00	354
47.80	740	73.10	4768	97.10	169	152.90	168
49.10	6062	74.10	17992	104.00	380	154.00	278
50.10	25544	75.10	62264	104.80	196	155.10	362
51.10	7860	76.00	5798	105.90	642	156.80	206
52.10	465	77.00	836	115.90	508	174.00	104192
55.00	284	78.00	708	117.00	683	175.00	7585
56.00	1438	79.00	2383	117.90	364	176.00	104688
57.10	4709	80.00	747	119.00	411	177.00	6063
58.10	253	80.90	2726	128.00	498	178.10	156
60.10	1433	82.10	456	129.00	315		
61.10	5566	86.00	153	130.00	358		

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050301.D

Date : 03-MAY-2018 14:44

Client ID: BFB

Instrument: VOA2.i

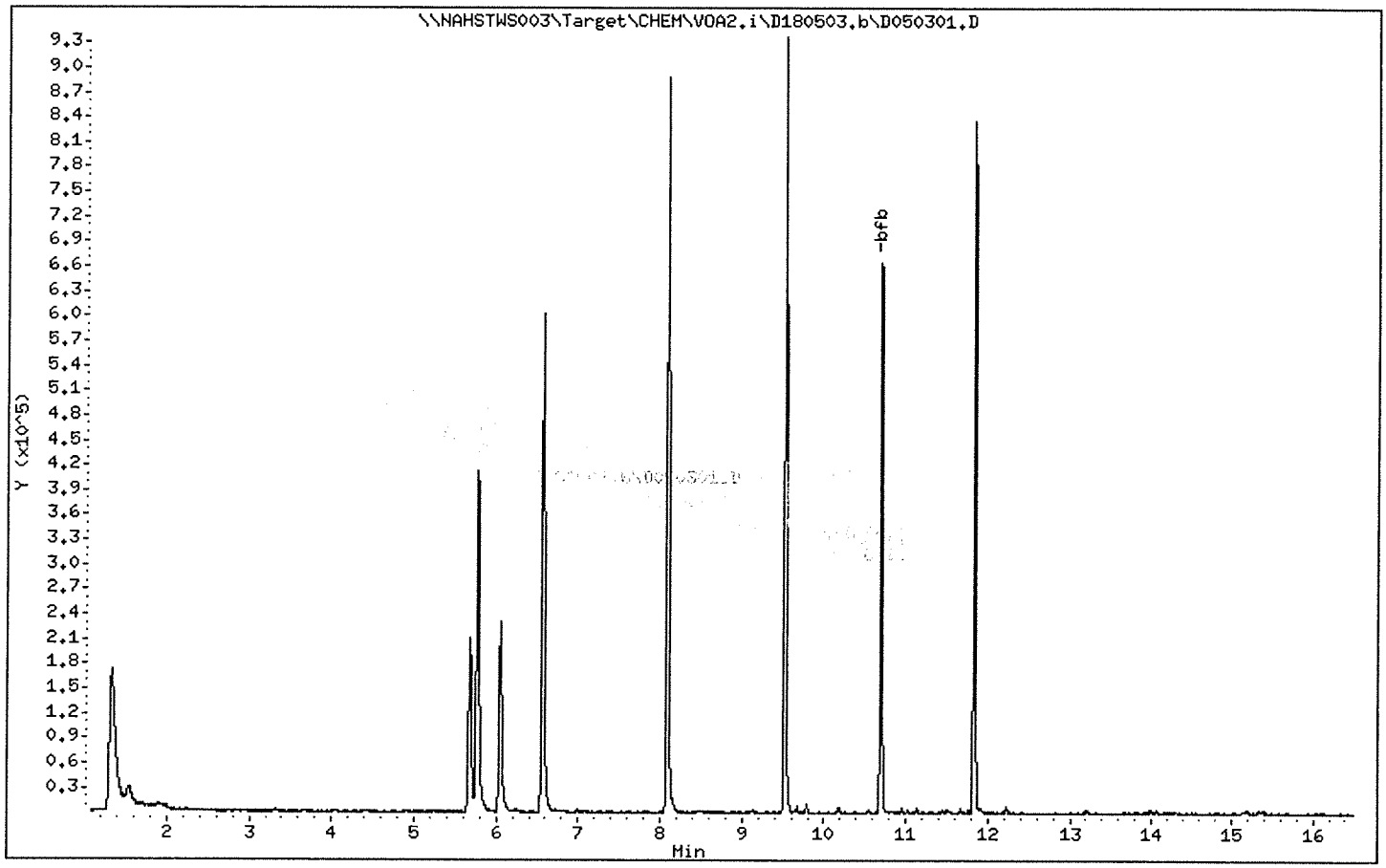
Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: AP

Column phase: DB624

Column diameter: 0.18



ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050314.D
Lab Smp Id: VLCSW-180503 Client Smp ID: VLCSW-180503
Inj Date : 03-MAY-2018 20:01
Operator : AP Inst ID: VOA2.i
Smp Info : VLCSW-180503;VLCSW-180503;3;;LCS
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\8260LL.m
Meth Date : 15-May-2018 13:16 Cesar.Lira Quant Type: ISTD
Cal Date : 03-MAY-2018 18:24 Cal File: D050310.D
Als bottle: 14 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1	Pentafluorobenzene	168	5.773	5.776	(1.000)	341349	50.0000	
2	Dichlorodifluoromethane	85	1.441	1.441	(0.250)	158212	50.2729	50.27
186	Isobutylene	56	1.643	1.646	(0.285)	173845	48.4373	48.43(AM)
3	Chloromethane	50	1.588	1.592	(0.275)	295330	54.6108	54.61
4	Propionitrile	54	5.231	5.234	(0.906)	654748	469.757	469.75
5	Vinyl Chloride	62	1.675	1.678	(0.290)	218747	47.9909	47.99
6	Bromomethane	94	1.935	1.932	(0.335)	108713	58.2943	58.29
7	Chloroethane	64	2.028	2.034	(0.351)	125966	46.3905	46.39
159	Dichlorofluoromethane	67	2.221	2.217	(0.385)	320363	47.8934	47.89
8	Trichlorofluoromethane	101	2.246	2.246	(0.389)	219756	49.6612	49.66
9	Acrolein	56	2.676	2.679	(0.464)	93496	108.717	108.71
10	Acetone	43	2.840	2.846	(0.492)	128012	101.294	101.29
11	1,1-Dichloroethene	96	2.744	2.740	(0.475)	141194	50.2571	50.25
12	Isobutyl Alcohol	74	6.155	6.155	(1.066)	15901	873.974	873.97(A)
13	Acetonitrile	39	3.161	3.161	(0.548)	226051	471.550	471.55
14	Allyl Chloride	41	3.164	3.167	(0.548)	609608	48.7485	48.74
15	Iodomethane	142	2.898	2.904	(0.502)	227660	92.7804	92.78
16	Acrylonitrile	53	3.681	3.684	(0.638)	176488	105.335	105.33
17	Methylene Chloride	84	3.324	3.324	(0.576)	176337	52.4029	52.40
18	Methyl tert-butyl ether	73	3.674	3.677	(0.636)	511735	46.7417	46.74
19	Carbon Disulfide	76	2.943	2.943	(0.510)	612241	94.8908	94.89

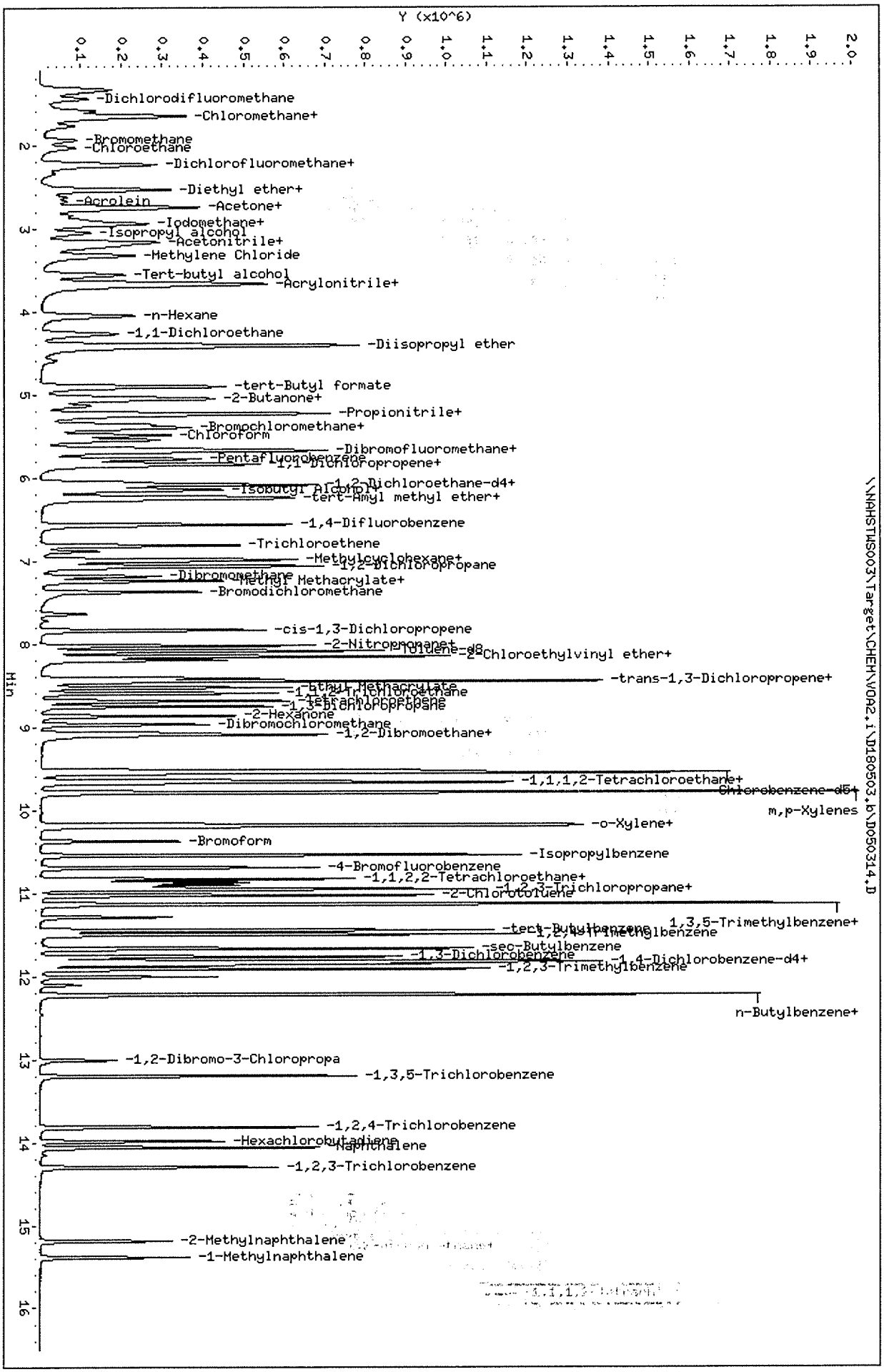
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050314.D Page 2
Report Date: 15-May-2018 13:21

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.649	3.658	(0.632)	154755	49.2153	49.21
	21 Vinyl Acetate	43	5.234	5.237	(0.907)	447515	90.7171	90.71
	22 1,1-Dichloroethane	63	4.261	4.271	(0.738)	347640	47.1258	47.12
	24 2-Butanone	43	5.134	5.131	(0.889)	199432	92.8514	92.85
	25 Methacrylonitrile	41	5.035	5.035	(0.872)	151351	44.0087	44.00(M)
	26 2,2-Dichloropropane	77	5.035	5.035	(0.872)	239833	46.2580	46.25
	27 cis-1,2-Dichloroethene	96	5.060	5.064	(0.877)	183926	46.7522	46.75
	28 Chloroform	83	5.487	5.490	(0.951)	300282	46.2682	46.26
	29 Bromochloromethane	128	5.356	5.356	(0.928)	94237	50.9422	50.94
$	30 Dibromofluoromethane	113	5.677	5.683	(0.983)	143980	47.4378	47.43
	31 1,1,1-Trichloroethane	97	5.648	5.648	(0.978)	265873	49.1579	49.15
	32 1,1-Dichloropropene	75	5.850	5.850	(0.891)	209738	52.9811	52.98
	33 1,2-Dichloroethane	62	6.139	6.139	(0.935)	262909	47.2052	47.20
	34 Carbon Tetrachloride	117	5.831	5.827	(0.888)	224948	52.1797	52.17
$	35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	188351	48.8131	48.81
*	36 1,4-Difluorobenzene	114	6.565	6.569	(1.000)	542593	50.0000	
	37 Benzene	78	6.090	6.087	(0.928)	660427	49.2609	49.26
	38 Trichloroethene	130	6.816	6.816	(1.038)	183437	46.7115	46.71
	39 Bromodichloromethane	83	7.374	7.374	(1.123)	249734	53.5868	53.58
	40 Methyl Methacrylate	41	7.242	7.243	(1.255)	218357	47.5217	47.52
	41 2-Chloroethylvinyl ether	63	8.154	8.157	(1.242)	59390	104.033	104.03(A)
	42 1,2-Dichloropropane	63	7.066	7.066	(1.076)	198609	53.4830	53.48
	43 2-Nitropropane	43	8.025	8.025	(1.390)	451305	46.8855	46.88
	44 Dibromomethane	93	7.188	7.188	(1.095)	107920	48.3728	48.37
	45 4-Methyl-2-Pentanone	43	8.025	8.025	(0.843)	451305	89.2164	89.21
	46 cis-1,3-Dichloropropene	75	7.839	7.836	(1.194)	293928	47.5312	47.53
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	498855	50.0000	
$	48 Toluene-d8	98	8.090	8.090	(0.849)	553589	41.2984	41.29(R)
	49 Ethyl Methacrylate	69	8.529	8.526	(1.299)	255675	53.0093	53.00
	50 Toluene	91	8.154	8.157	(0.856)	689928	49.6059	49.60
	51 trans-1,3-Dichloropropene	75	8.414	8.417	(1.282)	260078	51.7086	51.70
	52 2-Hexanone	43	8.863	8.866	(0.931)	296030	91.9892	91.98
	53 1,1,2-Trichloroethane	83	8.593	8.593	(0.902)	139433	44.9756	44.97
	54 1,3-Dichloropropane	76	8.751	8.751	(0.919)	279714	45.4039	45.40
	55 Dibromochloromethane	129	8.969	8.969	(0.942)	209947	46.3628	46.36
	56 Tetrachloroethene	164	8.687	8.687	(0.912)	142744	45.0709	45.07
	57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	182784	47.8484	47.84
	58 1-Chlorohexane	55	9.550	9.550	(1.455)	180613	52.3897	52.38
	59 Chlorobenzene	112	9.550	9.553	(1.003)	440850	49.4611	49.46
	60 1,1,1,2-Tetrachloroethane	131	9.646	9.646	(1.013)	186067	45.0644	45.06
	61 Ethylbenzene	106	9.668	9.668	(1.015)	236827	53.2248	53.22
	62 m,p-Xylenes	106	9.787	9.790	(1.028)	575858	99.4819	99.48
	63 o-Xylene	106	10.175	10.175	(1.068)	308163	54.6032	54.60
	64 Styrene	104	10.198	10.198	(1.071)	501878	49.3026	49.30
	66 Bromoform	173	10.374	10.374	(1.089)	155832	50.3379	50.33
	67 Isopropylbenzene	105	10.544	10.548	(1.107)	743064	49.7013	49.70
	68 1,1,2,2-Tetrachloroethane	83	10.869	10.869	(0.918)	231700	53.3237	53.32
$	69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	212252	48.8149	48.81
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	223099	50.0000	
	71 1,2,3-Trichloropropane	75	10.901	10.904	(0.921)	244723	45.3345	45.33
	72 trans-1,4-Dichloro-2-butene	53	10.930	10.930	(1.148)	63479	48.6824	48.68
	73 n-Propylbenzene	91	10.955	10.955	(0.926)	801321	49.6412	49.64
	74 Bromobenzene	156	10.833	10.830	(0.915)	207587	53.0057	53.00
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	602600	50.0997	50.09

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
76	2-Chlorotoluene	91	11.029	11.029	(0.932)	523603	54.2158	54.21
77	4-Chlorotoluene	91	11.138	11.141	(0.941)	578176	55.1470	55.14
78	tert-Butylbenzene	119	11.449	11.449	(0.967)	507887	49.9450	49.94
79	1,2,4-Trimethylbenzene	105	11.498	11.501	(0.972)	611934	49.8025	49.80
81	sec-Butylbenzene	105	11.664	11.668	(0.986)	702264	48.1637	48.16
82	p-Isopropyltoluene	119	11.818	11.815	(0.999)	583727	46.9741	46.97
83	1,3-Dichlorobenzene	146	11.764	11.764	(0.994)	357350	54.1524	54.15
84	1,4-Dichlorobenzene	146	11.857	11.860	(1.002)	341258	53.1545	53.15
87	n-Butylbenzene	91	12.223	12.220	(1.033)	465606	49.3798	49.37
88	1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	336029	49.0316	49.03
89	1,2-Dibromo-3-Chloropropane	75	13.006	13.009	(1.099)	42967	48.2557	48.25
90	1,2,4-Trichlorobenzene	180	13.814	13.818	(1.167)	209740	50.7836	50.78
91	Hexachlorobutadiene	225	13.988	13.988	(1.182)	90863	52.0384	52.03
92	Naphthalene	128	14.061	14.061	(1.188)	532137	51.9917	51.99
93	1,2,3-Trichlorobenzene	182	14.302	14.299	(1.209)	181221	50.4353	50.43
146	Methyl acetate	43	3.212	3.219	(0.556)	210619	45.1054	45.10
138	Freon TF	101	2.760	2.760	(0.478)	135725	48.1866	48.18
139	Diethyl ether	59	2.535	2.532	(0.439)	322982	47.6785	47.67
147	Methylcyclohexane	83	6.986	6.989	(1.064)	234779	52.8805	52.88
135	1,4-Dioxane	88	7.236	7.236	(1.253)	34831	941.255	941.25
132	n-Butanol	56	6.992	6.989	(1.211)	124716	1048.79	1048.78
131	Methyl Acrylate	55	5.253	5.256	(0.910)	328621	51.0290	51.02
133	Ethyl Acrylate	55	7.005	7.005	(1.213)	550329	46.8793	46.87
136	n-Hexane	57	4.050	4.046	(0.702)	213748	47.7030	47.70
141	Cyclohexane	56	5.680	5.680	(0.984)	302758	46.7235	46.72
142	Tetrahydrofuran	42	5.410	5.407	(0.937)	150626	90.5687	90.56
148	Tert-butyl alcohol	59	3.552	3.552	(0.615)	458313	882.694	882.69
149	Isopropyl alcohol	45	3.052	3.048	(0.529)	268669	821.186	821.18
151	4-Methyl-2-pentanol	45	8.452	8.452	(0.887)	1044828	933.312	933.31
166	1,2,3-Trimethylbenzene	105	11.915	11.915	(1.007)	572245	49.5416	49.54
167	Ethanol	45	2.529	2.529	(0.438)	314380	1062.14	1062.14
170	1,3,5-Trichlorobenzene	180	13.201	13.201	(1.116)	240177	51.9047	51.90
172	tert-Butyl formate	59	4.900	4.906	(0.849)	630467	56.6294	56.62
173	3,3-Dimethyl-1-butanol	57	9.094	9.094	(0.955)	380713	897.790	897.79
174	tert-Amyl methyl ether	73	6.254	6.257	(1.083)	605311	45.8566	45.85
175	tert-Butyl ethyl ether	59	6.228	6.228	(1.079)	327912	46.7590	46.75
176	tert-Amyl alcohol	59	6.228	6.228	(1.079)	327912	928.537	928.53
157	2-Methylnaphthalene	142	15.188	15.191	(1.283)	160324	43.1748	43.17
156	Diisopropyl ether	45	4.412	4.415	(0.764)	740745	46.1554	46.15
171	1-Methylnaphthalene	142	15.387	15.387	(1.300)	174961	44.6674	44.66
130	Ethyl Acetate	43	5.234	5.237	(0.907)	447515	47.0914	47.09
M 94	1,2-Dichloroethylene (total)	96				338681	95.9676	95.96
M 95	Xylenes (total)	106				884021	154.085	154.08

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
R - Spike/Surrogate failed recovery limits.
M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050314.D
Date : 03-MAY-2018 20:01
Client ID: VLCSW-180503
Sample Info: VLCSW-180503*VLCSW-180503*3*LCS
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050316.D
Lab Smp Id: VBLKW-180503 Client Smp ID: VBLKW-180503
Inj Date : 03-MAY-2018 20:50
Operator : AP Inst ID: VOA2.i
Smp Info : VBLKW-180503;VBLKW-180503;3;;BLANK
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\8260LL.m
Meth Date : 15-May-2018 13:16 Cesar.Lira Quant Type: ISTD
Cal Date : 03-MAY-2018 18:24 Cal File: D050310.D
Als bottle: 16 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	5.773	5.776	(1.000)	333645	50.0000	
$ 30 Dibromofluoromethane	113	5.680	5.683	(0.984)	147837	49.8333	49.83
$ 35 1,2-Dichloroethane-d4	65	6.055	6.052	(1.049)	179020	47.4661	47.46
* 36 1,4-Difluorobenzene	114	6.565	6.569	(1.000)	482537	50.0000	
* 47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	431532	50.0000	
$ 48 Toluene-d8	98	8.086	8.090	(0.849)	554888	47.8533	47.85
$ 69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	200097	53.2304	53.23
* 70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	185344	50.0000	

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050316.D

Date : 03-MAY-2018 20:50

Client ID: VBLKW-180503

Instrument: VOA2.i

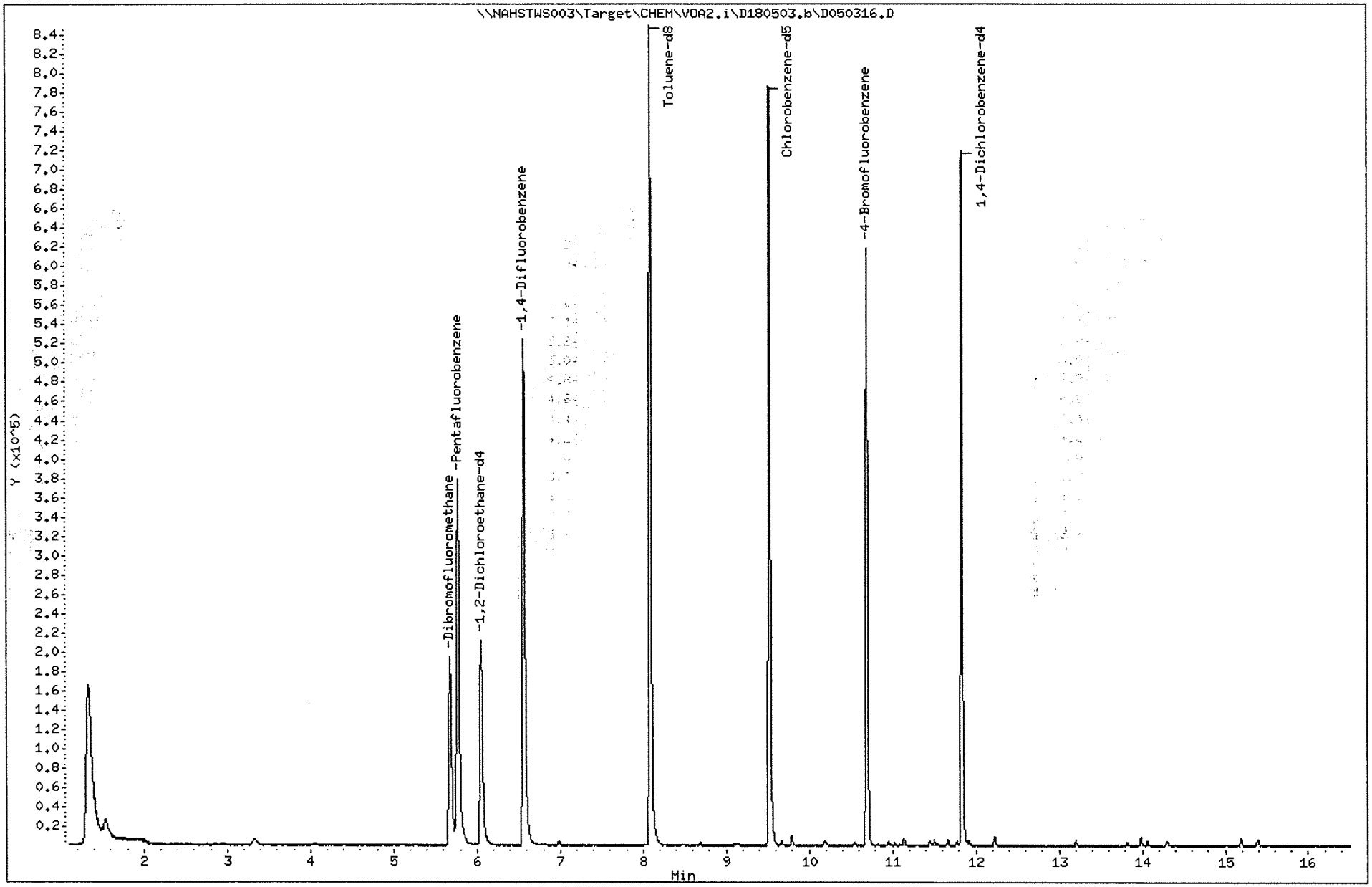
Sample Info: VBLKW-180503;VBLKW-180503;3;;BLANK

Purge Volume: 5.0

Operator: AP

Column phase: DB624

Column diameter: 0.18



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050317.D Page 1
Report Date: 15-May-2018 13:21

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050317.D
Lab Smp Id: HS18050072-01 Client Smp ID: HS18050072-01
Inj Date : 03-MAY-2018 21:15
Operator : AP Inst ID: VOA2.i
Smp Info : HS18050072-01;HS18050072-01;;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\8260LL.m
Meth Date : 15-May-2018 13:16 Cesar.Lira Quant Type: ISTD
Cal Date : 03-MAY-2018 18:24 Cal File: D050310.D
Als bottle: 17
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

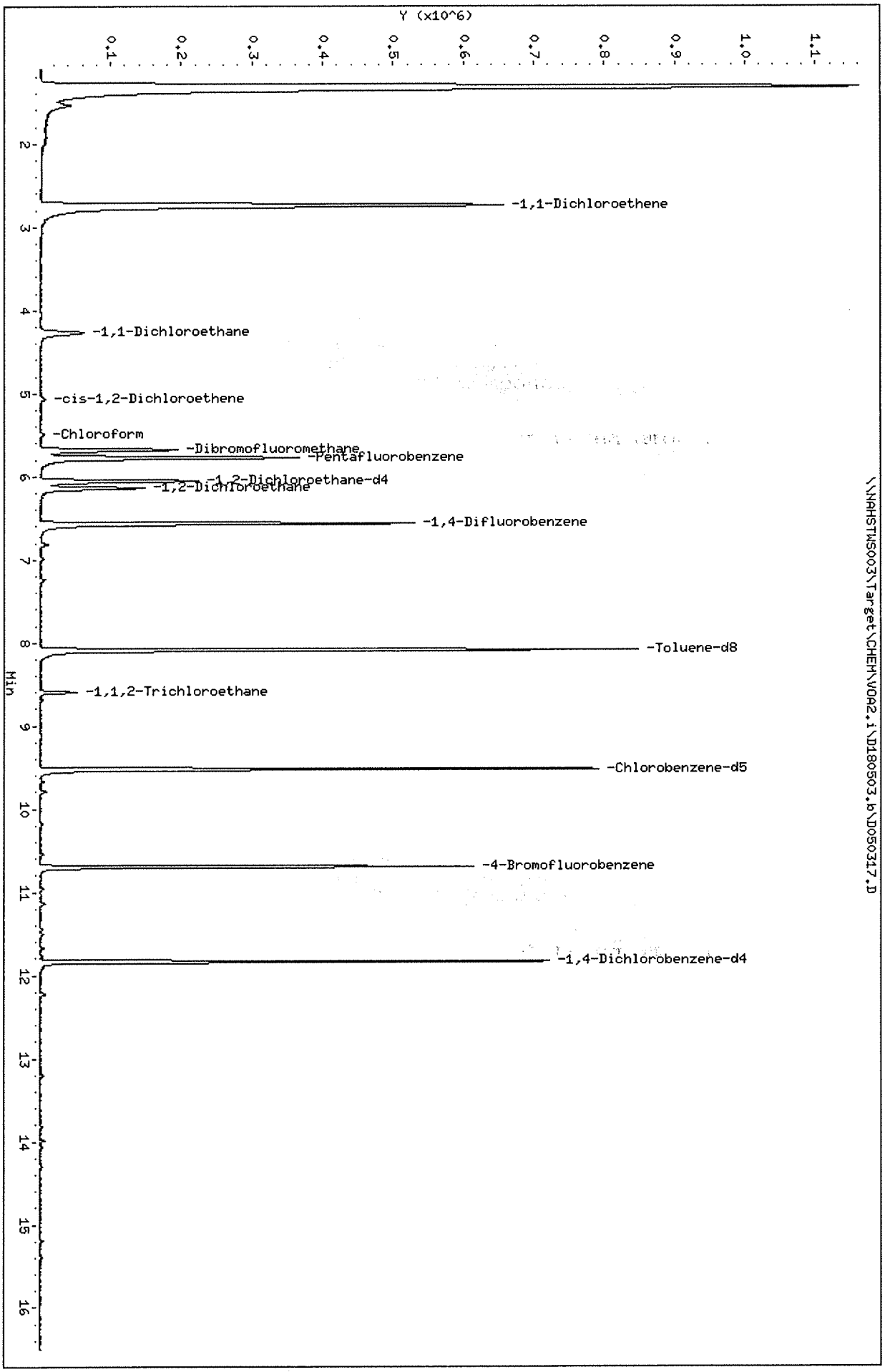
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
*	1 Pentafluorobenzene	168	5.776	5.776	(1.000)	331186	50.0000	
	11 1,1-Dichloroethene	96	2.737	2.740	(0.474)	445307	163.368	163.36
	22 1,1-Dichloroethane	63	4.268	4.271	(0.739)	106282	14.8496	14.84
	27 cis-1,2-Dichloroethene	96	5.070	5.064	(0.878)	3771	0.98797	0.98(a)
	28 Chloroform	83	5.481	5.490	(0.949)	4774	0.75816	0.75(a)
$	30 Dibromofluoromethane	113	5.673	5.683	(0.982)	152589	51.8170	51.81
	33 1,2-Dichloroethane	62	6.139	6.139	(0.935)	135271	27.3243	27.32
$	35 1,2-Dichloroethane-d4	65	6.049	6.052	(1.047)	179480	47.9414	47.94
*	36 1,4-Difluorobenzene	114	6.565	6.569	(1.000)	482297	50.0000	
*	47 Chlorobenzene-d5	117	9.521	9.524	(1.000)	434943	50.0000	
$	48 Toluene-d8	98	8.086	8.090	(0.849)	552318	47.2582	47.25
	53 1,1,2-Trichloroethane	83	8.593	8.593	(0.903)	12951	4.79133	4.79
$	69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	199874	52.7510	52.75
*	70 1,4-Dichlorobenzene-d4	152	11.831	11.834	(1.000)	188869	50.0000	
M	94 1,2-Dichloroethylene (total)	96				3771	0.98797	0.98(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050317.D
Date : 03-MAY-2018 21:15
Client ID: HS18050072-01
Sample Info: HS18050072-01;HS18050072-01;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18



ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050318.D
Lab Smp Id: HS18050072-01 Client Smp ID: HS18050072-01
Inj Date : 03-MAY-2018 21:42
Operator : AP Inst ID: VOA2.i
Smp Info : HS18050072-01;HS18050072-01;;;
Misc Info : HS15080001;WATER;0;10;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\8260LL.m
Meth Date : 15-May-2018 13:16 Cesar.Lira Quant Type: ISTD
Cal Date : 03-MAY-2018 18:24 Cal File: D050310.D
Als bottle: 17
Dil Factor: 10.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

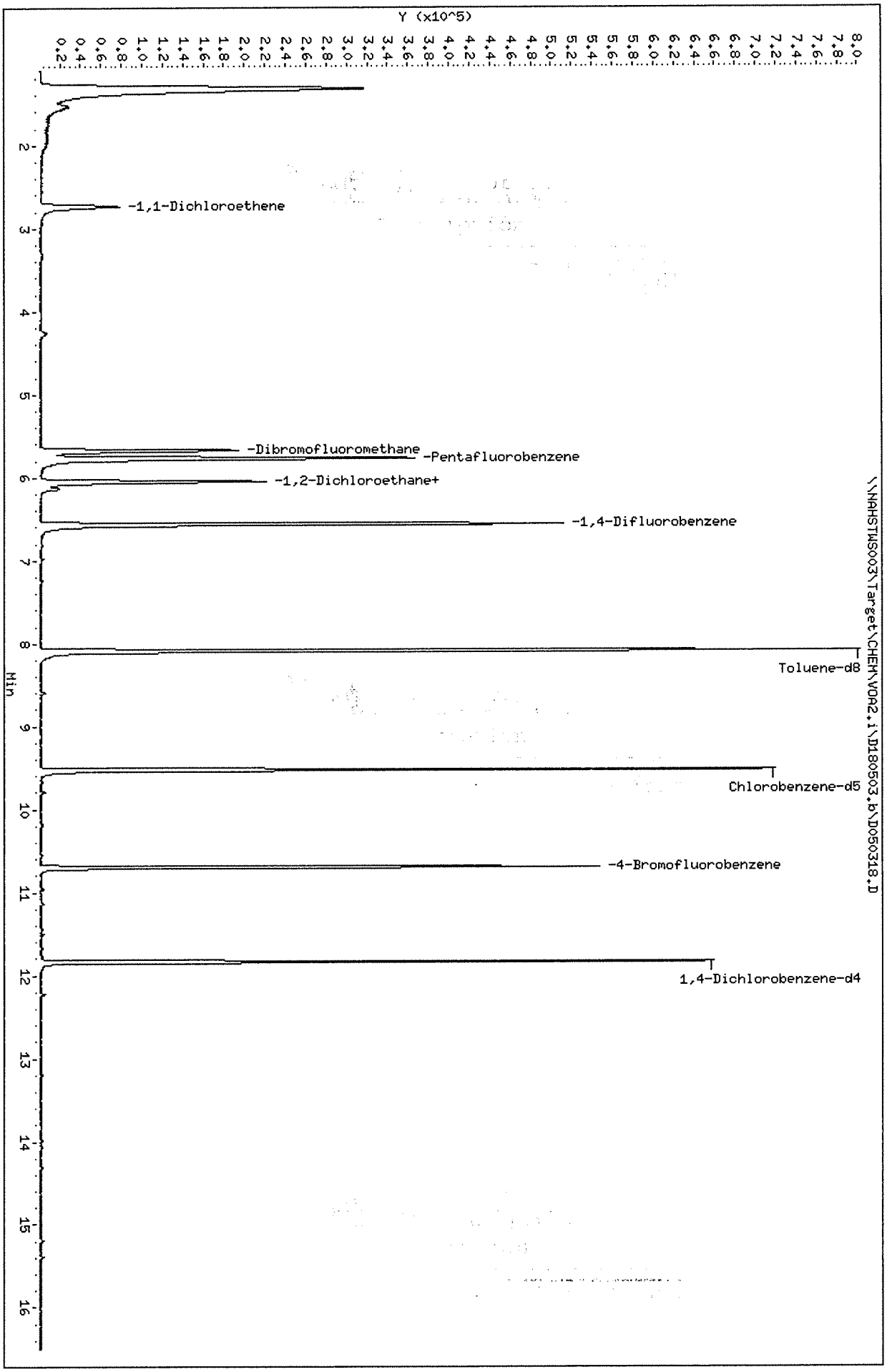
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	10.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
*	1 Pentafluorobenzene	168	5.770	5.776	(1.000)	331769	50.0000	
	11 1,1-Dichloroethene	96	2.734	2.740	(0.474)	48657	17.8193	178.19
$	30 Dibromofluoromethane	113	5.673	5.683	(0.983)	151260	51.2754	51.27
	33 1,2-Dichloroethane	62	6.142	6.139	(0.936)	15011	3.14471	31.44(M)
$	35 1,2-Dichloroethane-d4	65	6.049	6.052	(1.048)	181206	48.3174	48.31
*	36 1,4-Difluorobenzene	114	6.562	6.569	(1.000)	465037	50.0000	
*	47 Chlorobenzene-d5	117	9.521	9.524	(1.000)	390278	50.0000	
$	48 Toluene-d8	98	8.087	8.090	(0.849)	512638	48.8829	48.88
$	69 4-Bromofluorobenzene	95	10.692	10.695	(1.123)	177751	52.2779	52.27
*	70 1,4-Dichlorobenzene-d4	152	11.831	11.834	(1.000)	169704	50.0000	

QC Flag Legend

M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2,i\D180503,b\D050318.D
Date : 03-MAY-2018 21:42
Client ID: HS18050072-01
Sample Info: HS18050072-01;HS18050072-01;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2,i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050319.D Page 1
Report Date: 15-May-2018 13:21

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050319.D
Lab Smp Id: HS18050072-02 Client Smp ID: HS18050072-02
Inj Date : 03-MAY-2018 22:07
Operator : AP Inst ID: VOA2.i
Smp Info : HS18050072-02;HS18050072-02;;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\8260LL.m
Meth Date : 15-May-2018 13:16 Cesar.Lira Quant Type: ISTD
Cal Date : 03-MAY-2018 18:24 Cal File: D050310.D
Als bottle: 18
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

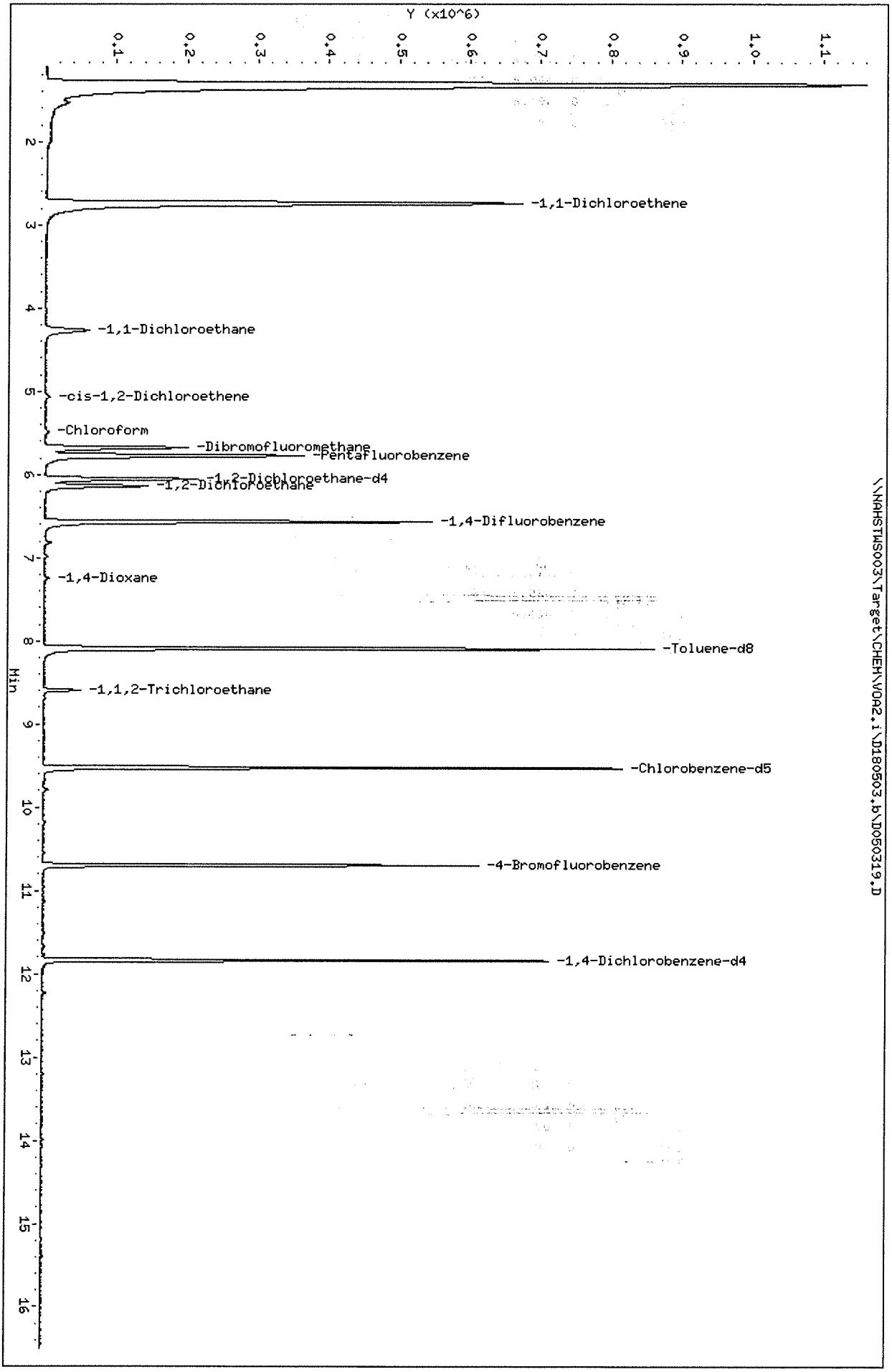
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1	Pentafluorobenzene	168	5.773	5.776	(1.000)	331557	50.0000	
11	1,1-Dichloroethene	96	2.740	2.740	(0.475)	451222	165.353	165.35
22	1,1-Dichloroethane	63	4.261	4.271	(0.738)	107926	15.0624	15.06
27	cis-1,2-Dichloroethene	96	5.067	5.064	(0.878)	3943	1.03187	1.03
28	Chloroform	83	5.487	5.490	(0.951)	4902	0.77762	0.77(a)
$ 30	Dibromofluoromethane	113	5.677	5.683	(0.983)	149200	50.6094	50.60
33	1,2-Dichloroethane	62	6.139	6.139	(0.935)	135066	27.6350	27.63
$ 35	1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	185967	49.6186	49.61
* 36	1,4-Difluorobenzene	114	6.565	6.569	(1.000)	476152	50.0000	
* 47	Chlorobenzene-d5	117	9.524	9.524	(1.000)	437878	50.0000	
$ 48	Toluene-d8	98	8.086	8.090	(0.849)	558489	47.4659	47.46
53	1,1,2-Trichloroethane	83	8.590	8.593	(0.902)	12740	4.68168	4.68
$ 69	4-Bromofluorobenzene	95	10.692	10.695	(1.123)	201668	52.8685	52.86
* 70	1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	187836	50.0000	
135	1,4-Dioxane	88	7.246	7.236	(1.255)	4260	76.1480	76.14
M 94	1,2-Dichloroethylene (total)	96				3943	1.03187	1.03(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).



Data File: \\NAHSTWS003\Target\CHEM\VOA2,i\D180503,b\D050319,D
Date : 03-MAY-2018 22:07
Client ID: HS18050072-02
Sample Info: HS18050072-02;HS18050072-02;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2,i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050320.D Page 1
Report Date: 15-May-2018 13:21

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050320.D
Lab Smp Id: HS18050072-02 Client Smp ID: HS18050072-02
Inj Date : 03-MAY-2018 22:34
Operator : AP Inst ID: VOA2.i
Smp Info : HS18050072-02;HS18050072-02;;;
Misc Info : HS15080001;WATER;0;10;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\8260LL.m
Meth Date : 15-May-2018 13:16 Cesar.Lira Quant Type: ISTD
Cal Date : 03-MAY-2018 18:24 Cal File: D050310.D
Als bottle: 18
Dil Factor: 10.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

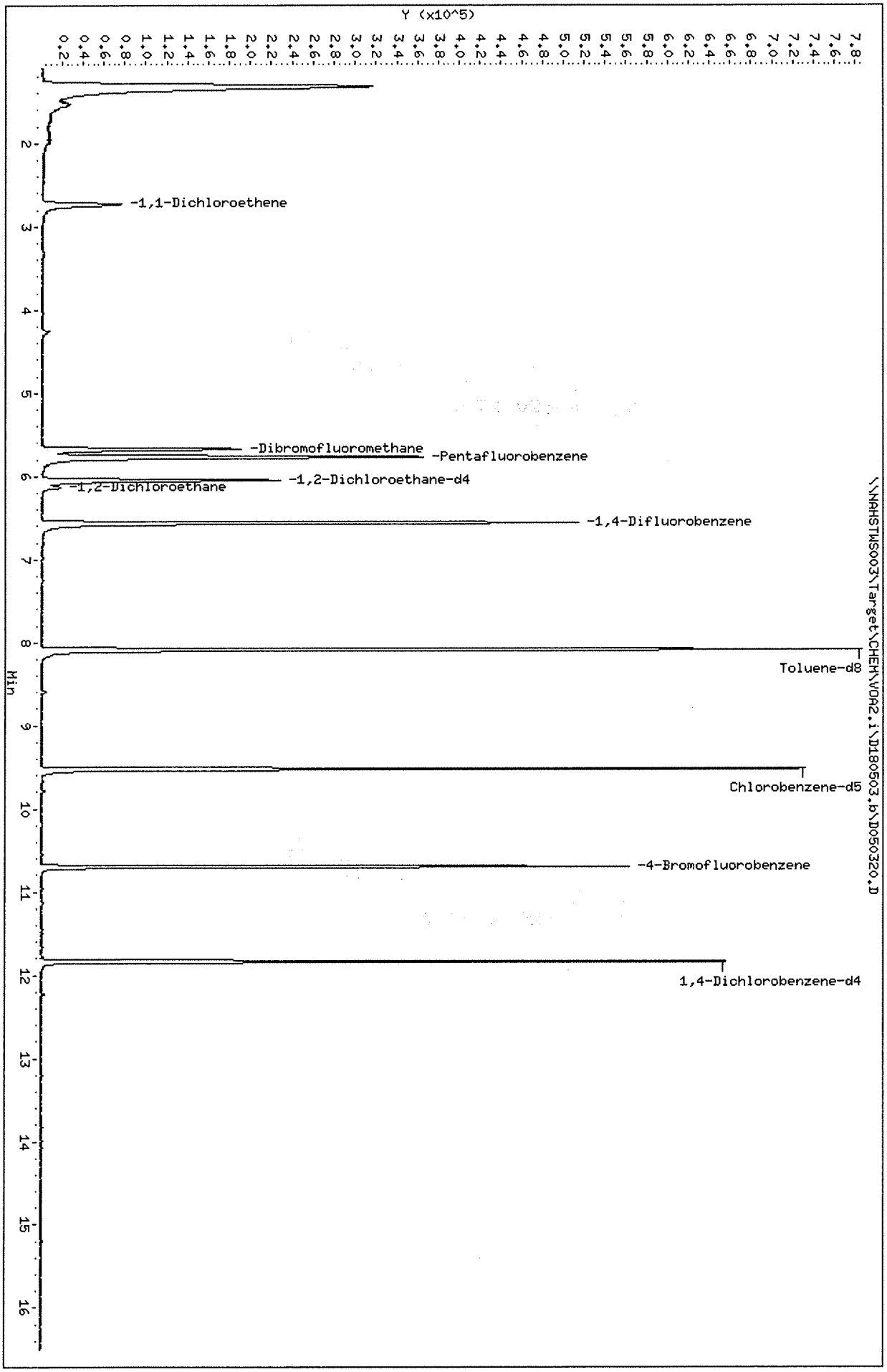
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	10.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
*	1 Pentafluorobenzene	168	5.770	5.776	(1.000)	334088	50.0000	
	11 1,1-Dichloroethene	96	2.737	2.740	(0.474)	49322	17.9374	179.37
$	30 Dibromofluoromethane	113	5.677	5.683	(0.984)	148032	49.8328	49.83
	33 1,2-Dichloroethane	62	6.135	6.139	(0.935)	14308	2.99899	29.98(M)
$	35 1,2-Dichloroethane-d4	65	6.049	6.052	(1.048)	182593	48.3493	48.34
*	36 1,4-Difluorobenzene	114	6.565	6.569	(1.000)	464797	50.0000	
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	395248	50.0000	
$	48 Toluene-d8	98	8.083	8.090	(0.849)	512673	48.2715	48.27
$	69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	182993	53.1487	53.14
*	70 1,4-Dichlorobenzene-d4	152	11.831	11.834	(1.000)	173211	50.0000	

QC Flag Legend

M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050320.D
Date : 03-MAY-2018 22:34
Client ID: HS18050072-02
Sample Info: HS18050072-02;HS18050072-02;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050321.D Page 1
Report Date: 15-May-2018 13:21

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050321.D
Lab Smp Id: HS18050072-03 Client Smp ID: HS18050072-03
Inj Date : 03-MAY-2018 22:58
Operator : AP Inst ID: VOA2.i
Smp Info : HS18050072-03;HS18050072-03;;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\8260LL.m
Meth Date : 15-May-2018 13:16 Cesar.Lira Quant Type: ISTD
Cal Date : 03-MAY-2018 18:24 Cal File: D050310.D
Als bottle: 19
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

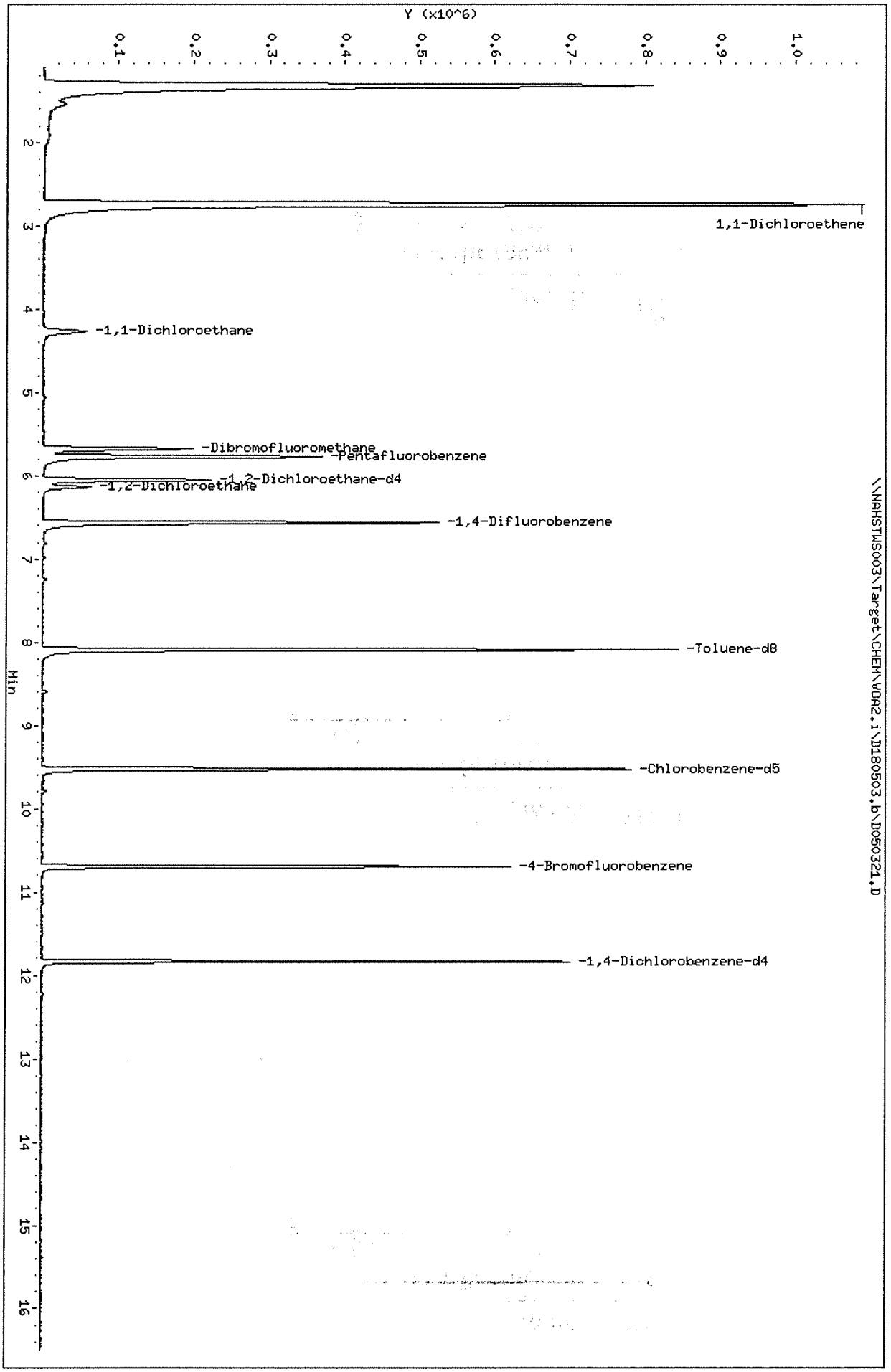
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	5.773	5.776	(1.000)	335326	50.0000	
11 1,1-Dichloroethene	96	2.740	2.740	(0.475)	730363	264.638	264.63(A)
22 1,1-Dichloroethane	63	4.268	4.271	(0.739)	102555	14.1520	14.15(M)
$ 30 Dibromofluoromethane	113	5.680	5.683	(0.984)	150112	50.3465	50.34
33 1,2-Dichloroethane	62	6.139	6.139	(0.935)	55821	11.3063	11.30
$ 35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	183521	48.4156	48.41
* 36 1,4-Difluorobenzene	114	6.569	6.569	(1.000)	480992	50.0000	
* 47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	431215	50.0000	
$ 48 Toluene-d8	98	8.090	8.090	(0.849)	556347	48.0144	48.01
$ 69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	201260	53.5815	53.58
* 70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	183837	50.0000	

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050321.D
Date : 03-MAY-2018 22:58
Client ID: HS18050072-03
Sample Info: HS18050072-03;HS18050072-03;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050322.D
Lab Smp Id: HS18050072-03 Client Smp ID: HS18050072-03
Inj Date : 03-MAY-2018 23:25
Operator : AP Inst ID: VOA2.i
Smp Info : HS18050072-03;HS18050072-03;;;
Misc Info : HS15080001;WATER;0;10;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\8260LL.m
Meth Date : 15-May-2018 13:16 Cesar.Lira Quant Type: ISTD
Cal Date : 03-MAY-2018 18:24 Cal File: D050310.D
Als bottle: 19
Dil Factor: 10.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

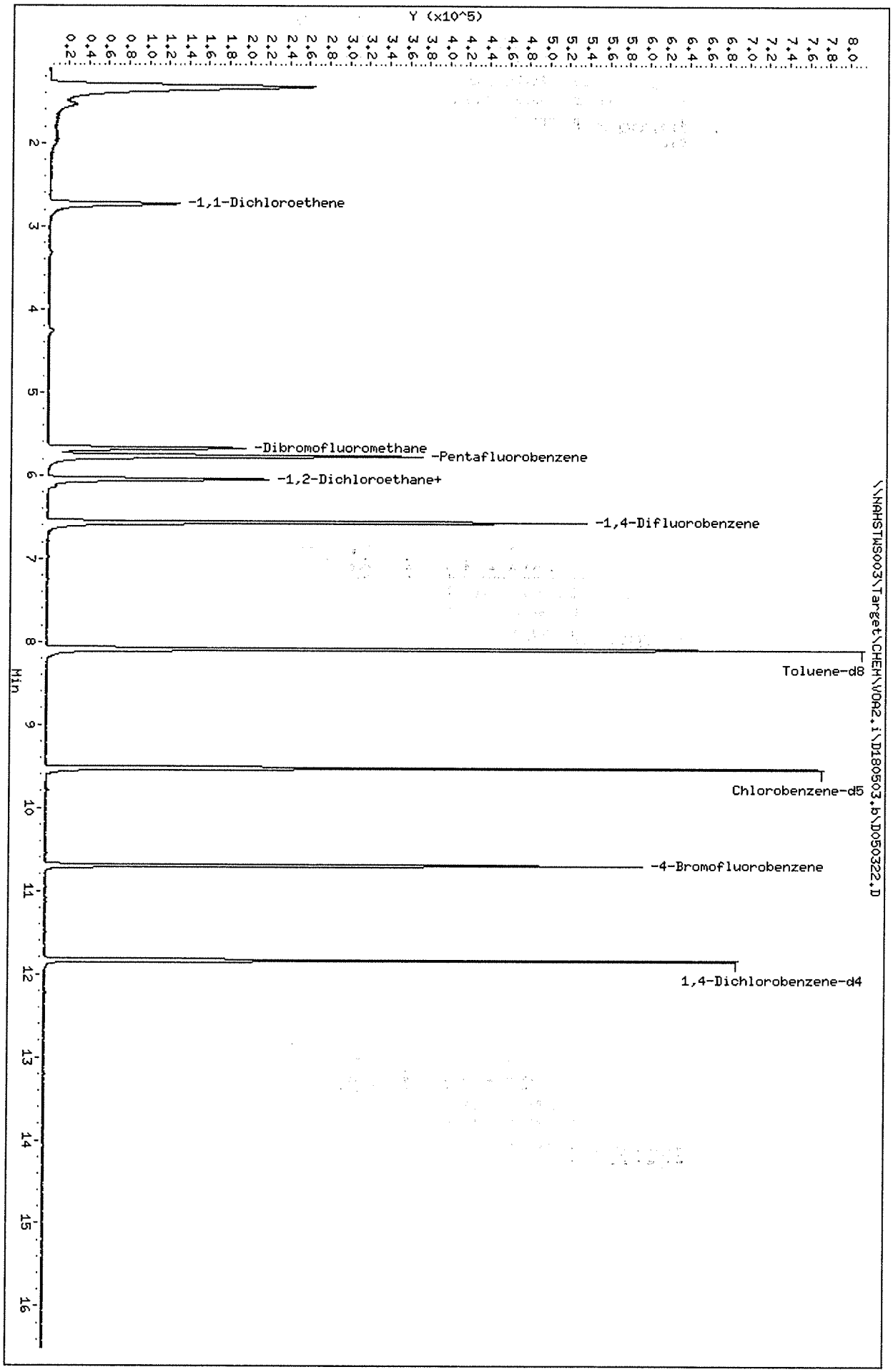
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	10.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
*	1 Pentafluorobenzene	168	5.770	5.776	(1.000)	333677	50.0000	
	11 1,1-Dichloroethene	96	2.731	2.740	(0.473)	82483	30.0343	300.34
$	30 Dibromofluoromethane	113	5.677	5.683	(0.984)	152160	51.2855	51.28
	33 1,2-Dichloroethane	62	6.139	6.139	(0.935)	6443	1.32175	13.21(M)
$	35 1,2-Dichloroethane-d4	65	6.046	6.052	(1.048)	182025	48.2583	48.25
*	36 1,4-Difluorobenzene	114	6.562	6.569	(1.000)	474895	50.0000	
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	417195	50.0000	
$	48 Toluene-d8	98	8.086	8.090	(0.849)	528240	47.1207	47.12
$	69 4-Bromofluorobenzene	95	10.692	10.695	(1.123)	189559	52.1529	52.15
*	70 1,4-Dichlorobenzene-d4	152	11.831	11.834	(1.000)	179033	50.0000	

QC Flag Legend

M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050322.D
Date : 03-MAY-2018 23:25
Client ID: HS18050072-03
Sample Info: HS18050072-03;HS18050072-03;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050323.D Page 1
Report Date: 15-May-2018 13:21

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050323.D
Lab Smp Id: HS18050072-03MS Client Smp ID: HS18050072-03MS
Inj Date : 03-MAY-2018 23:50
Operator : AP Inst ID: VOA2.i
Smp Info : HS18050072-03MS;HS18050072-03MS;3;;MS
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\8260LL.m
Meth Date : 15-May-2018 13:16 Cesar.Lira Quant Type: ISTD
Cal Date : 03-MAY-2018 18:24 Cal File: D050310.D
Als bottle: 20 QC Sample: MS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

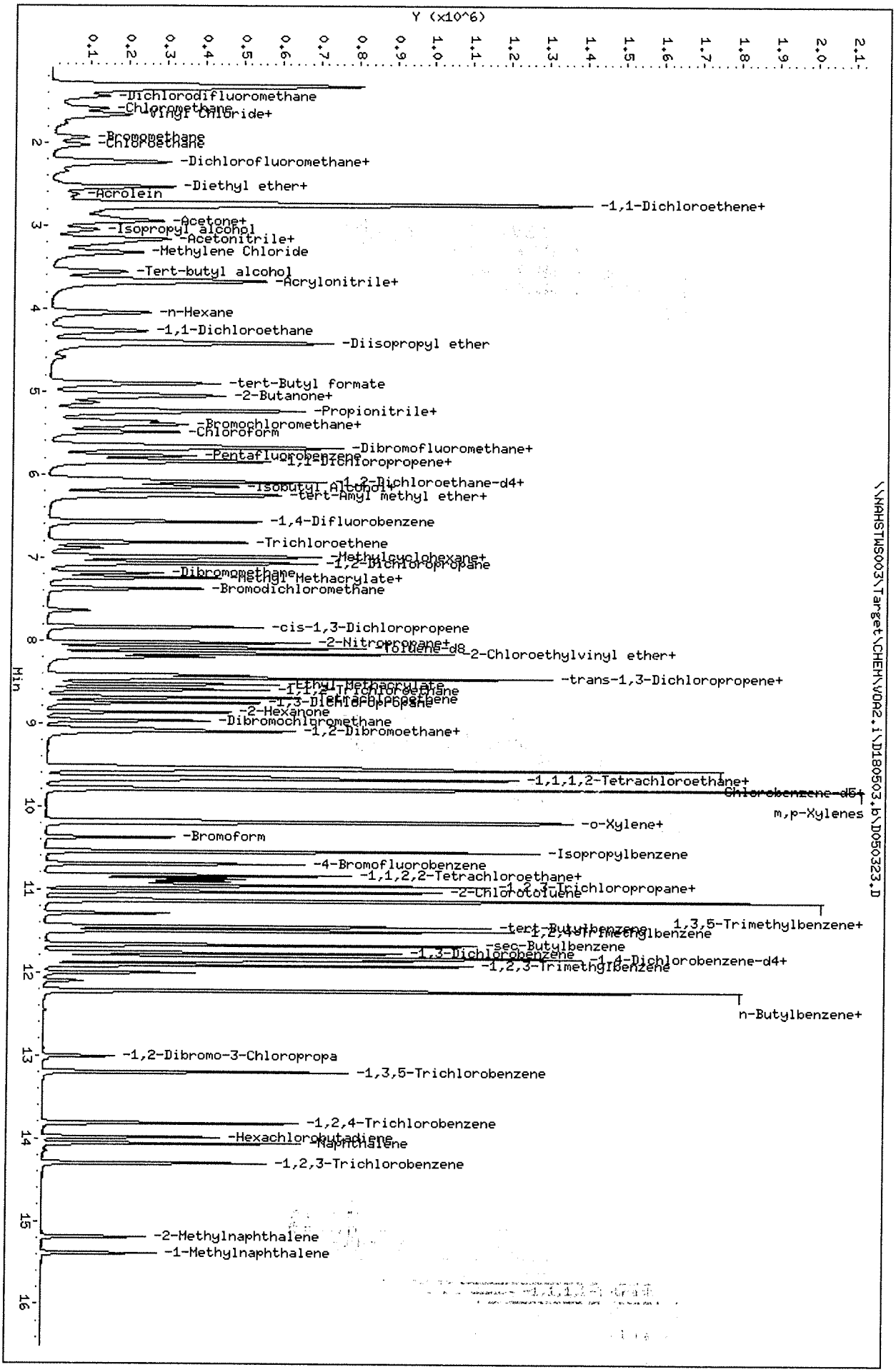
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	5.776	5.776	(1.000)	315378	50.0000	
2 Dichlorodifluoromethane	85	1.441	1.441	(0.249)	180318	62.0156	62.01
186 Isobutylene	56	1.649	1.646	(0.286)	63135	16.4834	16.48(AM)
3 Chloromethane	50	1.585	1.592	(0.274)	290810	58.3709	58.37
4 Propionitrile	54	5.233	5.234	(0.906)	646177	501.785	501.78
5 Vinyl Chloride	62	1.668	1.678	(0.289)	249113	59.1535	59.15
6 Bromomethane	94	1.928	1.932	(0.334)	114050	66.6231	66.62
7 Chloroethane	64	2.028	2.034	(0.351)	142585	56.8351	56.83
159 Dichlorofluoromethane	67	2.220	2.217	(0.384)	335171	54.2334	54.23
8 Trichlorofluoromethane	101	2.243	2.246	(0.388)	249860	61.1140	61.11
9 Acrolein	56	2.679	2.679	(0.464)	75934	95.5672	95.56
10 Acetone	43	2.849	2.846	(0.493)	121653	104.369	104.36
11 1,1-Dichloroethene	96	2.743	2.740	(0.475)	850782	327.768	327.76(A)
12 Isobutyl Alcohol	74	6.151	6.155	(1.065)	15590	928.568	928.56(A)
13 Acetonitrile	39	3.157	3.161	(0.547)	235748	532.276	532.27
14 Allyl Chloride	41	3.164	3.167	(0.548)	600529	51.9770	51.97
15 Iodomethane	142	2.897	2.904	(0.502)	257593	113.120	113.12
16 Acrylonitrile	53	3.684	3.684	(0.638)	176469	113.997	113.99
17 Methylene Chloride	84	3.324	3.324	(0.576)	181215	58.7046	58.70
18 Methyl tert-butyl ether	73	3.677	3.677	(0.637)	496493	49.0840	49.08
19 Carbon Disulfide	76	2.946	2.943	(0.510)	666842	111.864	111.86

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.658	3.658	(0.633)	168453	57.9831	57.98
	21 Vinyl Acetate	43	5.237	5.237	(0.907)	387201	84.9543	84.95
	22 1,1-Dichloroethane	63	4.264	4.271	(0.738)	460286	67.5342	67.53
	24 2-Butanone	43	5.131	5.131	(0.888)	193714	97.6162	97.61
	25 Methacrylonitrile	41	5.035	5.035	(0.872)	149812	47.1484	47.14
	26 2,2-Dichloropropane	77	5.035	5.035	(0.872)	244608	51.0641	51.06
	27 cis-1,2-Dichloroethene	96	5.060	5.064	(0.876)	191769	52.7600	52.76
	28 Chloroform	83	5.484	5.490	(0.949)	312810	52.1676	52.16
	29 Bromochloromethane	128	5.359	5.356	(0.928)	94597	55.3479	55.34
$	30 Dibromofluoromethane	113	5.679	5.683	(0.983)	135607	48.3583	48.35
	31 1,1,1-Trichloroethane	97	5.644	5.648	(0.977)	286549	57.3437	57.34
	32 1,1-Dichloropropene	75	5.850	5.850	(0.891)	226374	64.6257	64.62
	33 1,2-Dichloroethane	62	6.138	6.139	(0.935)	311787	62.6560	62.65
	34 Carbon Tetrachloride	117	5.827	5.827	(0.887)	240946	63.0937	63.09
$	35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	175138	49.1265	49.12
*	36 1,4-Difluorobenzene	114	6.568	6.569	(1.000)	484791	50.0000	
	37 Benzene	78	6.090	6.087	(0.927)	689479	58.4498	58.44
	38 Trichloroethene	130	6.815	6.816	(1.038)	194974	55.5691	55.56
	39 Bromodichloromethane	83	7.374	7.374	(1.123)	256397	62.0263	62.02
	40 Methyl Methacrylate	41	7.245	7.243	(1.254)	216343	50.9607	50.96
	41 2-Chloroethylvinyl ether	63	8.157	8.157	(1.242)	63850	126.386	126.38(A)
	42 1,2-Dichloropropane	63	7.063	7.066	(1.075)	205299	62.3797	62.37
	43 2-Nitropropane	43	8.025	8.025	(1.389)	445007	50.0383	50.03
	44 Dibromomethane	93	7.188	7.188	(1.094)	110051	55.2094	55.20
	45 4-Methyl-2-Pentanone	43	8.025	8.025	(0.843)	445007	100.507	100.50
	46 cis-1,3-Dichloropropene	75	7.839	7.836	(1.193)	296873	53.7314	53.73
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	436634	50.0000	
$	48 Toluene-d8	98	8.089	8.090	(0.849)	535030	45.6016	45.60
	49 Ethyl Methacrylate	69	8.529	8.526	(1.298)	252966	59.0413	59.04
	50 Toluene	91	8.157	8.157	(0.856)	725940	60.7720	60.77
	51 trans-1,3-Dichloropropene	75	8.413	8.417	(1.281)	255474	56.8494	56.84
	52 2-Hexanone	43	8.863	8.866	(0.931)	290814	103.246	103.24
	53 1,1,2-Trichloroethane	83	8.593	8.593	(0.902)	140735	51.8645	51.86
	54 1,3-Dichloropropane	76	8.754	8.751	(0.919)	274189	50.8494	50.84
	55 Dibromochloromethane	129	8.969	8.969	(0.942)	209298	52.8058	52.80
	56 Tetrachloroethene	164	8.686	8.687	(0.912)	154082	55.5837	55.58
	57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	177914	53.2104	53.21
	58 1-Chlorohexane	55	9.549	9.550	(1.454)	194434	63.9201	63.92
	59 Chlorobenzene	112	9.553	9.553	(1.003)	451061	58.7002	58.70
	60 1,1,1,2-Tetrachloroethane	131	9.643	9.646	(1.012)	187449	51.8685	51.86
	61 Ethylbenzene	106	9.668	9.668	(1.015)	249066	64.5943	64.59
	62 m,p-Xylenes	106	9.790	9.790	(1.028)	603856	121.482	121.48
	63 o-Xylene	106	10.175	10.175	(1.068)	317758	64.9624	64.96
	64 Styrene	104	10.198	10.198	(1.071)	495698	56.3062	56.30
	66 Bromoform	173	10.374	10.374	(1.089)	151152	55.7839	55.78
	67 Isopropylbenzene	105	10.544	10.548	(1.107)	783078	61.1546	61.15
	68 1,1,2,2-Tetrachloroethane	83	10.872	10.869	(0.919)	225270	58.1817	58.18
$	69 4-Bromofluorobenzene	95	10.692	10.695	(1.123)	205739	54.0975	54.09
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	199731	50.0000	
	71 1,2,3-Trichloropropane	75	10.900	10.904	(0.921)	234274	48.4763	48.47
	72 trans-1,4-Dichloro-2-butene	53	10.926	10.930	(1.147)	58654	51.3869	51.38
	73 n-Propylbenzene	91	10.952	10.955	(0.925)	844093	59.3633	59.36
	74 Bromobenzene	156	10.830	10.830	(0.915)	210415	60.3780	60.37
	75 1,3,5-Trimethylbenzene	105	11.131	11.132	(0.941)	621948	58.6976	58.69

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
76	2-Chlorotoluene	91	11.029	11.029	(0.932)	534286	62.2684	62.26
77	4-Chlorotoluene	91	11.138	11.141	(0.941)	588854	63.2289	63.22
78	tert-Butylbenzene	119	11.449	11.449	(0.967)	532831	59.3435	59.34
79	1,2,4-Trimethylbenzene	105	11.500	11.501	(0.972)	630919	58.1407	58.14
81	sec-Butylbenzene	105	11.667	11.668	(0.986)	733803	56.2149	56.21
82	p-Isopropyltoluene	119	11.818	11.815	(0.999)	612792	55.0826	55.08
83	1,3-Dichlorobenzene	146	11.767	11.764	(0.994)	358705	61.0673	61.06
84	1,4-Dichlorobenzene	146	11.857	11.860	(1.002)	343559	60.0690	60.06
87	n-Butylbenzene	91	12.222	12.220	(1.033)	485870	57.5577	57.55
88	1,2-Dichlorobenzene	146	12.222	12.223	(1.033)	340977	56.2434	56.24
89	1,2-Dibromo-3-Chloropropane	75	13.012	13.009	(1.100)	40626	50.9647	50.96
90	1,2,4-Trichlorobenzene	180	13.817	13.818	(1.168)	205837	55.7282	55.72
91	Hexachlorobutadiene	225	13.987	13.988	(1.182)	90881	58.2151	58.21
92	Naphthalene	128	14.061	14.061	(1.188)	500665	54.6750	54.67
93	1,2,3-Trichlorobenzene	182	14.302	14.299	(1.209)	169241	52.6248	52.62
146	Methyl acetate	43	3.218	3.219	(0.557)	179660	41.6438	41.64
138	Freon TF	101	2.759	2.760	(0.478)	149942	57.6178	57.61
139	Diethyl ether	59	2.532	2.532	(0.438)	321051	51.2963	51.29
147	Methylcyclohexane	83	6.989	6.989	(1.064)	264705	67.3523	67.35
135	1,4-Dioxane	88	7.233	7.236	(1.252)	36577	1076.46	1076.45
132	n-Butanol	56	6.989	6.989	(1.210)	127430	1161.96	1161.95
131	Methyl Acrylate	55	5.256	5.256	(0.910)	324082	54.4683	54.46
133	Ethyl Acrylate	55	7.005	7.005	(1.213)	568236	52.3908	52.39
136	n-Hexane	57	4.056	4.046	(0.702)	243291	58.7674	58.76
141	Cyclohexane	56	5.679	5.680	(0.983)	350851	58.6043	58.60
142	Tetrahydrofuran	42	5.407	5.407	(0.936)	144529	94.0591	94.05
148	Tert-butyl alcohol	59	3.552	3.552	(0.615)	445789	929.276	929.27
149	Isopropyl alcohol	45	3.051	3.048	(0.528)	259947	859.955	859.95
151	4-Methyl-2-pentanol	45	8.452	8.452	(0.887)	987884	1019.36	1019.36
166	1,2,3-Trimethylbenzene	105	11.914	11.915	(1.007)	580324	56.7676	56.76
167	Ethanol	45	2.528	2.529	(0.438)	318596	1171.76	1171.75
170	1,3,5-Trichlorobenzene	180	13.201	13.201	(1.116)	243332	58.9958	58.99
172	tert-Butyl formate	59	4.906	4.906	(0.849)	597134	58.0637	58.06
173	3,3-Dimethyl-1-butanol	57	9.094	9.094	(0.955)	346893	934.608	934.60
174	tert-Amyl methyl ether	73	6.257	6.257	(1.083)	576680	47.2852	47.28
175	tert-Butyl ethyl ether	59	6.228	6.228	(1.078)	311315	48.0479	48.04
176	tert-Amyl alcohol	59	6.228	6.228	(1.078)	311315	954.134	954.13
157	2-Methylnaphthalene	142	15.191	15.191	(1.284)	127697	38.9732	38.97
156	Diisopropyl ether	45	4.415	4.415	(0.764)	746760	50.3619	50.36
171	1-Methylnaphthalene	142	15.386	15.387	(1.300)	146022	41.8873	41.88
130	Ethyl Acetate	43	5.237	5.237	(0.907)	387201	44.0999	44.09
M 94	1,2-Dichloroethylene (total)	96				360222	110.743	110.74
M 95	Xylenes (total)	106				921614	186.444	186.44

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050323.D
Date : 03-MAY-2018 23:50
Client ID: HS18050072-03HS
Sample Info: HS18050072-03MS;HS18050072-03MS;3;;MS
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050324.D Page 1
Report Date: 15-May-2018 13:21

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050324.D
Lab Smp Id: HS18050072-03MSD Client Smp ID: HS18050072-03MSD
Inj Date : 04-MAY-2018 00:14
Operator : AP Inst ID: VOA2.i
Smp Info : HS18050072-03MSD;HS18050072-03MSD;3;;MSD
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\8260LL.m
Meth Date : 15-May-2018 13:16 Cesar.Lira Quant Type: ISTD
Cal Date : 03-MAY-2018 18:24 Cal File: D050310.D
Als bottle: 20 QC Sample: MSD
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	5.776	5.776	(1.000)	315674	50.0000	
2 Dichlorodifluoromethane	85	1.441	1.441	(0.249)	170568	58.6074	58.60
186 Isobutylene	56	1.643	1.646	(0.284)	60364	15.6669	15.66(AM)
3 Chloromethane	50	1.588	1.592	(0.275)	289438	58.0266	58.02
4 Propionitrile	54	5.227	5.234	(0.905)	626327	485.914	485.91
5 Vinyl Chloride	62	1.672	1.678	(0.289)	239469	56.8101	56.81
6 Bromomethane	94	1.935	1.932	(0.335)	106694	62.0597	62.05
7 Chloroethane	64	2.028	2.034	(0.351)	132856	52.9074	52.90
159 Dichlorofluoromethane	67	2.220	2.217	(0.384)	328015	53.0257	53.02
8 Trichlorofluoromethane	101	2.243	2.246	(0.388)	239267	58.4681	58.46
9 Acrolein	56	2.673	2.679	(0.463)	66745	83.9236	83.92
10 Acetone	43	2.846	2.846	(0.493)	119663	102.457	102.45
11 1,1-Dichloroethene	96	2.744	2.740	(0.475)	816102	314.113	314.11(A)
12 Isobutyl Alcohol	74	6.151	6.155	(1.065)	13003	770.691	770.69(A)
13 Acetonitrile	39	3.164	3.161	(0.548)	230950	520.954	520.95
14 Allyl Chloride	41	3.170	3.167	(0.549)	588965	50.9284	50.92
15 Iodomethane	142	2.904	2.904	(0.503)	263975	115.761	115.76
16 Acrylonitrile	53	3.681	3.684	(0.637)	161554	104.264	104.26
17 Methylene Chloride	84	3.328	3.324	(0.576)	174475	56.3265	56.32
18 Methyl tert-butyl ether	73	3.674	3.677	(0.636)	492348	48.6285	48.62
19 Carbon Disulfide	76	2.946	2.943	(0.510)	646281	108.314	108.31

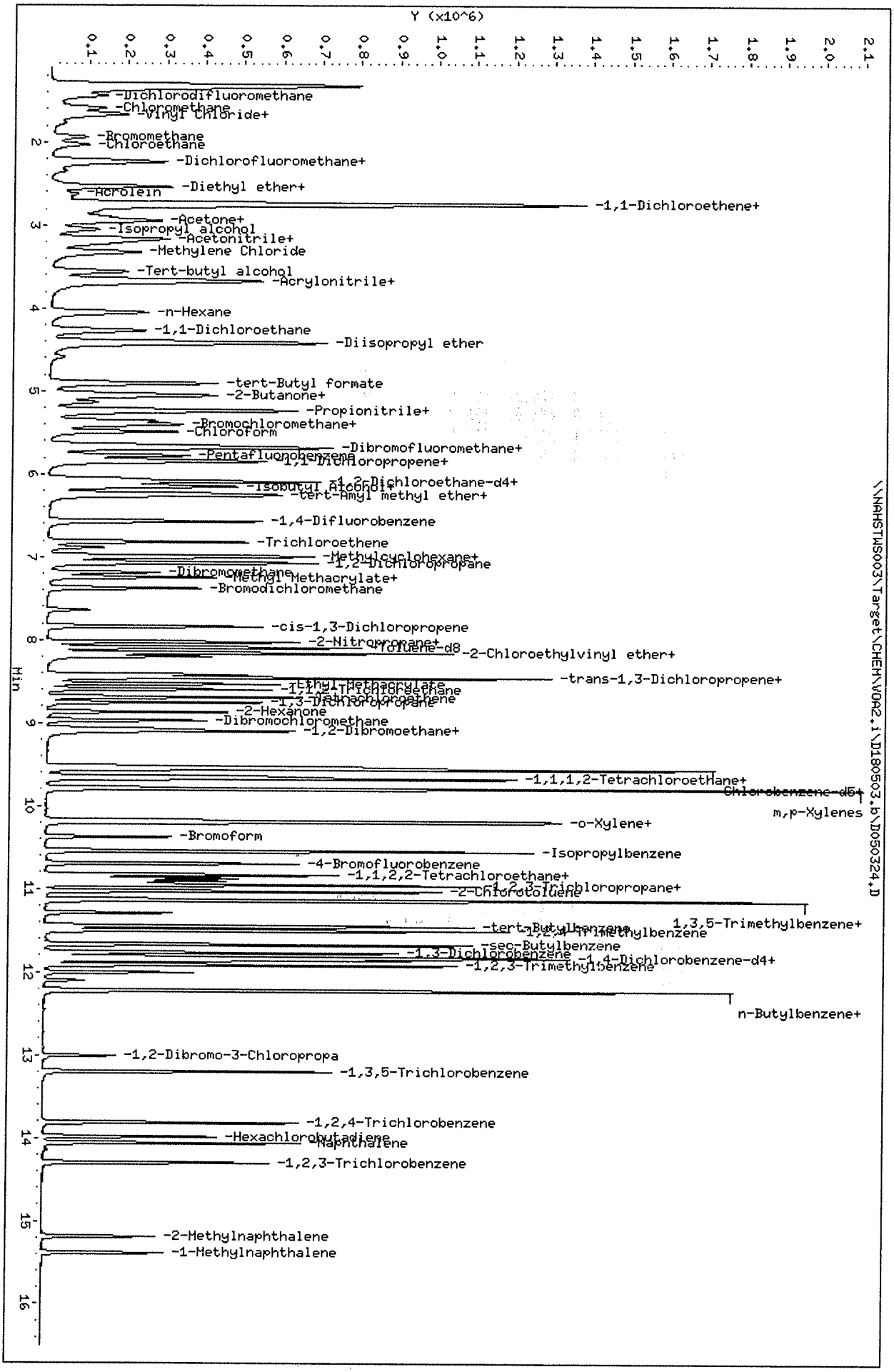
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050324.D Page 2
Report Date: 15-May-2018 13:21

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.652	3.658	(0.632)	159785	54.9480	54.94
	21 Vinyl Acetate	43	5.234	5.237	(0.906)	379166	83.1134	83.11
	22 1,1-Dichloroethane	63	4.268	4.271	(0.739)	445812	65.3492	65.34
	24 2-Butanone	43	5.134	5.131	(0.889)	190022	95.6659	95.66
	25 Methacrylonitrile	41	5.035	5.035	(0.872)	139844	43.9700	43.97
	26 2,2-Dichloropropane	77	5.035	5.035	(0.872)	235942	49.2088	49.20
	27 cis-1,2-Dichloroethene	96	5.060	5.064	(0.876)	187411	51.5127	51.51
	28 Chloroform	83	5.487	5.490	(0.950)	308153	51.3428	51.34
	29 Bromochloromethane	128	5.359	5.356	(0.928)	92985	54.3537	54.35
$	30 Dibromofluoromethane	113	5.680	5.683	(0.983)	134244	47.8274	47.82
	31 1,1,1-Trichloroethane	97	5.648	5.648	(0.978)	276696	55.3200	55.31
	32 1,1-Dichloropropene	75	5.850	5.850	(0.891)	223294	64.6658	64.66
	33 1,2-Dichloroethane	62	6.139	6.139	(0.935)	295905	60.3203	60.32
	34 Carbon Tetrachloride	117	5.830	5.827	(0.888)	231133	61.3222	61.32
$	35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	173513	48.6251	48.62
*	36 1,4-Difluorobenzene	114	6.569	6.569	(1.000)	477912	50.0000	
	37 Benzene	78	6.087	6.087	(0.927)	673917	57.9020	57.90
	38 Trichloroethene	130	6.816	6.816	(1.038)	190767	55.1526	55.15
	39 Bromodichloromethane	83	7.374	7.374	(1.123)	248710	60.9844	60.98
	40 Methyl Methacrylate	41	7.246	7.243	(1.254)	207269	48.7775	48.77
	41 2-Chloroethylvinyl ether	63	8.154	8.157	(1.241)	62634	125.734	125.73(A)
	42 1,2-Dichloropropane	63	7.063	7.066	(1.075)	200445	61.7507	61.75
	43 2-Nitropropane	43	8.025	8.025	(1.389)	437964	49.2002	49.20
	44 Dibromomethane	93	7.185	7.188	(1.094)	106401	54.1466	54.14
	45 4-Methyl-2-Pentanone	43	8.025	8.025	(0.843)	437964	100.666	100.66
	46 cis-1,3-Dichloropropene	75	7.836	7.836	(1.193)	293243	53.8384	53.83
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	429047	50.0000	
$	48 Toluene-d8	98	8.090	8.090	(0.849)	525812	45.6085	45.60
	49 Ethyl Methacrylate	69	8.529	8.526	(1.298)	246692	58.3716	58.37
	50 Toluene	91	8.154	8.157	(0.856)	708003	60.2700	60.27
	51 trans-1,3-Dichloropropene	75	8.414	8.417	(1.281)	247832	55.9426	55.94
	52 2-Hexanone	43	8.863	8.866	(0.931)	285049	102.989	102.98
	53 1,1,2-Trichloroethane	83	8.593	8.593	(0.902)	137656	51.6268	51.62
	54 1,3-Dichloropropane	76	8.751	8.751	(0.919)	270648	51.0803	51.08
	55 Dibromochloromethane	129	8.969	8.969	(0.942)	206174	52.9374	52.93
	56 Tetrachloroethene	164	8.686	8.687	(0.912)	150411	55.2189	55.21
	57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	172553	52.5196	52.51
	58 1-Chlorohexane	55	9.553	9.550	(1.454)	190866	63.6338	63.63
	59 Chlorobenzene	112	9.553	9.553	(1.003)	443627	58.7591	58.75
	60 1,1,1,2-Tetrachloroethane	131	9.646	9.646	(1.013)	180890	50.9387	50.93
	61 Ethylbenzene	106	9.668	9.668	(1.015)	242389	63.9437	63.94
	62 m,p-Xylenes	106	9.790	9.790	(1.028)	588332	120.338	120.33
	63 o-Xylene	106	10.175	10.175	(1.068)	315925	65.7719	65.77
	64 Styrene	104	10.195	10.198	(1.070)	485966	56.1636	56.16
	66 Bromoform	173	10.374	10.374	(1.089)	148266	55.6864	55.68
	67 Isopropylbenzene	105	10.544	10.548	(1.107)	769709	61.1759	61.17
	68 1,1,2,2-Tetrachloroethane	83	10.872	10.869	(0.919)	221826	57.7246	57.72
$	69 4-Bromofluorobenzene	95	10.692	10.695	(1.123)	206282	55.2065	55.20
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	198154	50.0000	
	71 1,2,3-Trichloropropane	75	10.901	10.904	(0.921)	227393	47.4270	47.42
	72 trans-1,4-Dichloro-2-butene	53	10.926	10.930	(1.147)	57446	51.2188	51.21
	73 n-Propylbenzene	91	10.952	10.955	(0.925)	813659	57.5063	57.50
	74 Bromobenzene	156	10.833	10.830	(0.915)	205526	59.4019	59.40
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	608225	57.7613	57.76

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
	76 2-Chlorotoluene	91	11.029	11.029	(0.932)	533180	62.6540	62.65
	77 4-Chlorotoluene	91	11.138	11.141	(0.941)	569557	61.5540	61.55
	78 tert-Butylbenzene	119	11.449	11.449	(0.967)	523211	58.6807	58.68
	79 1,2,4-Trimethylbenzene	105	11.501	11.501	(0.972)	617917	57.3220	57.32
	81 sec-Butylbenzene	105	11.668	11.668	(0.986)	712653	55.0291	55.02
	82 p-Isopropyltoluene	119	11.818	11.815	(0.999)	595441	53.9489	53.94
	83 1,3-Dichlorobenzene	146	11.767	11.764	(0.994)	354576	60.8342	60.83
	84 1,4-Dichlorobenzene	146	11.857	11.860	(1.002)	338710	59.6777	59.67
	87 n-Butylbenzene	91	12.223	12.220	(1.033)	472764	56.4508	56.45
	88 1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	334234	55.5039	55.50
	89 1,2-Dibromo-3-Chloropropane	75	13.006	13.009	(1.099)	41474	52.4426	52.44
	90 1,2,4-Trichlorobenzene	180	13.817	13.818	(1.168)	205124	55.9798	55.97
	91 Hexachlorobutadiene	225	13.984	13.988	(1.182)	90860	58.6699	58.66
	92 Naphthalene	128	14.061	14.061	(1.188)	497926	54.8104	54.81
	93 1,2,3-Trichlorobenzene	182	14.299	14.299	(1.208)	175488	55.0152	55.01
	146 Methyl acetate	43	3.225	3.219	(0.558)	175973	40.7509	40.75
	138 Freon TF	101	2.753	2.760	(0.477)	143334	55.0269	55.02
	139 Diethyl ether	59	2.535	2.532	(0.439)	308497	49.2442	49.24
	147 Methylcyclohexane	83	6.989	6.989	(1.064)	252426	65.0748	65.07
	135 1,4-Dioxane	88	7.233	7.236	(1.252)	37522	1104.44	1104.43
	132 n-Butanol	56	6.989	6.989	(1.210)	125408	1142.12	1142.11
	131 Methyl Acrylate	55	5.256	5.256	(0.910)	313244	52.5974	52.59
	133 Ethyl Acrylate	55	7.005	7.005	(1.213)	553381	50.9733	50.97
	136 n-Hexane	57	4.053	4.046	(0.702)	231543	55.8772	55.87
	141 Cyclohexane	56	5.680	5.680	(0.983)	339678	56.6849	56.68
	142 Tetrahydrofuran	42	5.413	5.407	(0.937)	142210	92.4631	92.46
	148 Tert-butyl alcohol	59	3.559	3.552	(0.616)	448630	934.321	934.32
	149 Isopropyl alcohol	45	3.052	3.048	(0.528)	266327	880.236	880.23
	151 4-Methyl-2-pentanol	45	8.452	8.452	(0.887)	969437	1017.82	1017.81
	166 1,2,3-Trimethylbenzene	105	11.915	11.915	(1.007)	568804	56.0188	56.01
	167 Ethanol	45	2.532	2.529	(0.438)	301245	1103.06	1103.05
	170 1,3,5-Trichlorobenzene	180	13.201	13.201	(1.116)	239557	58.5278	58.52
	172 tert-Butyl formate	59	4.903	4.906	(0.849)	593304	57.6338	57.63
	173 3,3-Dimethyl-1-butanol	57	9.094	9.094	(0.955)	353826	970.145	970.14
	174 tert-Amyl methyl ether	73	6.257	6.257	(1.083)	568930	46.6060	46.60
	175 tert-Butyl ethyl ether	59	6.232	6.228	(1.079)	306939	47.3281	47.32
	176 tert-Amyl alcohol	59	6.232	6.228	(1.079)	306939	939.840	939.84
	157 2-Methylnaphthalene	142	15.188	15.191	(1.283)	140350	42.6284	42.62
	156 Diisopropyl ether	45	4.415	4.415	(0.764)	734350	49.4786	49.47
	171 1-Methylnaphthalene	142	15.387	15.387	(1.300)	161898	46.3833	46.38
	130 Ethyl Acetate	43	5.234	5.237	(0.906)	379166	43.1443	43.14
M	94 1,2-Dichloroethylene (total)	96				347196	106.461	106.46
M	95 Xylenes (total)	106				904257	186.110	186.11

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050324.D
Date : 04-MAY-2018 00:14
Client ID: HS18050072-03MSD
Sample Info: HS18050072-03MSD;HS18050072-03MSD;3;;HSD
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050329.D Page 1
Report Date: 15-May-2018 13:21

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050329.D
Lab Smp Id: CCV_END Client Smp ID: CCV_END
Inj Date : 04-MAY-2018 02:19
Operator : AP Inst ID: VOA2.i
Smp Info : CCV_END;CCV_END;2;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\8260LL.m
Meth Date : 15-May-2018 13:21 VOA2.i Quant Type: ISTD
Cal Date : 03-MAY-2018 18:24 Cal File: D050310.D
Als bottle: 25 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1	Pentafluorobenzene	168	5.776	5.776	(1.000)	327516	50.0000	
2	Dichlorodifluoromethane	85	1.441	1.441	(0.250)	177706	50.0000	58.85
186	Isobutylene	56	1.646	1.646	(0.285)	190364	50.0000	56.93(AM)
3	Chloromethane	50	1.592	1.592	(0.276)	304037	50.0000	58.78
4	Propionitrile	54	5.234	5.234	(0.906)	645411	500.000	482.61
5	Vinyl Chloride	62	1.678	1.678	(0.291)	226491	50.0000	51.78
6	Bromomethane	94	1.932	1.932	(0.334)	109049	50.0000	61.08
7	Chloroethane	64	2.034	2.034	(0.352)	134809	50.0000	51.74
159	Dichlorofluoromethane	67	2.217	2.217	(0.384)	319527	50.0000	49.78
8	Trichlorofluoromethane	101	2.246	2.246	(0.389)	220263	50.0000	51.87
9	Acrolein	56	2.679	2.679	(0.464)	83591	100.000	101.30
10	Acetone	43	2.846	2.846	(0.493)	128678	100.000	106.42
11	1,1-Dichloroethene	96	2.740	2.740	(0.474)	142896	50.0000	53.01
12	Isobutyl Alcohol	74	6.155	6.155	(1.066)	16087	1000.00	922.54(A)
13	Acetonitrile	39	3.161	3.161	(0.547)	224310	500.000	487.68
14	Allyl Chloride	41	3.167	3.167	(0.548)	594731	50.0000	49.56
15	Iodomethane	142	2.904	2.904	(0.503)	265144	100.000	112.14
16	Acrylonitrile	53	3.684	3.684	(0.638)	174144	100.000	108.32
17	Methylene Chloride	84	3.324	3.324	(0.576)	172963	50.0000	53.65
18	Methyl tert-butyl ether	73	3.677	3.677	(0.637)	510050	50.0000	48.55
19	Carbon Disulfide	76	2.943	2.943	(0.509)	609381	100.000	98.43

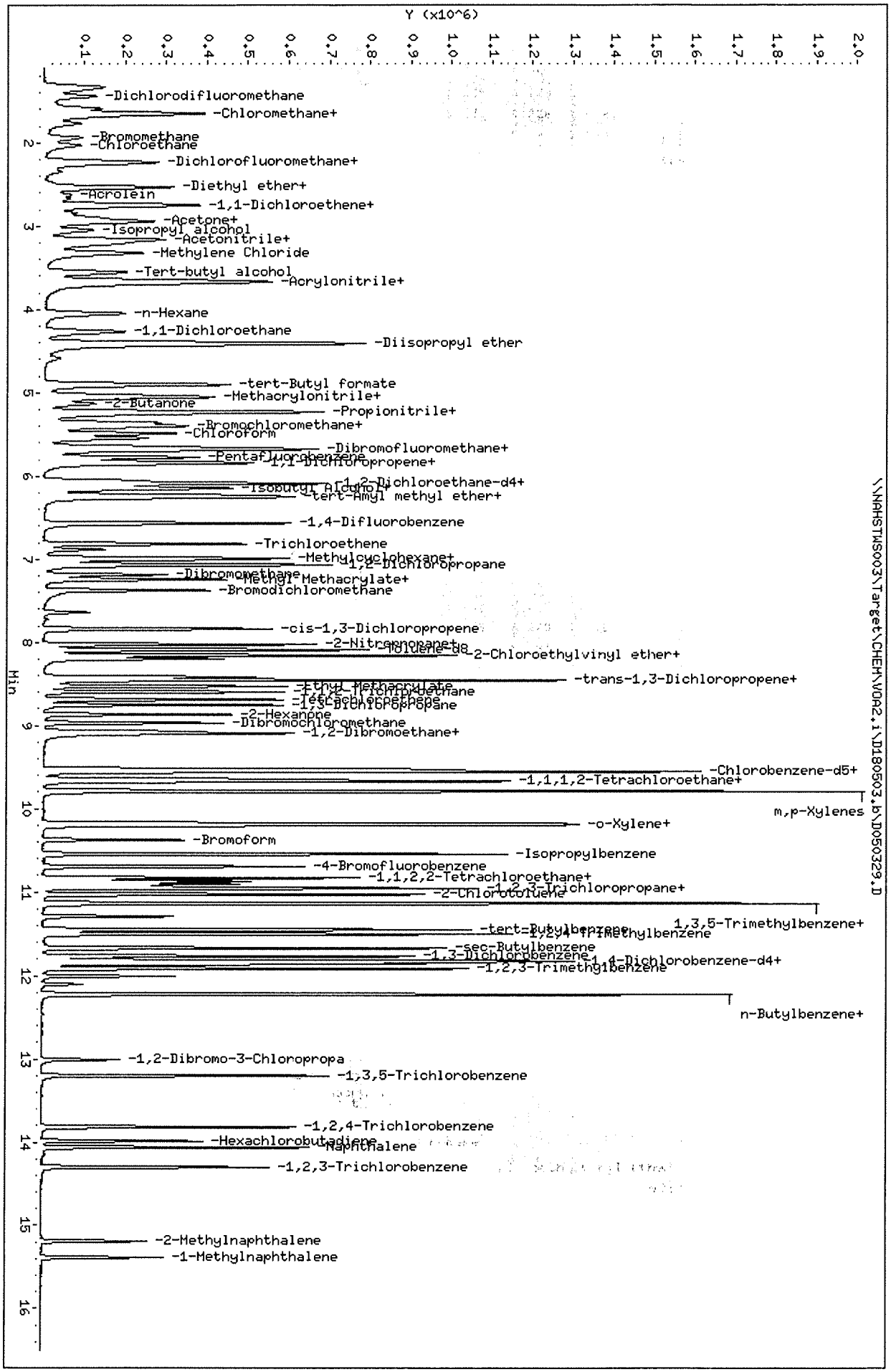
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050329.D Page 2
Report Date: 15-May-2018 13:21

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.658	3.658	(0.633)	158592	50.0000	52.56
	21 Vinyl Acetate	43	5.237	5.237	(0.907)	442709	100.000	93.53
	22 1,1-Dichloroethane	63	4.271	4.271	(0.739)	357471	50.0000	50.50
	24 2-Butanone	43	5.131	5.131	(0.888)	196319	100.000	95.26
	25 Methacrylonitrile	41	5.035	5.035	(0.872)	128890	50.0000	39.06
	26 2,2-Dichloropropane	77	5.035	5.035	(0.872)	206191	50.0000	41.44
	27 cis-1,2-Dichloroethene	96	5.064	5.064	(0.877)	189287	50.0000	50.14
	28 Chloroform	83	5.490	5.490	(0.951)	308892	50.0000	49.60
	29 Bromochloromethane	128	5.356	5.356	(0.927)	96156	50.0000	54.17
$	30 Dibromofluoromethane	113	5.683	5.683	(0.984)	137771	50.0000	47.30
	31 1,1,1-Trichloroethane	97	5.648	5.648	(0.978)	259226	50.0000	49.95
	32 1,1-Dichloropropene	75	5.850	5.850	(0.891)	205065	50.0000	52.65
	33 1,2-Dichloroethane	62	6.139	6.139	(0.935)	267019	50.0000	48.74
	34 Carbon Tetrachloride	117	5.827	5.827	(0.887)	212880	50.0000	50.10
$	35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	178901	50.0000	48.32
*	36 1,4-Difluorobenzene	114	6.569	6.569	(1.000)	533660	50.0000	
	37 Benzene	78	6.087	6.087	(0.927)	672396	50.0000	51.16
	38 Trichloroethene	130	6.816	6.816	(1.038)	183286	50.0000	47.45
	39 Bromodichloromethane	83	7.374	7.374	(1.123)	254446	50.0000	55.62
	40 Methyl Methacrylate	41	7.243	7.243	(1.254)	216830	50.0000	49.18
	41 2-Chloroethylvinyl ether	63	8.157	8.157	(1.242)	59271	100.000	105.64(TA)
	42 1,2-Dichloropropane	63	7.066	7.066	(1.076)	205255	50.0000	56.36
	43 2-Nitropropane	43	8.025	8.025	(1.389)	444972	50.0000	48.18
	44 Dibromomethane	93	7.188	7.188	(1.094)	110718	50.0000	50.45
	45 4-Methyl-2-Pentanone	43	8.025	8.025	(0.843)	444972	100.000	90.19
	46 cis-1,3-Dichloropropene	75	7.836	7.836	(1.193)	292980	50.0000	48.17
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	486509	50.0000	
$	48 Toluene-d8	98	8.090	8.090	(0.849)	527299	50.0000	40.33
	49 Ethyl Methacrylate	69	8.526	8.526	(1.298)	251490	50.0000	53.01
	50 Toluene	91	8.157	8.157	(0.856)	690868	50.0000	51.06
	51 trans-1,3-Dichloropropene	75	8.417	8.417	(1.281)	251443	50.0000	50.82
	52 2-Hexanone	43	8.866	8.866	(0.931)	288874	100.000	92.04
	53 1,1,2-Trichloroethane	83	8.593	8.593	(0.902)	140526	50.0000	46.47
	54 1,3-Dichloropropane	76	8.751	8.751	(0.919)	283194	50.0000	47.13
	55 Dibromochloromethane	129	8.969	8.969	(0.942)	211835	50.0000	47.96
	56 Tetrachloroethene	164	8.687	8.687	(0.912)	137294	50.0000	44.45
	57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	183329	50.0000	49.20
	58 1-Chlorohexane	55	9.550	9.550	(1.454)	166875	50.0000	48.97
	59 Chlorobenzene	112	9.553	9.553	(1.003)	444060	50.0000	51.24
	60 1,1,1,2-Tetrachloroethane	131	9.646	9.646	(1.013)	185740	50.0000	46.12
	61 Ethylbenzene	106	9.668	9.668	(1.015)	230737	50.0000	53.16
	62 m,p-Xylenes	106	9.790	9.790	(1.028)	571891	100.000	101.49
	63 o-Xylene	106	10.175	10.175	(1.068)	304787	50.0000	55.42
	64 Styrene	104	10.198	10.198	(1.071)	499709	50.0000	50.43
	66 Bromoform	173	10.374	10.374	(1.089)	153045	50.0000	50.69
	67 Isopropylbenzene	105	10.548	10.548	(1.107)	709013	50.0000	48.51
	68 1,1,2,2-Tetrachloroethane	83	10.869	10.869	(0.918)	230616	50.0000	54.55
$	69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	199523	50.0000	47.03
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	217319	50.0000	
	71 1,2,3-Trichloropropane	75	10.904	10.904	(0.921)	232543	50.0000	44.22
	72 trans-1,4-Dichloro-2-butene	53	10.930	10.930	(1.148)	54541	50.0000	42.90
	73 n-Propylbenzene	91	10.955	10.955	(0.926)	764206	50.0000	48.50
	74 Bromobenzene	156	10.830	10.830	(0.915)	208346	50.0000	54.69
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	576218	50.0000	49.08

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
76	2-Chlorotoluene	91	11.029	11.029	(0.932)	509618	50.0000	54.16
77	4-Chlorotoluene	91	11.141	11.141	(0.941)	557272	50.0000	54.52
78	tert-Butylbenzene	119	11.449	11.449	(0.967)	480392	50.0000	48.38
79	1,2,4-Trimethylbenzene	105	11.501	11.501	(0.972)	593563	50.0000	49.57
81	sec-Butylbenzene	105	11.668	11.668	(0.986)	650709	50.0000	45.81
82	p-Isopropyltoluene	119	11.815	11.815	(0.998)	547875	50.0000	45.26
83	1,3-Dichlorobenzene	146	11.764	11.764	(0.994)	349051	50.0000	54.30
84	1,4-Dichlorobenzene	146	11.860	11.860	(1.002)	329657	50.0000	52.69
87	n-Butylbenzene	91	12.220	12.220	(1.033)	418438	50.0000	45.55
88	1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	334527	50.0000	50.21
89	1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	40537	50.0000	46.73
90	1,2,4-Trichlorobenzene	180	13.818	13.818	(1.168)	195881	50.0000	48.66
91	Hexachlorobutadiene	225	13.988	13.988	(1.182)	77340	50.0000	45.38
92	Naphthalene	128	14.061	14.061	(1.188)	492042	50.0000	49.31
93	1,2,3-Trichlorobenzene	182	14.299	14.299	(1.208)	167501	50.0000	47.84
146	Methyl acetate	43	3.219	3.219	(0.557)	206675	50.0000	46.13
138	Freon TF	101	2.760	2.760	(0.478)	130023	50.0000	48.11
139	Diethyl ether	59	2.532	2.532	(0.438)	316500	50.0000	48.69
147	Methylcyclohexane	83	6.989	6.989	(1.064)	216026	50.0000	49.31
135	1,4-Dioxane	88	7.236	7.236	(1.253)	33624	1000.00	947.31
132	n-Butanol	56	6.989	6.989	(1.210)	114652	1000.00	1004.04
131	Methyl Acrylate	55	5.256	5.256	(0.910)	323748	50.0000	52.39
133	Ethyl Acrylate	55	7.005	7.005	(1.213)	527243	50.0000	46.80
136	n-Hexane	57	4.046	4.046	(0.701)	184891	50.0000	43.00
141	Cyclohexane	56	5.680	5.680	(0.983)	283692	50.0000	45.63
142	Tetrahydrofuran	42	5.407	5.407	(0.936)	144148	100.000	90.33
148	Tert-butyl alcohol	59	3.552	3.552	(0.615)	447838	1000.00	898.94
149	Isopropyl alcohol	45	3.048	3.048	(0.528)	260532	1000.00	829.94(T)
151	4-Methyl-2-pentanol	45	8.452	8.452	(0.887)	977252	1000.00	890.01
166	1,2,3-Trimethylbenzene	105	11.915	11.915	(1.007)	563062	50.0000	50.08
167	Ethanol	45	2.529	2.529	(0.438)	312353	1000.00	1102.33
170	1,3,5-Trichlorobenzene	180	13.201	13.201	(1.116)	222452	50.0000	49.25
172	tert-Butyl formate	59	4.906	4.906	(0.849)	617775	50.0000	57.84
173	3,3-Dimethyl-1-butanol	57	9.094	9.094	(0.955)	352495	1000.00	852.34
174	tert-Amyl methyl ether	73	6.257	6.257	(1.083)	593298	50.0000	46.84
175	tert-Butyl ethyl ether	59	6.228	6.228	(1.078)	308139	50.0000	45.79
176	tert-Amyl alcohol	59	6.228	6.228	(1.078)	308139	1000.00	909.39
157	2-Methylnaphthalene	142	15.191	15.191	(1.284)	125908	50.0000	35.77
156	Diisopropyl ether	45	4.415	4.415	(0.764)	742743	50.0000	48.23(T)
171	1-Methylnaphthalene	142	15.387	15.387	(1.300)	145866	50.0000	38.75
130	Ethyl Acetate	43	5.237	5.237	(0.907)	442709	50.0000	48.55

QC Flag Legend

T - Target compound detected outside RT window.
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180503.b\D050329.D
Date : 04-MAY-2018 02:19
Client ID: CCV_END
Sample Info: CCV_END;CCV_END;2;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Sub Contract Data

Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant
-67/501032
ALS WO# HS18050072

LABORATORY REPORT

May 14, 2018

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road Suite 210
Houston, TX 77099-4338

RE: HS18050072

Dear RJ:

Enclosed are the results of the samples submitted to our laboratory on May 3, 2018. For your reference, these analyses have been assigned our service request number P1802242.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental



Kate Kaneko
Project Manager

Client: ALS Laboratory Group
Project: HS18050072

Service Request No: P1802242

CASE NARRATIVE

The samples were received intact under chain of custody on May 3, 2018 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Carbon Dioxide Analysis

The samples were analyzed for carbon dioxide using a gas chromatograph equipped with a thermal conductivity detector (TCD). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least four hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (carbon dioxide) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175 as described in laboratory SOP VOA-DISGAS. This analyte is included on the laboratory's NELAP and DoD-ELAP scope of accreditation.

The relative percent difference and the recovery of carbon dioxide in the matrix spike duplicate were outside of the DOD control limits due to matrix interference. However the recovery of the laboratory control sample and its duplicate were within all QC parameters.

Methane, Ethene and Ethane Analysis

The samples were also analyzed for methane, ethene and ethane using a gas chromatograph equipped with a flame ionization detector (FID). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least two hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (methane, ethene and ethane) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175. This method is included on the laboratory's NELAP and DoD-ELAP scope of accreditation. Any analytes flagged with an X are not included on the laboratory's NELAP or DoD-ELAP accreditation.

The recovery of ethene and ethane in the matrix spike and its duplicate were outside of the DOD control limits. However the recovery of the laboratory control sample and its duplicate were within all QC parameters.

Client: ALS Laboratory Group
Project: HS18050072

Service Request No: P1802242

Manual integrations were performed on the following sample(s) and analyte(s). Refer to the raw data for additional information.

Sample Identification(s)	Analyte(s)
P1802242-005MS	Ethene

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/labcert.htm	2016036
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1347317
New Jersey DEP (NELAP)	http://www.nj.gov/dep/oqa/	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-005
Pennsylvania DEP	http://www.depweb.state.pa.us/labs	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704413-17-8
Utah DOH (NELAP)	http://health.utah.gov/lab/environmental-lab-certification/	CA016272017-8
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: ALS Laboratory Group
Project ID: HS18050072

Service Request: P1802242

Date Received: 5/3/2018
Time Received: 09:10

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	RSK 175 - Gases	RSK 175 - CO2
67WW13-180501	P1802242-001	Water	5/1/2018	09:40	X	
67WW13-180501	P1802242-002	Water	5/1/2018	09:40		X
67WW13-180501-FD	P1802242-003	Water	5/1/2018	09:40	X	
67WW13-180501-FD	P1802242-004	Water	5/1/2018	09:40		X
67WW08-180501	P1802242-005	Water	5/1/2018	12:10	X	
67WW08-180501	P1802242-006	Water	5/1/2018	12:10		X

P1802242

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

COC ID: 9051

SUBCONTRACT TO:

ALS Environmental
2655 Park Center Drive, Suite A
Simi Valley, CA 93065

Phone: +1 805 526 7161

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS18050072
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS18050072-01**	**67WW13-180501**	**Groundwater**	**01 May 2018 09:40**
	SUB_RSK			16 May 2018
2.	**HS18050072-02**	**67WW13-180501-FD**	**Groundwater**	**01 May 2018 09:40**
	SUB_RSK			16 May 2018
3.	**HS18050072-03**	**67WW08-180501**	**Groundwater**	**01 May 2018 12:10**
	SUB_RSK			16 May 2018

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

HS18050072-03 MS/MSD

QC Level: DOD IV (DoD Data Package)

Relinquished By: _____ Date/Time: 5/2/18 1800.

Received By: _____ Date/Time: 5-3-18 0910

Cooler ID(s): _____ Temperature(s): 2°C
WET ICE

ALS Environmental
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P1802242

Project: HS18050072

Sample(s) received on: 5/3/18 Date opened: 5/3/18 by: ADAVID

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 2° C **Wet Ice**			
8	Were **custody seals** on outside of cooler/Box/Container?	☒	☐	☐
	Location of seal(s)? Cooler lid. Sealing Lid?	☒	☐	☐
	Were signature and date included?	☒	☐	☐
	Were seals intact?	☒	☐	☐
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☒	☐	☐
	Were **VOA vials** checked for presence/absence of air bubbles?	☒	☐	☐
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1802242-001.01	40ml VOA HCL		1		A	wh 5/11/18
P1802242-001.02	40ml VOA HCL				A	
P1802242-001.03	40ml VOA HCL				A	
P1802242-002.01	40mL VOA NP		7		A	wh 5/11/18
P1802242-002.02	40mL VOA NP				A	
P1802242-002.03	40mL VOA NP				A	
P1802242-003.01	40ml VOA HCL		1		A	wh 5/11/18
P1802242-003.02	40ml VOA HCL				A	
P1802242-003.03	40ml VOA HCL				A	
P1802242-004.01	40mL VOA NP		7		A	wh 5/11/18
P1802242-004.02	40mL VOA NP				A	
P1802242-004.03	40mL VOA NP				A	
P1802242-005.01	40ml VOA HCL		1		A	wh 5/11/18
P1802242-005.02	40ml VOA HCL		1		A	wh 5/11/18
P1802242-005.03	40ml VOA HCL		1		A	wh 5/11/18

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS Environmental
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P1802242

Project: HS18050072

Sample(s) received on: 5/3/18 Date opened: 5/3/18 by: ADAVID

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1802242-005.04	40ml VOA HCL				A	
P1802242-005.05	40ml VOA HCL				A	
P1802242-005.06	40ml VOA HCL				A	
P1802242-005.07	40ml VOA HCL				A	
P1802242-005.08	40ml VOA HCL				A	
P1802242-005.09	40ml VOA HCL				A	
P1802242-006.01	40mL VOA NP		7		A	wh 5/11/18
P1802242-006.02	40mL VOA NP		7		A	wh 5/11/18
P1802242-006.03	40mL VOA NP		7		A	wh 5/11/18
P1802242-006.04	40mL VOA NP				A	
P1802242-006.05	40mL VOA NP				A	
P1802242-006.06	40mL VOA NP				A	
P1802242-006.07	40mL VOA NP				A	
P1802242-006.08	40mL VOA NP				A	
P1802242-006.09	40mL VOA NP				A	

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Project ID: **HS18050072** ALS Project ID: P1802242

Carbon Dioxide

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date(s) Collected: 5/1/18
Date Received: 5/3/18
Date Analyzed: 5/11/18

Client Sample ID	ALS Sample ID	Injection Volume ml(s)	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
67WW13-180501	P1802242-002	0.050	**870,000**	2,000	1,700	740	
67WW13-180501-FD	P1802242-004	0.050	**860,000**	2,000	1,700	740	
67WW08-180501	P1802242-006	0.050	**420,000**	2,000	1,700	740	
Method Control Sample	P180511-MB	0.10	860	1,000	860	370	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

MATRIX SPIKE / DUPLICATE MATRIX SPIKE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **67WW08-180501**
Client Project ID: **HS18050072**

ALS Project ID: P1802242
ALS Sample ID: P1802242-006MS
P1802242-006DMS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 5/1/18
Date Received: 5/3/18
Date Analyzed: 5/11/18
Volume(s) Analyzed: 0.050 ml(s)

CAS #	Compound	Spike Amount MS / DMS ug/L	Sample Amount ug/L	Result MS ug/L	Result DMS ug/L	% Recovery MS	% Recovery DMS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	45,800	423,000	464,000	484,000	**90**	**133**	80-122	39	30	**R, N**

R = Duplicate precision not met.
N = The matrix spike sample recovery is not within control limits. See case narrative.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **HS18050072**

ALS Project ID: P1802242
ALS Sample ID: P180511-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 5/11/18
Volume(s) Analyzed: NA ml(s)

CAS #	Compound	Spike Amount LCS / DLCS ug/L	Result[1] LCS ug/L	Result[1] DLCS ug/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	22,900	24,500	26,000	**107**	**114**	80-122	6	15	

[1] = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **67WW13-180501**
Client Project ID: **HS18050072**

ALS Project ID: P1802242
ALS Sample ID: P1802242-001

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 5/1/18
Date Received: 5/3/18
Date Analyzed: 5/11/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **67WW13-180501-FD**
Client Project ID: **HS18050072**

ALS Project ID: P1802242
ALS Sample ID: P1802242-003

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 5/1/18
Date Received: 5/3/18
Date Analyzed: 5/11/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **67WW08-180501**
Client Project ID: **HS18050072**

ALS Project ID: P1802242
ALS Sample ID: P1802242-005

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 5/1/18
Date Received: 5/3/18
Date Analyzed: 5/11/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**2.1**	1.3	1.0	0.51	
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **Method Control Sample**
Client Project ID: **HS18050072**

ALS Project ID: P1802242
ALS Sample ID: P180511-MB

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 5/11/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

MATRIX SPIKE / DUPLICATE MATRIX SPIKE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **67WW08-180501**
Client Project ID: **HS18050072**

ALS Project ID: P1802242
ALS Sample ID: P1802242-005MS
P1802242-005DMS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 5/1/18
Date Received: 5/3/18
Date Analyzed: 5/11/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount MS / DMS µg/L	Sample Amount µg/L	Result MS µg/L	Result DMS µg/L	% Recovery MS	% Recovery DMS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-82-8	Methane	2.52	2.13	4.31	4.33	**87**	**87**	73-125	0	30	
74-85-1	Ethene	4.40	ND	3.13	3.03	**71**	**69**	72-133	3	30	**N**
74-84-0	Ethane	4.72	ND	3.49	3.47	**74**	**74**	74-131	0	30	

N = The matrix spike sample recovery is not within control limits. See case narrative.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **HS18050072**

ALS Project ID: P1802242
ALS Sample ID: P180511-LCS
P180511-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 5/11/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount LCS / DLCS µg/L	Result$_1$ LCS µg/L	Result$_1$ DLCS µg/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-82-8	Methane	2.50	2.42	2.47	**97**	**99**	73-125	2	12	
74-85-1	Ethene	4.37	4.86	5.01	**111**	**115**	72-133	4	7	
74-84-0	Ethane	4.69	4.87	4.96	**104**	**106**	74-131	2	6	

$_1$ = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

Data Path : I:\GC10\DATA\RSK_TCD\2018_05\11\
Data File : 05111809.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 17:47:34
Operator : WH
Sample : P1802242-002 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 13 14:16:24 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

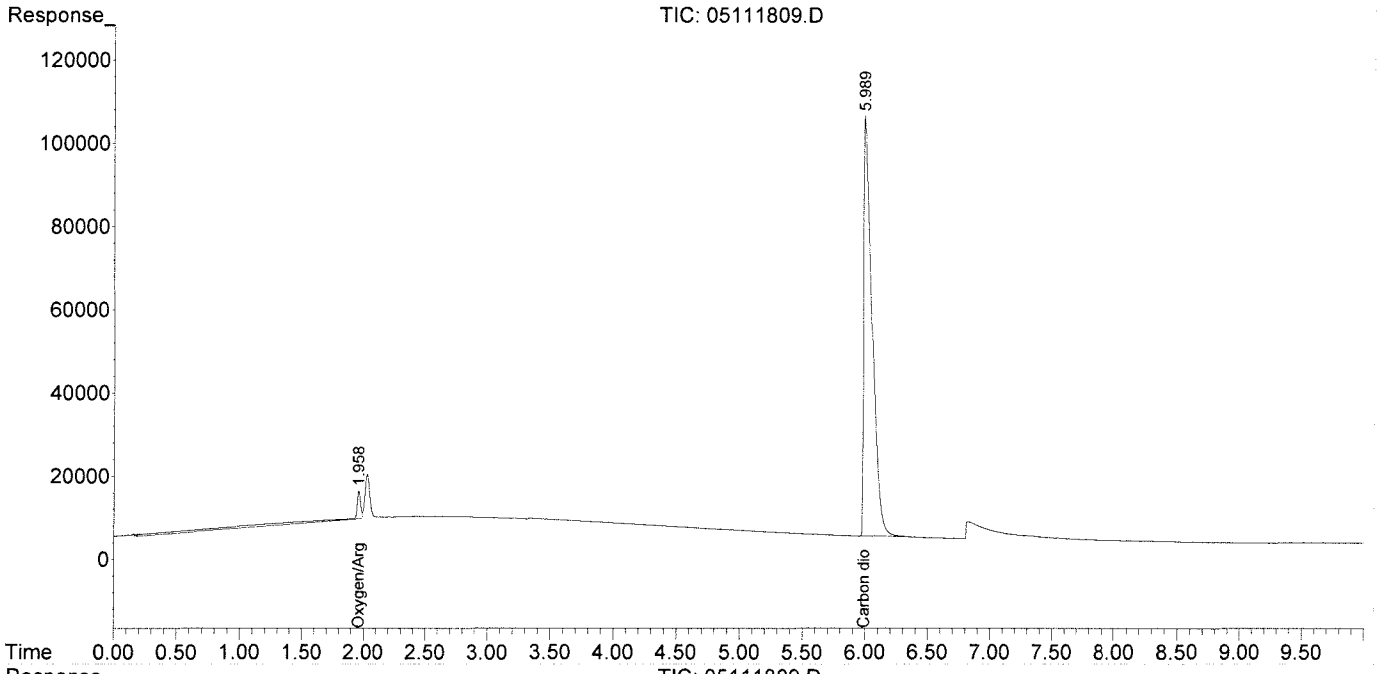
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.959f	569987	0.120	ppm
2)	Carbon monoxide	1.959f	569987	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	5.990	4672083	19904.142	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

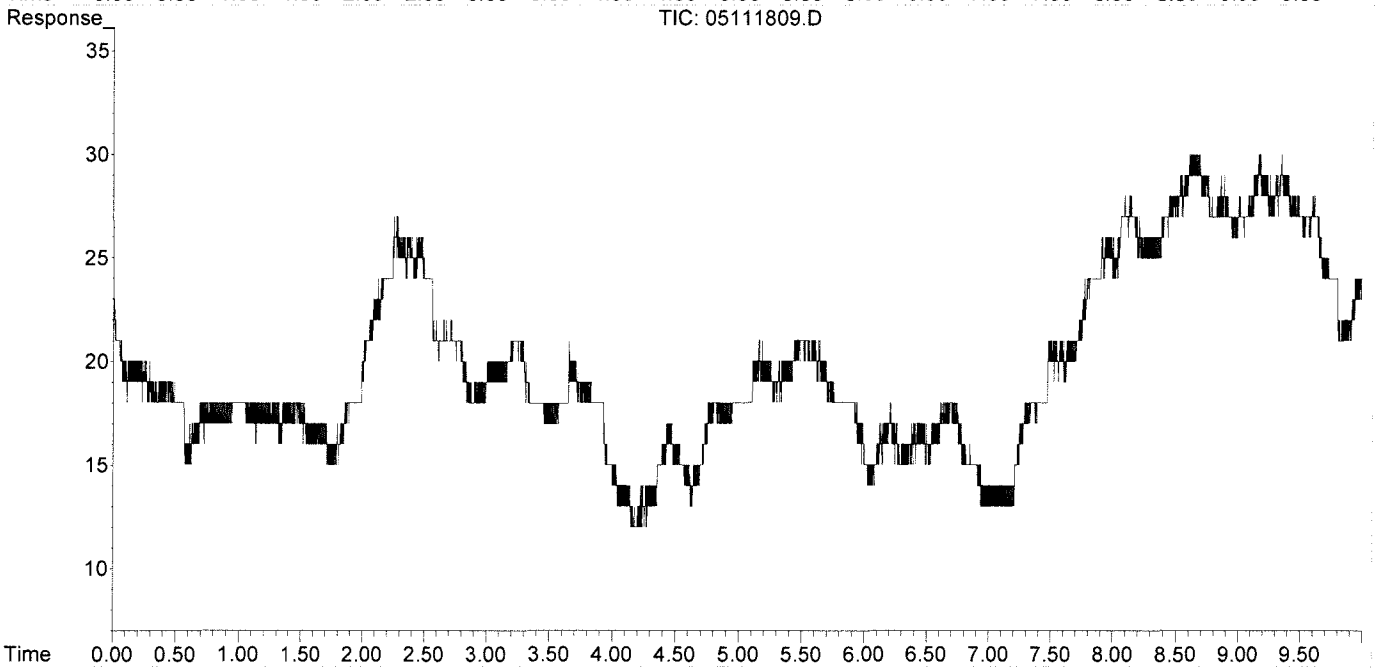
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_TCD\2018_05\11\
Data File : 05111809.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 17:47:34
Operator : WH
Sample : P1802242-002 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 13 14:16:24 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : I:\GC10\DATA\RSK_TCD\2018_05\11\
Data File : 05111810.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 19:28:15
Operator : WH
Sample : P1802242-004 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 13 14:16:42 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

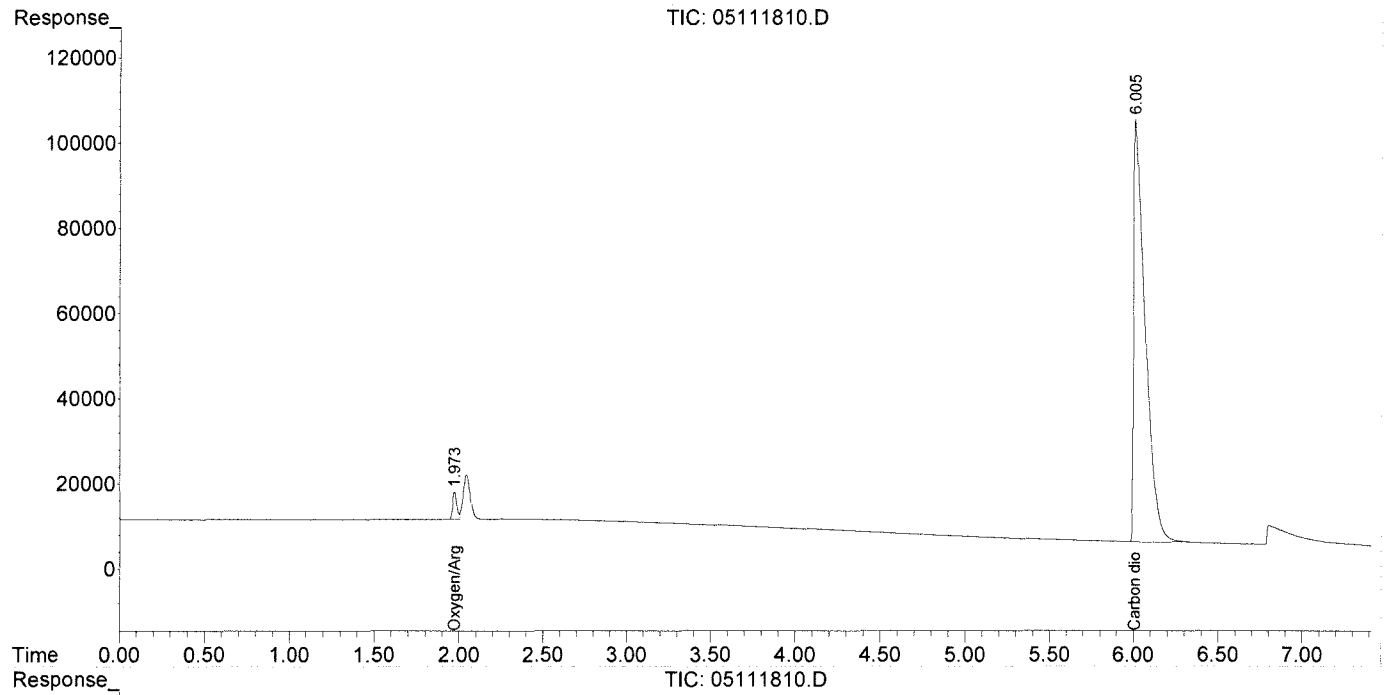
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.974f	117227	0.025	ppm
2)	Carbon monoxide	1.974f	117227	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.006	4633415	19739.408	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

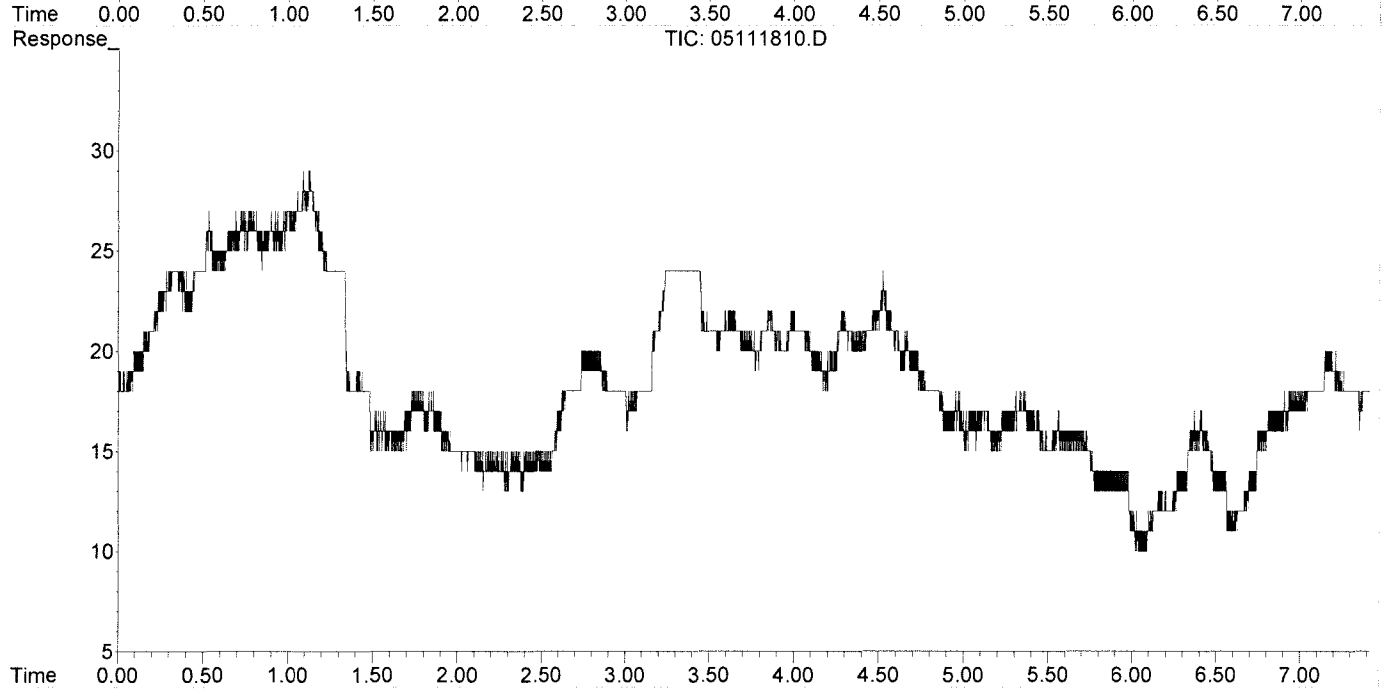
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_TCD\2018_05\11\
Data File : 05111810.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 19:28:15
Operator : WH
Sample : P1802242-004 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 13 14:16:42 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : I:\GC10\DATA\RSK_TCD\2018_05\11\
Data File : 05111814.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 20:12:31
Operator : WH
Sample : P1802242-006 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 13 14:18:16 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

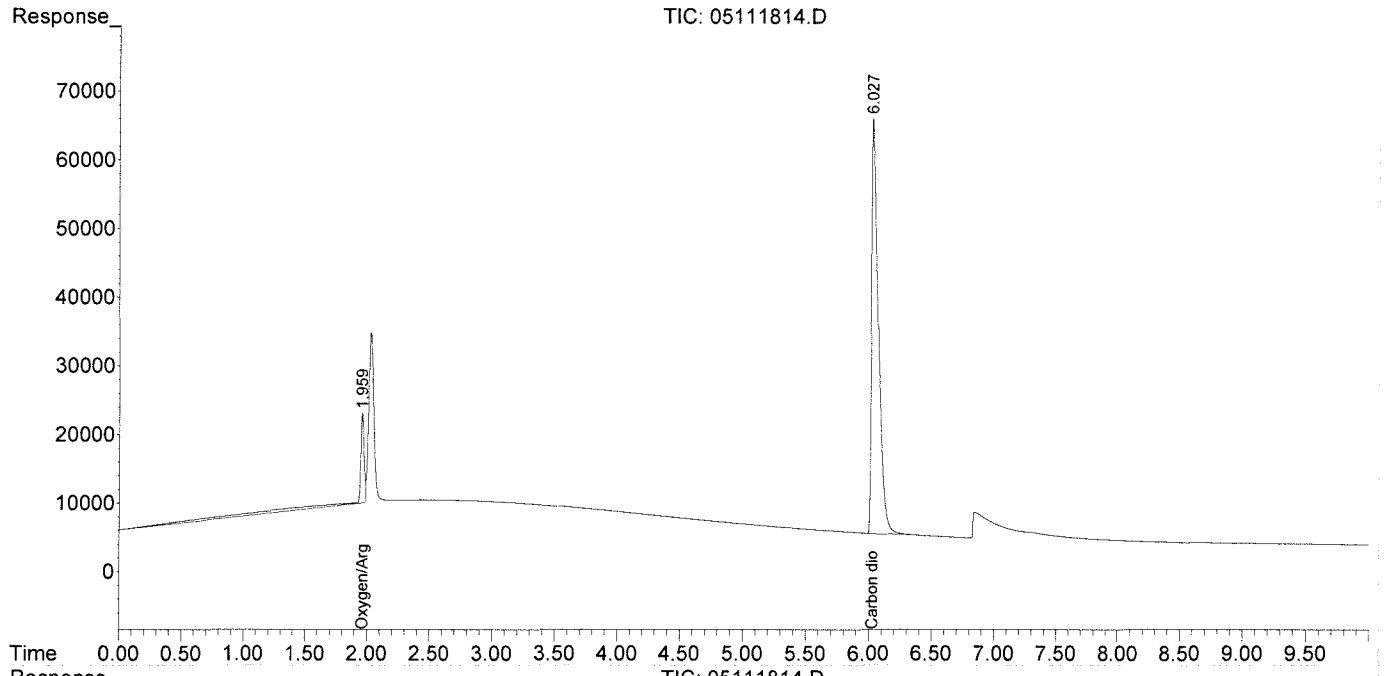
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.960f	541993	0.114	ppm
2)	Carbon monoxide	1.960f	541993	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.027	2274305	9689.059	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

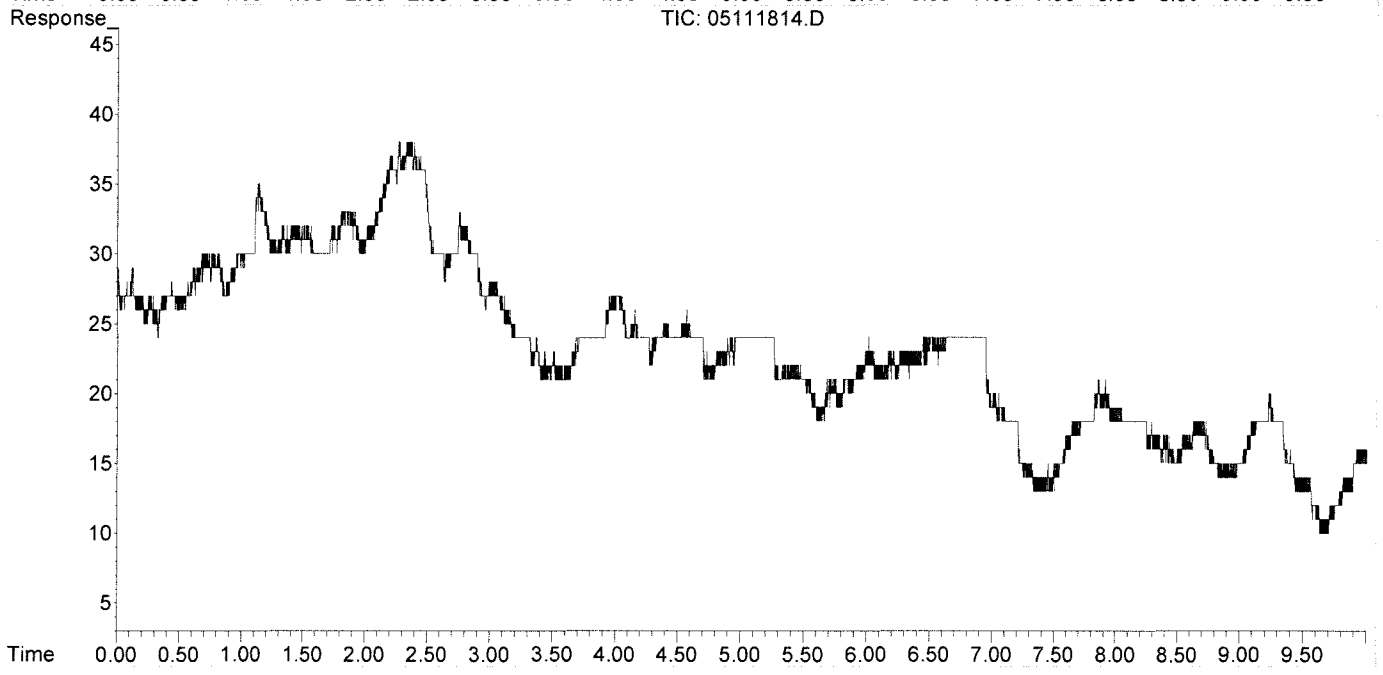
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_TCD\2018_05\11\
Data File : 05111814.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 20:12:31
Operator : WH
Sample : P1802242-006 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 13 14:18:16 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : I:\GC10\DATA\RSK_TCD\2018_05\11\
Data File : 05111804.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 16:34:47
Operator : WH
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 13 14:14:47 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

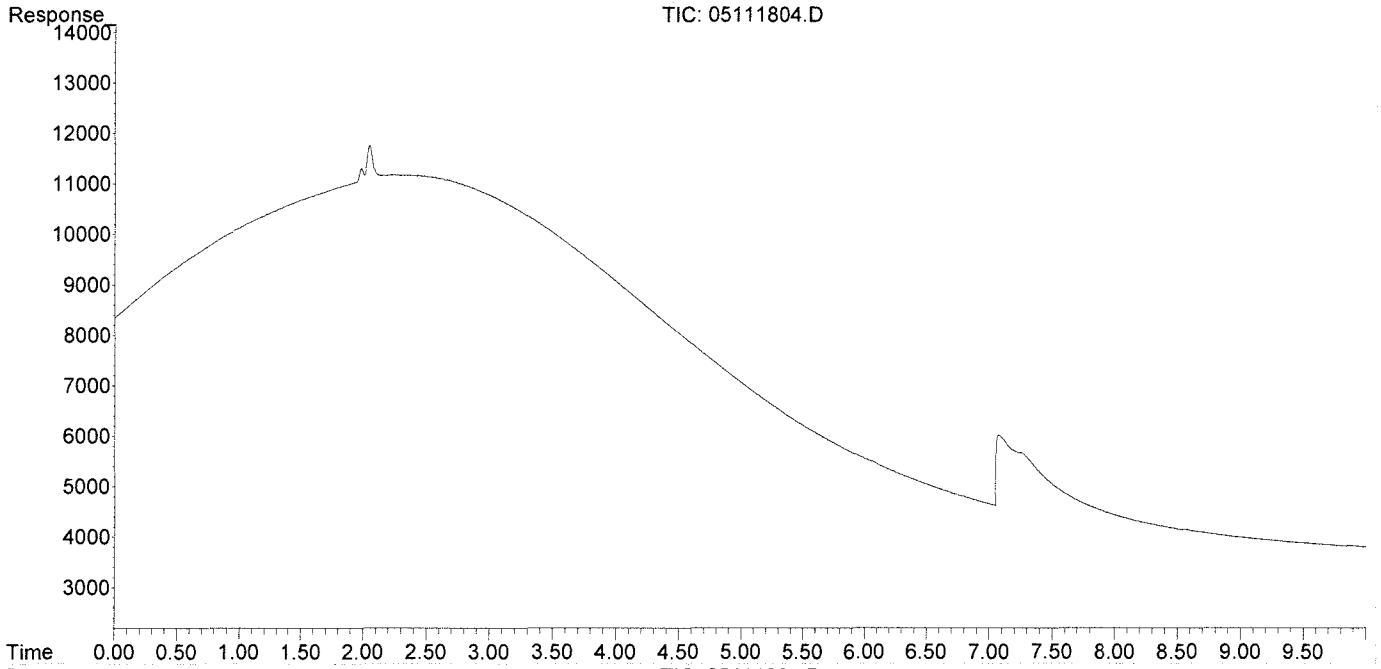
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

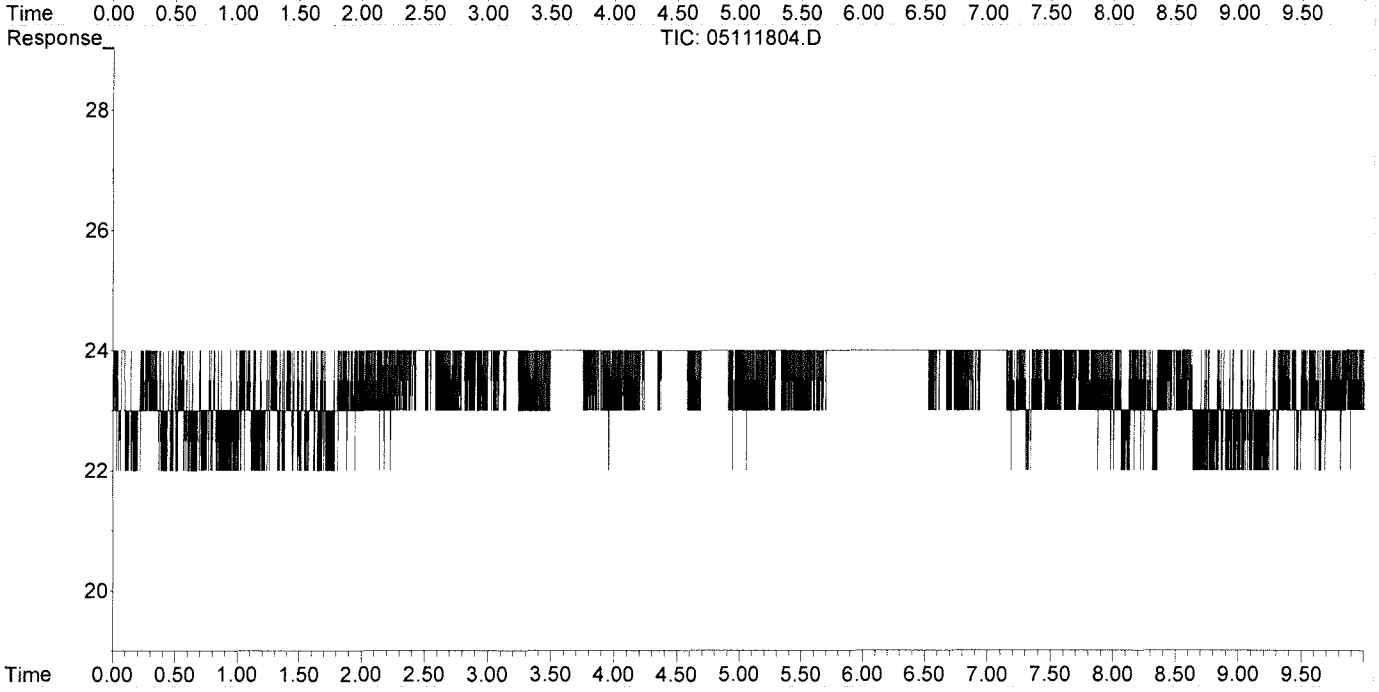
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_TCD\2018_05\11\
Data File : 05111804.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 16:34:47
Operator : WH
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 13 14:14:47 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : I:\GC10\DATA\RSK_TCD\2018_05\11\
Data File : 05111812.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 19:51:22
Operator : WH
Sample : P1802242-006ms 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 13 14:17:30 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

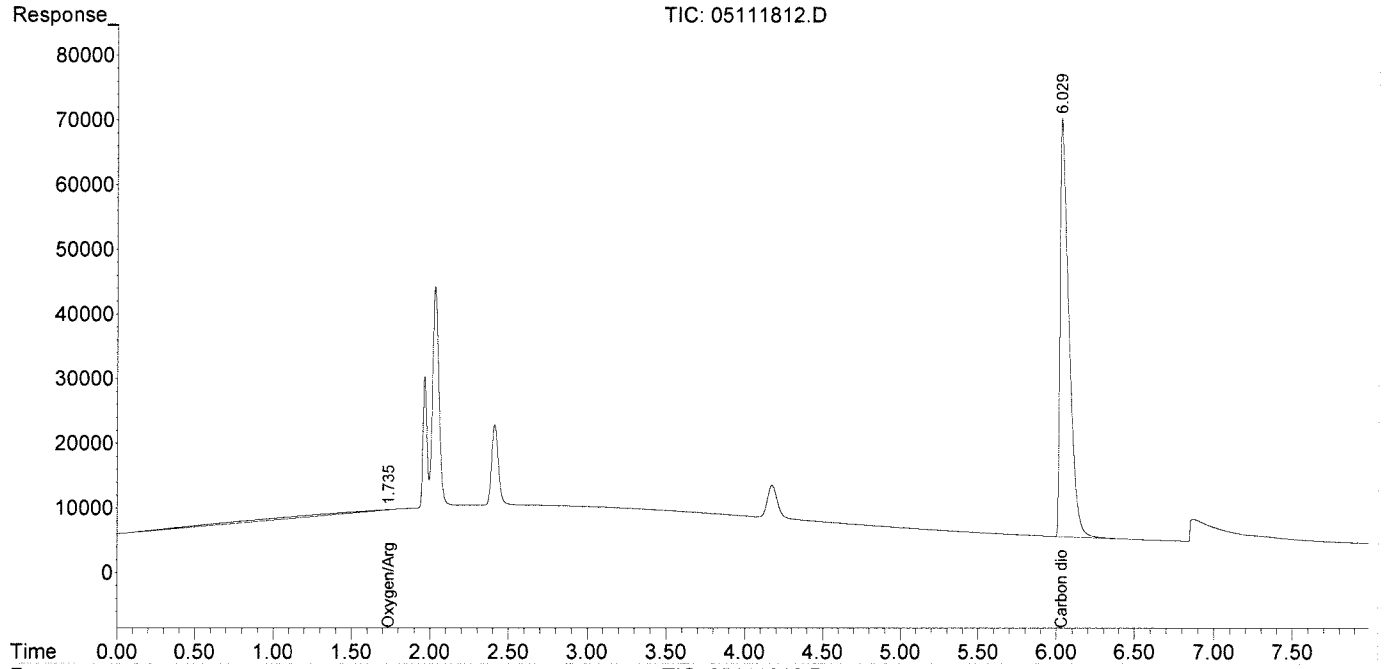
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.736	189294	0.040	ppm
2)	Carbon monoxide	1.736	189294	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.030	2497555	10640.153	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_TCD\2018_05\11\
Data File : 05111812.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 19:51:22
Operator : WH
Sample : P1802242-006ms 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 13 14:17:30 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : I:\GC10\DATA\RSK_TCD\2018_05\11\
Data File : 05111813.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 20:02:01
Operator : WH
Sample : P1802242-006msd 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 13 14:17:53 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

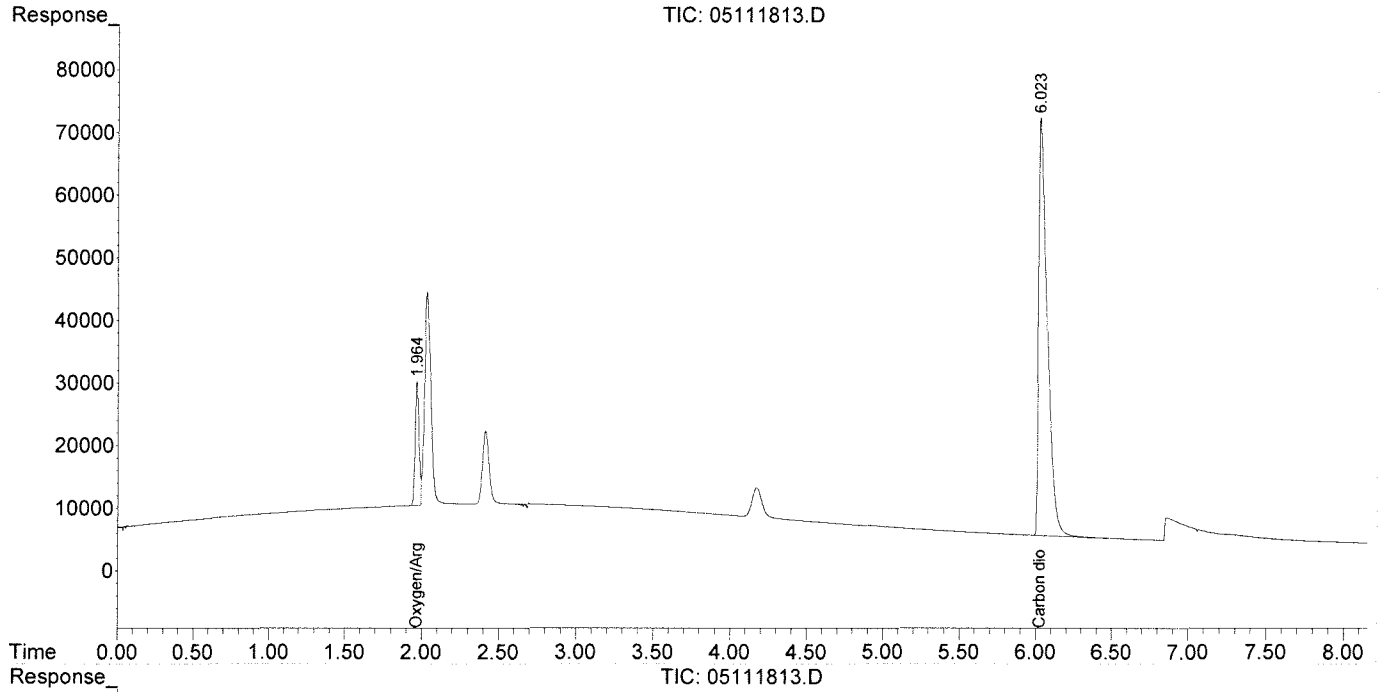
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.965f	343205	0.072	ppm
2)	Carbon monoxide	1.965f	343205	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.024	2601280	11082.048	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

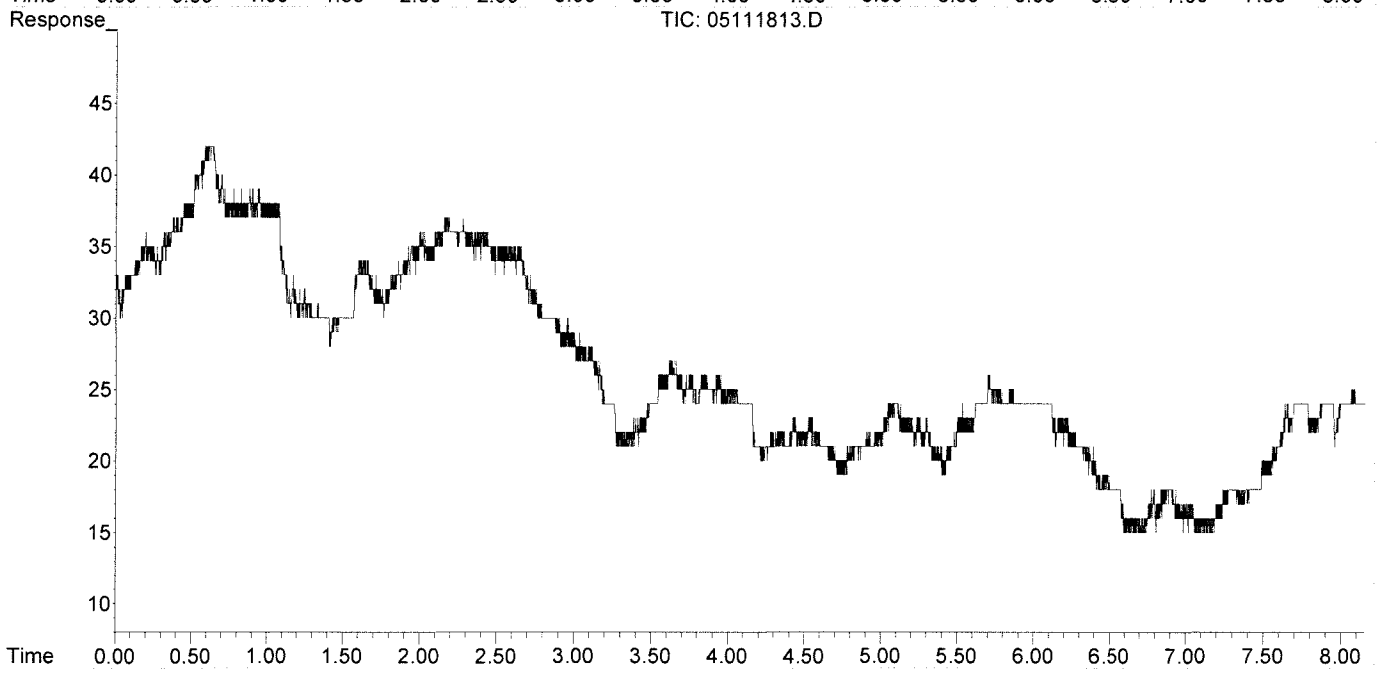
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_TCD\2018_05\11\
Data File : 05111813.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 20:02:01
Operator : WH
Sample : P1802242-006msd 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 13 14:17:53 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : I:\GC10\DATA\RSK_TCD\2018_05\11\
Data File : 05111805.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 17:01:00
Operator : WH
Sample : tcd lcs S32 05011801 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 13 14:15:12 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

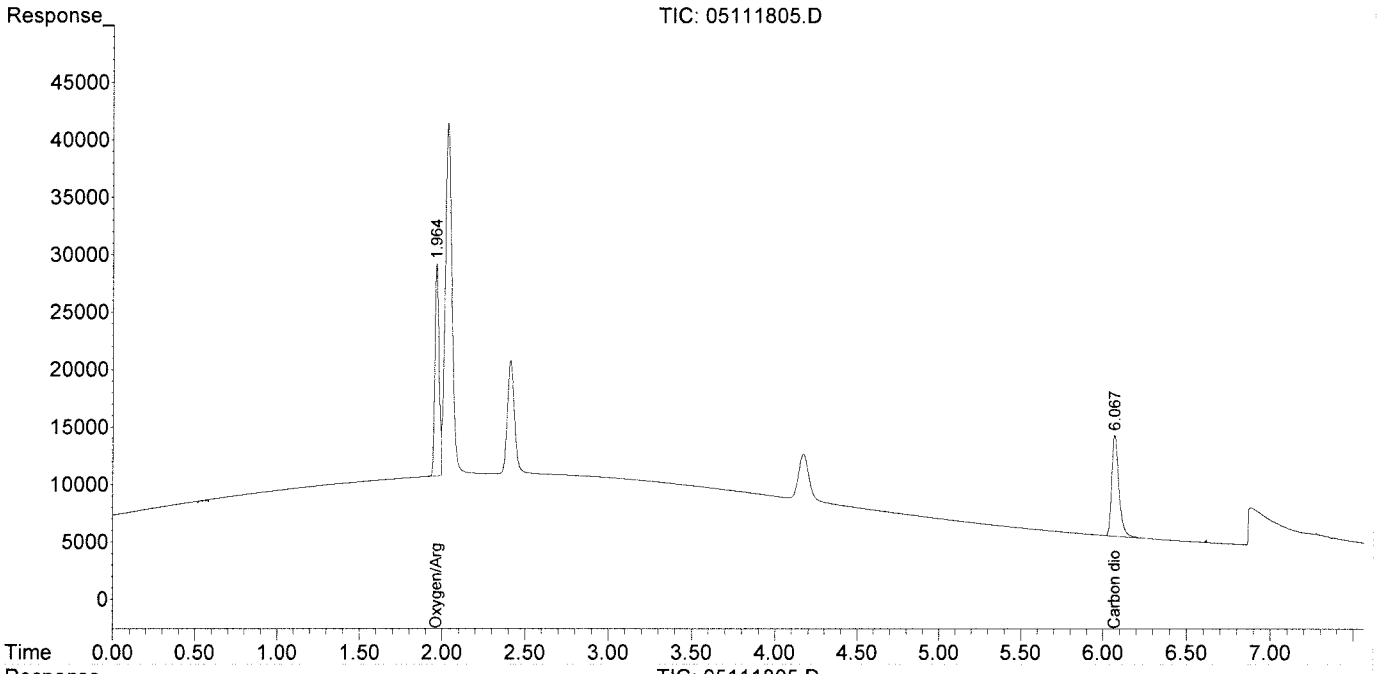
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.964f	323542	0.068	ppm
2)	Carbon monoxide	1.964f	323542	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.068	263346	1121.914	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

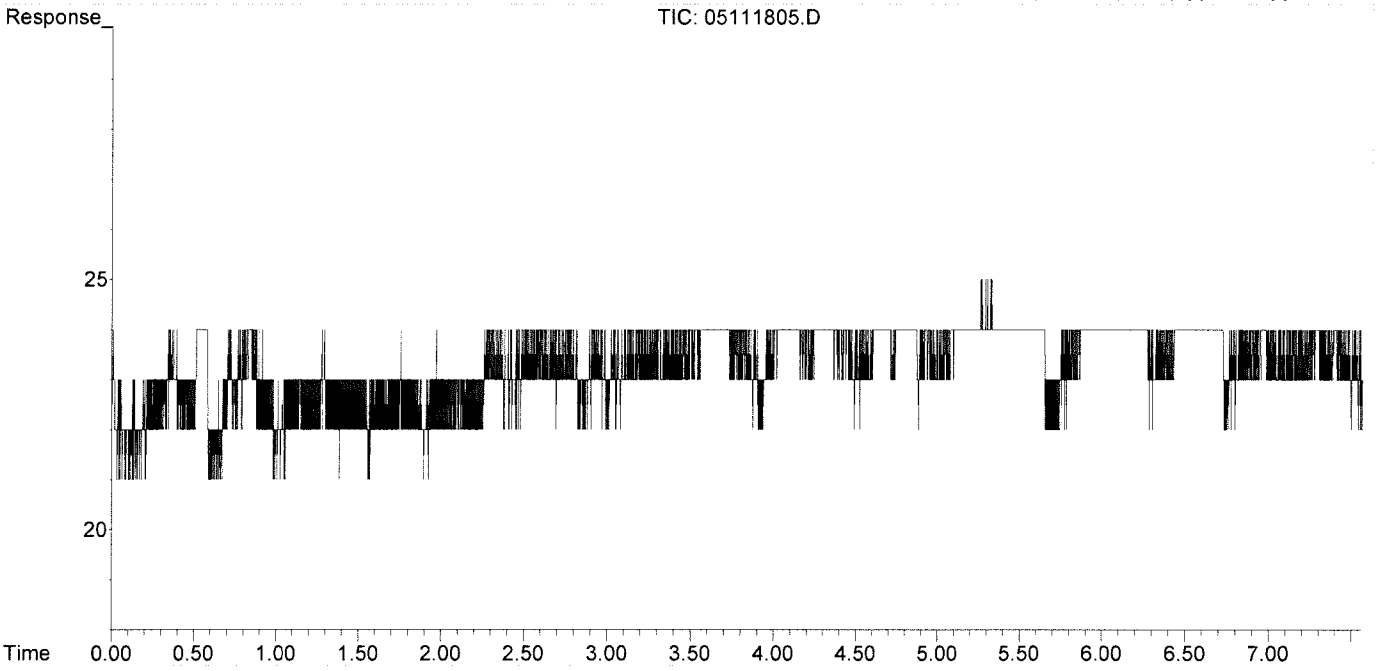
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_TCD\2018_05\11\
Data File : 05111805.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 17:01:00
Operator : WH
Sample : tcd lcs S32 05011801 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 13 14:15:12 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : I:\GC10\DATA\RSK_TCD\2018_05\11\
Data File : 05111806.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 17:10:42
Operator : WH
Sample : tcd lcsd S32 05011801 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 13 14:15:18 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

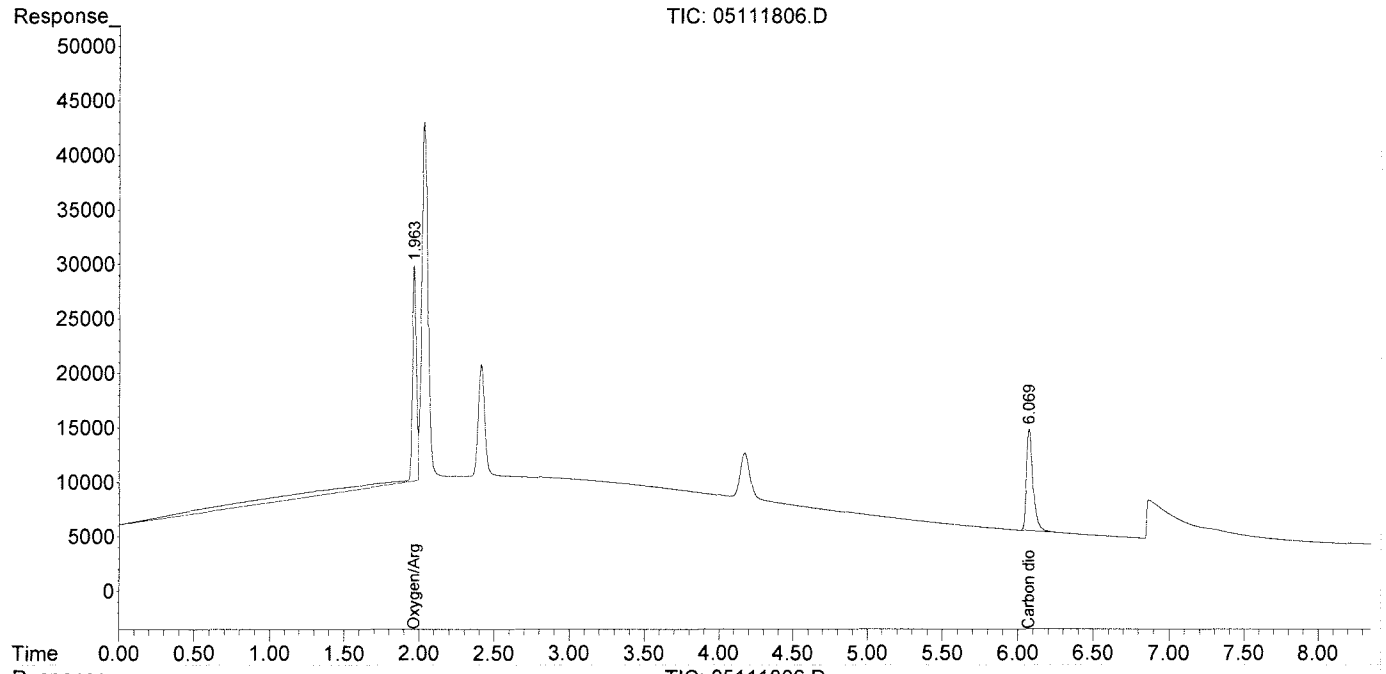
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.964f	677041	0.142	ppm
2)	Carbon monoxide	1.964f	677041	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.070	279889	1192.392	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

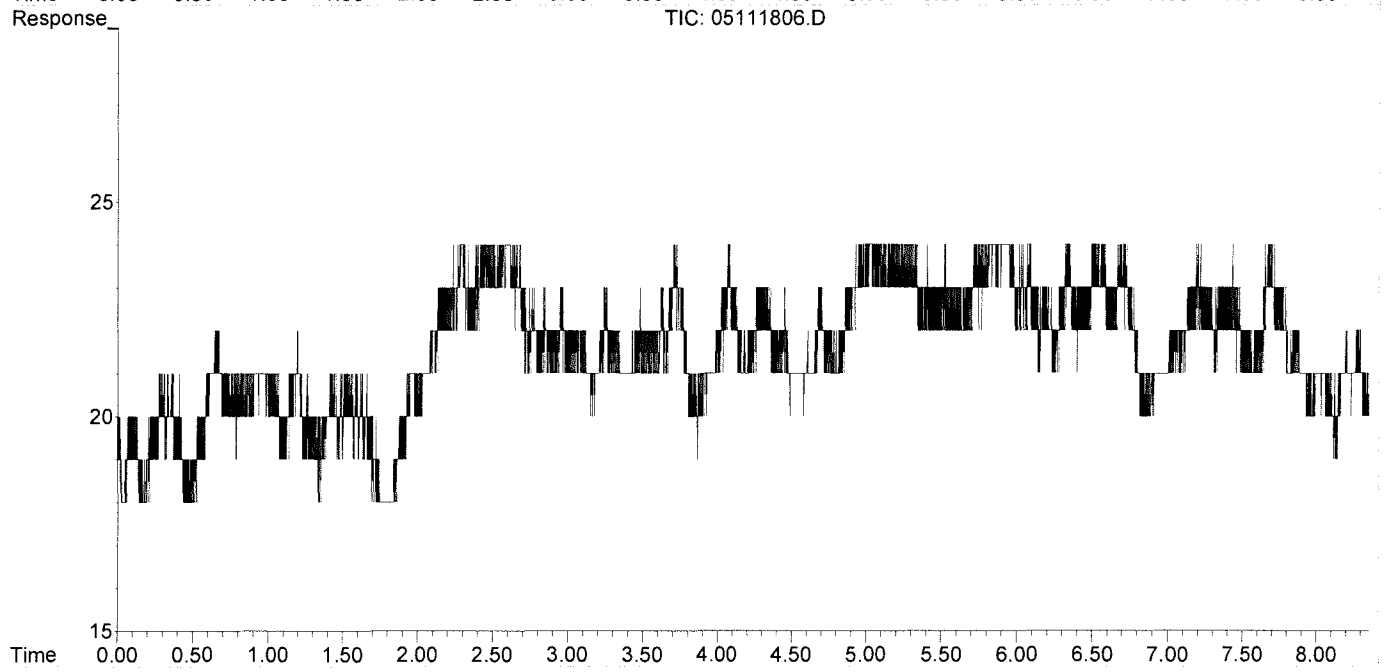
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_TCD\2018_05\11\
Data File : 05111806.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 17:10:42
Operator : WH
Sample : tcd lcsd S32 05011801 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 13 14:15:18 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Response Factor Report HP5890

Method Path : I:\GC10\METHODS\
Method File : RS082817_CO2.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Tue Aug 29 16:13:13 2017
Response Via : Initial Calibration

Calibration Files
1 =08291715.D 2 =08291716.D 3 =08291717.D
4 =08291719.D 5 =08291720.D 6 =08291721.D

	Compound	1	2	3	4	5	6	Avg		%RSD
1)	Oxygen/Argon	4.760						4.760	E6	0.00
2)	Carbon monoxide	2.775		1.066	0.043	0.033	0.027	0.657	E6	170.12
3)	Methane (TCD)							9.457		0.00
4)	Carbon dioxide	2.717	2.193	2.338	2.272	2.265	2.298	2.347	E2	7.99

Signal #2 Calibration Files
1 =08291715.D 2 =08291716.D 3 =08291717.D
4 =08291719.D 5 =08291720.D 6 =08291721.D

	Compound	1	2	3	4	5	6	Avg		%RSD
6)	Methane (FID)	1.253	1.160	1.005	0.927	0.848	0.848	0.945	E4	15.85
7)	Ethylene	1.677	1.605	1.900	1.749	1.597	1.579	1.684	E4	7.30
8)	Ethane	1.769	1.631	1.866	1.767	1.639	1.667	1.723	E4	5.40
9)	Propylene	2.402	2.309	2.767	2.551	2.331	2.333	2.449	E4	7.32
10)	Propane	2.906	2.737	2.817	2.639	2.410	2.420	2.655	E4	7.75
11)	Isobutylene							0.000		-1.00
12)	Isobutane							0.000		-1.00
13)	n-Butane							0.000		-1.00

(#) = Out of Range ### Number of calibration levels exceeded format ###

RS082817_CO2.M Wed Aug 30 13:24:19 2017

dit Compounds -- Compound #4 -- Carbon dioxide

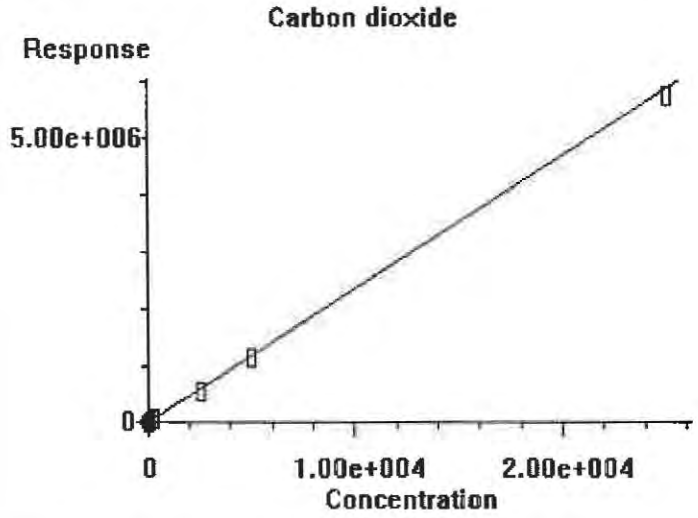
Search by: Ret Time | Name | Index — Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	25.000000	6793.665186
2	100.000000	21932.418000
3	250.000000	58460.642510
4	2500.000000	568043.388750
5	5000.000000	1132363.215937
6	25000.000000	5744294.891563
7	25000.000000	
8	25000.000000	
9	2000.000000	
10	30000.000000	

Lvl ID	Concentration	Response



0.000e+000	Quadratic term
2.347e+002	Linear term
0.000e+000	Constant term
7.987%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Calibration Status Report HP5890

Method Path : I:\GC10\METHODS\
Method File : RS082817_CO2.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Tue Aug 29 16:13:13 2017
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	0	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291715.D
2	2	0	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291716.D
3	3	3	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291717.D
4	4	10	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291719.D
5	5	25	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291720.D
6	6	125	0	J:\GC10\DATA\RSK_FID\2017_08\29\08291721.D
7	7	5000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241708.D
8	8	25000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241709.D
9	9	2000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241710.D
10	10	30000	0	J:\GC10\DATA\RSK_FID\2017_08\24\08241711.D

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Aug 29 14:21 2017	Aug 29 14:20 2017	29-Aug-2017, 14:07
2	2	Aug 29 14:52 2017	Aug 29 14:51 2017	29-Aug-2017, 14:22
3	3	Aug 29 15:04 2017	Aug 29 15:04 2017	29-Aug-2017, 14:53
4	4	Aug 29 15:36 2017	Aug 29 15:36 2017	29-Aug-2017, 15:23
5	5	Aug 29 15:57 2017	Aug 29 15:57 2017	29-Aug-2017, 15:44
6	6	Aug 29 16:13 2017	Aug 29 16:13 2017	29-Aug-2017, 16:00
7	7	Aug 25 09:05 2017	Aug 24 16:00 2017	24-Aug-2017, 15:44
8	8	Aug 25 09:06 2017	Aug 24 16:13 2017	24-Aug-2017, 16:02
9	9	Aug 25 09:06 2017	Aug 24 16:31 2017	24-Aug-2017, 16:16
10	10	Aug 25 09:07 2017	Aug 24 16:42 2017	24-Aug-2017, 16:33

RS082817_CO2.M Wed Aug 30 13:24:30 2017

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.776	277465	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.978	6794	27.870	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

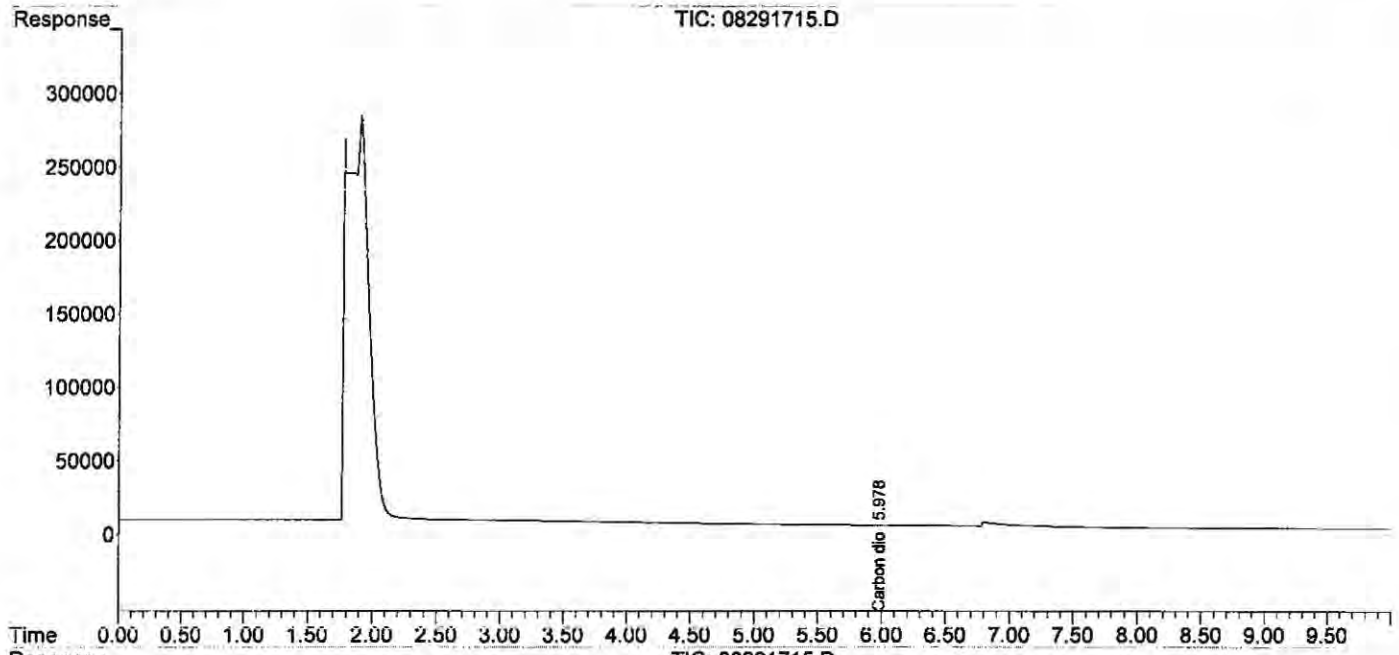
(f)=RT Delta > 1/2 Window (m)=manual int.

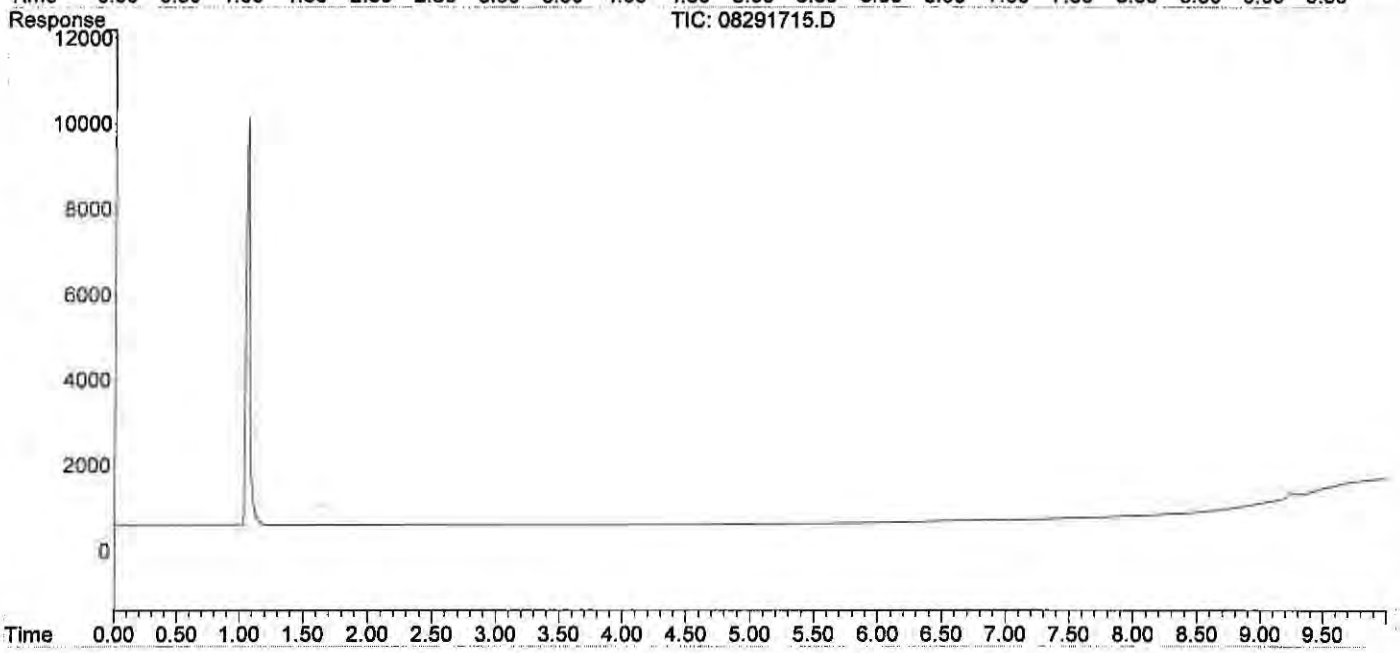
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



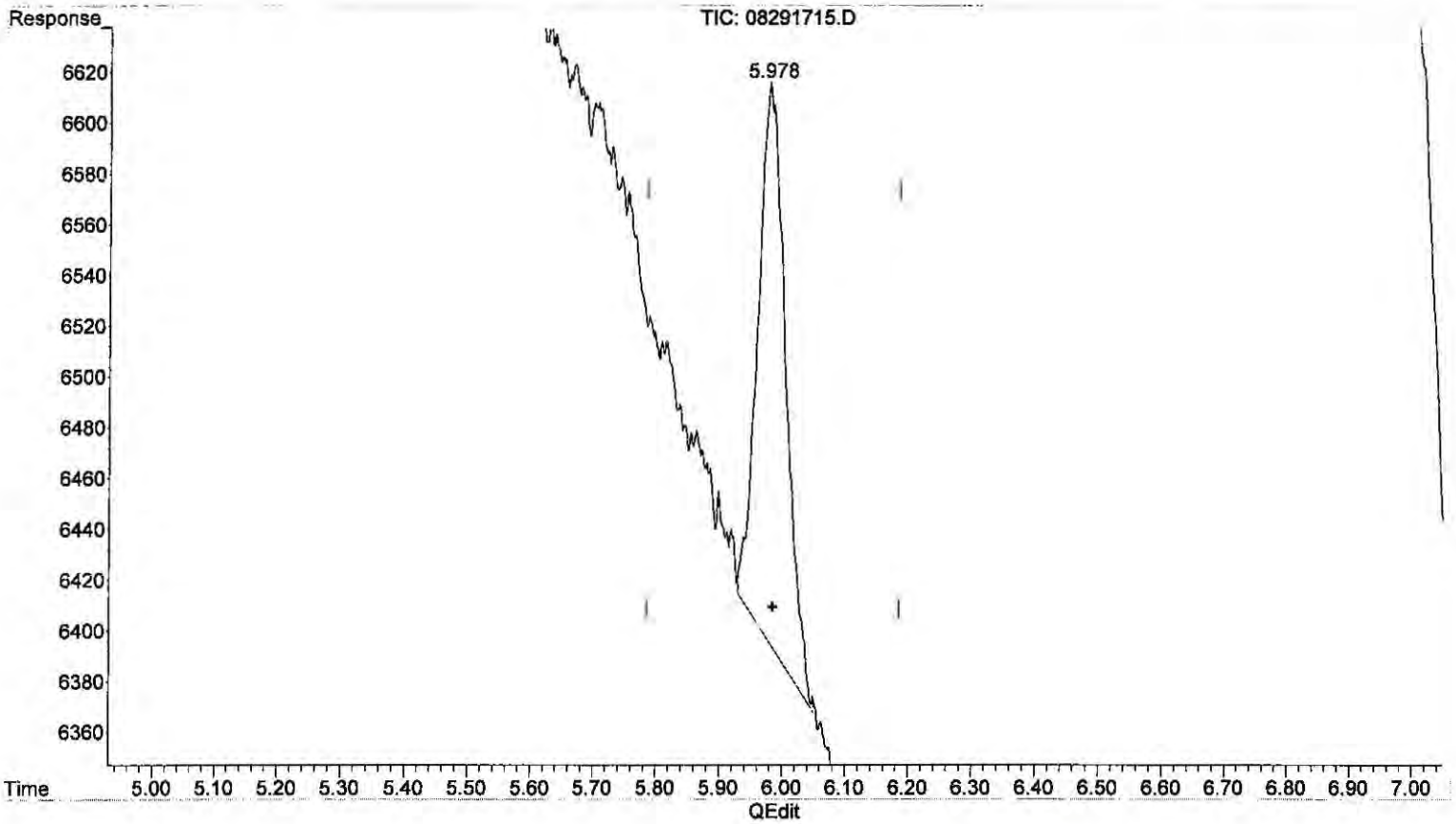


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:07
Operator : MC
Sample : 25ppm s32-08291701 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:20:06 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

5.978min 27.870 ppm m

response 6794

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291716.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:22
Operator : MC
Sample : 100ppm s32-08291702 0.2ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:51:38 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:21:08 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

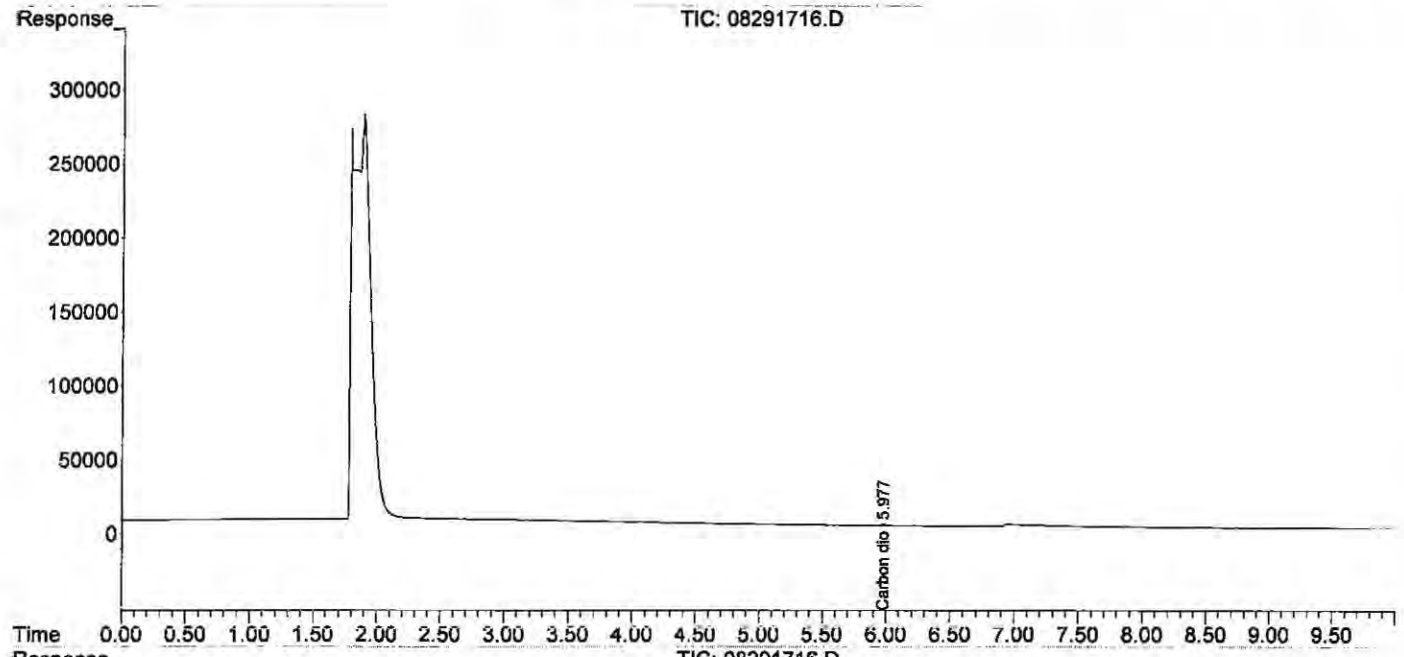
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.790	-598962	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	5.978	21932	87.858	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

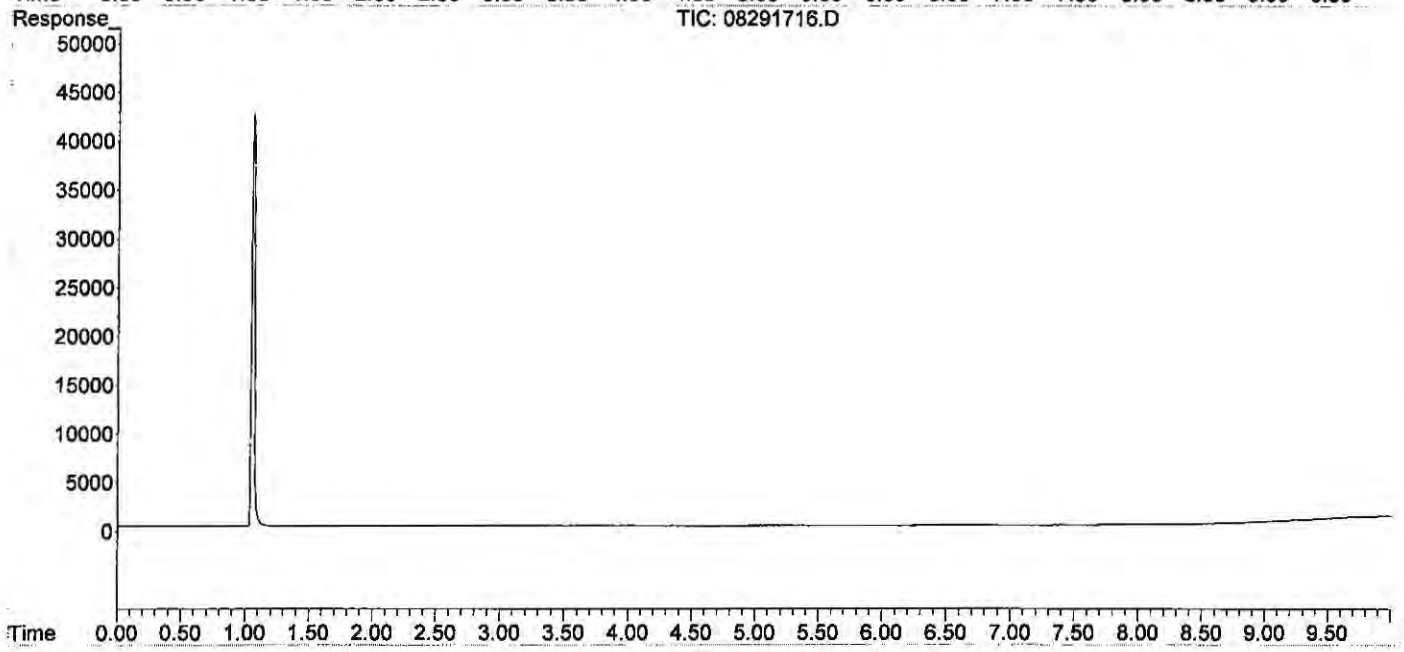
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291716.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:22
Operator : MC
Sample : 100ppm s32-08291702 0.2ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 14:51:38 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:21:08 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.920f	-30716454	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.970	58461	240.204	ppm	m
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

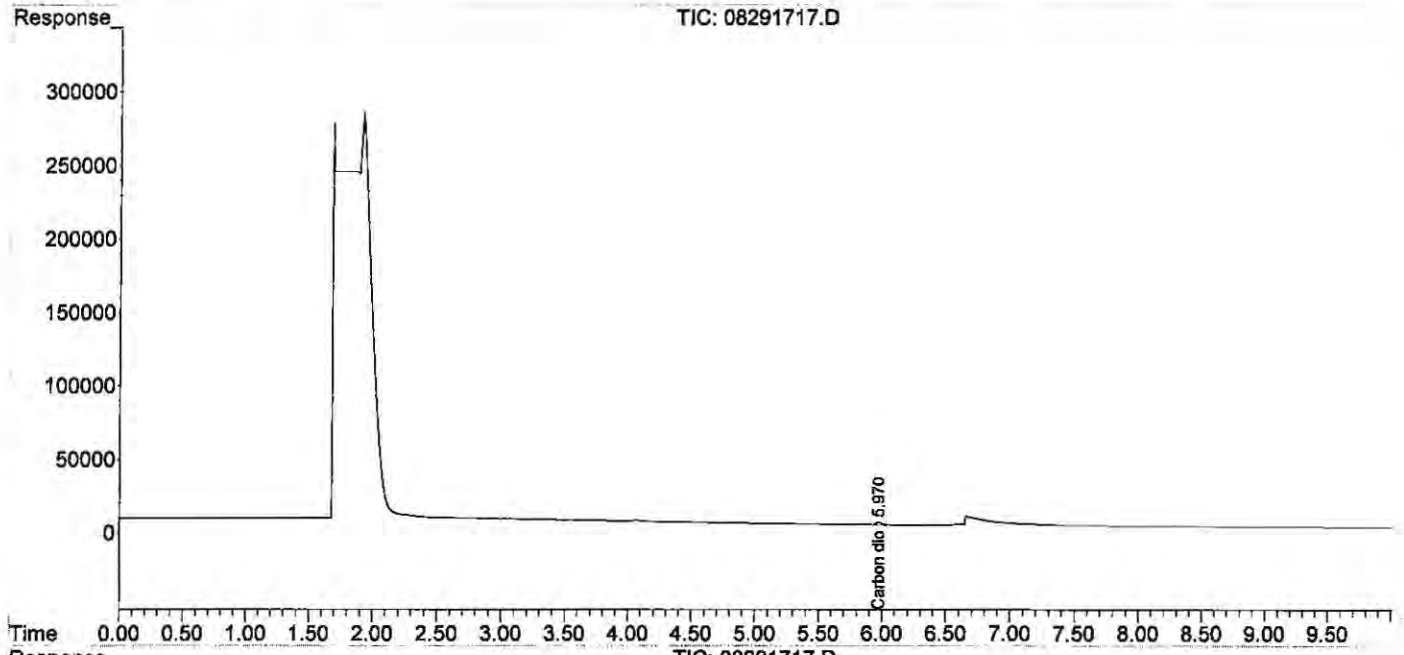
(f)=RT Delta > 1/2 Window (m)=manual int.

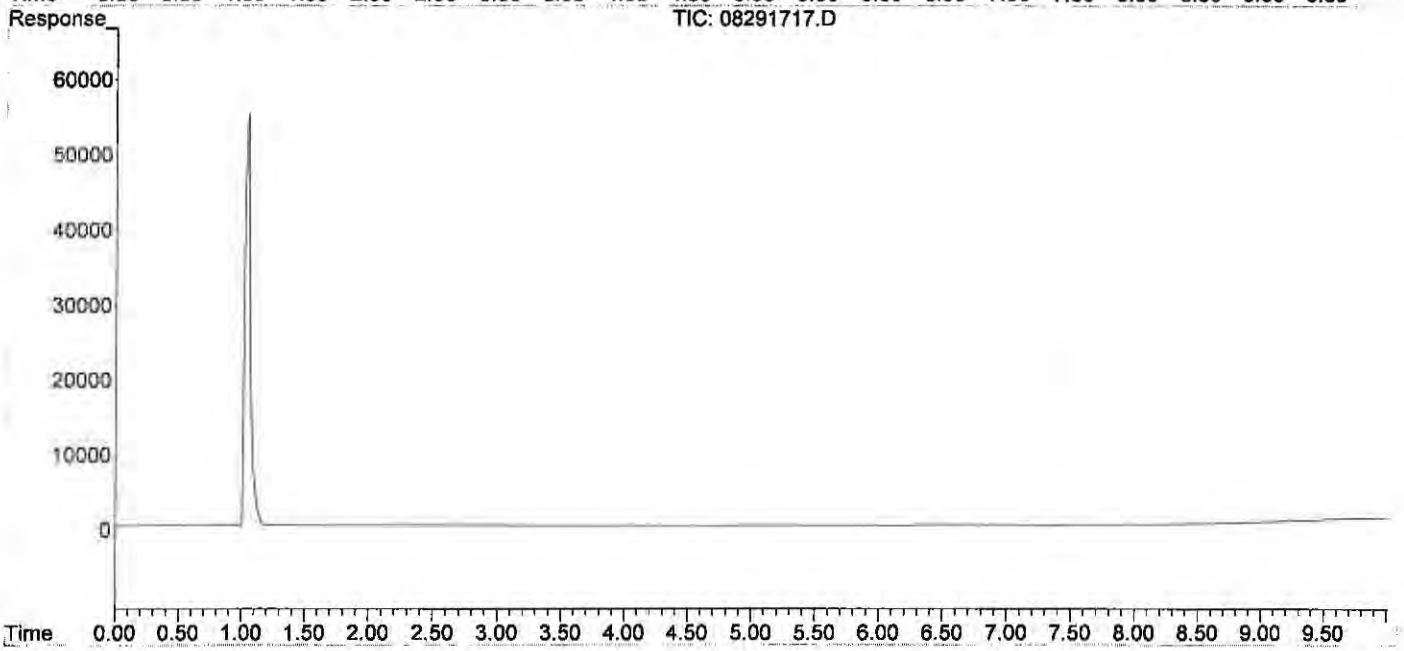
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



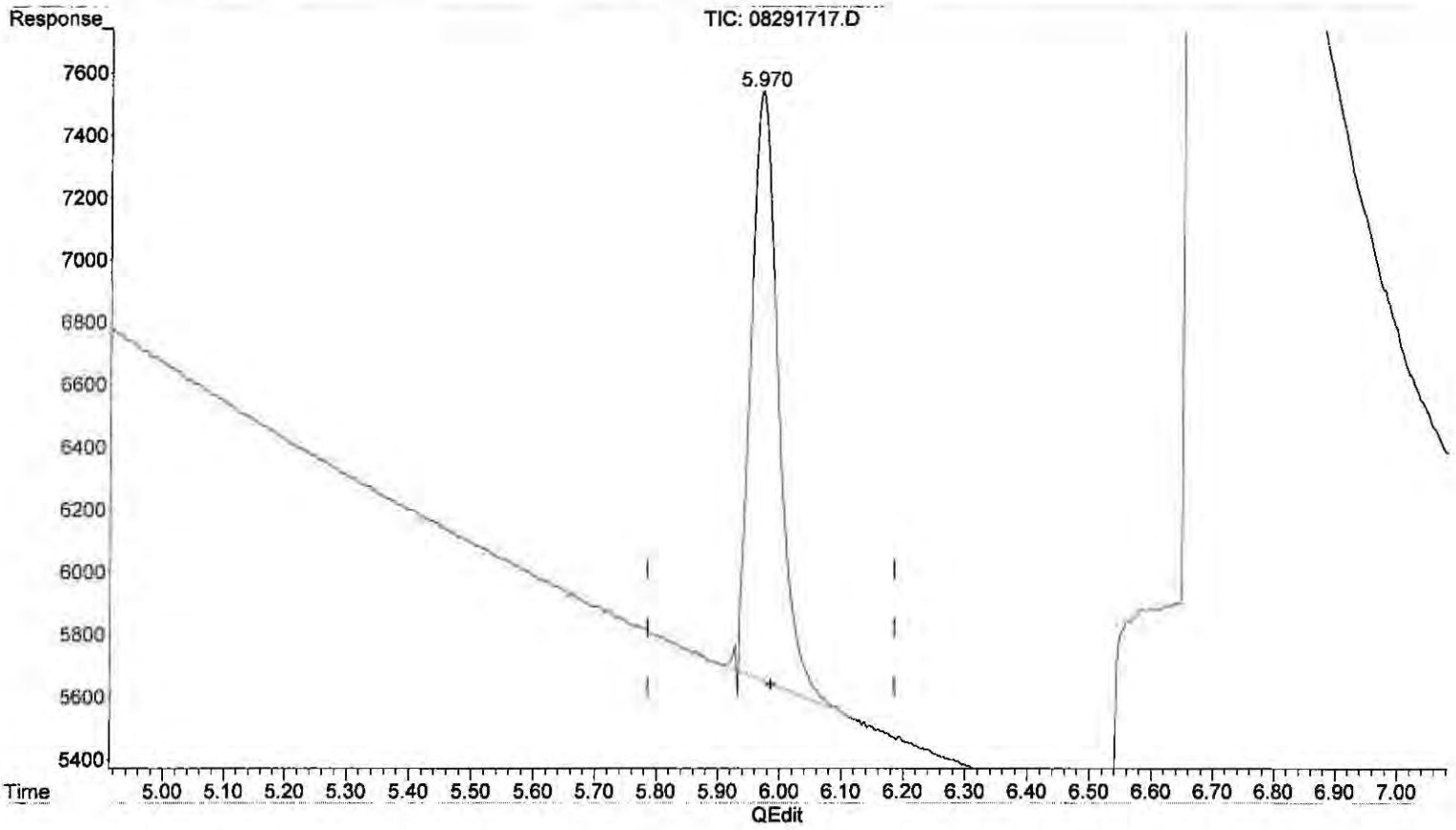


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291717.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 14:53
Operator : MC
Sample : 250ppm s32-08291702 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:03:42 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 14:52:06 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(4) Carbon dioxide

5.970min 240.204 ppm m

response 58461

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291719.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:23
Operator : MC
Sample : 2500ppm s32-08231701 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:35:50 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:04:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

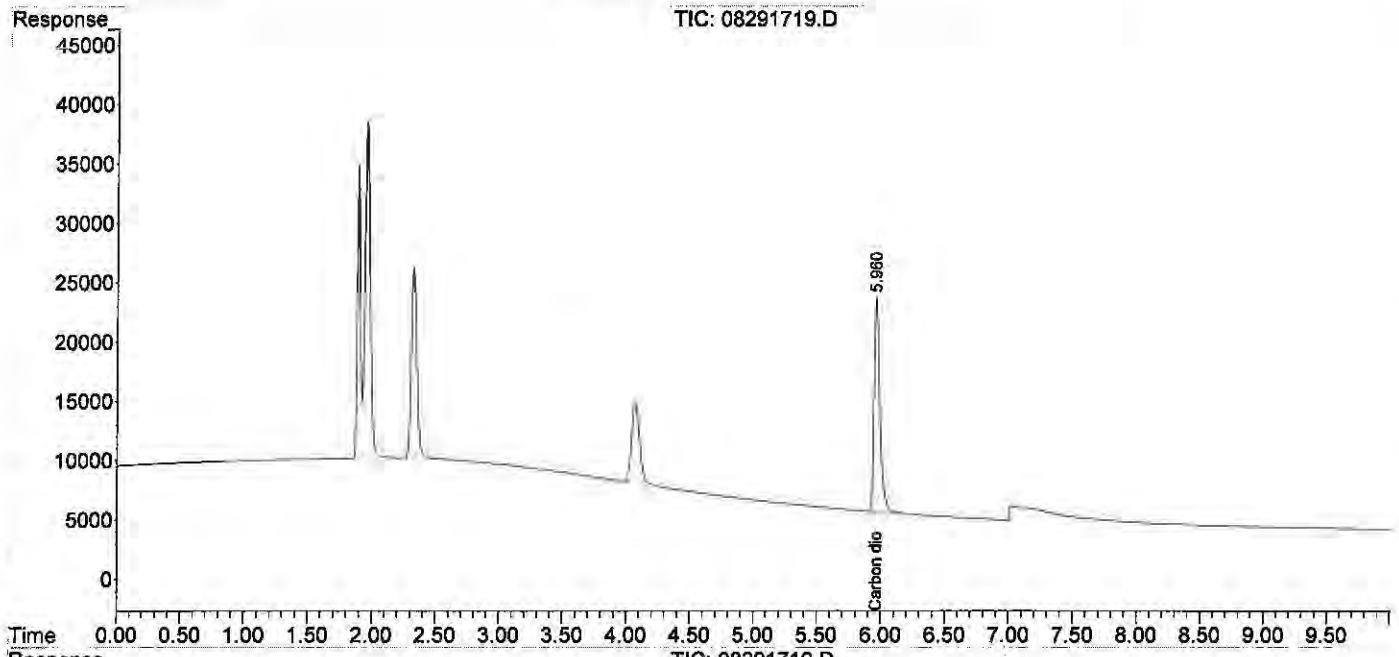
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.891	425113	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.962	568043	2369.673	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

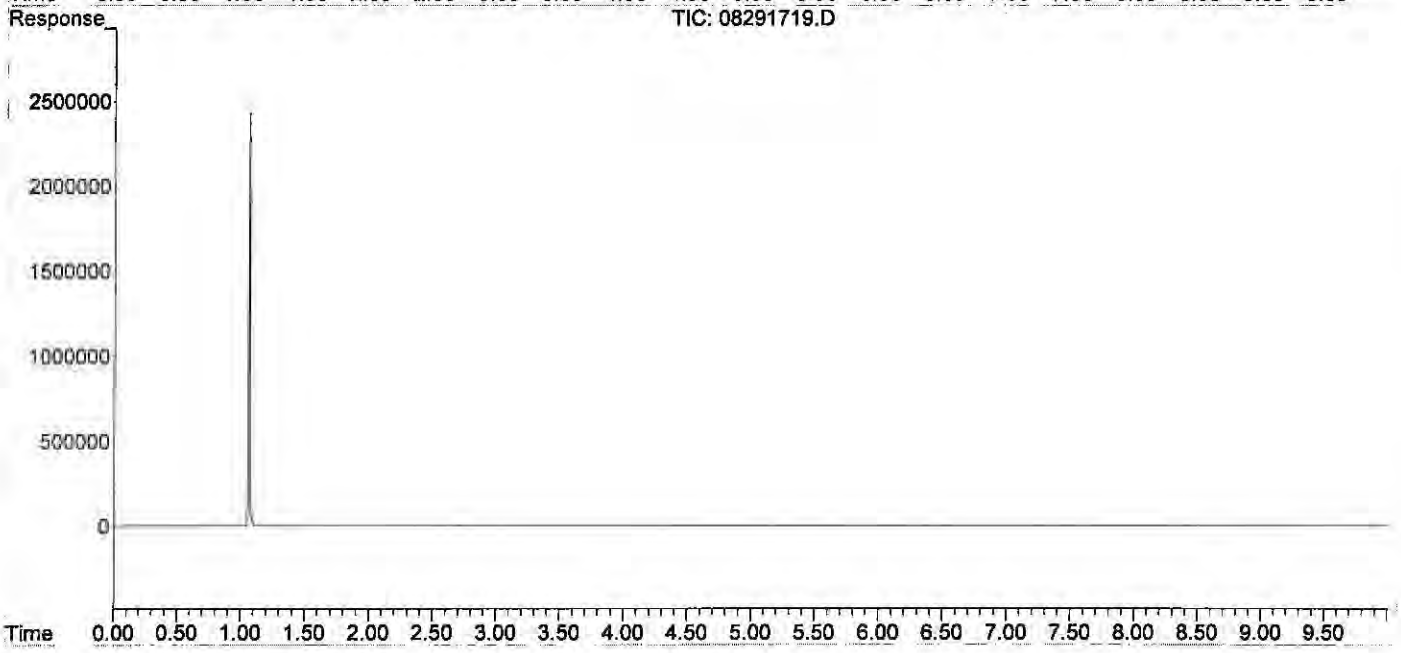
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291719.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:23
Operator : MC
Sample : 2500ppm s32-08231701 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:35:50 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:04:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291720.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:44
Operator : MC
Sample : 5000ppm s32-08231701 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:57:17 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:36:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

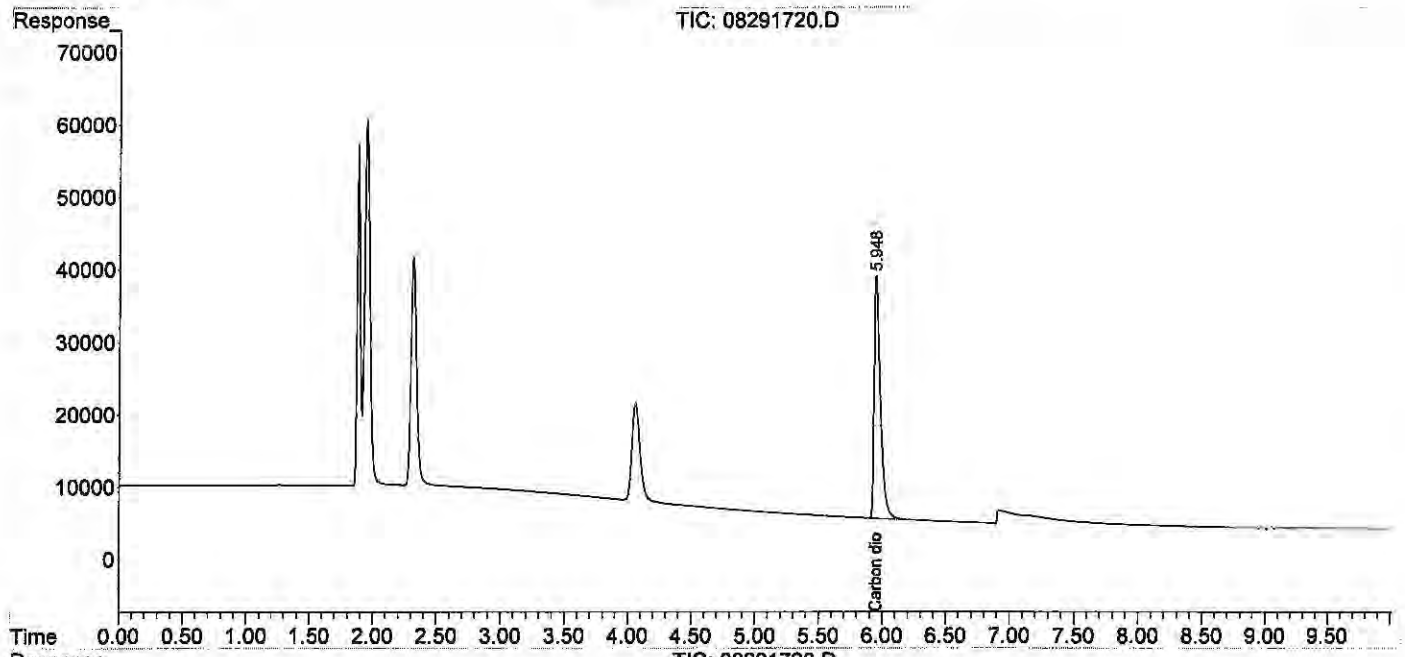
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.880	819221	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.948	1132363	4753.126	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

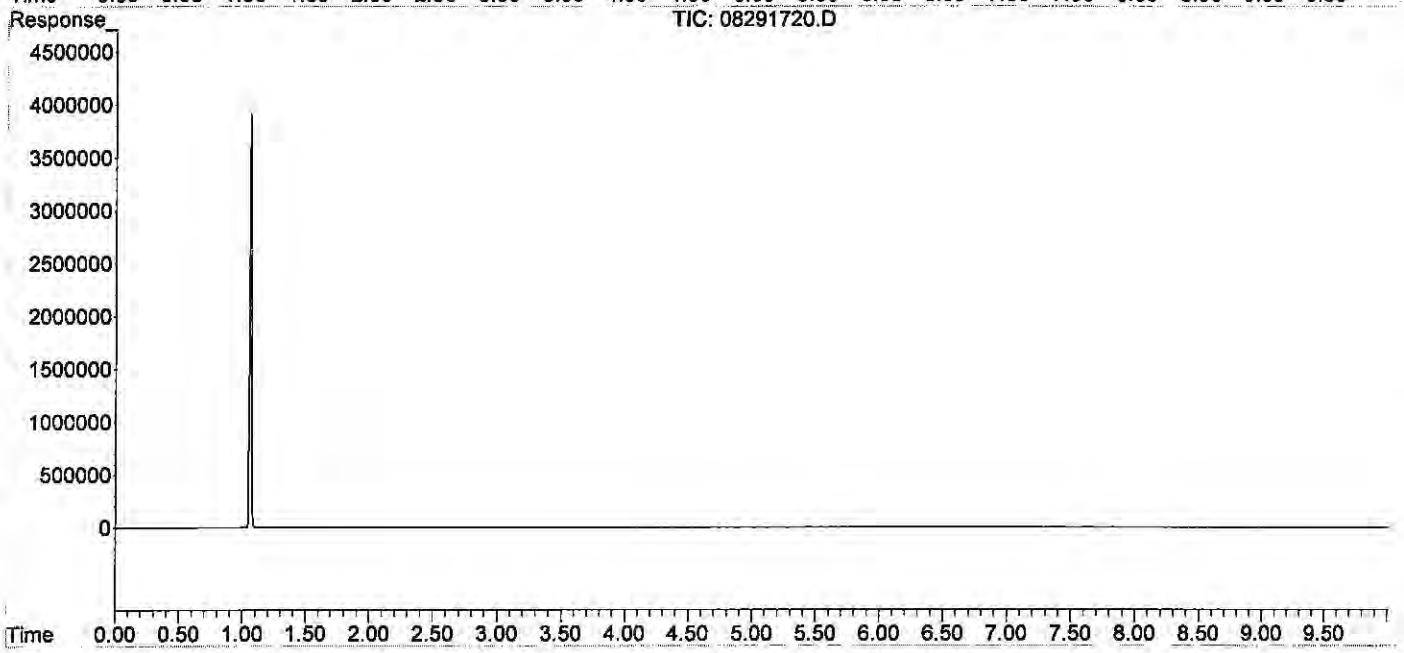
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291720.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 15:44
Operator : MC
Sample : 5000ppm s32-08231701 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 15:57:17 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:36:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291721.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:00
Operator : MC
Sample : 25000ppm s32-08231701 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:12:53 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:57:37 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

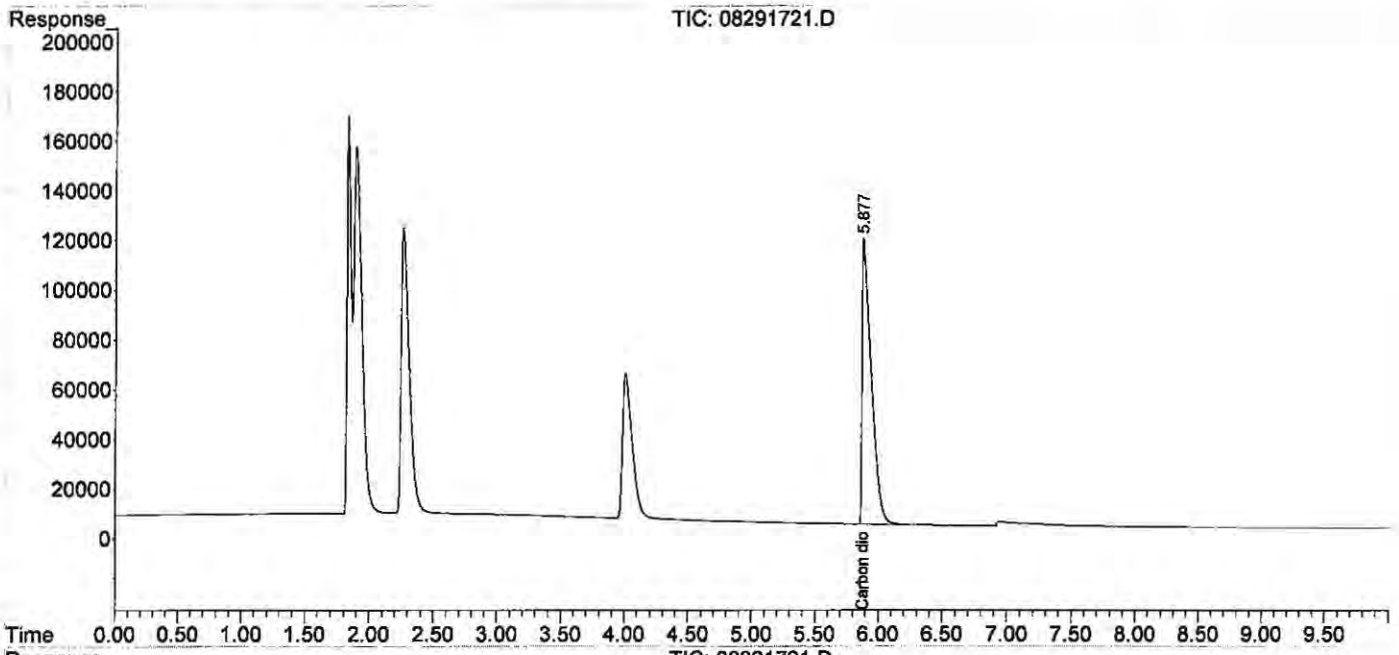
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.827	3325463	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	5.879f	5744295	24443.288	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

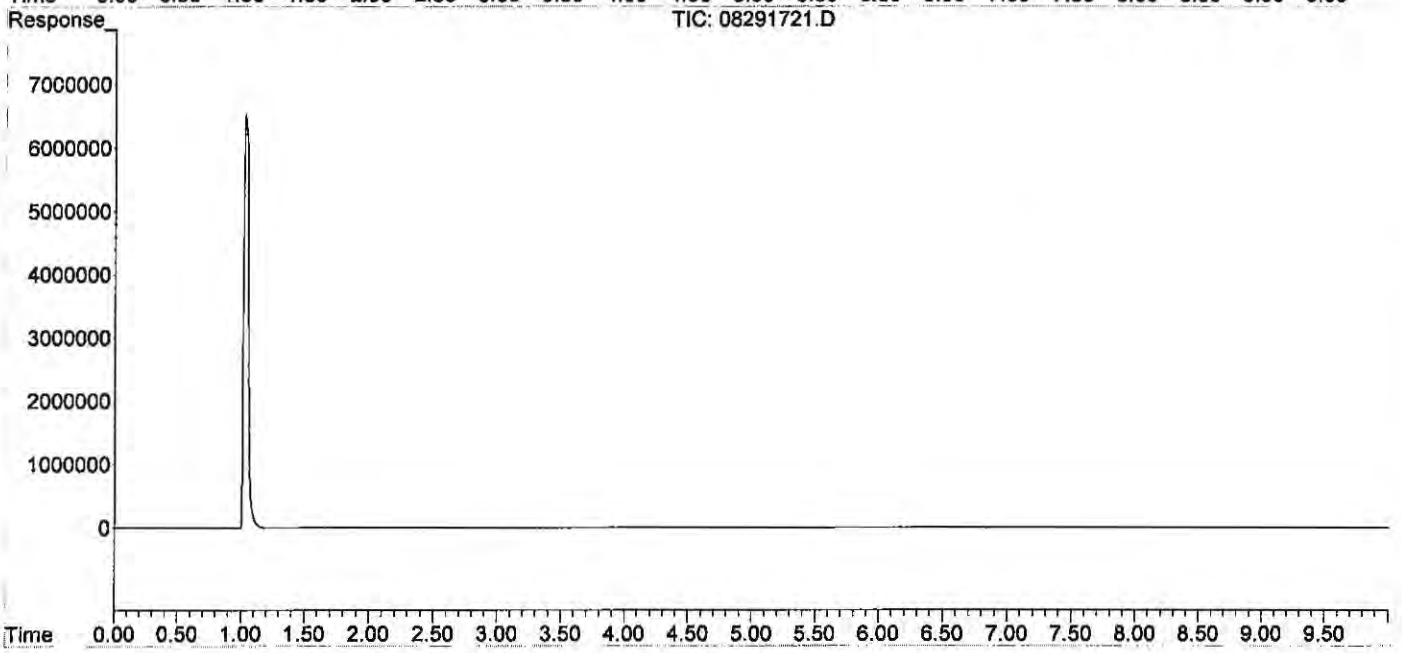
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291721.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:00
Operator : MC
Sample : 25000ppm s32-08231701 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:12:53 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 15:57:37 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291723.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:35
Operator : MC
Sample : icv s30-07071701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:54:07 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.886	536422	0.113	ppm	Actual %D
2)	Carbon monoxide	1.886	536422	N.D.	ppm	
3)	Methane (TCD)	4.059f	626500	66244.710	ppm	
4)	Carbon dioxide	5.947	1163775	4957.948	ppm	5000 99.16
6)	Methane (FID)	1.062	37290742	3947.023	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

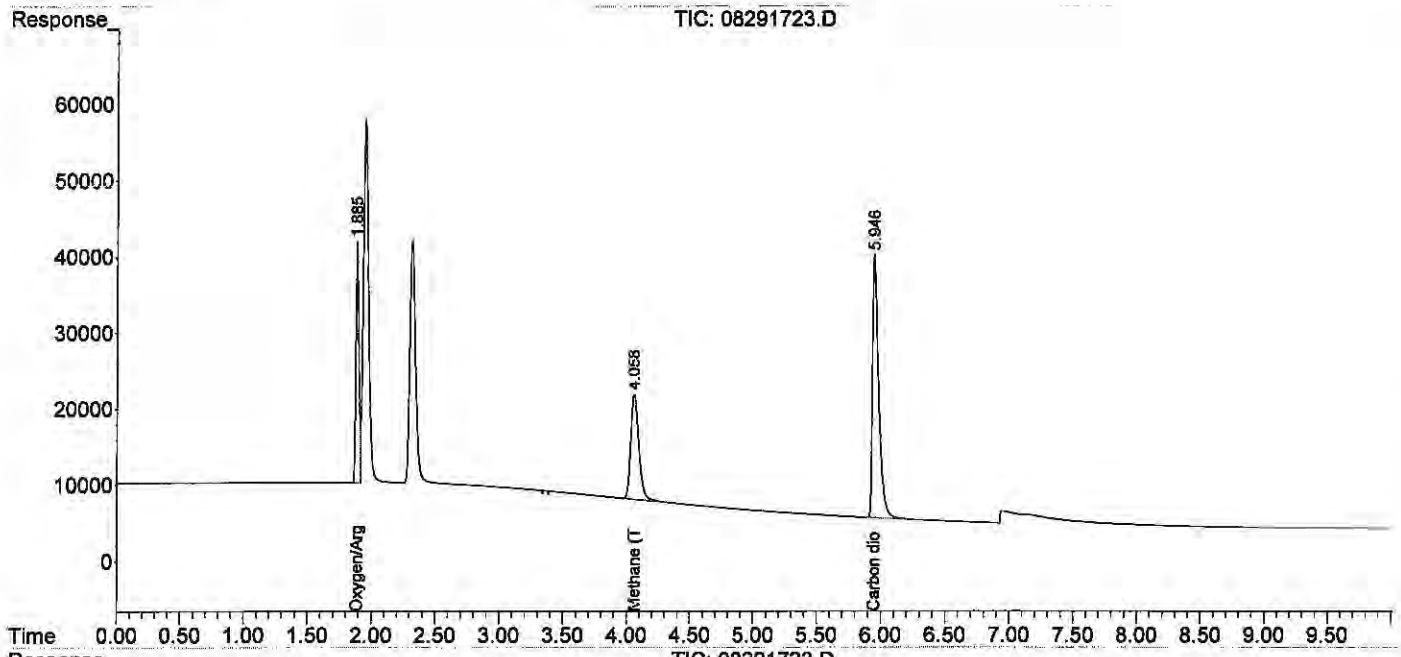
(f)=RT Delta > 1/2 Window (m)=manual int.

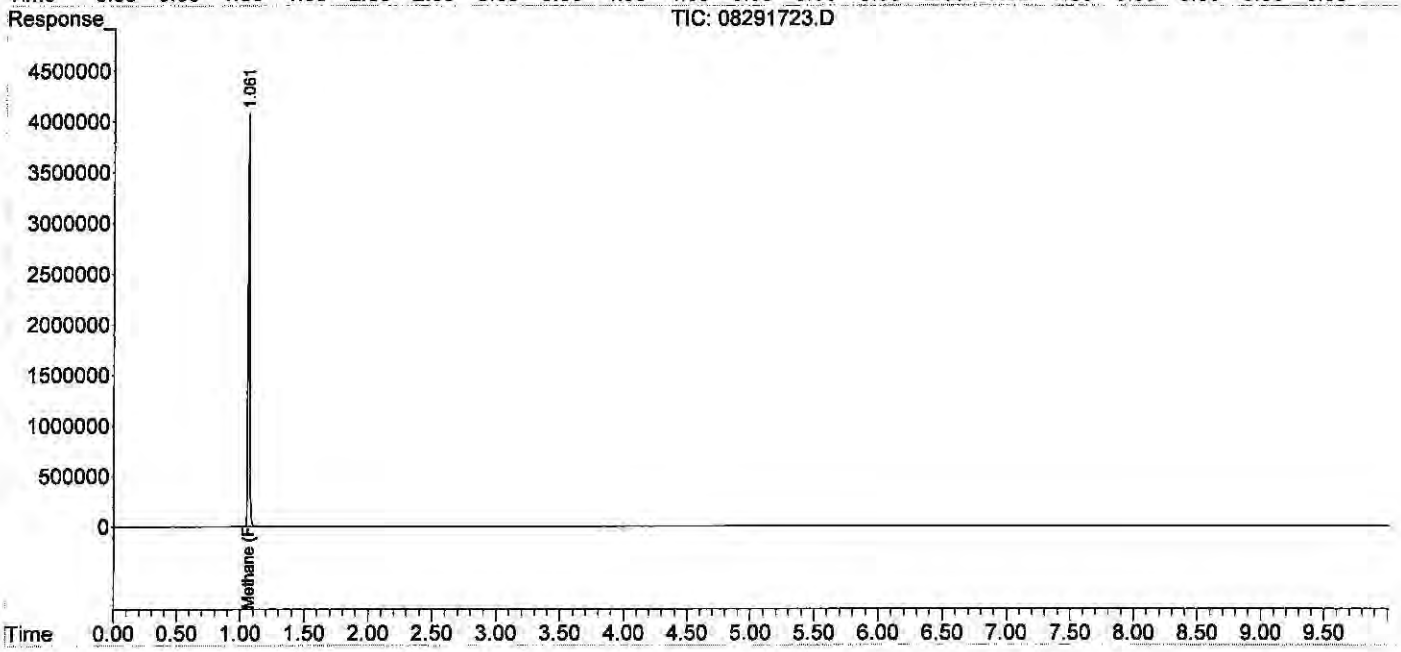
W 9/4/17

Data Path : J:\GC10\DATA\RSK_FID\2017_08\29\
Data File : 08291723.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 29-Aug-2017, 16:35
Operator : MC
Sample : icv s30-07071701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Aug 29 16:54:07 2017
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





ALS Environmental

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : ALS Laboratory Group | Analyst : WH | Instrument : GC#10
Service Request: P1802242 | Date Analysis : 05/11/18 | Detector : FID#10, TCD#10
Sample Vol. (ml) : 32.00 ml | Head Space Vol.(ml) : 8.00 ml | Gas Constant : 24.05684 (20°C)

HEAD SPACE RESULT (ppm)

Sample ID	Inj. Vol.	Carbon Dioxide
std S32-04201801	0.100	5125.438
ACTUAL		5000.00
%Difference		2.5%
mcs 0.1ml	0.100	0.000
rb 0.1ml	0.100	0.000
tcd lcs S32 05011801 0.1	0.100	1121.914
tcd lcsd S32 05011801 0	0.100	1192.392
P1802242-002 50ul	0.050	19904.14
P1802242-004 50ul	0.050	19739.41
P1802242-006 50ul	0.050	9689.06
P1802242-006ms 50ul	0.050	10640.15
P1802242-006msd 50ul	0.050	11082.05
std S32-04201801		4935.442
ACTUAL		5000.00
%Difference		1.3%

FINAL HEAD SPACE RESULT (ppm)

	Carbon Dioxide
WWt.	44.10
HENRY'S CONSTANT	1.42E+03
RL	100.00
mcs 0.1ml	0.000
tcd lcs S32 05011801 0.1ml	11219.140
tcd lcsd S32 05011801 0.1ml	11923.920
P1802242-002 50ul	398082.84
P1802242-004 50ul	394788.16
P1802242-006 50ul	193781.18
P1802242-006ms 50ul	212803.06
P1802242-006msd 50ul	221640.96

00912284

Data Path : I:\GC10\DATA\RSK_TCD\2018_05\11\
Data File : 05111801.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 15:56:50
Operator : WH
Sample : std S32-04201801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 13 14:14:06 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

WH 5/13/18

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

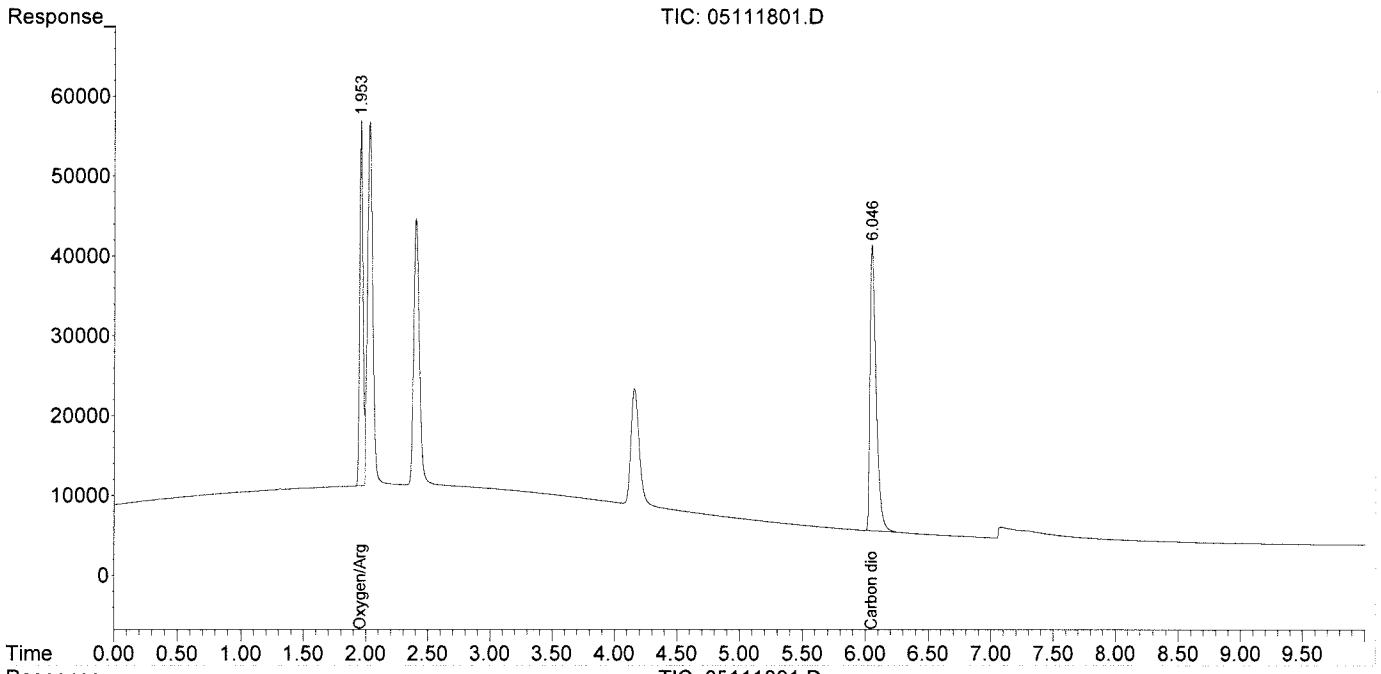
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.954f	826841	0.174	ppm
2)	Carbon monoxide	1.954f	826841	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.046	1203090	5125.438	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

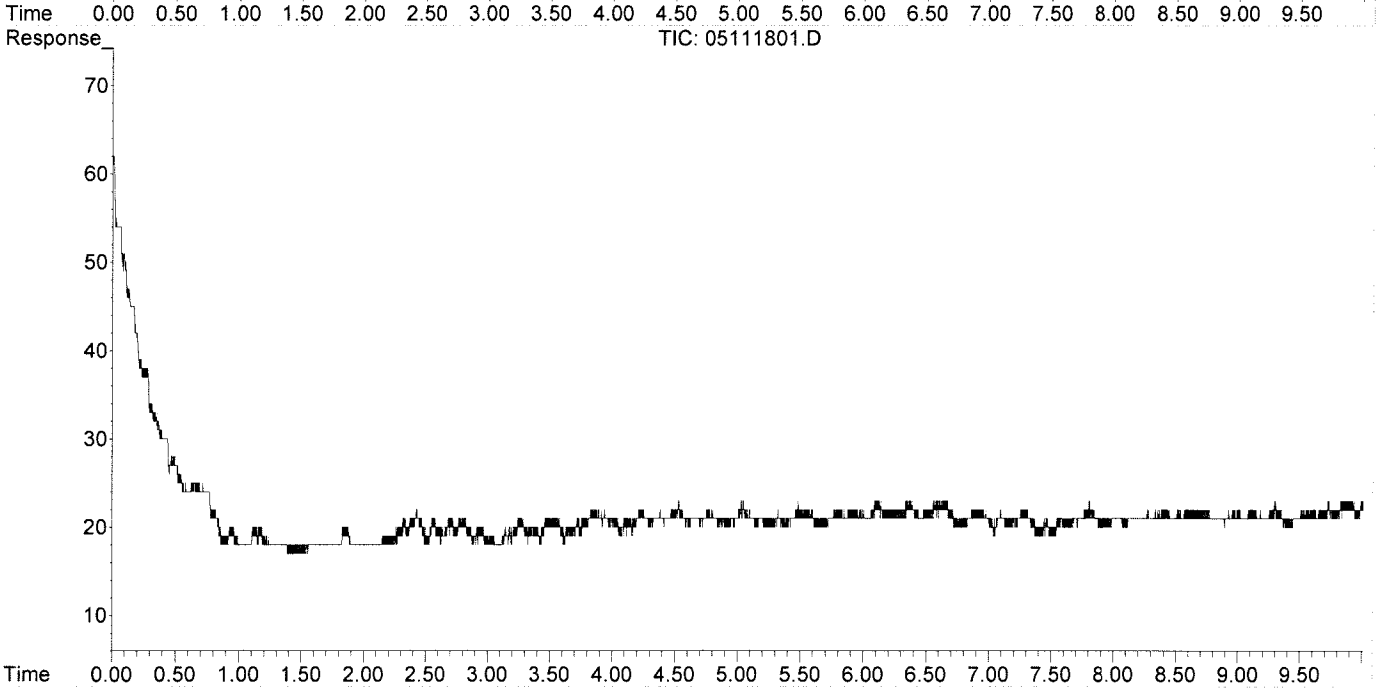
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_TCD\2018_05\11\
Data File : 05111801.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 15:56:50
Operator : WH
Sample : std S32-04201801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 13 14:14:06 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : I:\GC10\DATA\RSK_TCD\2018_05\11\
Data File : 05111815.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 20:29:33
Operator : WH
Sample : std S32-04201801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 13 14:18:37 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

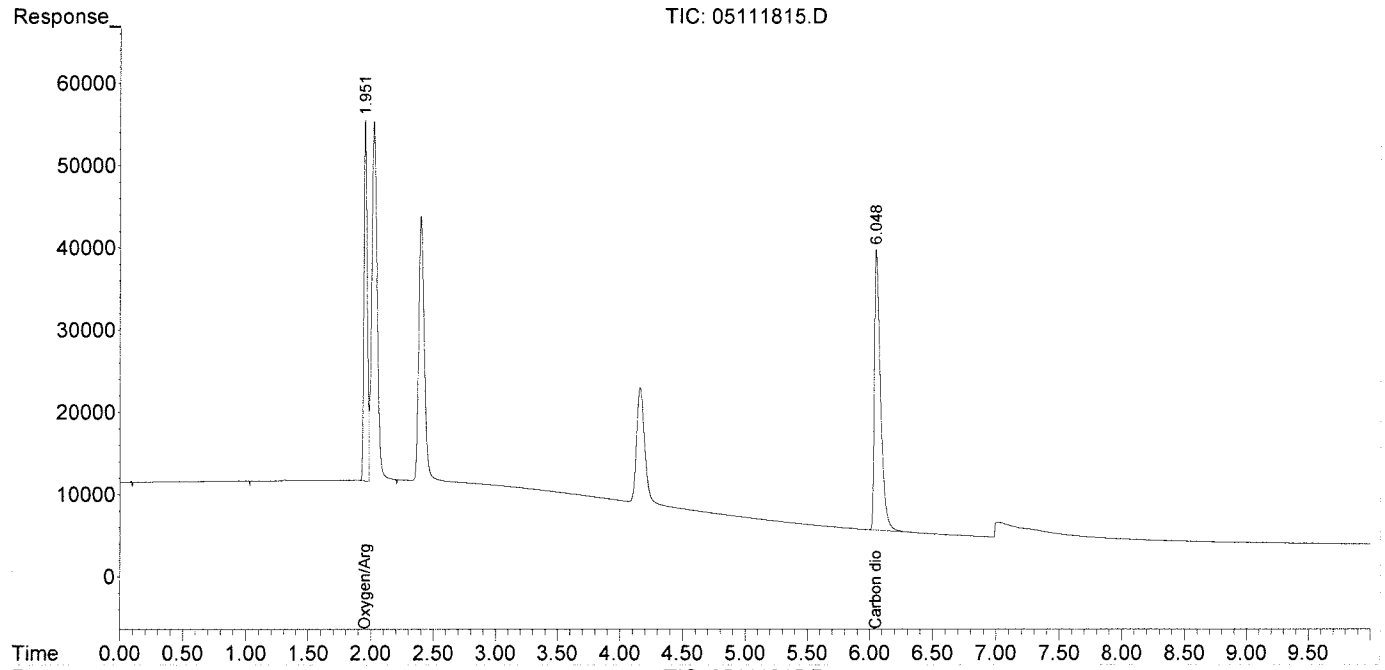
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.951f	802738	0.169	ppm
2)	Carbon monoxide	1.951f	802738	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	6.049	1158492	4935.442	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

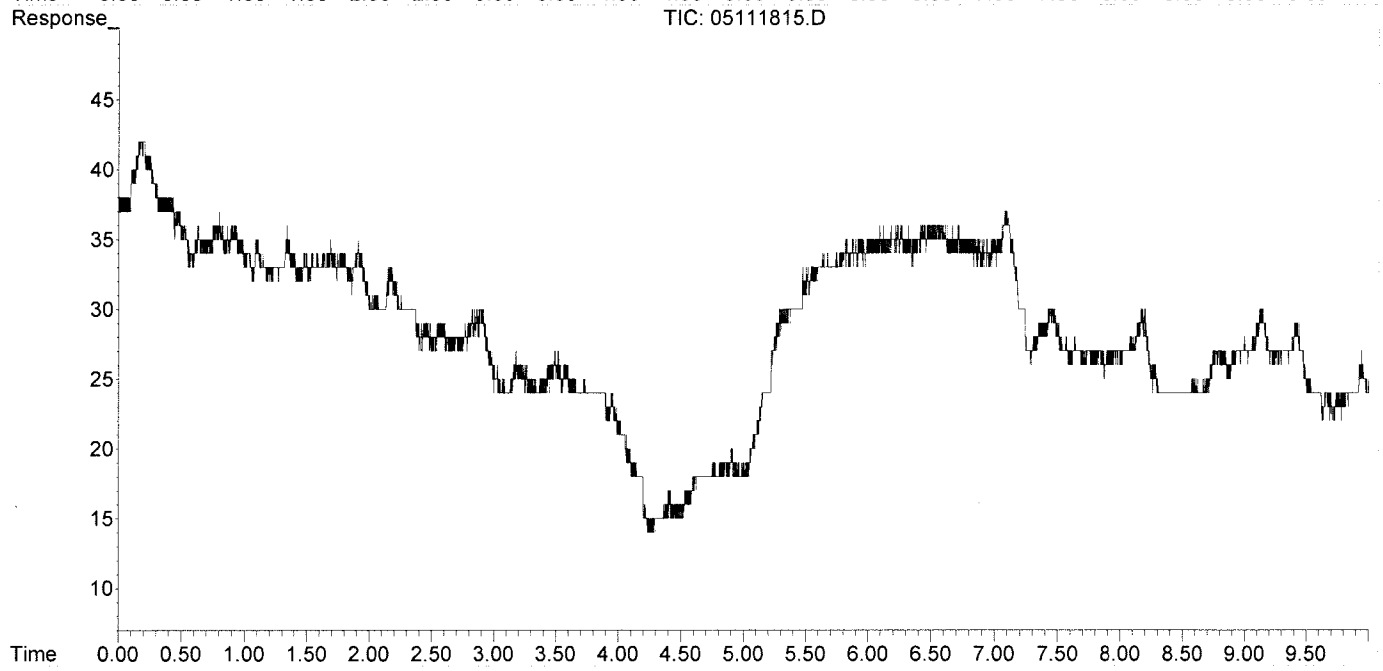
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_TCD\2018_05\11\
Data File : 05111815.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 20:29:33
Operator : WH
Sample : std S32-04201801
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 13 14:18:37 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Injection Log

Directory: I:\GC10\DATA\RSK_FID\2017_08\29\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	29-Aug-17, 07:58:00	08291701.D	std s30-06161601		MC	RSKBOTH.M	Pass
2	29-Aug-17, 08:11:02	08291702.D	mb 0.5ml		MC	RSKBOTH.M	Pass
3	29-Aug-17, 08:24:13	08291703.D	4089-001 0.5ml		MC	RSKBOTH.M	
4	29-Aug-17, 08:39:29	08291704.D	4089-002 0.5ml		MC	RSKBOTH.M	
5	29-Aug-17, 08:53:38	08291705.D	4089-003 0.5ml		MC	RSKBOTH.M	
6	29-Aug-17, 09:33:52	08291706.D	4089-004 0.5ml		MC	RSKBOTH.M	
7	29-Aug-17, 09:50:51	08291707.D	4089-005 0.5ml		MC	RSKBOTH.M	
8	29-Aug-17, 10:07:54	08291708.D	4089-006 0.5ml		MC	RSKBOTH.M	
9	29-Aug-17, 10:42:34	08291709.D	4089-007 0.5ml		MC	RSKBOTH.M	
10	29-Aug-17, 11:06:01	08291710.D	4089-008 0.5ml		MC	RSKBOTH.M	
11	29-Aug-17, 11:23:53	08291711.D	4089-009 0.5ml		MC	RSKBOTH.M	
12	29-Aug-17, 11:37:17	08291712.D	lcs s30-05241604		MC	RSKBOTH.M	Pass
13	29-Aug-17, 11:50:31	08291713.D	lcs s30-05241604		MC	RSKBOTH.M	Pass
14	29-Aug-17, 12:29:45	08291714.D	std s30-06161601		MC	RSKBOTH.M	Pass
15	29-Aug-17, 14:07:01	08291715.D	25ppm s32-08291701 0.25ml		MC	RSKBOTH.M	Curve
16	29-Aug-17, 14:22:12	08291716.D	100ppm s32-08291702 0.2ml		MC	RSKBOTH.M	Curve
17	29-Aug-17, 14:53:00	08291717.D	250ppm s32-08291702 0.5ml		MC	RSKBOTH.M	Curve
18	29-Aug-17, 15:07:43	08291718.D	mls inject		MC	RSKBOTH.M	
19	29-Aug-17, 15:23:21	08291719.D	2500ppm s32-08231701 50ul		MC	RSKBOTH.M	Curve
20	29-Aug-17, 15:44:54	08291720.D	5000ppm s32-08231701 0.1ml		MC	RSKBOTH.M	Curve
21	29-Aug-17, 16:00:09	08291721.D	25000ppm s32-08231701 0.5ml		MC	RSKBOTH.M	Curve
22	29-Aug-17, 16:15:43	08291722.D	mb 0.1ml		MC	RSKBOTH.M	Pass
23	29-Aug-17, 16:35:37	08291723.D	lcv s30-07071701		MC	RSKBOTH.M	Pass

Injection Log

Directory: I:\GC10\DATA\RSK_TCD\2018_05\11\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	11-May-18, 15:56:50	05111801.D	std S32-04201801		WH	RSKBOTH.M	pass
2	11-May-18, 16:10:21	05111802.D	rb 0.1ml		WH	RSKBOTH.M	pass
3	11-May-18, 16:20:58	05111803.D	mcs 0.1ml		WH	RSKBOTH.M	mis inject
4	11-May-18, 16:34:47	05111804.D	mcs 0.1ml		WH	RSKBOTH.M	pass
5	11-May-18, 17:01:00	05111805.D	tcd lcs S32 05011801 0.1ml		WH	RSKBOTH.M	pass
6	11-May-18, 17:10:42	05111806.D	tcd lcsd S32 05011801 0.1ml		WH	RSKBOTH.M	pass
7	11-May-18, 17:21:23	05111807.D	P1802242-002 0.1		WH	RSKBOTH.M	
8	11-May-18, 17:34:51	05111808.D	P1802242-004 0.1		WH	RSKBOTH.M	
9	11-May-18, 17:47:34	05111809.D	P1802242-002 50ul		WH	RSKBOTH.M	
10	11-May-18, 19:28:15	05111810.D	P1802242-004 50ul		WH	RSKBOTH.M	
11	11-May-18, 19:38:24	05111811.D	P1802242-006 50		WH	RSKBOTH.M	
12	11-May-18, 19:51:22	05111812.D	P1802242-006ms 50ul		WH	RSKBOTH.M	
13	11-May-18, 20:02:01	05111813.D	P1802242-006msd 50ul		WH	RSKBOTH.M	
14	11-May-18, 20:12:31	05111814.D	P1802242-006 50ul		WH	RSKBOTH.M	
15	11-May-18, 20:29:33	05111815.D	std S32-04201801		WH	RSKBOTH.M	pass

Data Path : I:\GC10\DATA\RSK_FID\2018_05\11\
Data File : 05111806.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 14:37:22
Operator : WH
Sample : P1802242-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 13 14:36:39 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

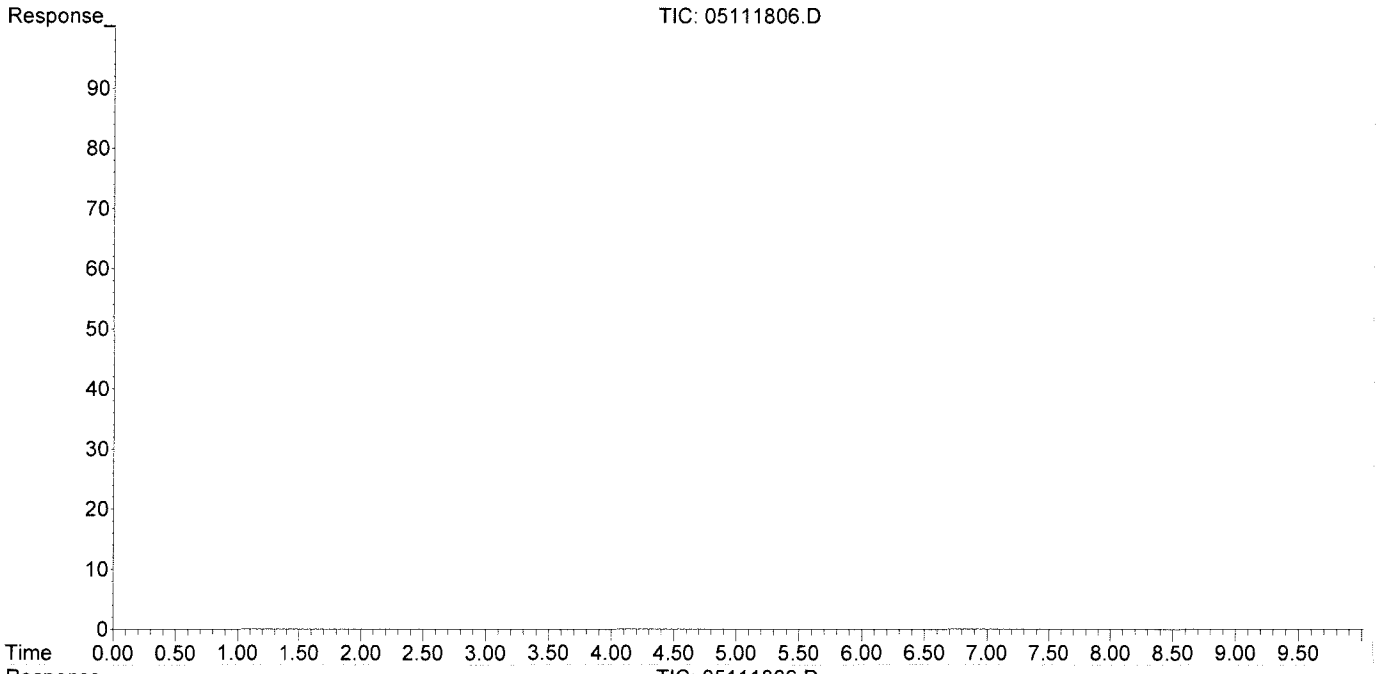
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.093	762	0.084	ppm	m
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

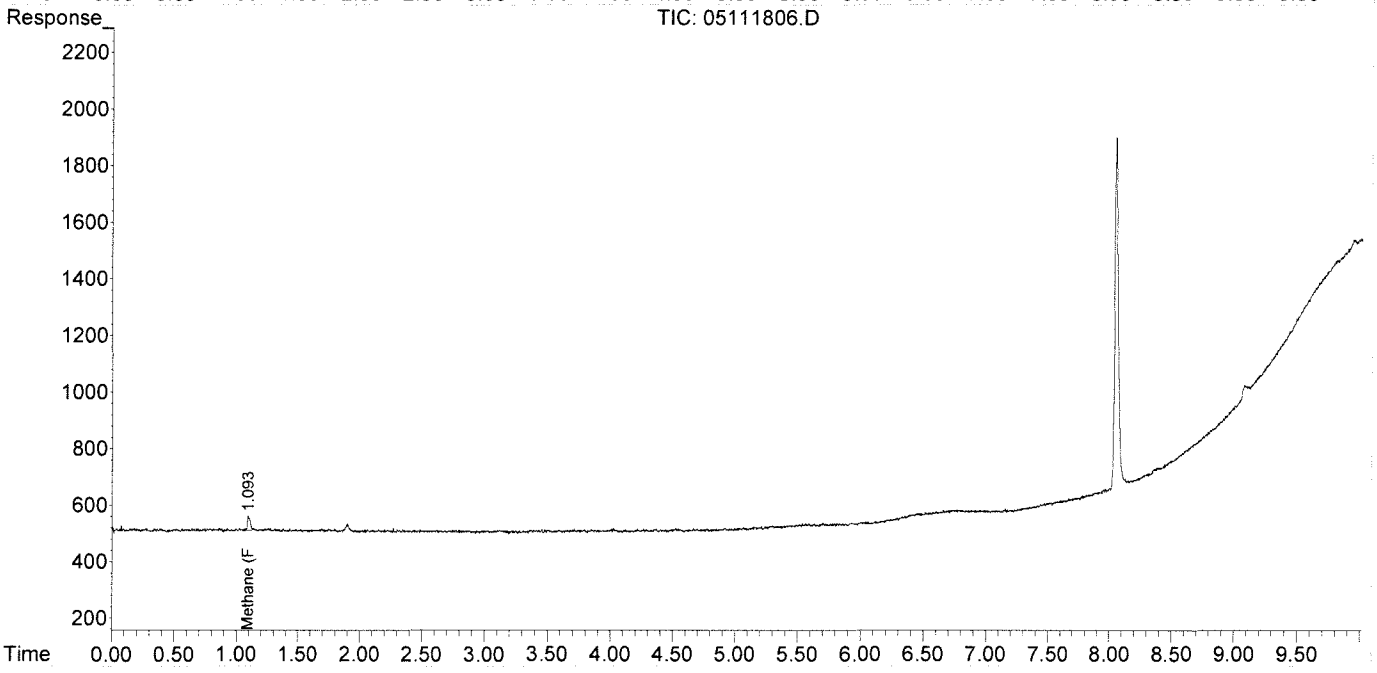
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2018_05\11\
Data File : 05111806.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 14:37:22
Operator : WH
Sample : P1802242-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 13 14:36:39 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

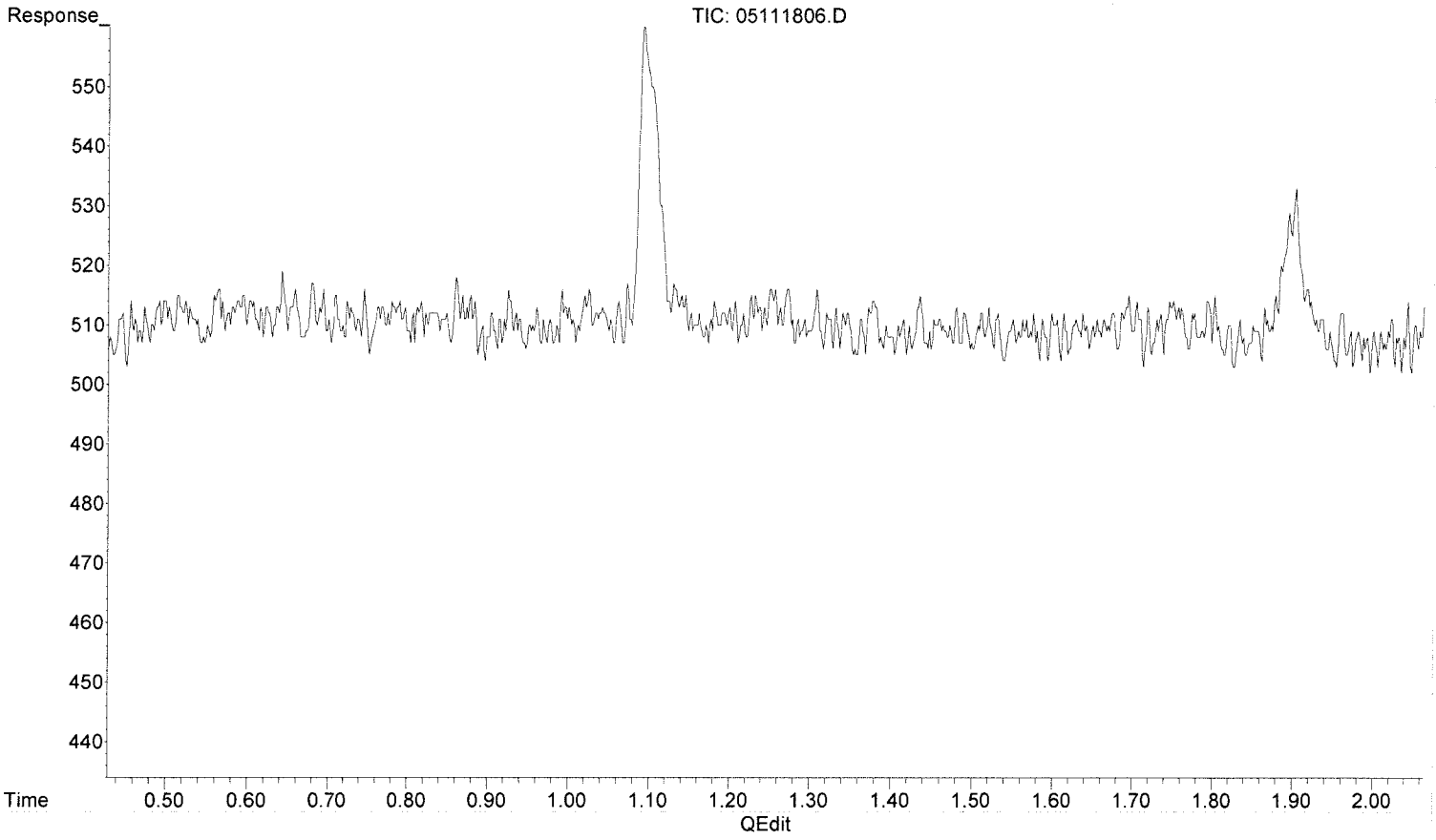




Data Path : I:\GC10\DATA\RSK_FID\2018_05\11\
Data File : 05111806.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 14:37:22
Operator : WH
Sample : P1802242-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 13 14:36:39 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.115min 0.000 ppm

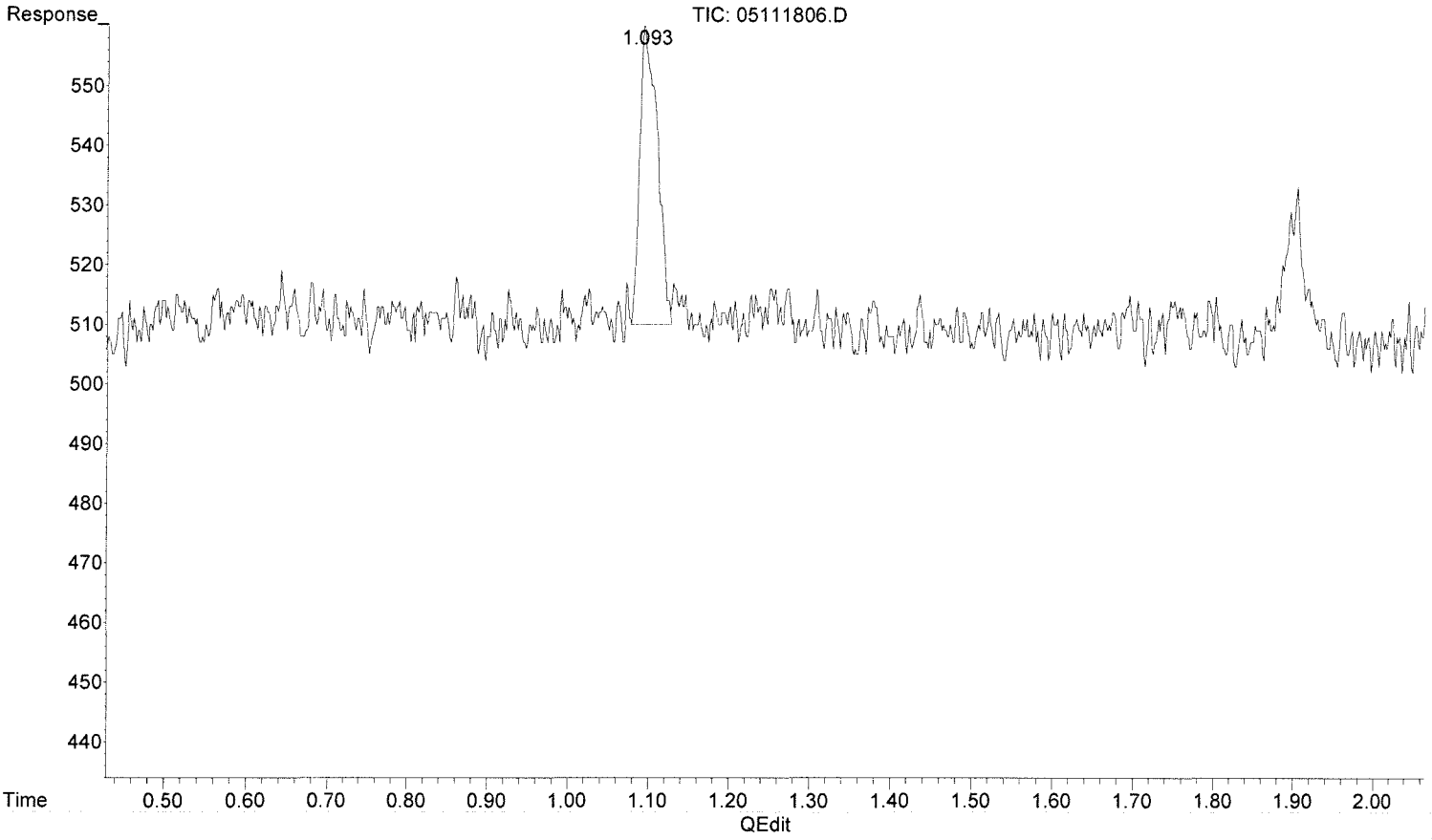
response 0

(+) = Expected Retention Time

Data Path : I:\GC10\DATA\RSK_FID\2018_05\11\
Data File : 05111806.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 14:37:22
Operator : WH
Sample : P1802242-001 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 13 14:36:39 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.093min 0.084 ppm m

response 762

5/13/18
mf

5/14/18
SA

(+) = Expected Retention Time

Data Path : I:\GC10\DATA\RSK_FID\2018_05\11\
Data File : 05111807.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 14:50:29
Operator : WH
Sample : P1802242-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 13 14:37:09 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

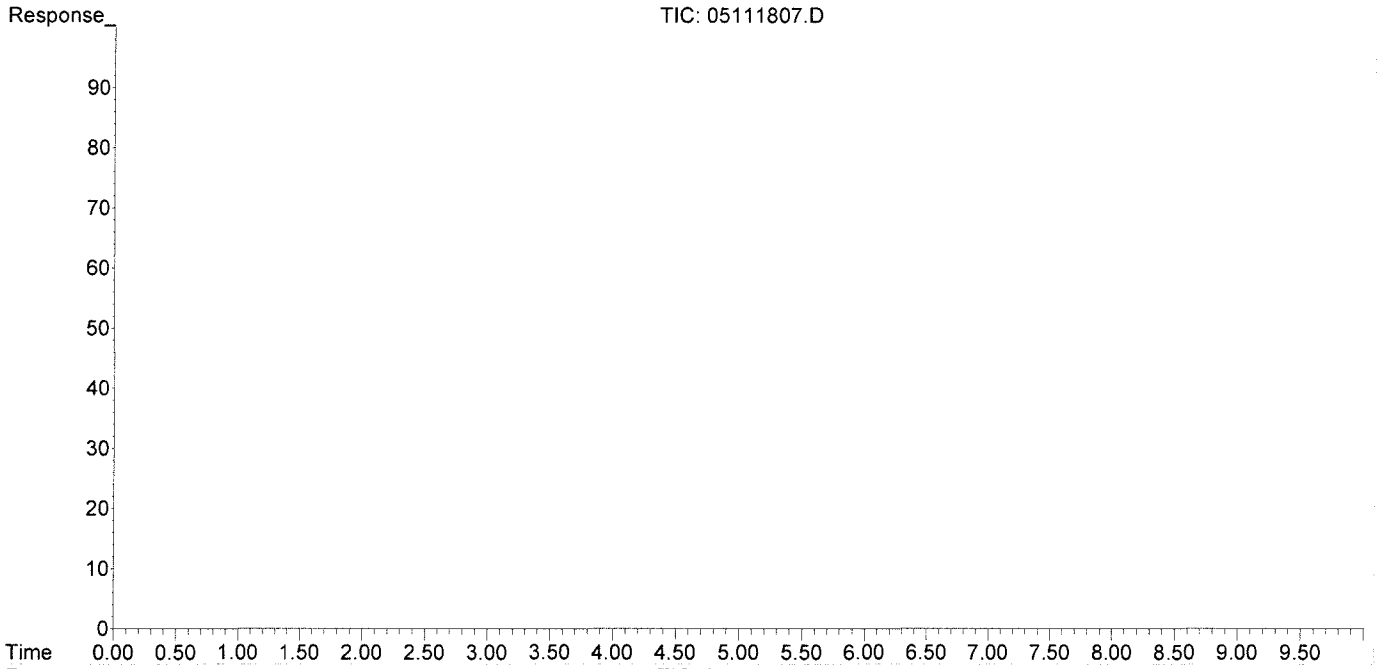
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.117	1212	0.134	ppm	m
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

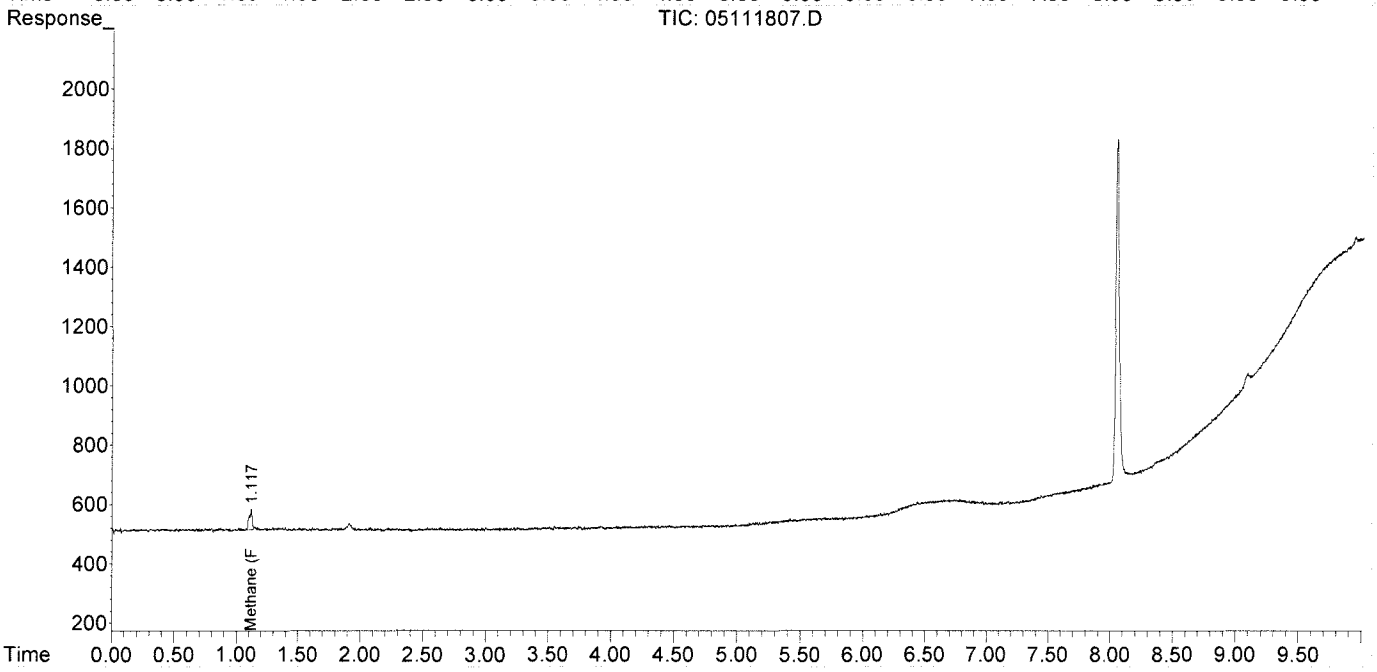
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2018_05\11\
Data File : 05111807.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 14:50:29
Operator : WH
Sample : P1802242-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 13 14:37:09 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

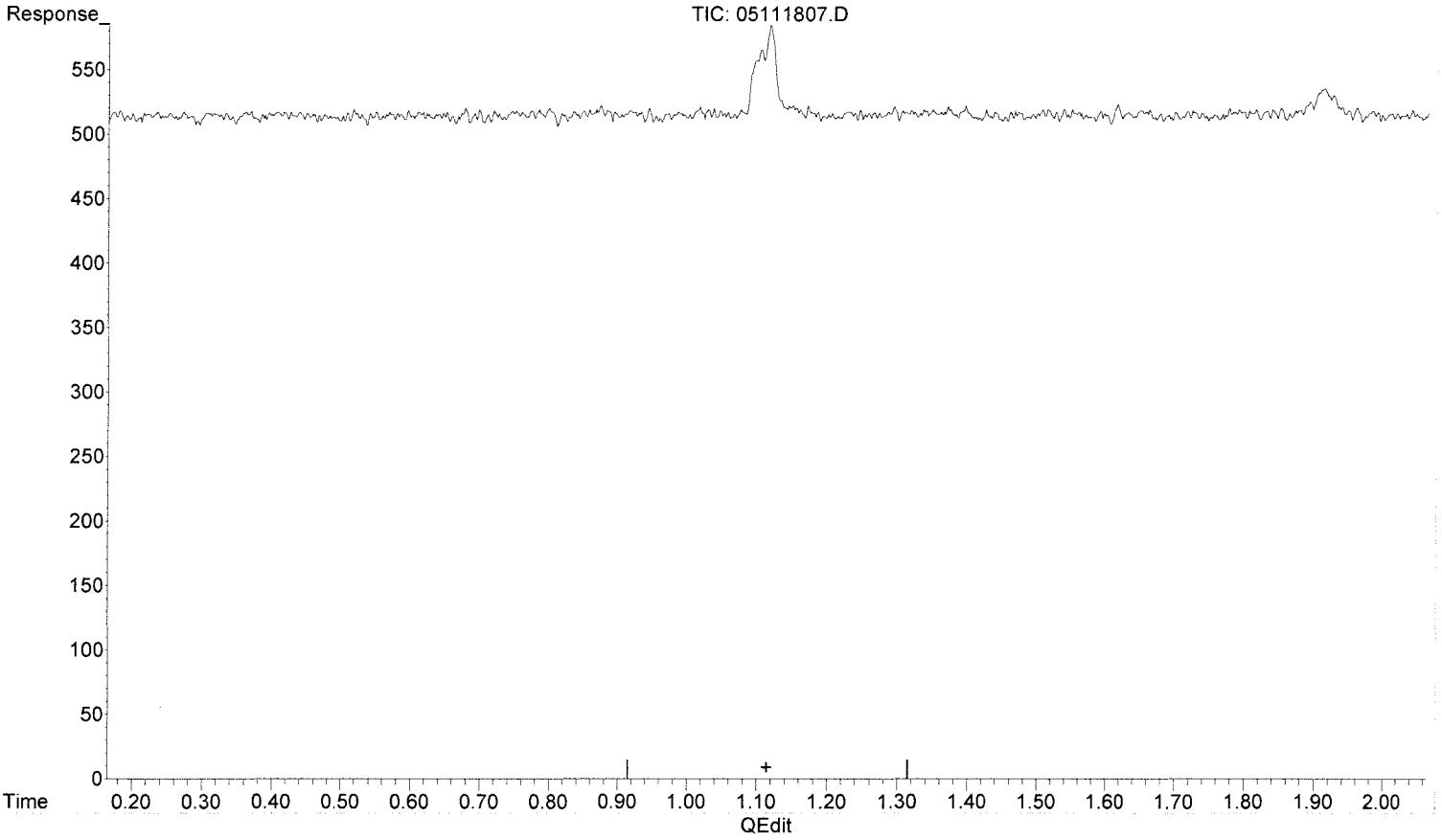




Data Path : I:\GC10\DATA\RSK_FID\2018_05\11\
Data File : 05111807.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 14:50:29
Operator : WH
Sample : P1802242-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 13 14:37:09 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.115min 0.000 ppm

response 0

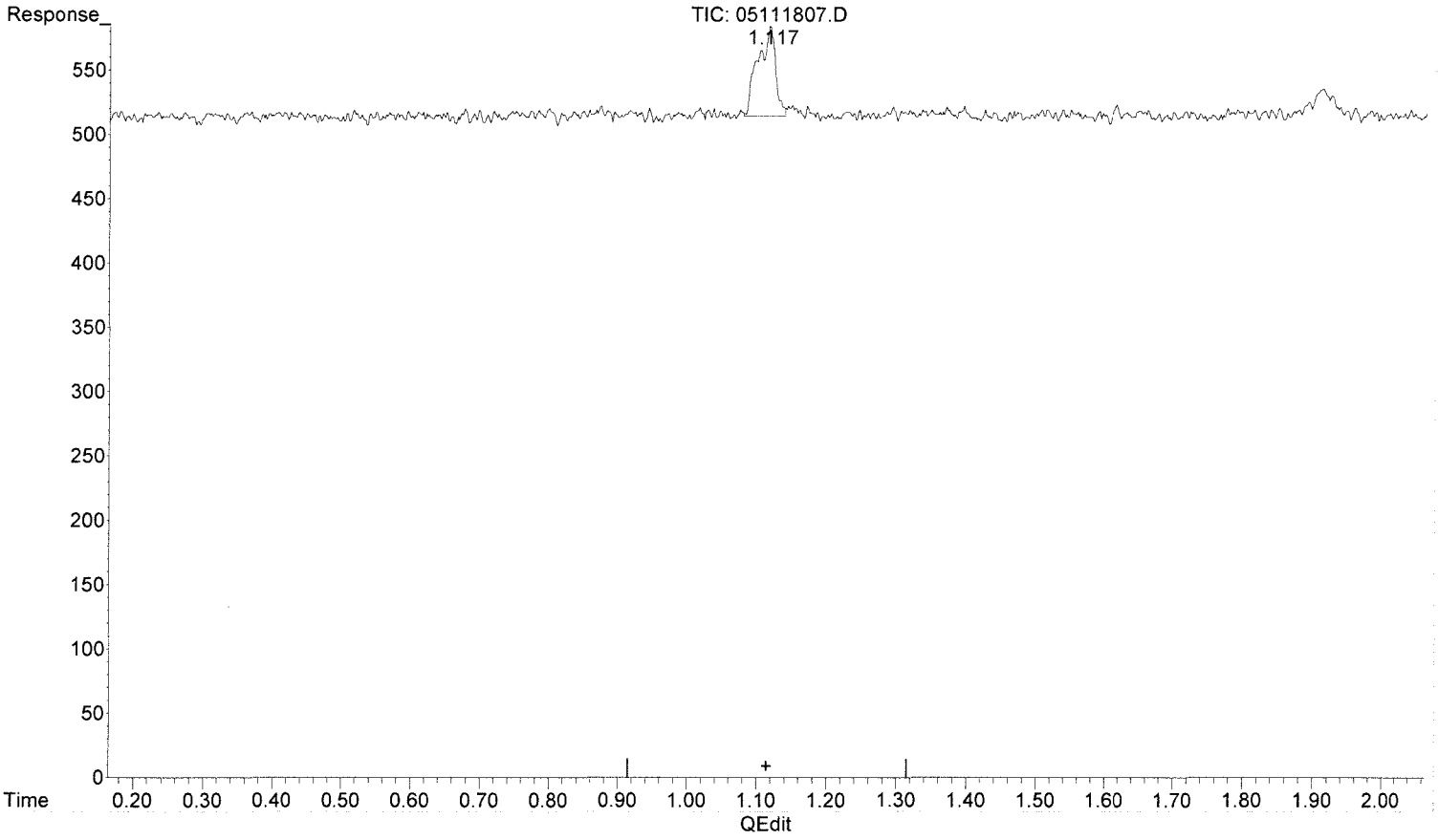
(+) = Expected Retention Time

00912298

Data Path : I:\GC10\DATA\RSK_FID\2018_05\11\
Data File : 05111807.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 14:50:29
Operator : WH
Sample : P1802242-003 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 13 14:37:09 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.117min 0.134 ppm m

response 1212

5/13/18 MS

5/14/18 KA

(+) = Expected Retention Time

RS091217_R.M Sun May 13 14:37:25 2018

Data Path : I:\GC10\DATA\RSK_FID\2018_05\11\
Data File : 05111808.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 15:03:39
Operator : WH
Sample : P1802242-005 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 13 14:37:49 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

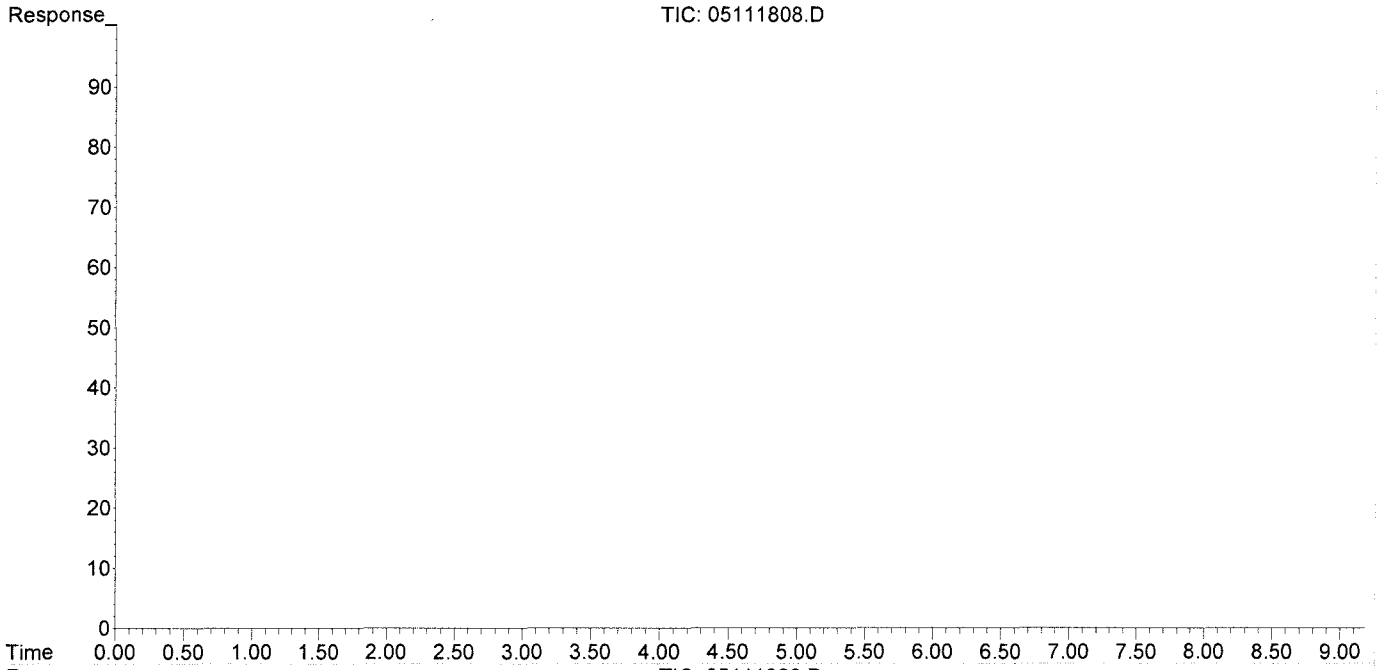
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.101	10144	1.118	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

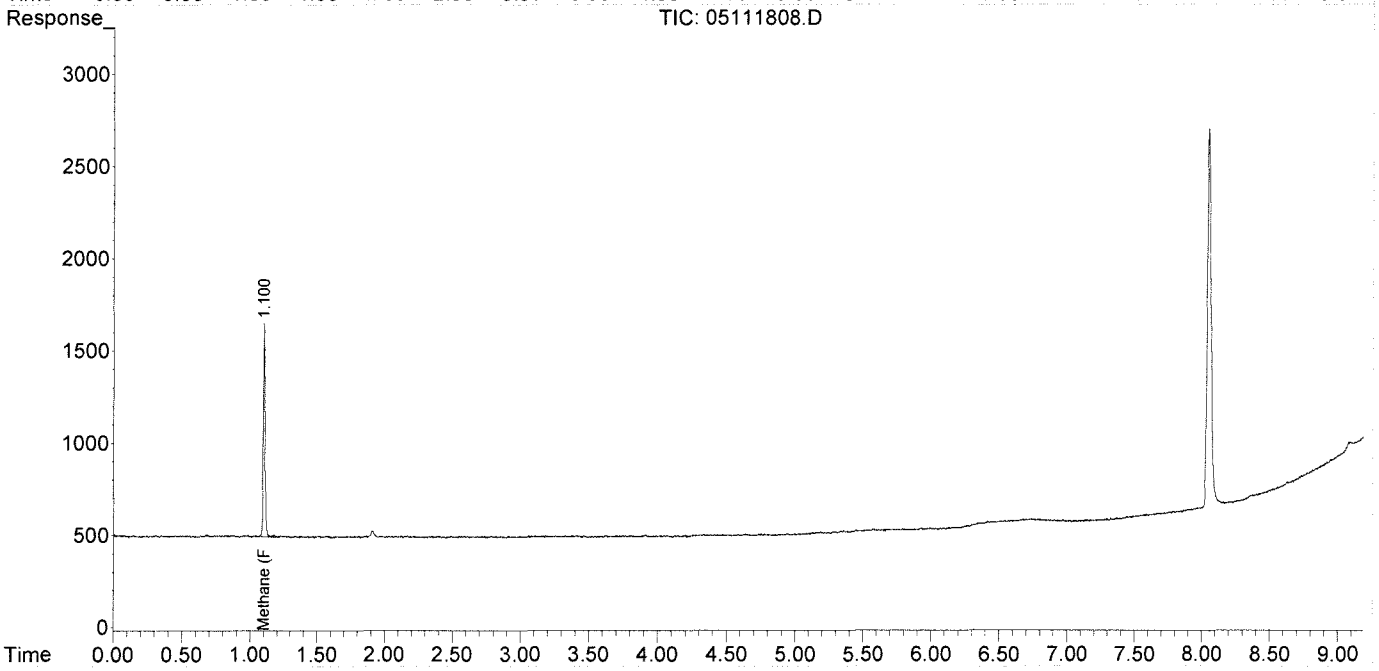
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2018_05\11\
Data File : 05111808.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 15:03:39
Operator : WH
Sample : P1802242-005 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 13 14:37:49 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : I:\GC10\DATA\RSK_FID\2018_05\11\
Data File : 05111803.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 13:57:59
Operator : WH
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 11 14:28:25 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

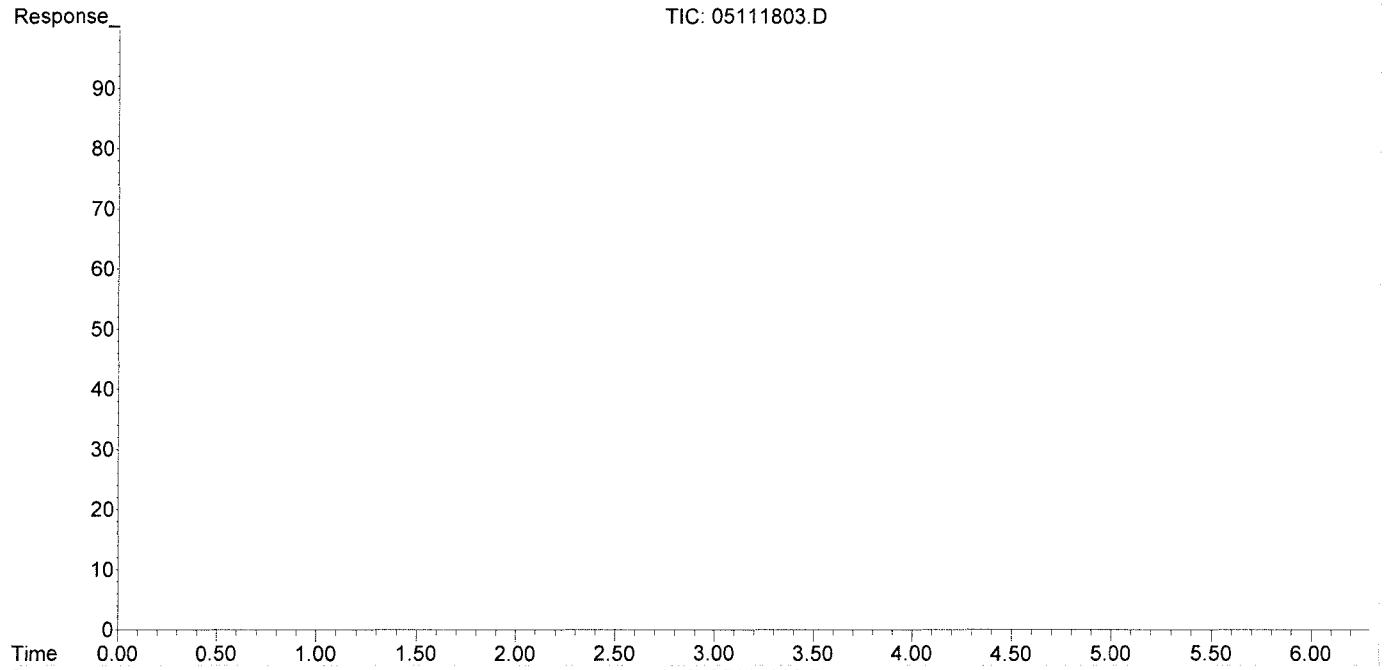
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.104	1882	0.208	ppm	m
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

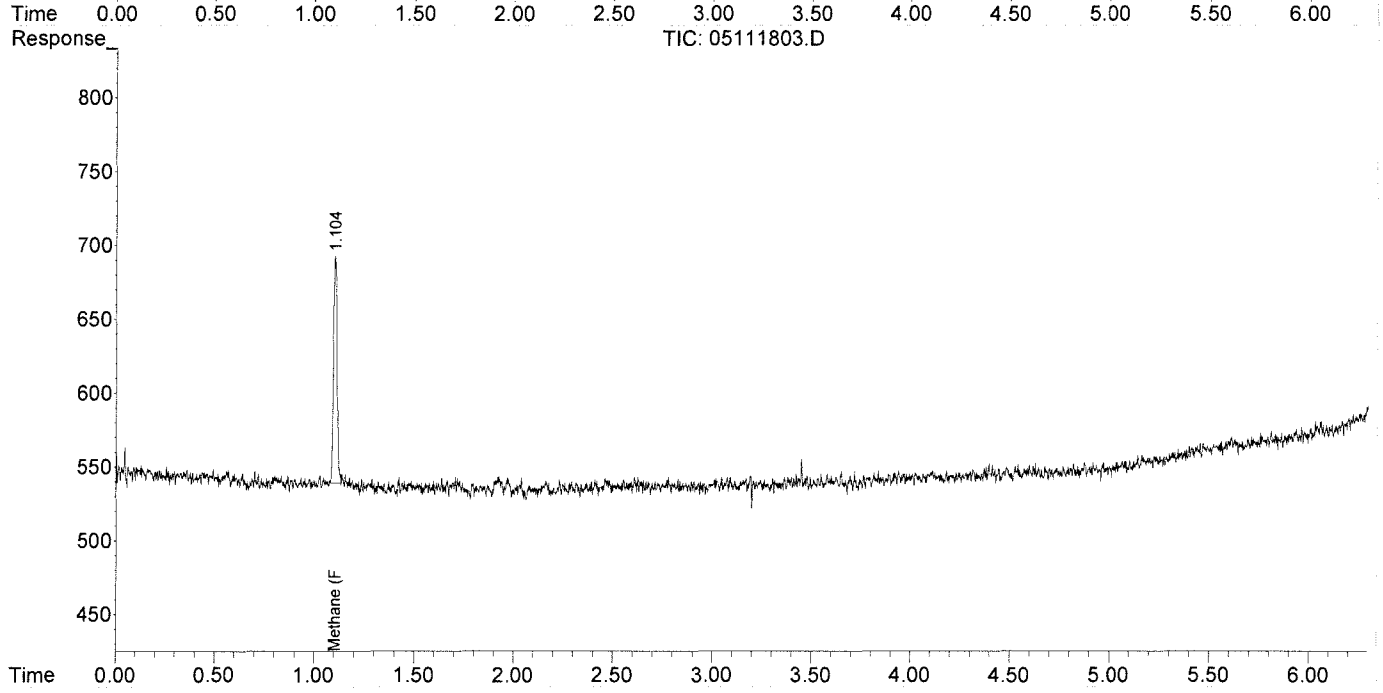
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2018_05\11\
Data File : 05111803.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 13:57:59
Operator : WH
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 11 14:28:25 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

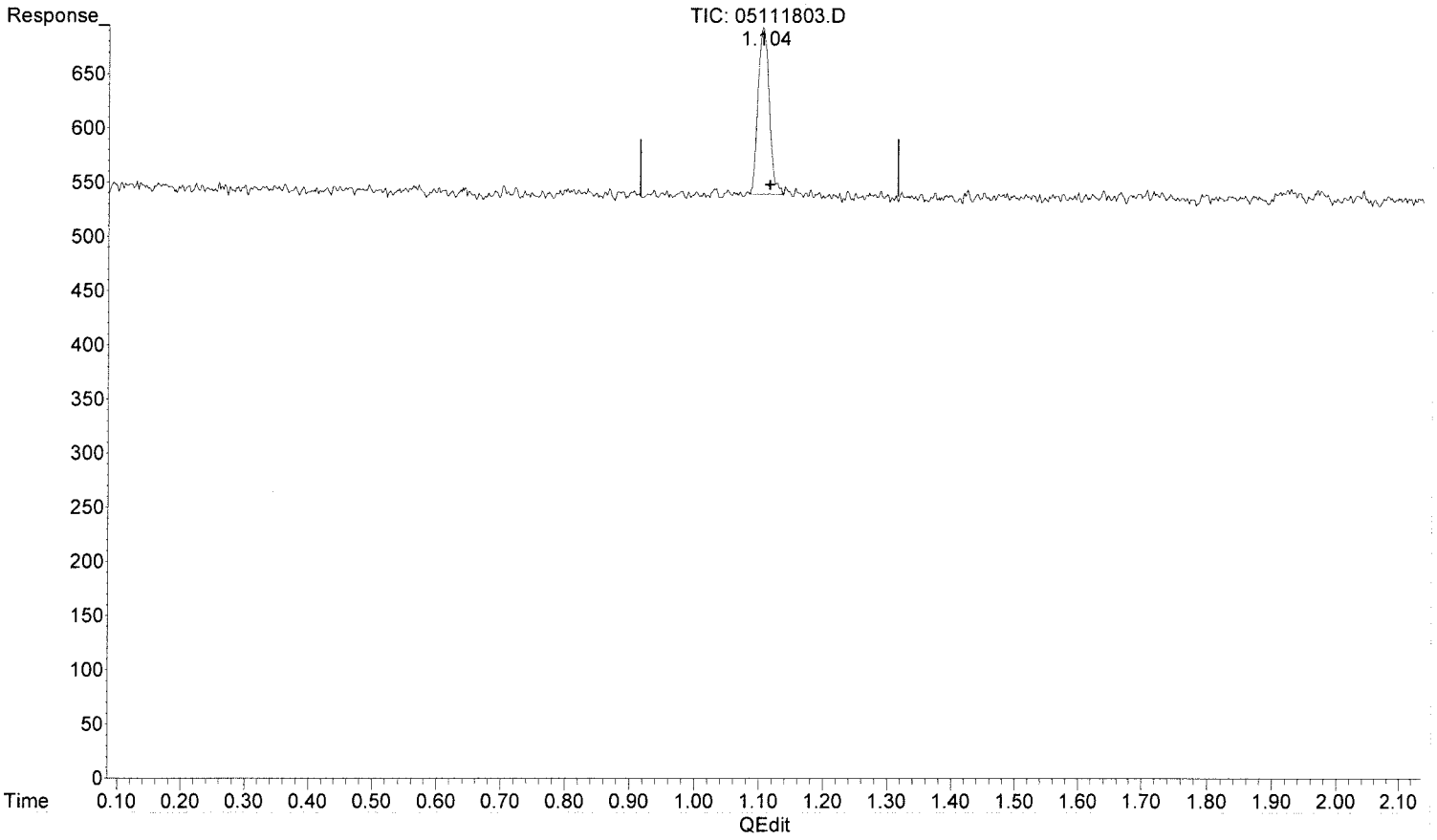




Data Path : I:\GC10\DATA\RSK_FID\2018_05\11\
Data File : 05111803.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 13:57:59
Operator : WH
Sample : mcs 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 11 14:28:25 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.104min 0.208 ppm m

response 1882

5/13/18
no problems

5/14/18
KA

(+) = Expected Retention Time

Data Path : I:\GC10\DATA\RSK_FID\2018_05\11\
Data File : 05111809.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 15:16:19
Operator : WH
Sample : P1802242-005ms 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 11 15:40:27 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

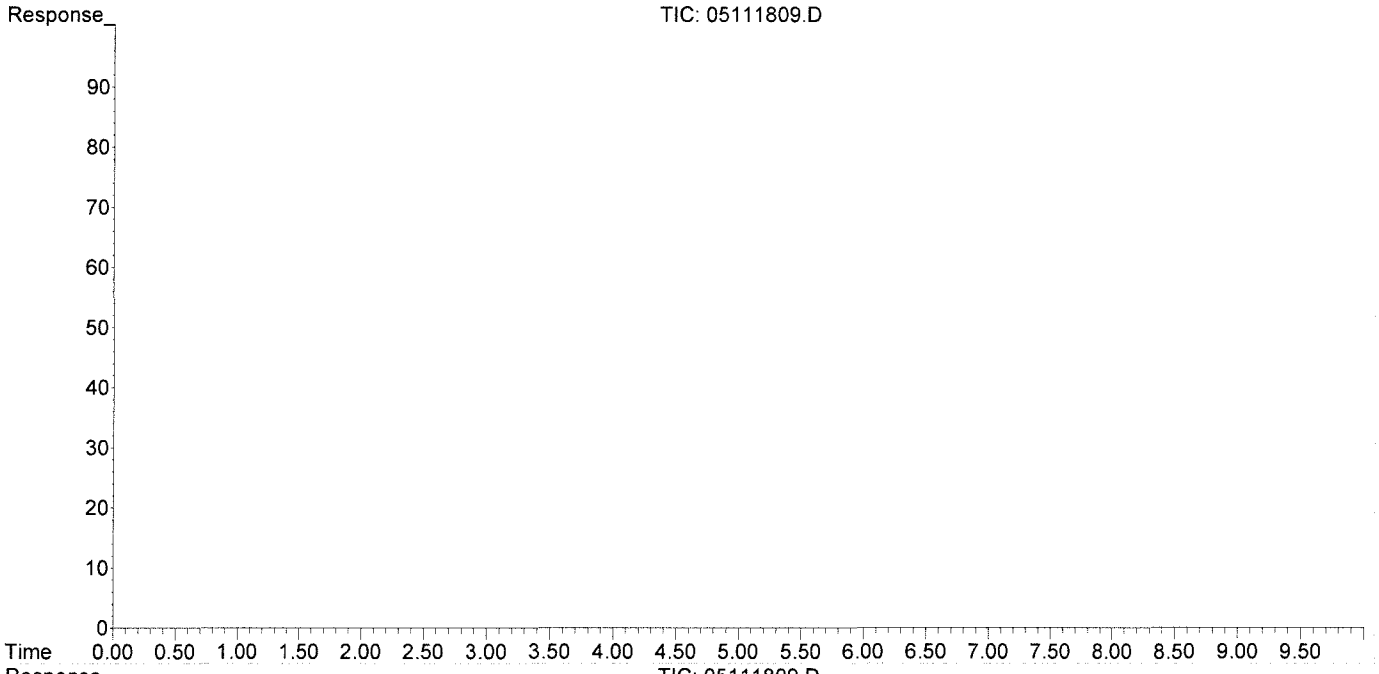
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	
2)	Carbon monoxide	0.000	0	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.102	20545	2.265	ppm	
7)	Ethylene	1.650	11788	0.704	ppm	m
8)	Ethane	1.911	15710	0.927	ppm	
9)	Propylene	4.285	13331	0.569	ppm	
10)	Propane	4.411	23993	0.964	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.634f	32646	1.227	ppm	
13)	n-Butane	6.634f	32646	1.227	ppm	

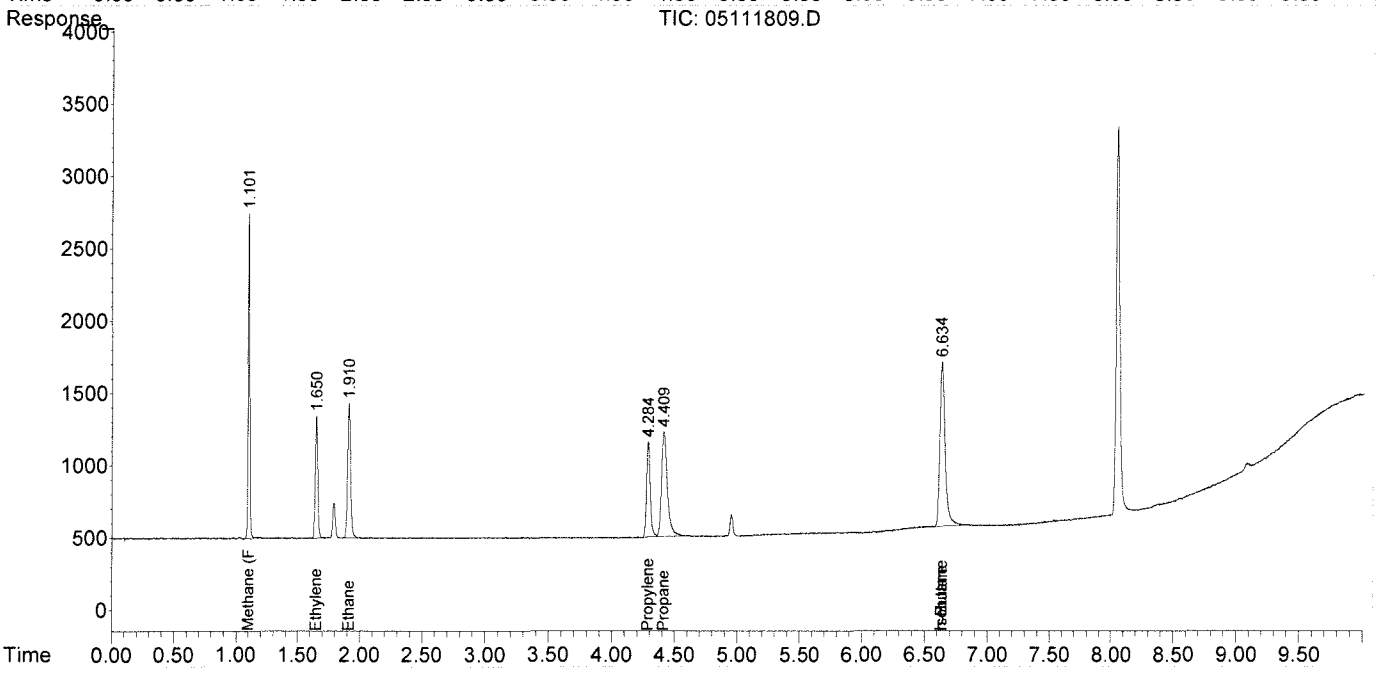
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2018_05\11\
Data File : 05111809.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 15:16:19
Operator : WH
Sample : P1802242-005ms 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 11 15:40:27 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

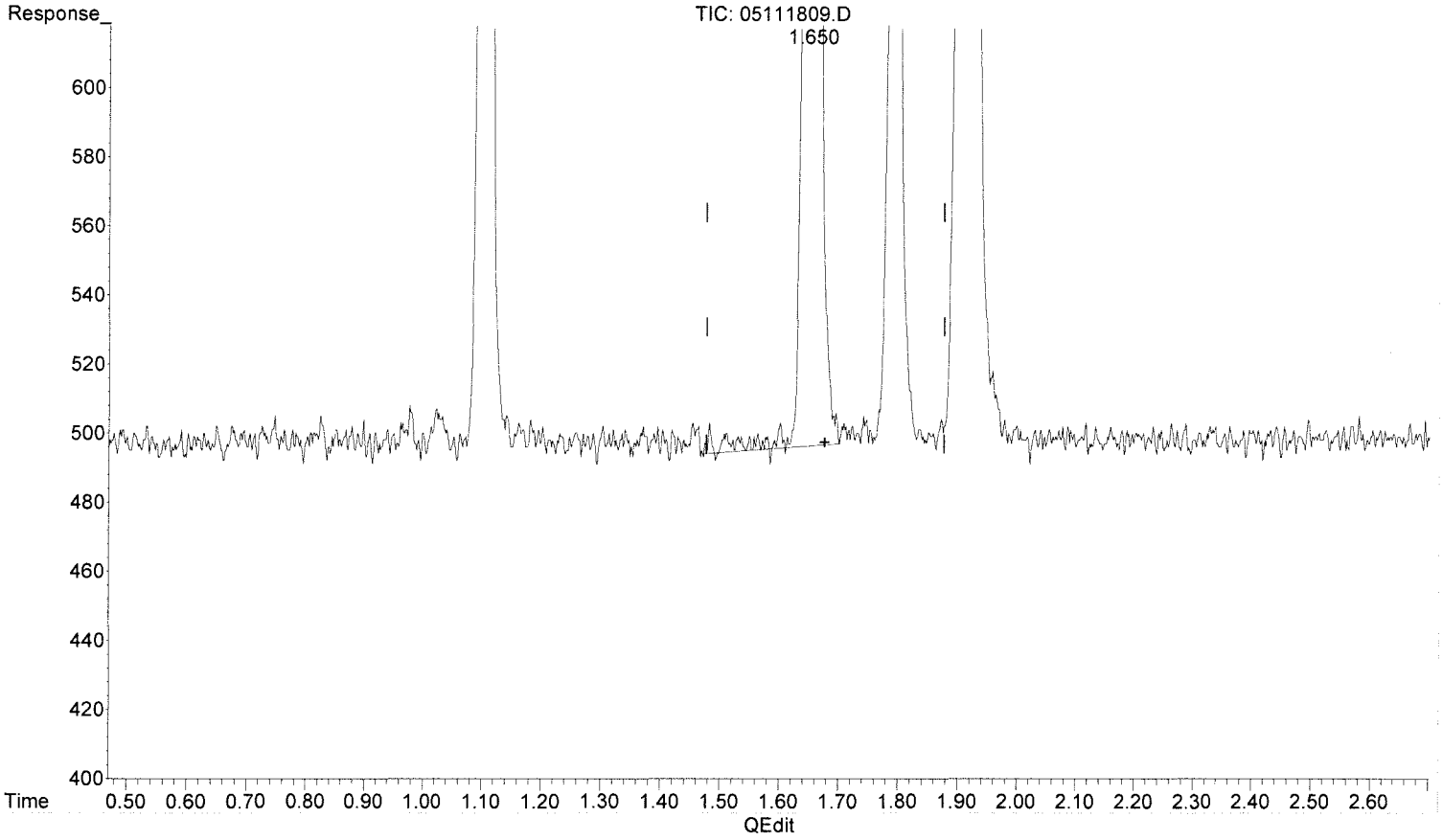




Data Path : I:\GC10\DATA\RSK_FID\2018_05\11\
Data File : 05111809.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 15:16:19
Operator : WH
Sample : P1802242-005ms 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 11 15:40:27 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(7) Ethylene

1.651min 0.711 ppm

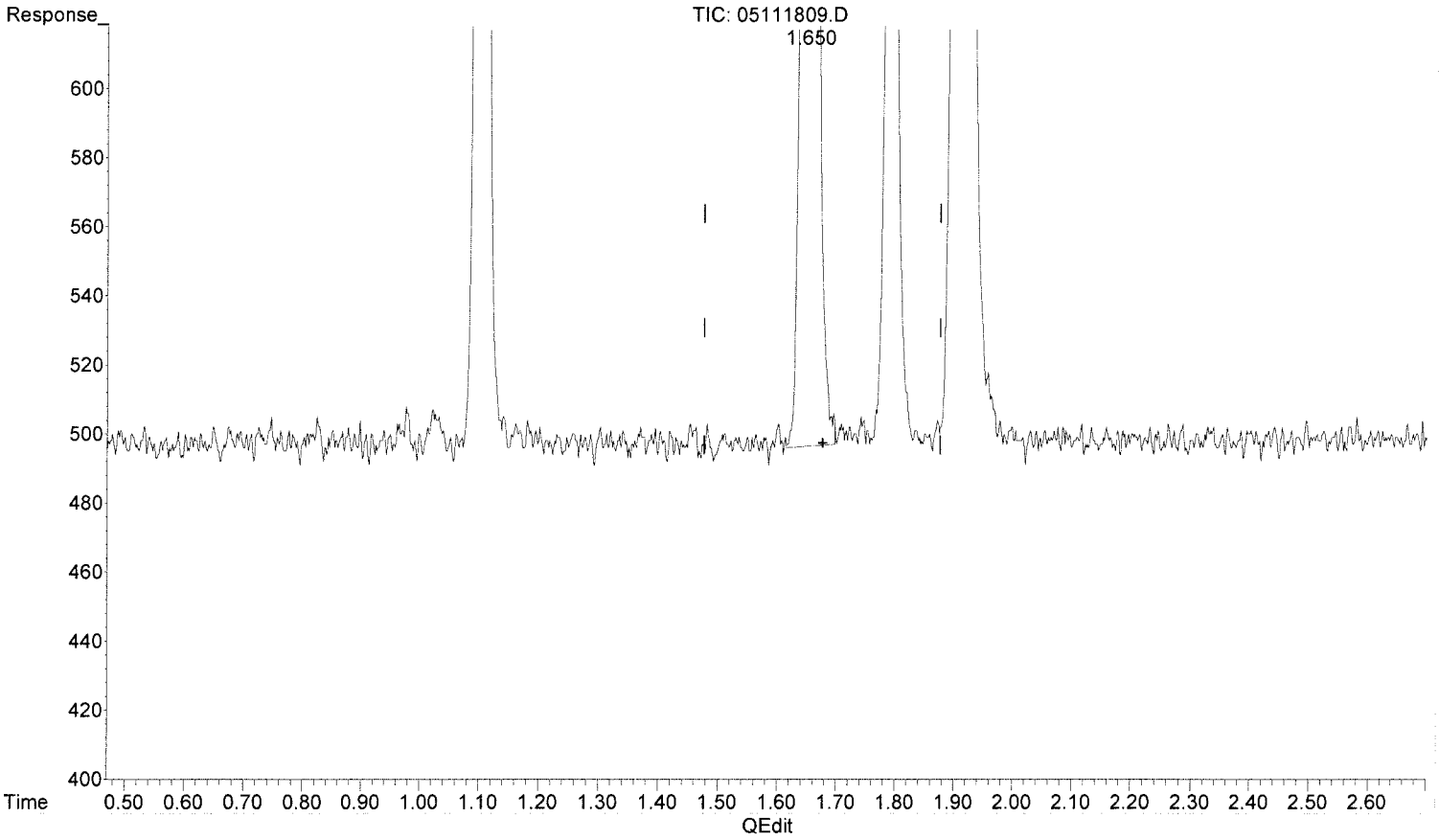
response 11905

(+) = Expected Retention Time

Data Path : I:\GC10\DATA\RSK_FID\2018_05\11\
Data File : 05111809.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 15:16:19
Operator : WH
Sample : P1802242-005ms 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 11 15:40:27 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(7) Ethylene

1.650min 0.704 ppm m

response 11788

5/14/18

(+) = Expected Retention Time

Data Path : I:\GC10\DATA\RSK_FID\2018_05\11\
Data File : 05111810.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 15:30:19
Operator : WH
Sample : P1802242-005msd 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 11 15:40:48 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

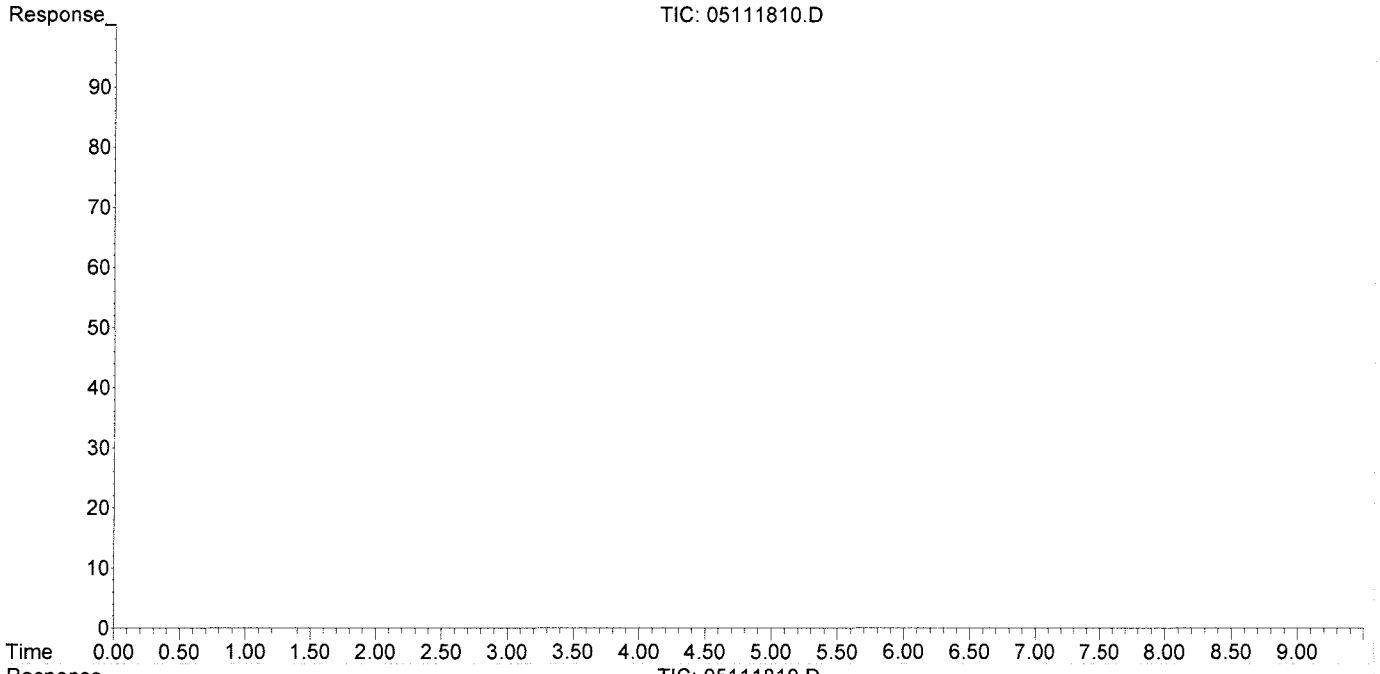
	Compound	R.T.	Response	Conc	Units
	Target Compounds				
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.102	20649	2.276	ppm
7)	Ethylene	1.653	11430	0.683	ppm
8)	Ethane	1.913	15626	0.922	ppm
9)	Propylene	4.288	12414	0.530	ppm
10)	Propane	4.413	23250	0.934	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.635f	31006	1.165	ppm
13)	n-Butane	6.635f	31006	1.165	ppm

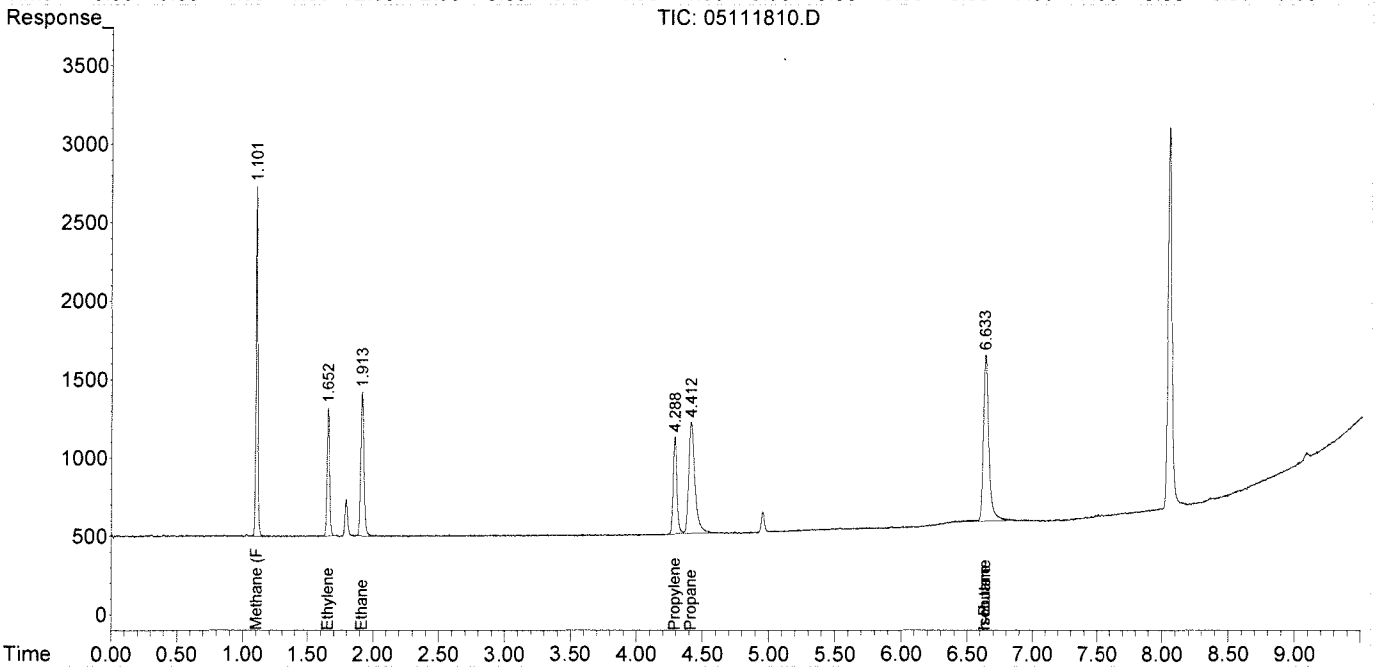
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2018_05\11\
Data File : 05111810.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 15:30:19
Operator : WH
Sample : P1802242-005msd 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 11 15:40:48 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : I:\GC10\DATA\RSK_FID\2018_05\11\
Data File : 05111804.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 14:06:50
Operator : WH
Sample : fid lcs s30-05241604 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 11 14:29:27 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

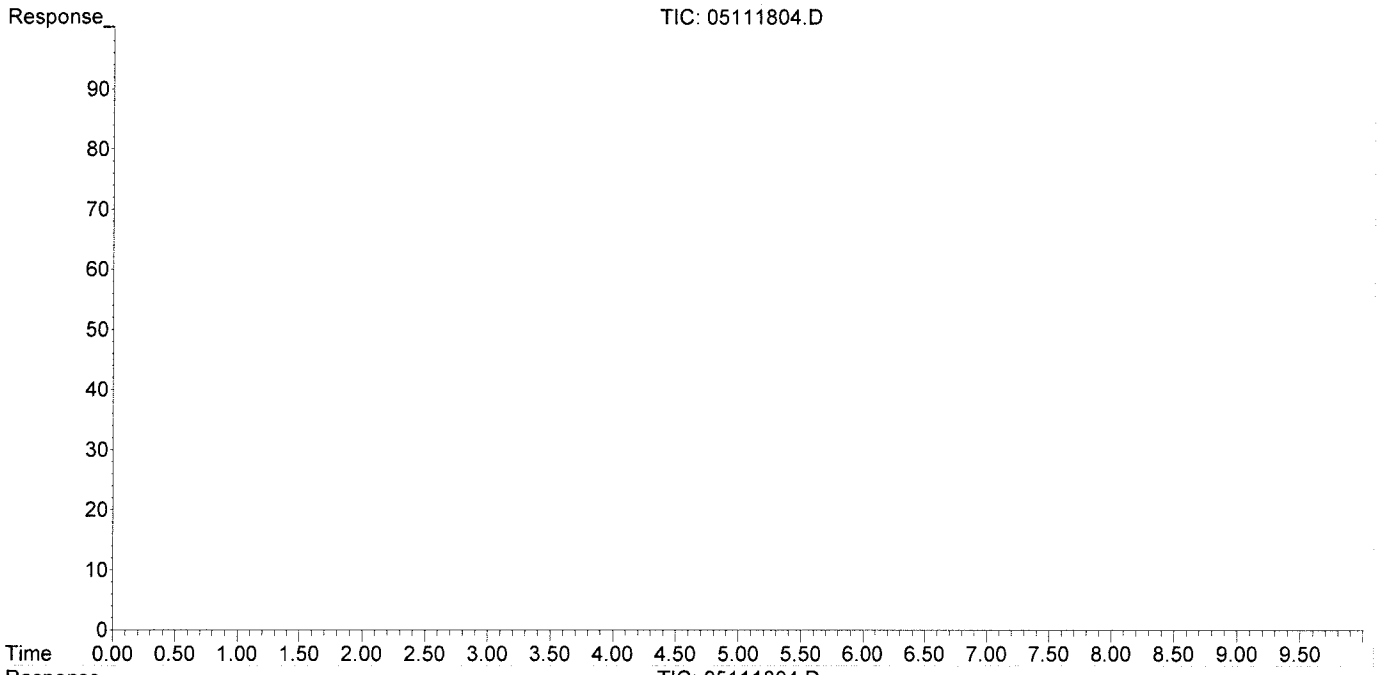
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.105	13433	1.481	ppm
7)	Ethylene	1.656	18330	1.095	ppm
8)	Ethane	1.916	21965	1.296	ppm
9)	Propylene	4.288	25420	1.085	ppm
10)	Propane	4.414	33646	1.352	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.639f	40568	1.524	ppm
13)	n-Butane	6.639f	40568	1.524	ppm

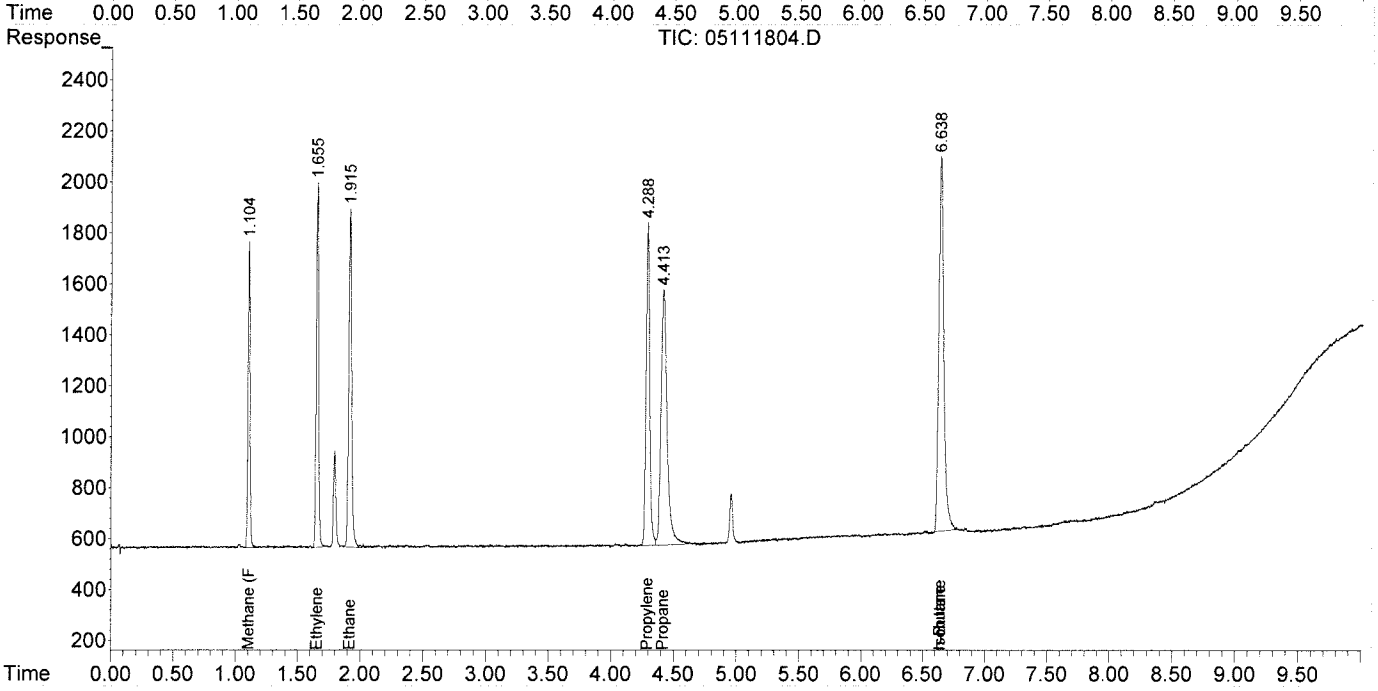
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2018_05\11\
Data File : 05111804.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 14:06:50
Operator : WH
Sample : fid lcs s30-05241604 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 11 14:29:27 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : I:\GC10\DATA\RSK_FID\2018_05\11\
Data File : 05111805.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 14:25:52
Operator : WH
Sample : fid lcsd s30-05241604 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 11 14:53:37 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

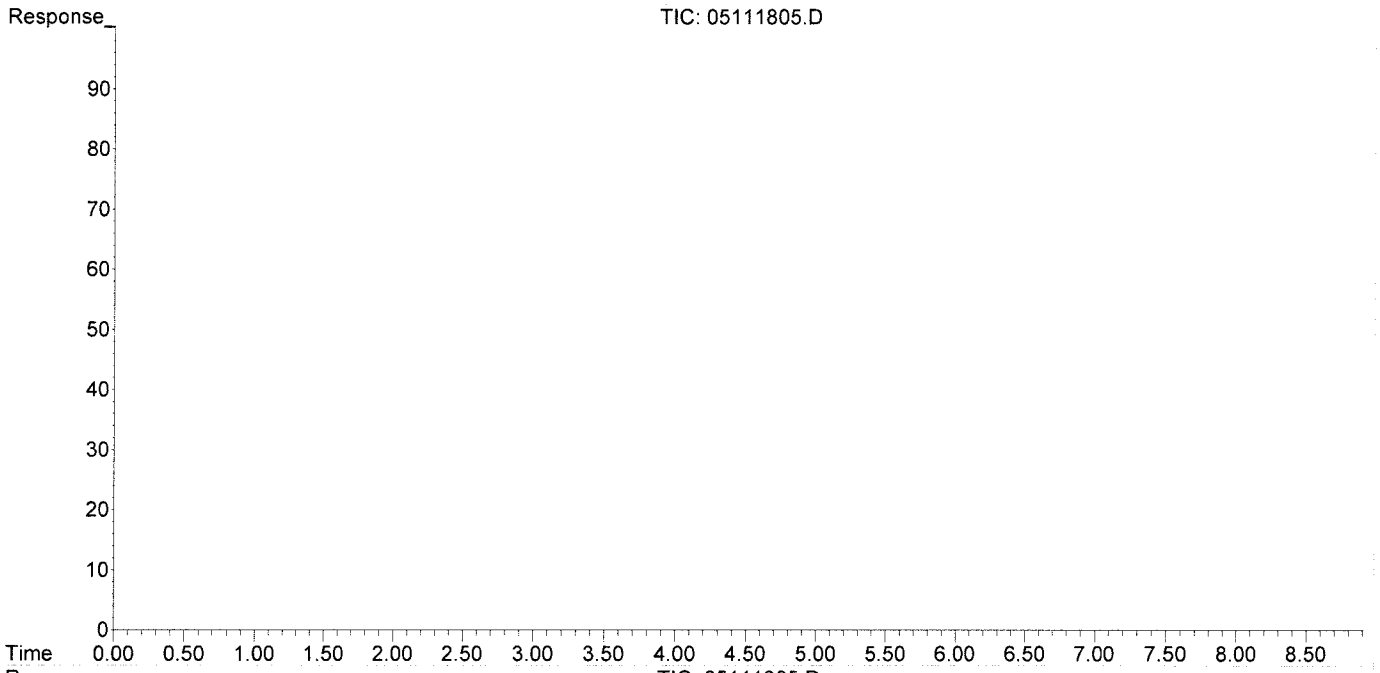
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.088	13653	1.505	ppm
7)	Ethylene	1.643	18860	1.127	ppm
8)	Ethane	1.904	22372	1.320	ppm
9)	Propylene	4.285	26347	1.124	ppm
10)	Propane	4.411	34291	1.378	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.636f	44497	1.672	ppm
13)	n-Butane	6.636f	44497	1.672	ppm

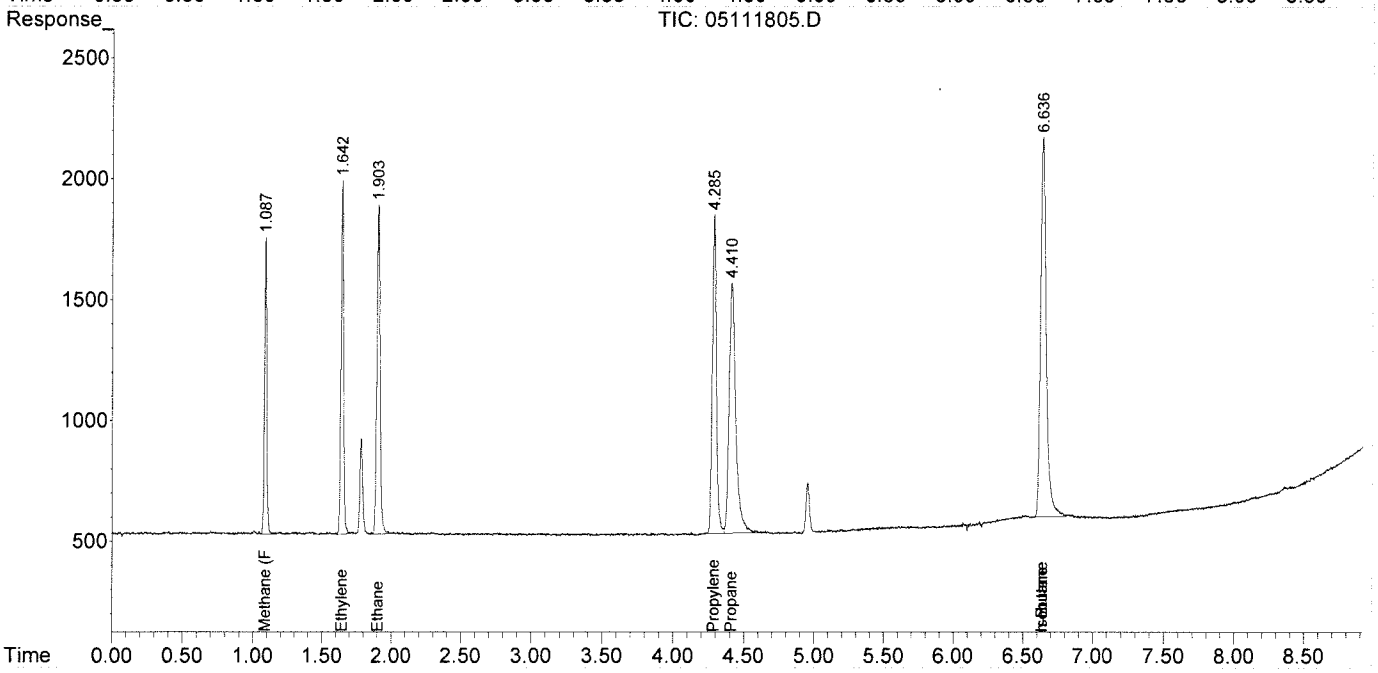
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2018_05\11\
Data File : 05111805.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 14:25:52
Operator : WH
Sample : fid lcsd s30-05241604 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 11 14:53:37 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Response Factor Report HP5890

Method Path : J:\GC10\METHODS\
Method File : RS091217_R.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Wed Sep 13 11:14:47 2017
Response Via : Initial Calibration

Calibration Files
1 =09121702.D 2 =09121703.D 3 =09121704.D
4 =09121705.D 5 =09121706.D 6 =09121707.D

	Compound	1	2	3	4	5	6	Avg		%RSD
1)	Oxygen/Argon	3.739		1.014			0.001	0.793	E6	189.17
2)	Carbon monoxide	3.739		1.014			0.001	0.594	E6	221.92
3)	Methane (TCD)						2.161	0.951	E2	106.37
4)	Carbon dioxide	2.365	2.569	2.558	2.361	2.459	2.314	2.438	E2	4.44

Signal #2 Calibration Files
1 =09121702.D 2 =09121703.D 3 =09121704.D
4 =09121705.D 5 =09121706.D 6 =09121707.D

	Compound	1	2	3	4	5	6	Avg		%RSD
6)	Methane (FID)		1.180	0.975	0.908	0.870	0.868	0.907	E4	11.66
7)	Ethylene	1.736	1.638	1.780	1.720	1.628	1.670	1.673	E4	3.90
8)	Ethane	1.781	1.676	1.784	1.730	1.692	1.675	1.695	E4	3.83
9)	Propylene	2.505	2.296	2.592	2.480	2.346	2.252	2.343	E4	6.56
10)	Propane	2.439	2.283	2.645	2.555	2.433	2.522	2.488	E4	4.20
11)	Isobutylene							0.652	E1	138.46
12)	Isobutane	6.058	4.793	2.214	1.553	1.353		2.662	E4	86.17
13)	n-Butane	6.058	4.793	2.214	1.553	1.353		2.662	E4	86.17

(#) = Out of Range ### Number of calibration levels exceeded format ###

RS091217_R.M Wed Sep 13 15:11:48 2017

Edit Compounds -- Compound #6 -- Methane (FID)

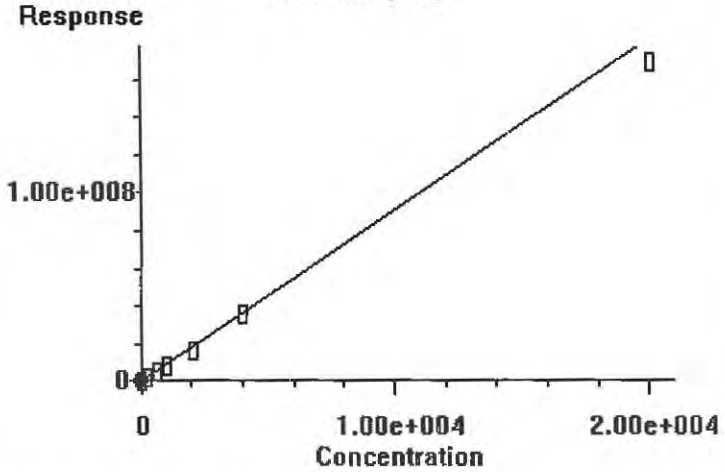
Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	
2	0.302000	3564.400000
3	1.510000	14725.268625
4	4.530000	41128.575000
5	10.570000	91966.784531
6	200.000000	1735997.497500
7	600.000000	5189848.900000
8	1000.000000	8598533.570000
9	2000.000000	16098209.390000
10	4000.000000	35776839.311362
11	20000.000000	169009160.49199

Methane (FID)



0.000e+000	Quadratic term
9.071e+003	Linear term
0.000e+000	Constant term
11.657%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #7 -- Ethylene

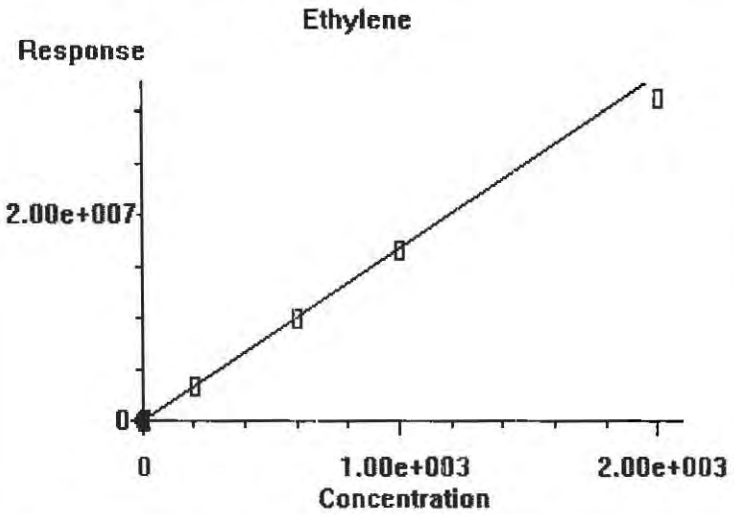
Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	2621.970000
2	0.302000	4946.731301
3	1.510000	26884.746847
4	4.530000	77902.721497
5	10.570000	172085.529560
6	200.000000	3339702.313219
7	600.000000	10007758.776971
8	1000.000000	16608503.805988
9	2000.000000	31192443.898600
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
1.673e+004	Linear term
0.000e+000	Constant term
3.897%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #8 -- Ethane

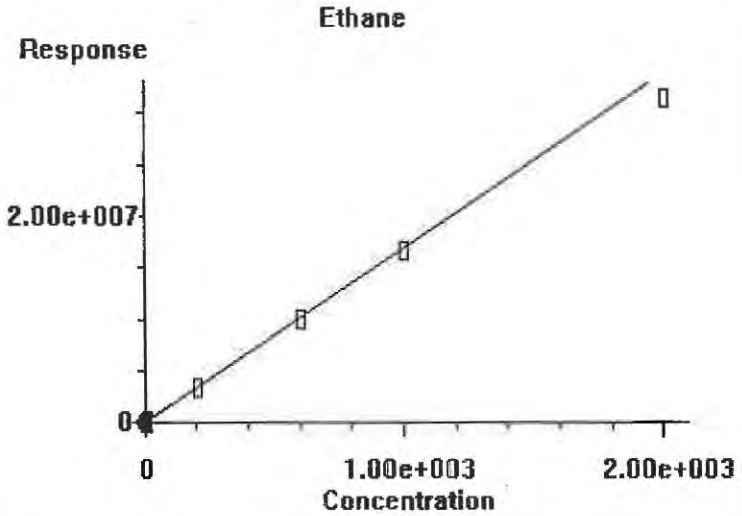
Search by: Ret Time | Name | Index — Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	2689.928008
2	0.302000	5060.331943
3	1.510000	26943.667500
4	4.530000	78353.525045
5	10.570000	178840.731148
6	200.000000	3350442.319129
7	600.000000	10048964.218029
8	1000.000000	16703164.879012
9	2000.000000	31424217.938900
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
1.695e+004	Linear term
0.000e+000	Constant term
3.831%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

00912317

Edit Compounds -- Compound #9 -- Propylene

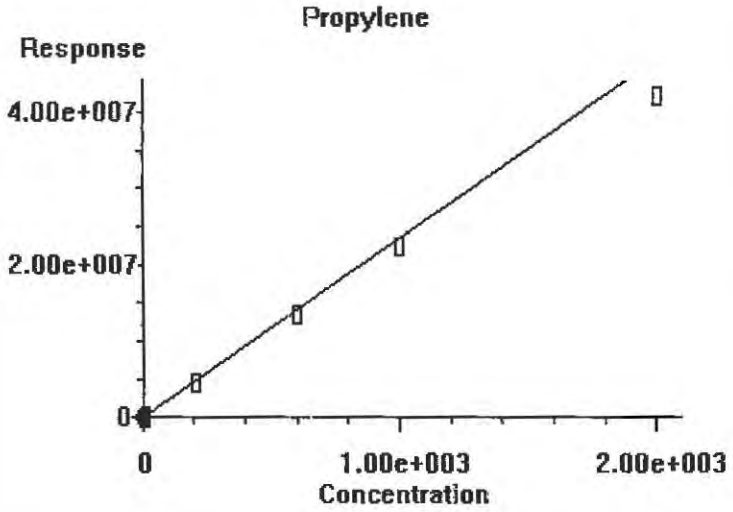
Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	3782.537646
2	0.302000	6933.285530
3	1.510000	39139.518208
4	4.530000	112341.896872
5	10.570000	248003.903623
6	200.000000	4504060.086084
7	600.000000	13569342.761419
8	1000.000000	22494887.720990
9	2000.000000	42124689.656800
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
2.343e+004	Linear term
0.000e+000	Constant term
6.559%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

Edit Compounds -- Compound #10 -- Propane

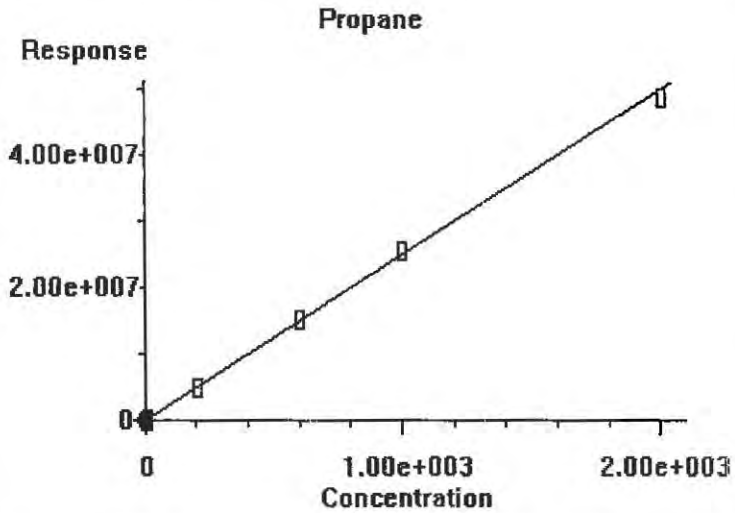
Search by: Ret Time | Name | Index — Find Compound

- Compound Database
- External Standard Compoun
  - Oxygen/Argon
  - Carbon monoxide
  - Methane (TCD)
  - Carbon dioxide
  - Signal #2
  - Methane (FID)
  - Ethylene
  - Ethane
  - Propylene
  - Propane
  - Isobutylene
  - Isobutane
  - n-Butane

Identification | Calibration | User-Defined | Advanced | Reporting

Lvl ID	Concentration	Response
1	0.151000	3682.897354
2	0.302000	6894.237803
3	1.510000	39934.166792
4	4.530000	115723.428128
5	10.570000	257124.432806
6	200.000000	5043035.663316
7	600.000000	15251325.797404
8	1000.000000	25459410.657938
9	2000.000000	48583085.287451
10	4000.000000	

Lvl ID	Concentration	Response
11	20000.000000	



0.000e+000	Quadratic term
2.488e+004	Linear term
0.000e+000	Constant term
4.200%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

00912319

Calibration Status Report HP5890

Method Path : J:\GC10\METHODS\
Method File : RS091217_R.M
Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
Last Update : Wed Sep 13 11:14:47 2017
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	0	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121702.D
2	2	0	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121703.D
3	3	3	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121704.D
4	4	10	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121705.D
5	5	25	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121706.D
6	6	125	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121707.D
7	7	5000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121708.D
8	8	25000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121709.D
9	9	2000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121710.D
10	10	30000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121711.D
11	11	20000	0	J:\GC10\DATA\RSK_FID\2017_09\12\09121712.D

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Sep 13 11:04 2017	Sep 12 15:03 2017	12-Sep-2017, 10:52
2	2	Sep 13 11:05 2017	Sep 13 11:05 2017	12-Sep-2017, 11:05
3	3	Sep 13 11:06 2017	Sep 13 11:05 2017	12-Sep-2017, 11:45
4	4	Sep 13 11:09 2017	Sep 13 11:06 2017	12-Sep-2017, 12:09
5	5	Sep 13 11:09 2017	Sep 13 11:09 2017	12-Sep-2017, 12:30
6	6	Sep 13 11:10 2017	Sep 13 11:10 2017	12-Sep-2017, 12:47
7	7	Sep 13 11:11 2017	Sep 13 11:10 2017	12-Sep-2017, 13:00
8	8	Sep 13 11:12 2017	Sep 13 11:11 2017	12-Sep-2017, 13:47
9	9	Sep 13 11:12 2017	Sep 13 11:12 2017	12-Sep-2017, 14:07
10	10	Sep 13 11:14 2017	Sep 13 11:13 2017	12-Sep-2017, 14:48
11	11	Sep 13 11:14 2017	Sep 13 11:14 2017	12-Sep-2017, 15:21

RS091217_R.M Wed Sep 13 15:11:22 2017

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121702.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 10:52
Operator : MC
Sample : 0.151ppm 0.250ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 12 11:03:15 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.767	373920	0.128	ppm	
2)	Carbon monoxide	1.767	373920	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	0.000	0	N.D.	ppm	d
7)	Ethylene	1.595	2622	0.156	ppm	
8)	Ethane	1.848	2690	0.156	ppm	
9)	Propylene	4.222	3783	0.154	ppm	
10)	Propane	4.348	3683	0.139	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.582f	6058	NoCal	ppm	
13)	n-Butane	6.582f	6058	NoCal	ppm	

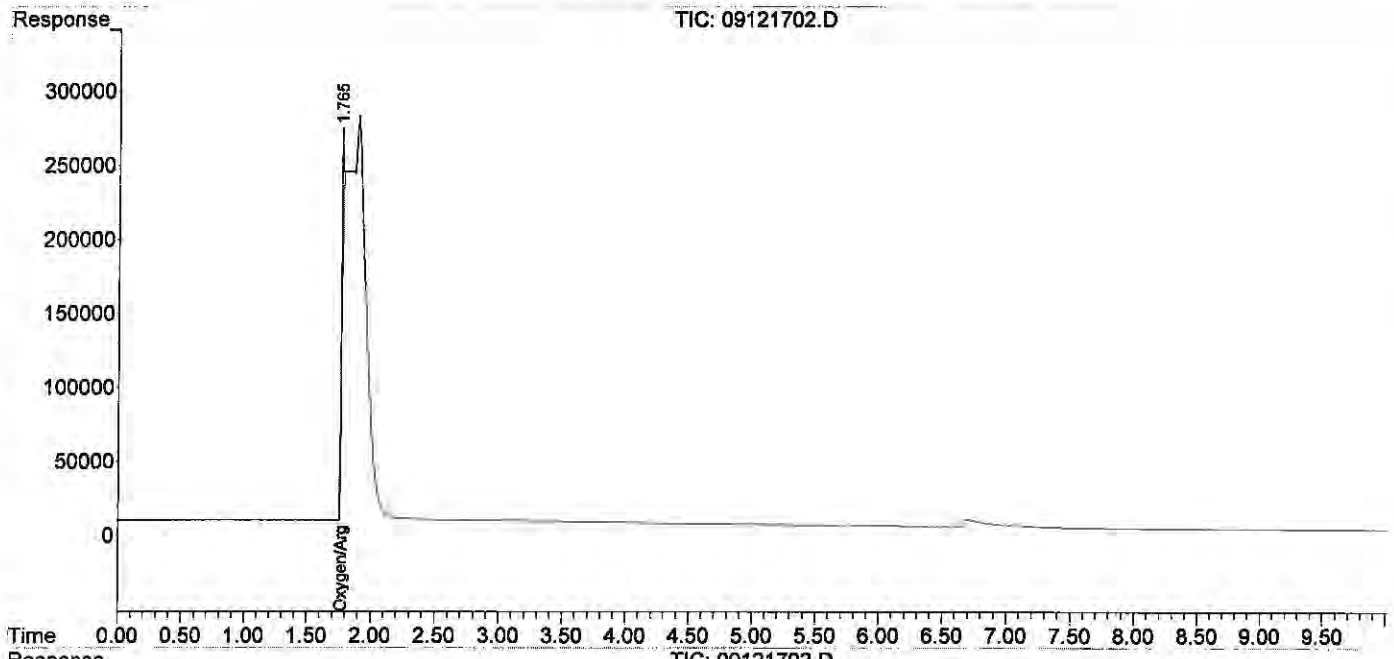
(f)=RT Delta > 1/2 Window (m)=manual int.

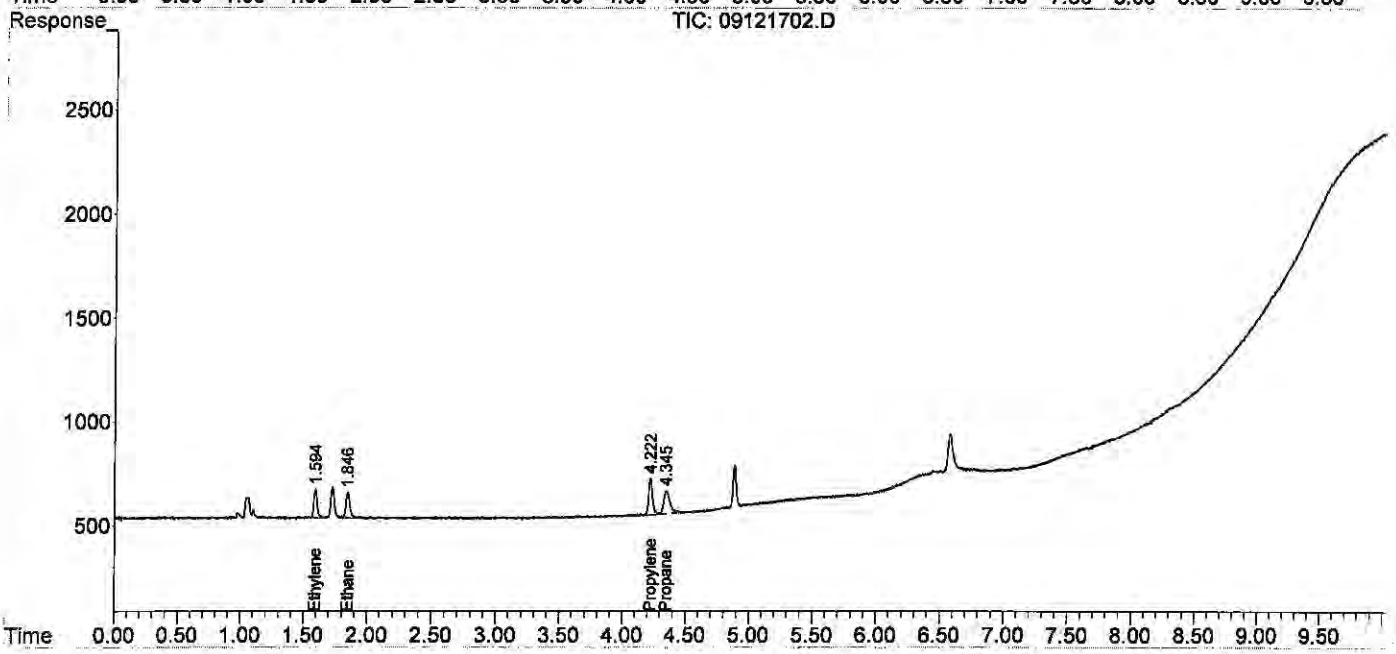
9/13/17

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121702.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 10:52
Operator : MC
Sample : 0.151ppm 0.250ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 12 11:03:15 2017
Quant Method : I:\GC10\METHODS\RS082417.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Fri Aug 25 09:19:14 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.913f	-25181981	N.D.	ppm	
2)	Carbon monoxide	1.913f	-25181981	1.089	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.049	3564	0.391	ppm	m
7)	Ethylene	1.577	4947	0.292	ppm	
8)	Ethane	1.828	5060	0.293	ppm	
9)	Propylene	4.207	6933	0.281	ppm	
10)	Propane	4.337	6894	0.268	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.579f	9587	0.158	ppm	
13)	n-Butane	6.579f	9587	0.158	ppm	

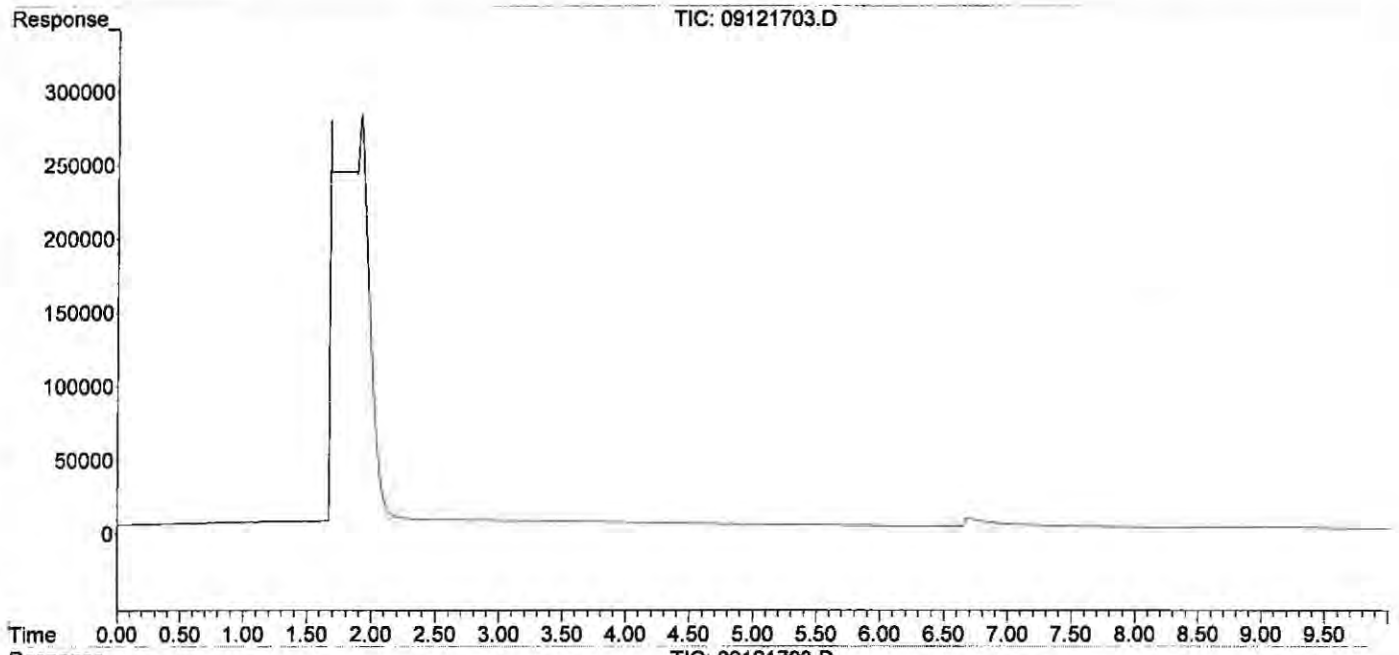
(f)=RT Delta > 1/2 Window (m)=manual int.

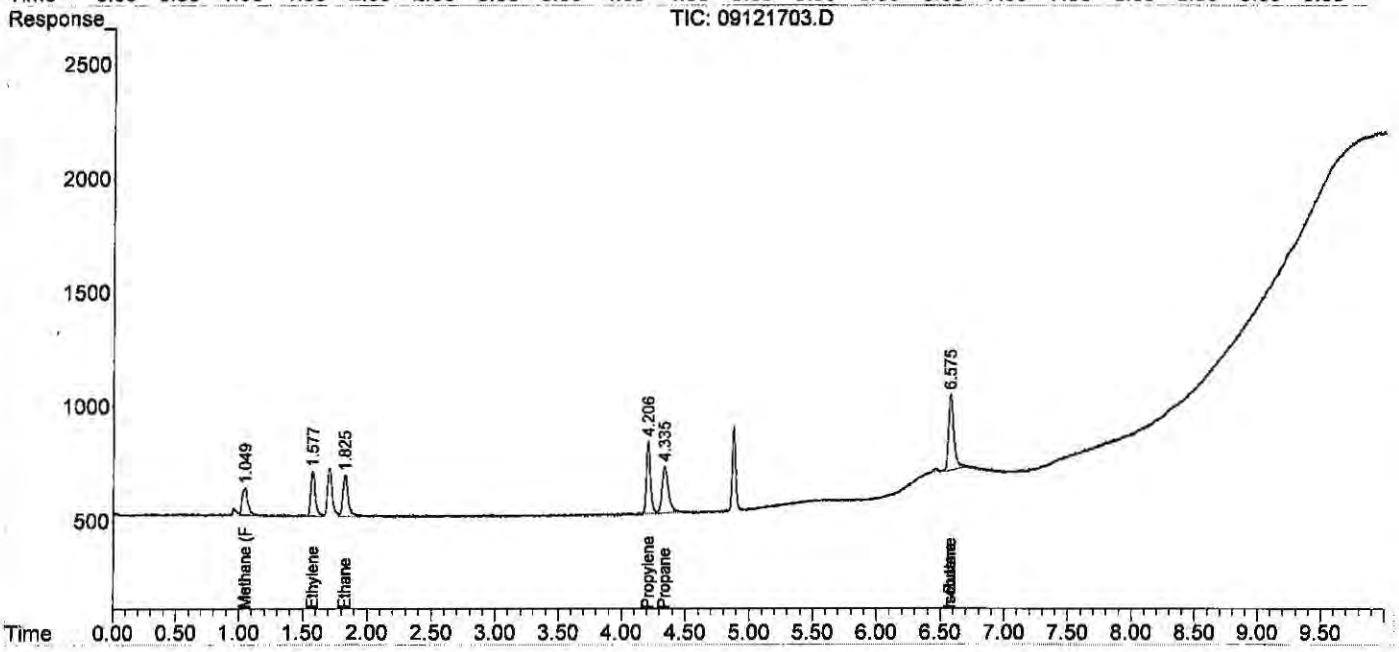
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



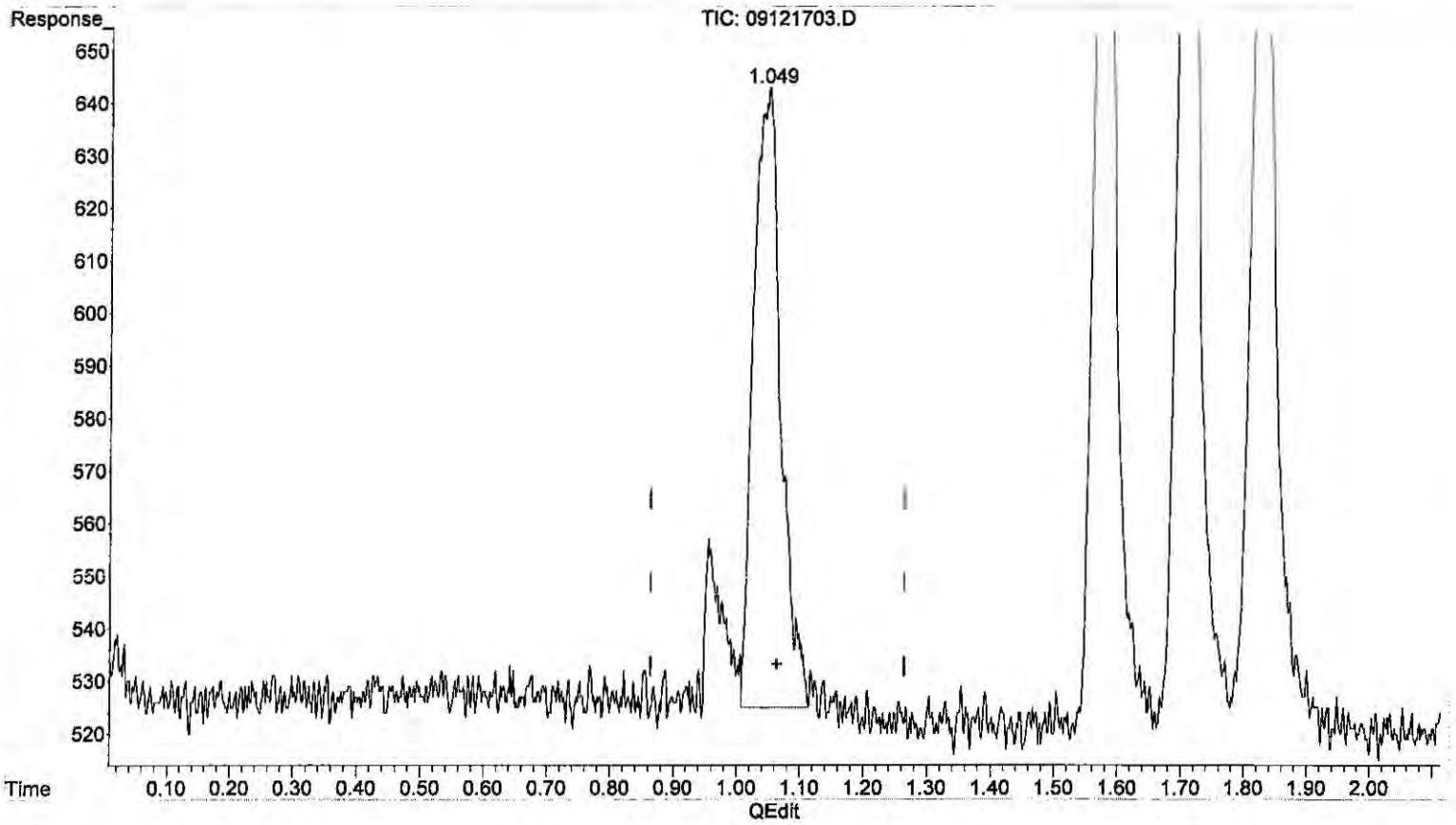


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121703.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:05
Operator : MC
Sample : 0.302ppm 0.5ml s32-09121702
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:03 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(6) Methane (FID)

1.049min 0.391 ppm m

response 3564

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121704.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:45
Operator : MC
Sample : 1.51ppm 0.1ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:55 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

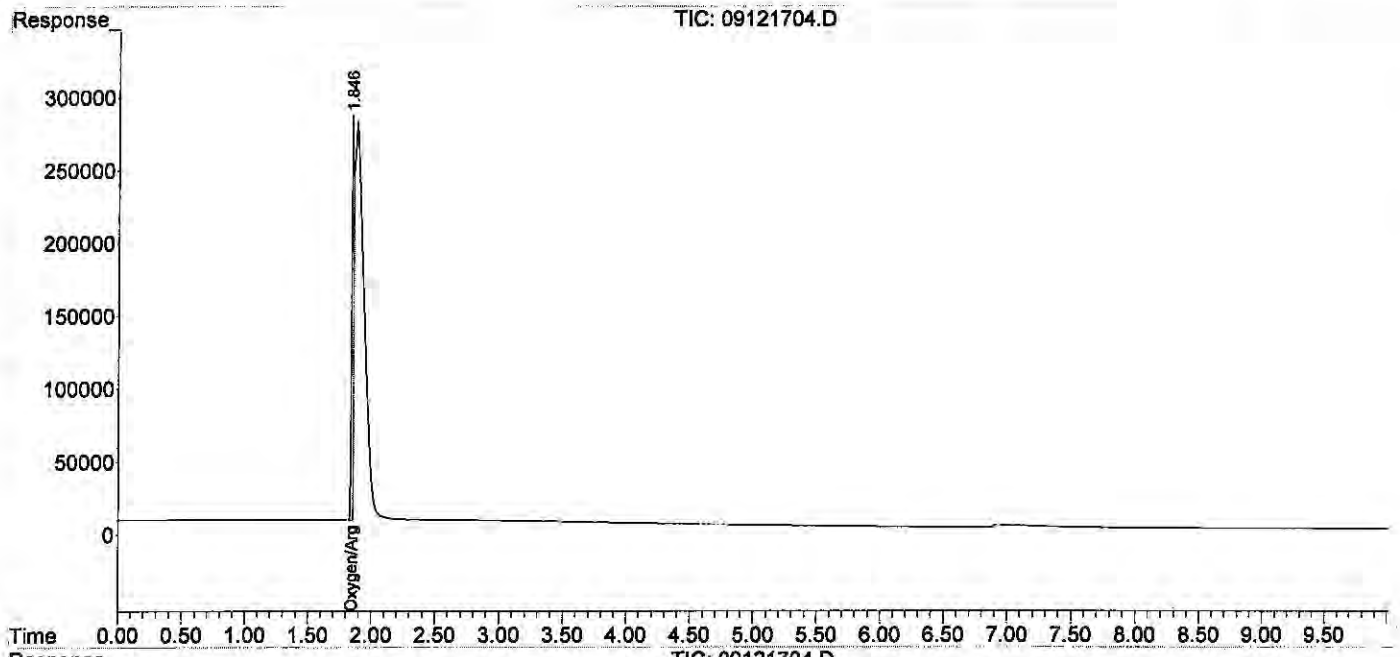
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.847	2536230	1.056	ppm
2)	Carbon monoxide	1.847	2536230	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.064	14725	1.613	ppm
7)	Ethylene	1.598	26885	1.582	ppm
8)	Ethane	1.851	26944	1.555	ppm
9)	Propylene	4.220	39140	1.589	ppm
10)	Propane	4.349	39934	1.596	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.578f	55348	1.020	ppm
13)	n-Butane	6.578f	55348	1.020	ppm

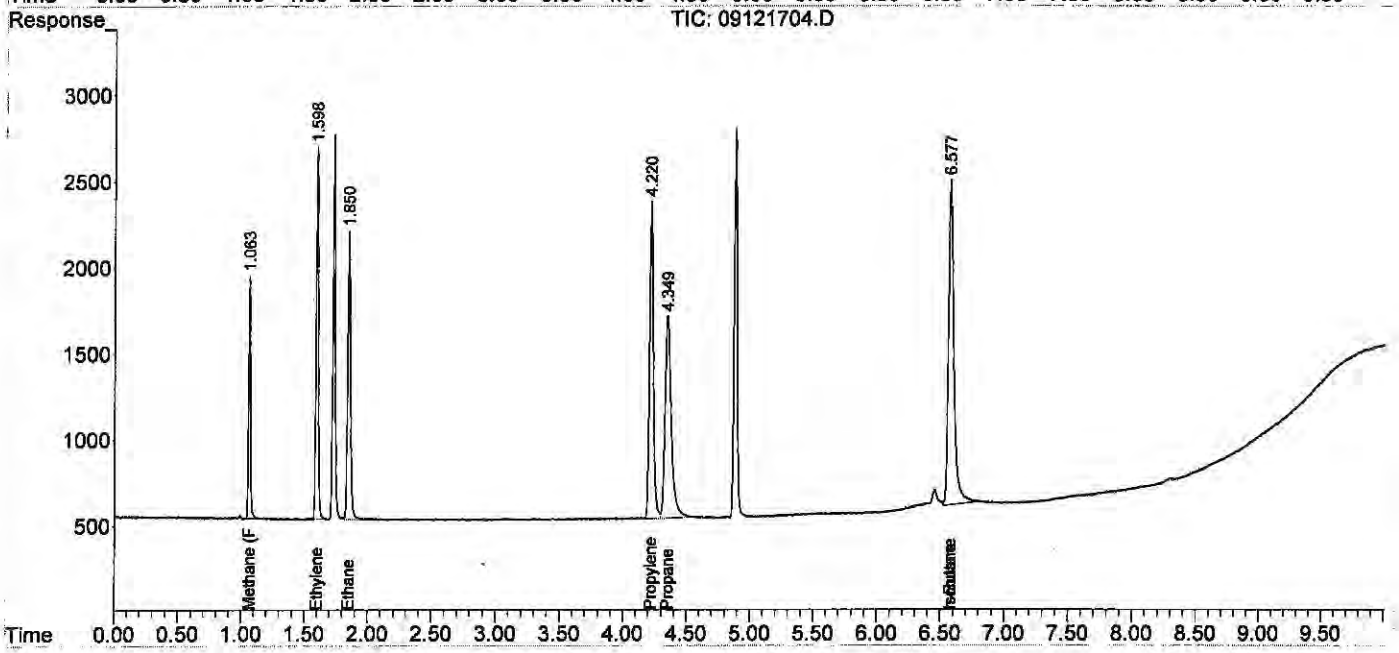
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121704.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 11:45
Operator : MC
Sample : 1.51ppm 0.1ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:05:55 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121705.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:09
Operator : MC
Sample : 4.53ppm 0.3ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:06:32 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

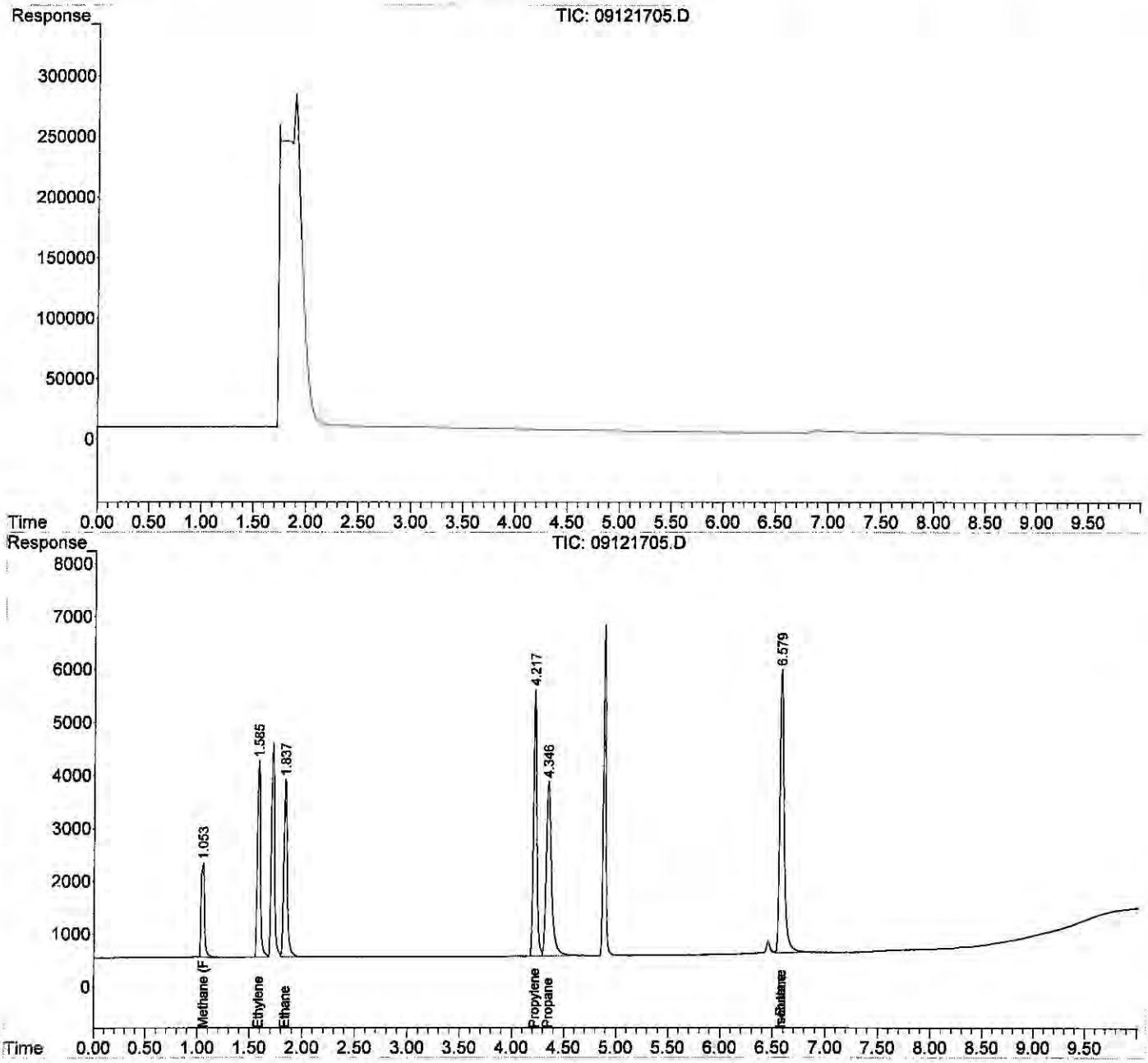
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.738	-331216	N.D.	ppm
2)	Carbon monoxide	1.738	-331216	0.019	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.052	41129	4.522	ppm
7)	Ethylene	1.586	77903	4.637	ppm
8)	Ethane	1.838	78354	4.558	ppm
9)	Propylene	4.218	112342	4.614	ppm
10)	Propane	4.347	115723	4.680	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.580f	155256	3.565	ppm
13)	n-Butane	6.580f	155256	3.565	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121705.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:09
Operator : MC
Sample : 4.53ppm 0.3ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:06:32 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121706.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:30
Operator : MC
Sample : 10.57ppm 0.7ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:24 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.929f	-31871242	N.D.	ppm
2)	Carbon monoxide	1.929f	-31871242	1.818	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.025	91967	10.135	ppm
7)	Ethylene	1.568	172086	10.273	ppm
8)	Ethane	1.822	178841	10.441	ppm
9)	Propylene	4.214	248004	10.236	ppm
10)	Propane	4.344	257124	10.458	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.578f	338181	9.254	ppm
13)	n-Butane	6.578f	338181	9.254	ppm

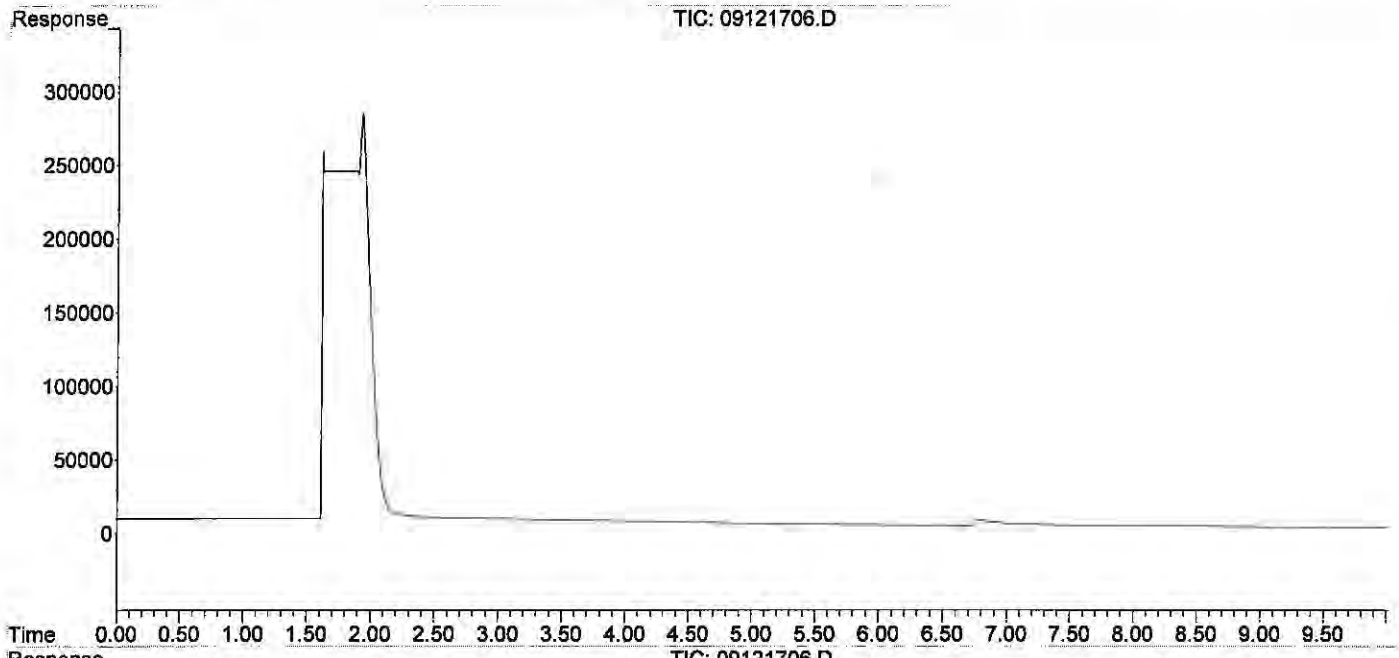
(f)=RT Delta > 1/2 Window (m)=manual int.

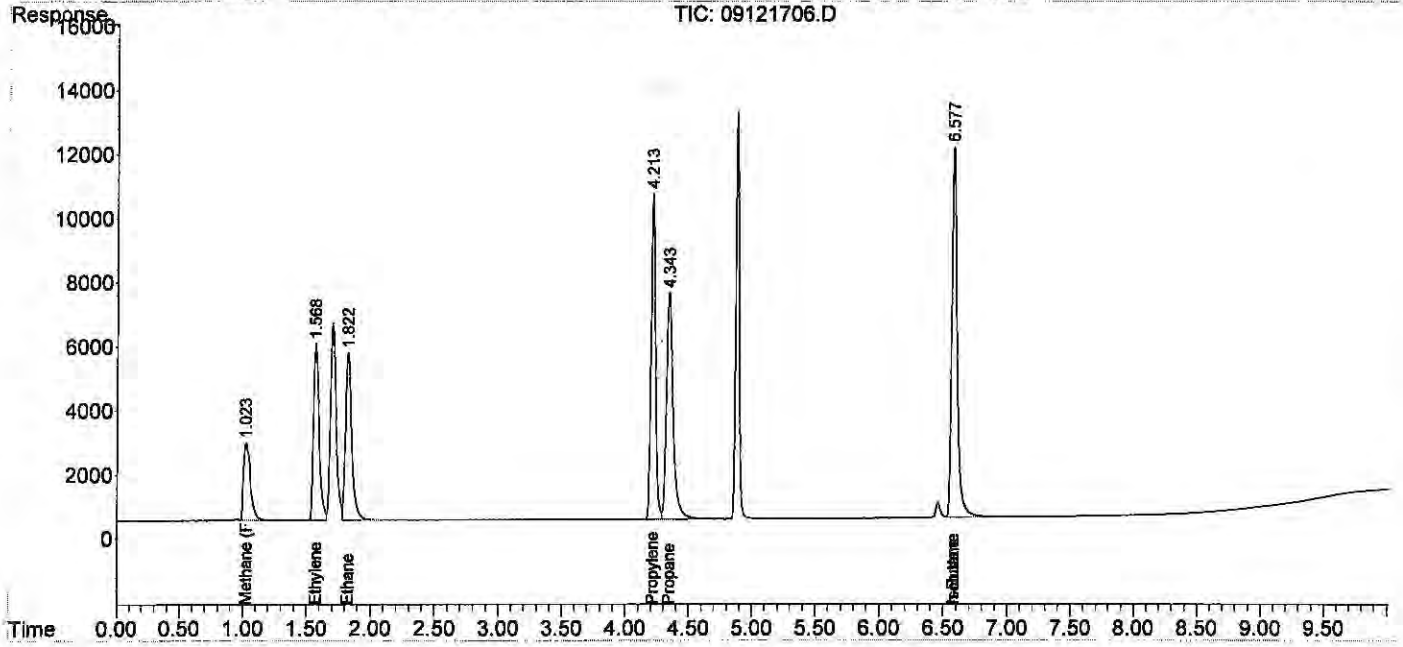
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121706.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:30
Operator : MC
Sample : 10.57ppm 0.7ml s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:24 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121707.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:47
Operator : MC
Sample : 200ppm 0.1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:59 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

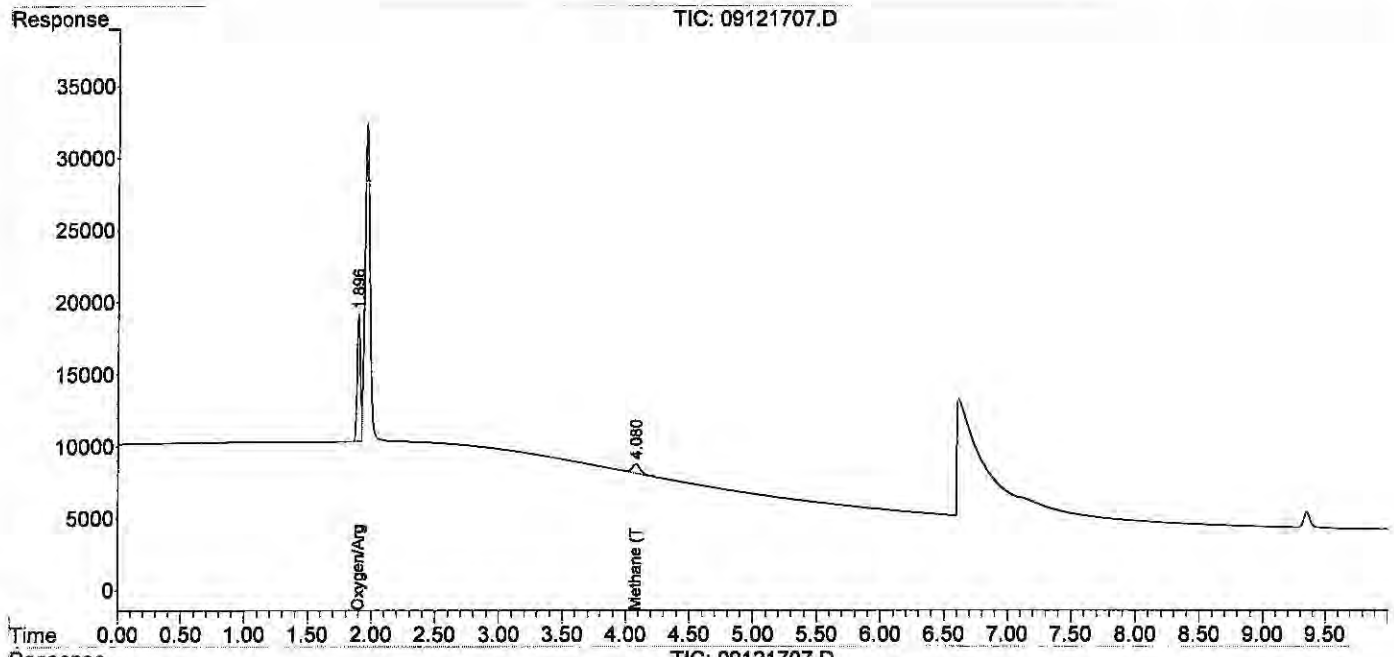
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.897	155286	0.065	ppm
2)	Carbon monoxide	1.897	155286	N.D.	ppm
3)	Methane (TCD)	4.079f	27015	2856.472	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.063	1735997	190.792	ppm
7)	Ethylene	1.597	3339702	198.758	ppm
8)	Ethane	1.849	3350442	194.597	ppm
9)	Propylene	4.201	4504060	185.706	ppm
10)	Propane	4.333	5043036	204.809	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

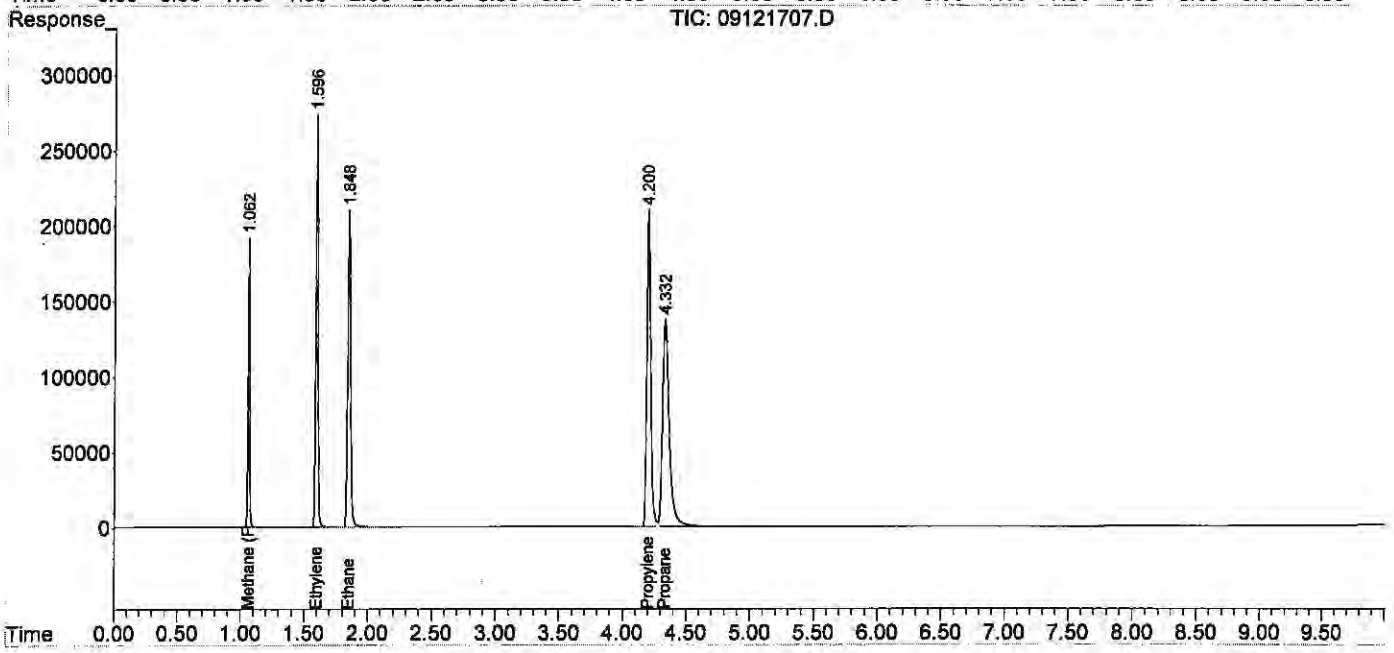
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121707.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 12:47
Operator : MC
Sample : 200ppm 0.1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:09:59 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:04:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121708.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:00
Operator : MC
Sample : 600ppm 0.3ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:10:57 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:10:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.884	196022	0.124	ppm
2)	Carbon monoxide	1.884	196022	N.D.	ppm
3)	Methane (TCD)	4.070f	88282	782.730	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.044	5189849	539.759	ppm
7)	Ethylene	1.573	10007759	590.286	ppm
8)	Ethane	1.822	10048964	583.213	ppm
9)	Propylene	4.160	13569343	562.612	ppm
10)	Propane	4.300	15251326	615.171	ppm
11)	Isobutylene	6.143	9815	NoCal	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

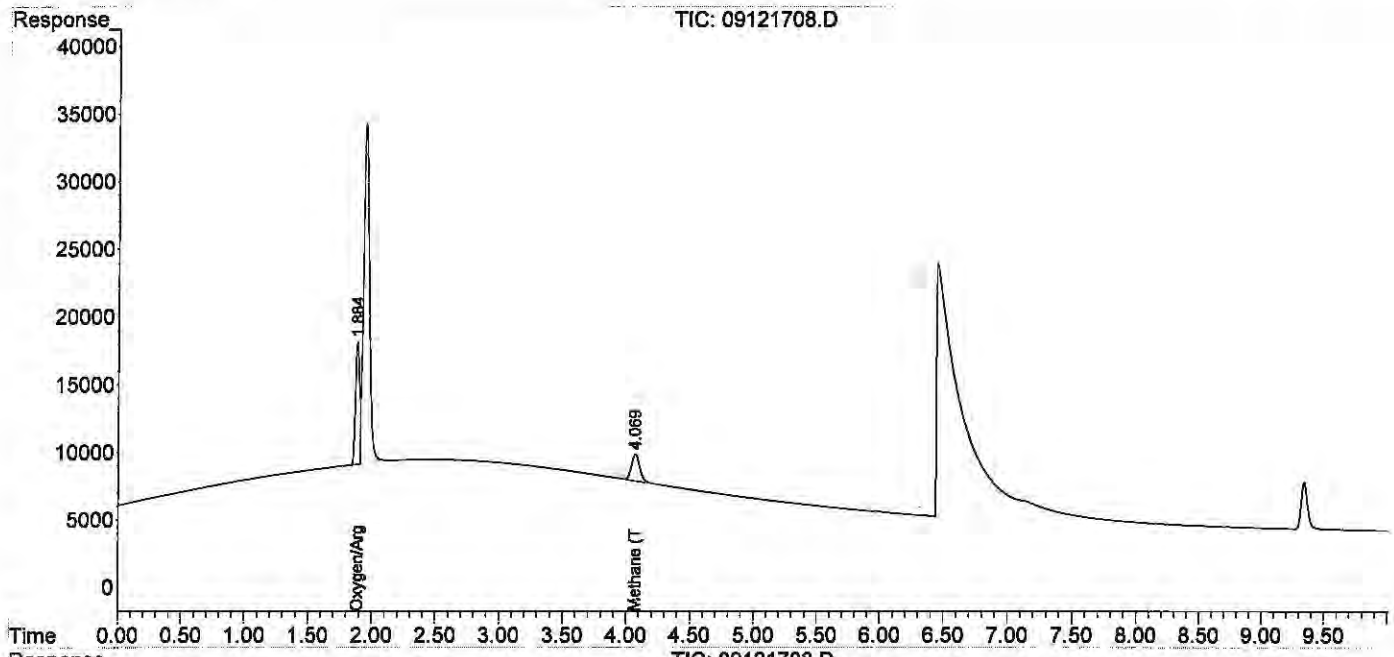
(f)=RT Delta > 1/2 Window (m)=manual int.

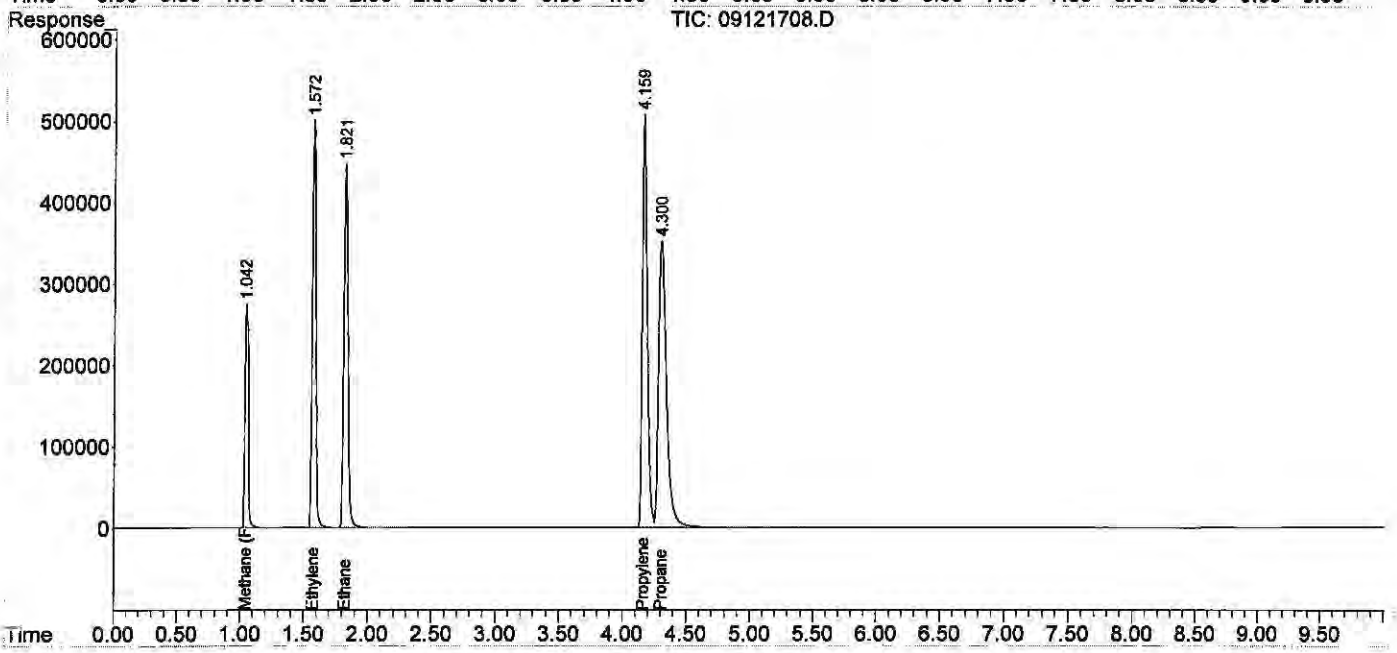
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121708.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:00
Operator : MC
Sample : 600ppm 0.3ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:10:57 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:10:50 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121709.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:47
Operator : MC
Sample : 1000ppm 0.5ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:11:46 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:11:38 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.879	192611	0.162	ppm
2)	Carbon monoxide	1.879	192611	N.D.	ppm
3)	Methane (TCD)	4.070f	145492	1244.729	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.039	8598534	945.644	ppm
7)	Ethylene	1.576	16608504	981.887	ppm
8)	Ethane	1.827	16709165	973.644	ppm
9)	Propylene	4.161	22494888	941.060	ppm
10)	Propane	4.298	25459411	1023.223	ppm
11)	Isobutylene	6.138	16970	8645.243	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

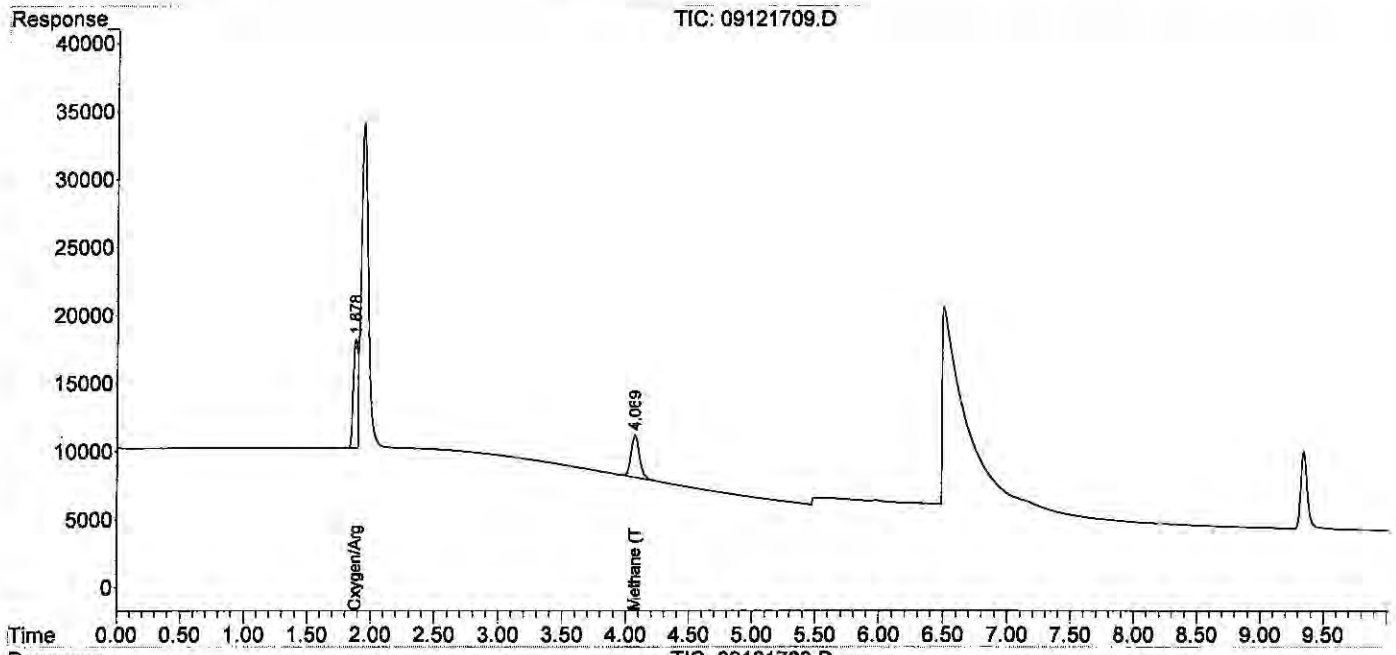
(f)=RT Delta > 1/2 Window (m)=manual int.

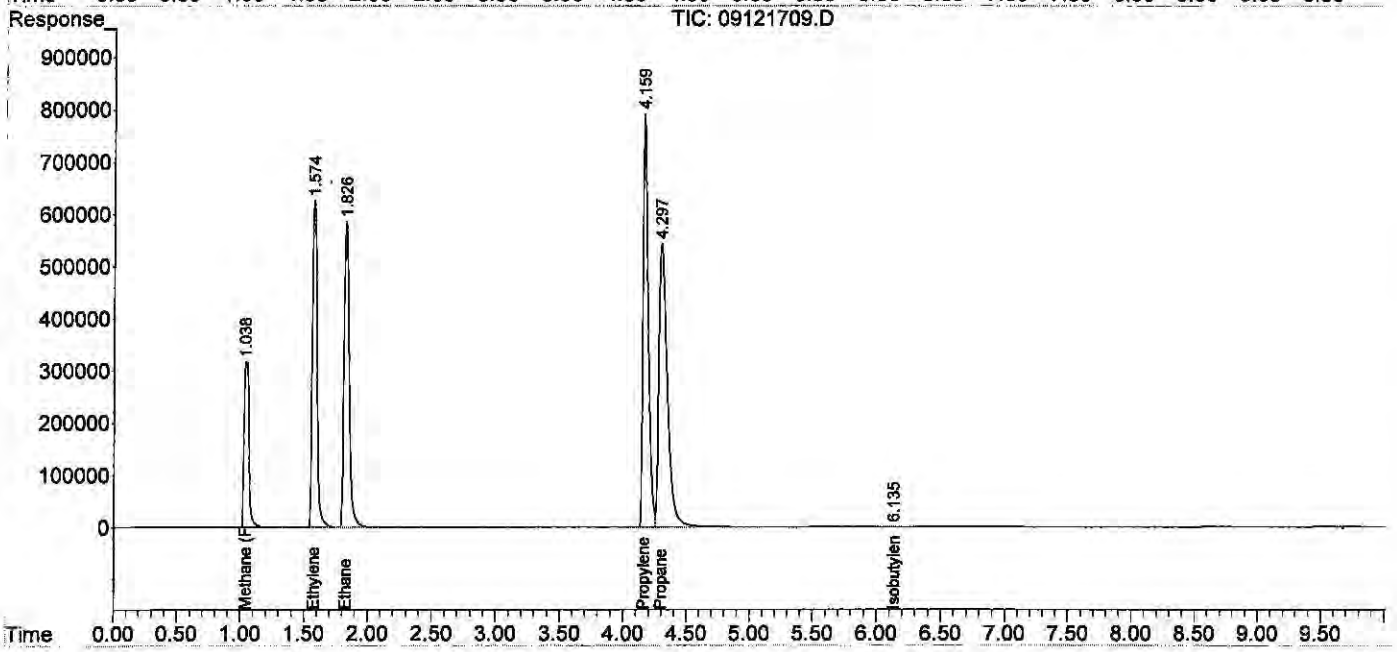
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121709.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 13:47
Operator : MC
Sample : 1000ppm 0.5ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:11:46 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:11:38 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase :
Signal #1 Info :
Signal #2 Phase:
Signal #2 Info :





Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

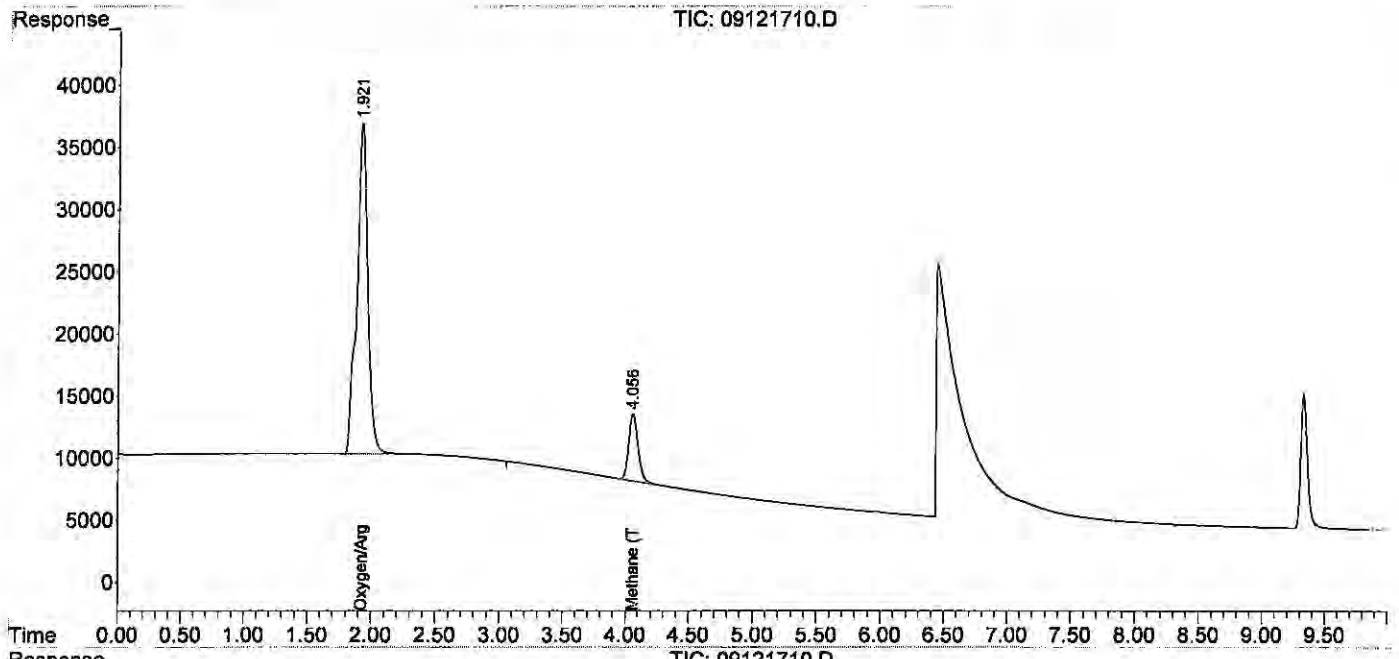
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.922f	1578147	1.659	ppm	
2)	Carbon monoxide	1.922f	1578147	N.D.	ppm	
3)	Methane (TCD)	4.057f	281651	3526.607	ppm	
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.016	16098209	1763.622	ppm	
7)	Ethylene	1.552	31192444	1848.268	ppm	
8)	Ethane	1.801	31424218	1837.143	ppm	
9)	Propylene	4.129	42124690	1775.341	ppm	m
10)	Propane	4.269	48583085	1946.921	ppm	
11)	Isobutylene	6.136	33832	25613.603	ppm	
12)	Isobutane	6.576f	3845	0.120	ppm	
13)	n-Butane	6.576f	3845	0.120	ppm	

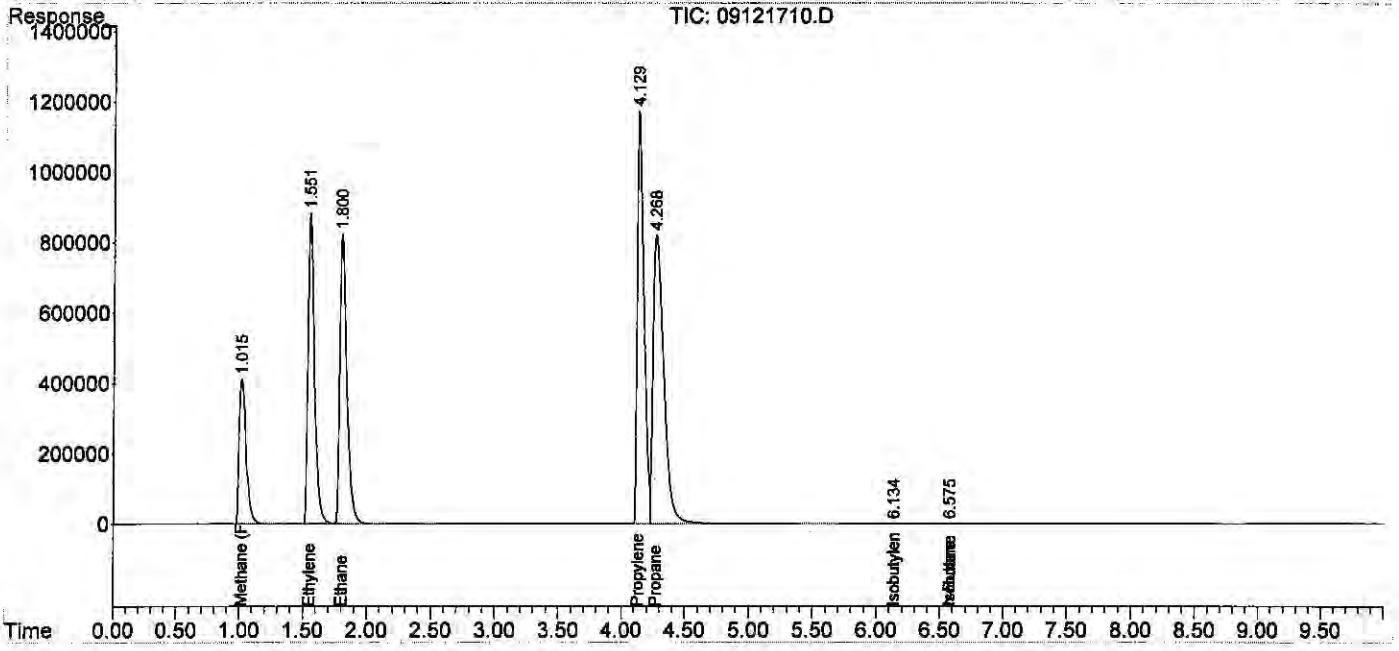
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



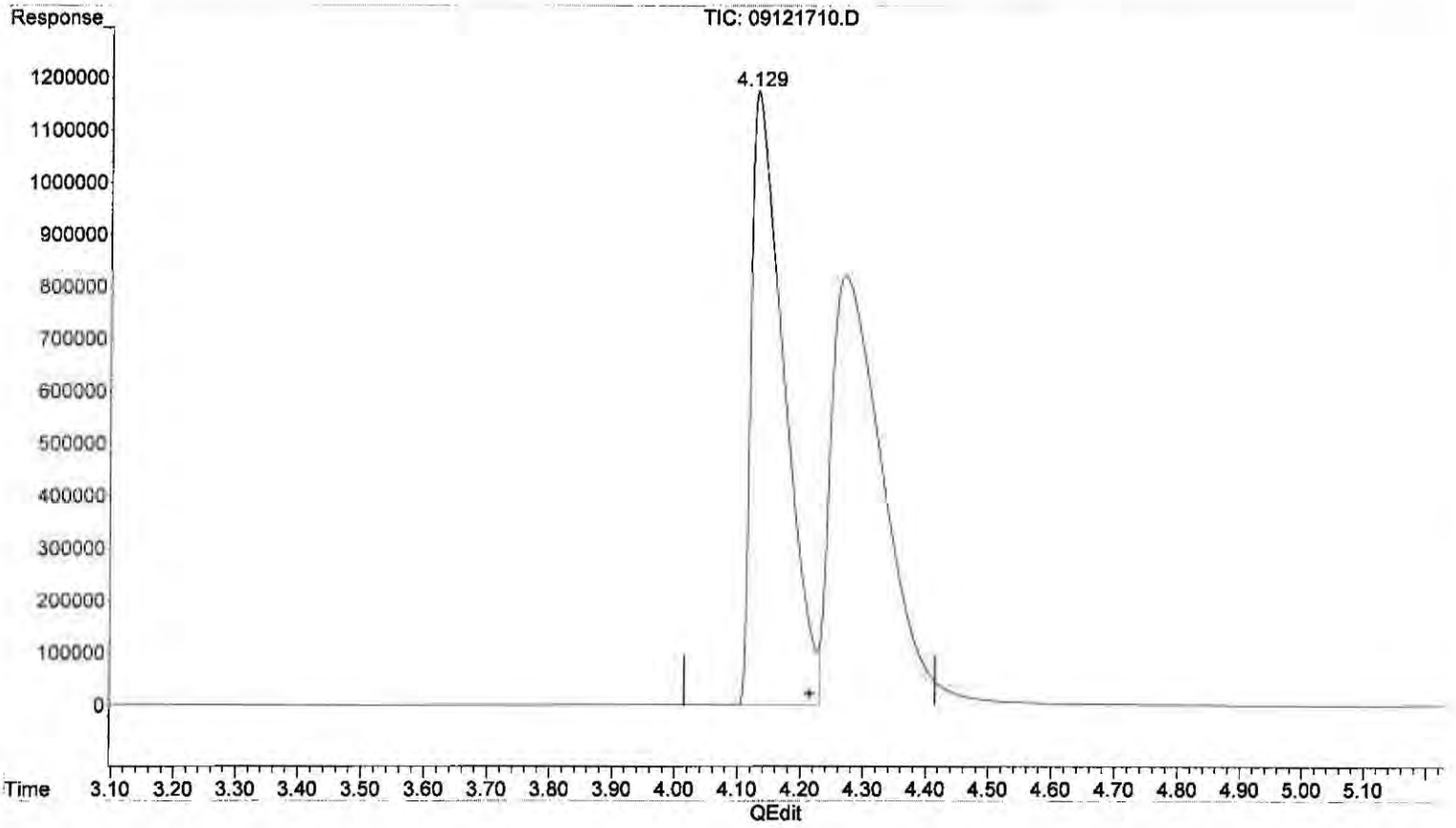


Quantitation Report (Qedit)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121710.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:07
Operator : MC
Sample : 2000ppm 1ml s32-09121701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:12:33 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:12:25 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :



(9) Propylene

4.129min 1775.341 ppm m

response 42124690

(+) = Expected Retention Time

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121711.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:48
Operator : MC
Sample : 4000ppm 0.1ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:13:37 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

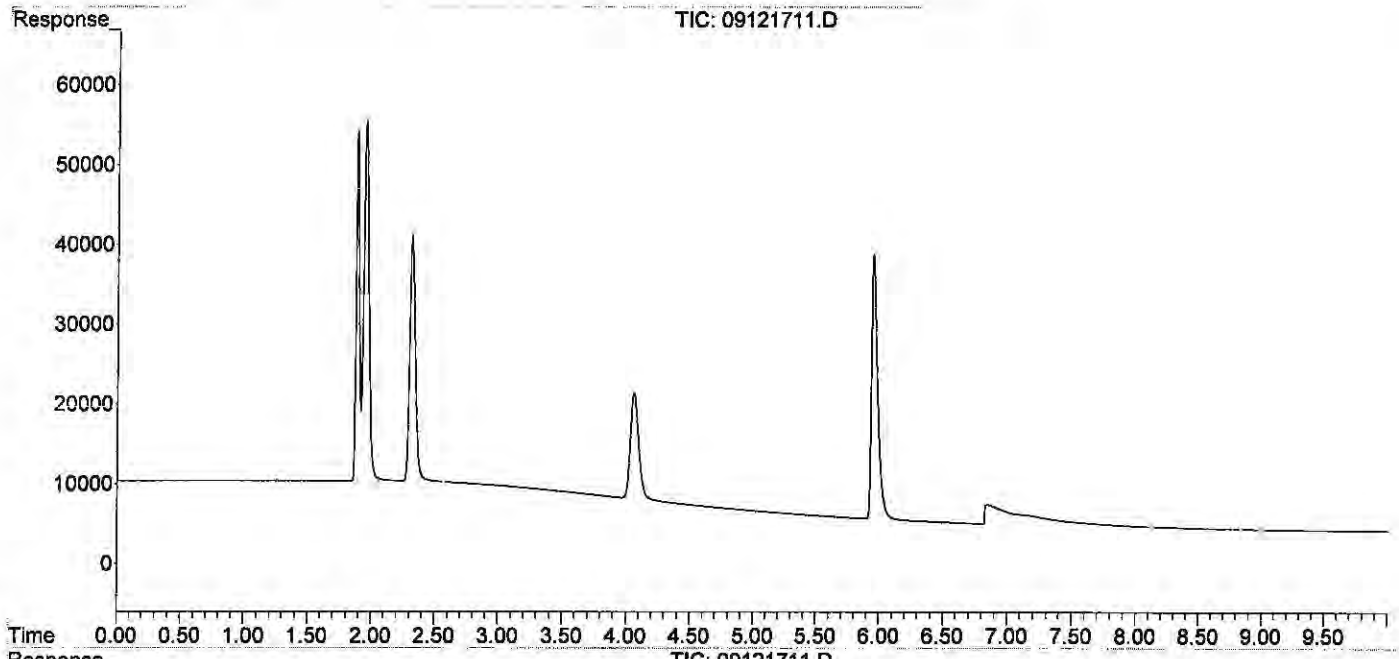
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	0.000	0	N.D.	ppm	d
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.059	35776839	3925.122	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

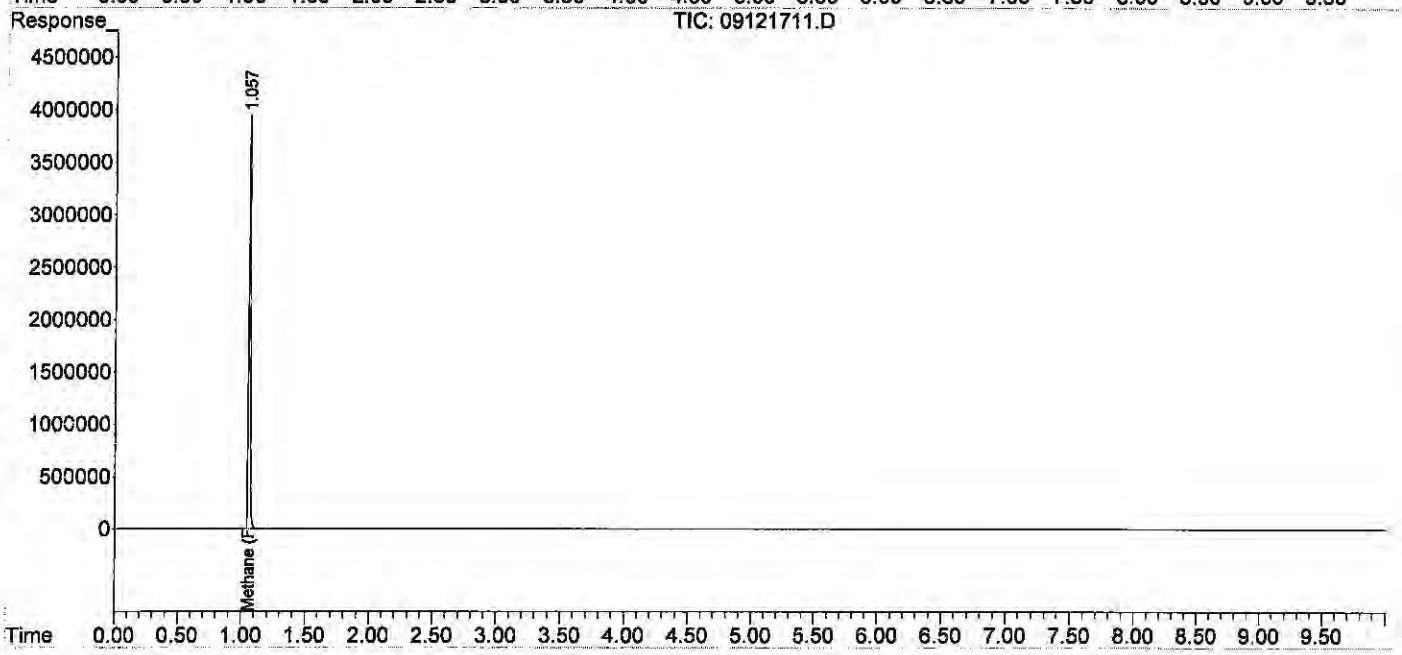
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121711.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 14:48
Operator : MC
Sample : 4000ppm 0.1ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:13:37 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase :
Signal #1 Info :
Signal #2 Phase:
Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121712.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 15:21
Operator : MC
Sample : 20000ppm 0.5ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:14:17 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	0.000	0	N.D.	ppm	d
2)	Carbon monoxide	1.836	3190788	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	d
4)	Carbon dioxide	0.000	0	N.D.	ppm	d
6)	Methane (FID)	1.034	169009160	18492.064	ppm	
7)	Ethylene	0.000	0	N.D.	ppm	
8)	Ethane	0.000	0	N.D.	ppm	
9)	Propylene	0.000	0	N.D.	ppm	
10)	Propane	0.000	0	N.D.	ppm	
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	0.000	0	N.D.	ppm	
13)	n-Butane	0.000	0	N.D.	ppm	

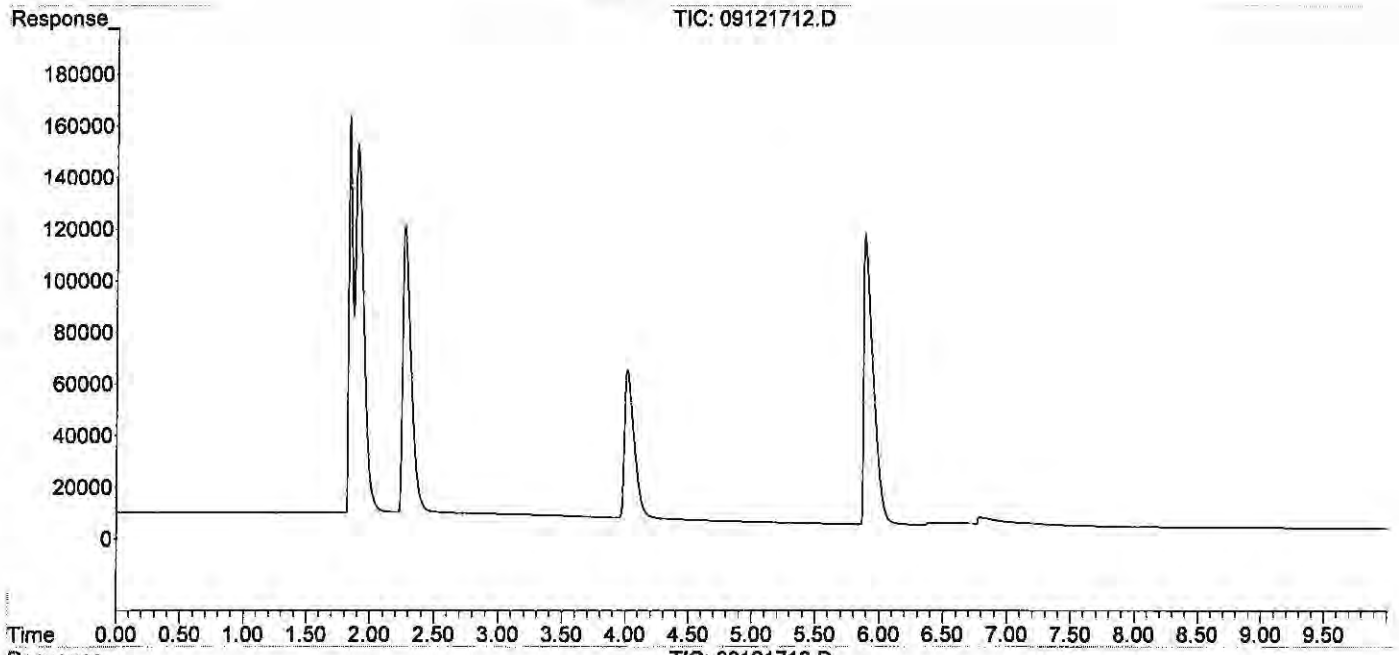
(f)=RT Delta > 1/2 Window (m)=manual int.

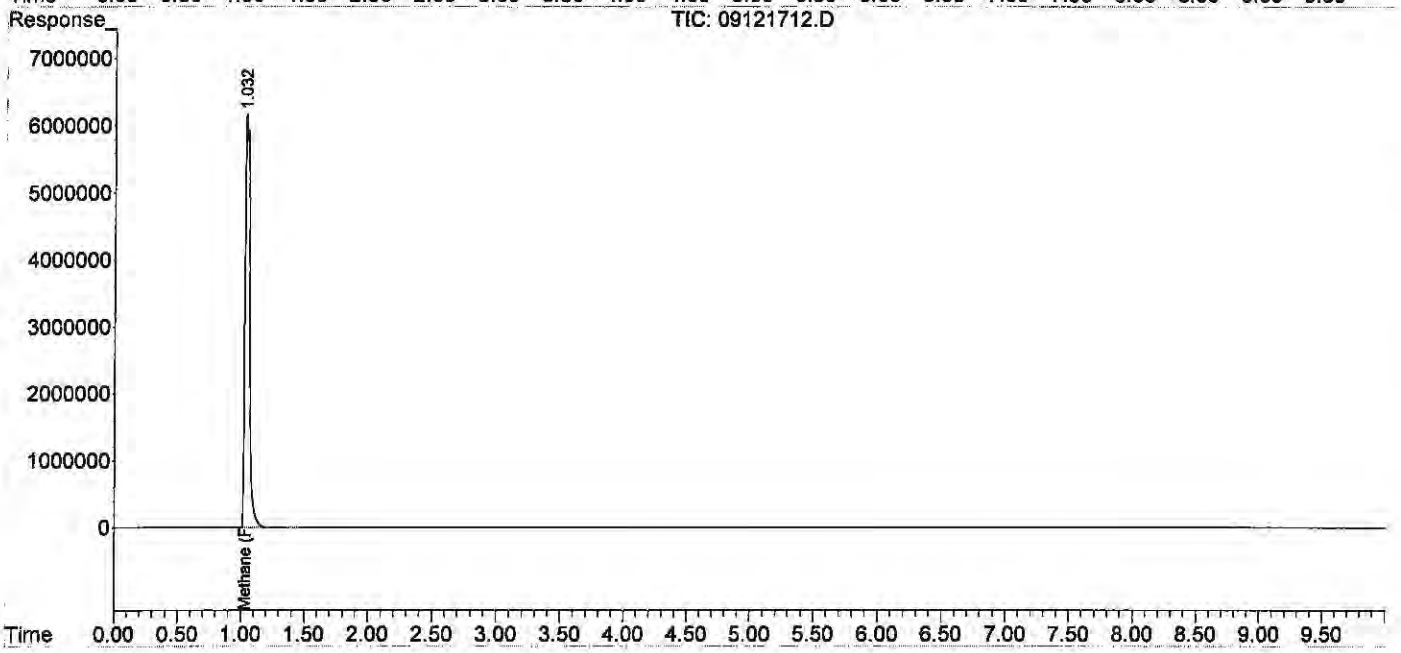
Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121712.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 15:21
Operator : MC
Sample : 20000ppm 0.5ml s32-08231701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:14:17 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Quantitation Report (QT Reviewed)

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 16:15
Operator : MC
Sample : icv s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:15:11 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Oxygen/Argon	1.843	2922459	3.687	ppm	
2)	Carbon monoxide	1.843	2922459	N.D.	ppm	
3)	Methane (TCD)	0.000	0	N.D.	ppm	actual %D
4)	Carbon dioxide	0.000	0	N.D.	ppm	
6)	Methane (FID)	1.063	13748	1.516	ppm	1.50 101.1
7)	Ethylene	1.598	24153	1.443	ppm	1.50 96.2
8)	Ethane	1.850	24488	1.445	ppm	1.50 96.3
9)	Propylene	4.221	36004	1.537	ppm	1.50 102.5
10)	Propane	4.350	37738	1.517	ppm	1.51 100.5
11)	Isobutylene	0.000	0	N.D.	ppm	
12)	Isobutane	6.579f	48019	1.804	ppm	9/14/2
13)	n-Butane	6.579f	48019	1.804	ppm	

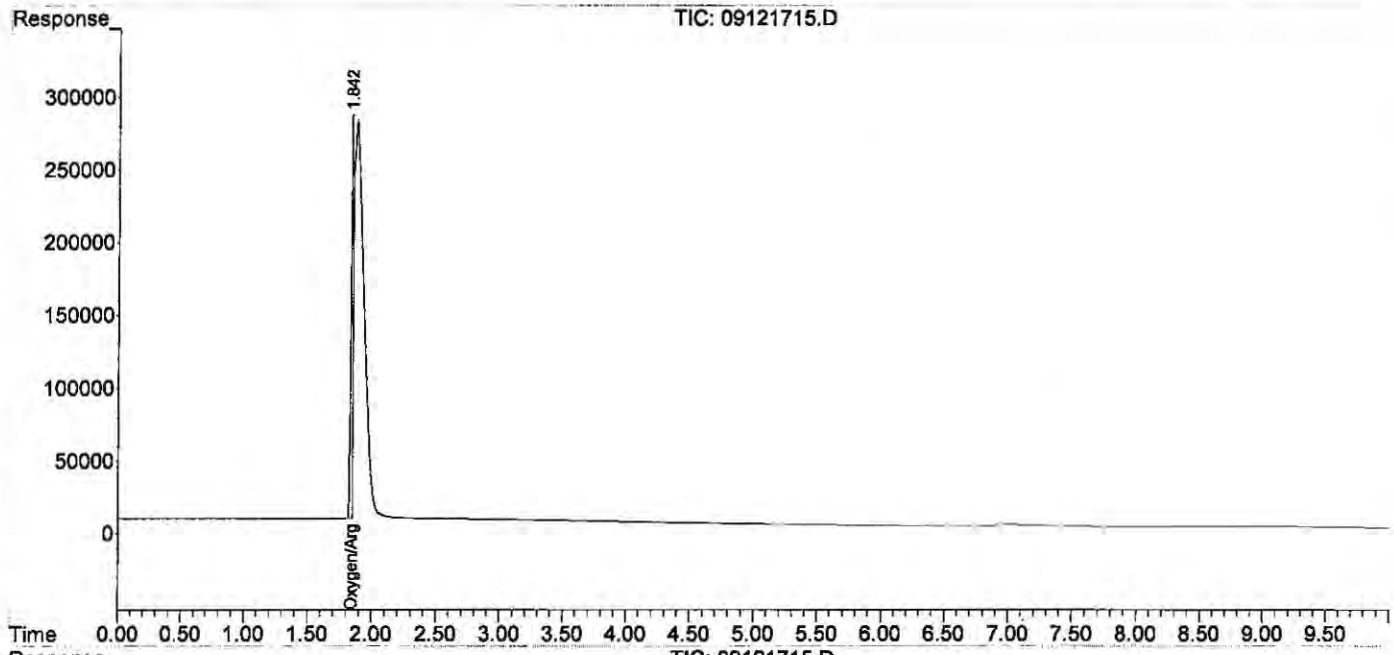
(f)=RT Delta > 1/2 Window (m)=manual int.

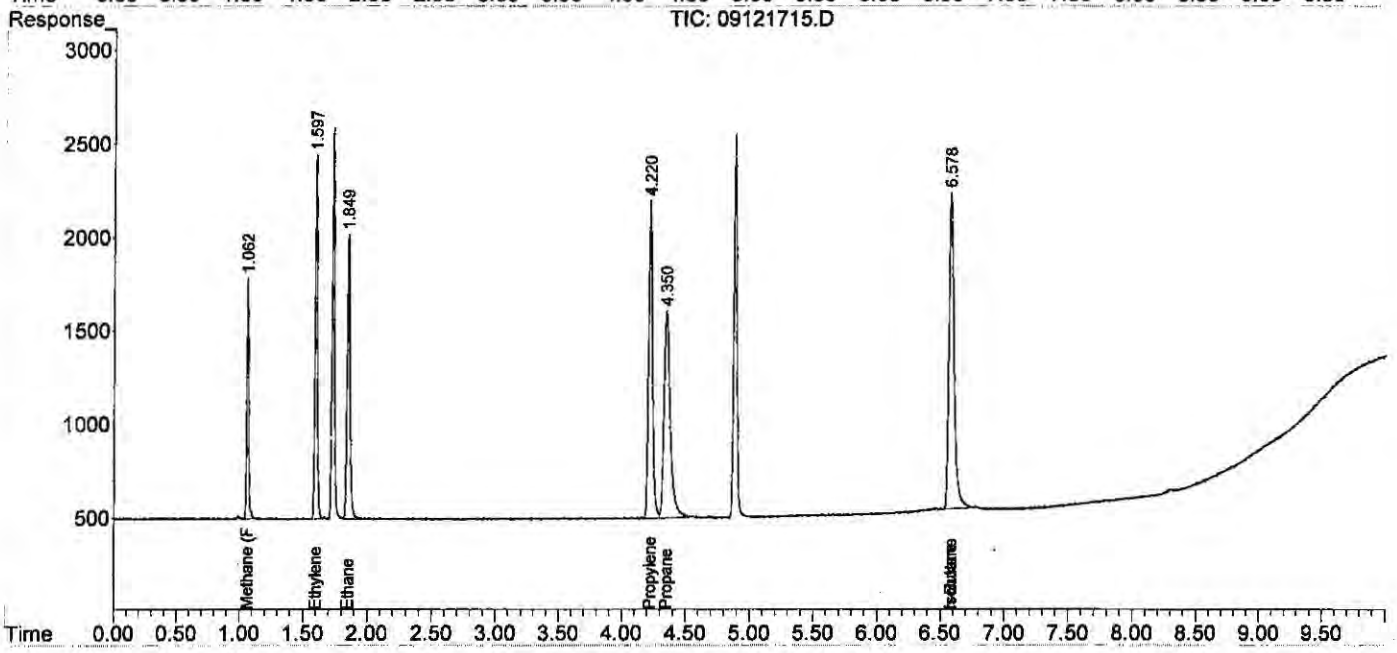
9/14/2017

Data Path : J:\GC10\DATA\RSK_FID\2017_09\12\
Data File : 09121715.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 12-Sep-2017, 16:15
Operator : MC
Sample : icv s30-05241604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: Sep 13 11:15:11 2017
Quant Method : J:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:13:29 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





ALS Environmental

Method : RSK175 Headspace Method for Dissolved Hydrocarbon in Water by FID/TCD
Client : ALS Laboratory Group
Service Request: P1802242
Sample Vol. (ml) : 32.00 ml
Analyst : WH
Date Analysis : 05/11/18
Head Space Vol.(ml) : 8.00 ml
Instrument : GC#10
Detector : FID#10, TCD#10
Gas Constant : 24.05684 (20°C)

HEAD SPACE RESULT (ppm)

Sample ID	Inj. Vol.	Methane	Ethylene	Ethane
std s32-09051701	0.100	1.642	1.588	1.559
ACTUAL		1.51	1.51	1.51
%Difference		8.7%	5.2%	3.2%
mcs 0.1ml	0.100	0.208	0.000	0.000
rb 0.1ml	0.100	0.065	0.000	0.000
fid lcs s30-05241604 0.1r	0.100	1.481	1.095	1.296
fid lcsd s30-05241604 0.1	0.100	1.505	1.127	1.320
P1802242-001 0.1ml	0.100	0.084	0.000	0.000
P1802242-003 0.1ml	0.100	0.134	0.000	0.000
P1802242-005 0.1ml	0.100	1.118	0.000	0.000
P1802242-005ms 0.1ml	0.100	2.265	0.704	0.927
P1802242-005msd 0.1ml	0.100	2.276	0.683	0.922
std s32-09051701		1.577	1.552	1.534
ACTUAL		1.51	1.51	1.51
%Difference		4.4%	2.8%	1.6%

FINAL HEAD SPACE RESULT (ppm)

	Methane	Ethylene	Ethane
WWt.	16.04	28.05	30.07
HENRY'S CONSTANT	3.76E+04	1.02E+04	2.63E+04
RL	1.30	1.00	0.60
mcs 0.1ml	2.080	0.000	0.000
fid lcs s30-05241604 0.1ml	14.810	10.950	12.960
fid lcsd s30-05241604 0.1ml	15.050	11.270	13.200
P1802242-001 0.1ml	0.840	0.000	0.000
P1802242-003 0.1ml	1.340	0.000	0.000
P1802242-005 0.1ml	11.180	0.000	0.000
P1802242-005ms 0.1ml	22.650	7.040	9.270
P1802242-005msd 0.1ml	22.760	6.830	9.220

00912347

Data Path : I:\GC10\DATA\RSK_FID\2018_05\11\
Data File : 05111801.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 13:25:33
Operator : WH
Sample : std s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 11 13:33:56 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

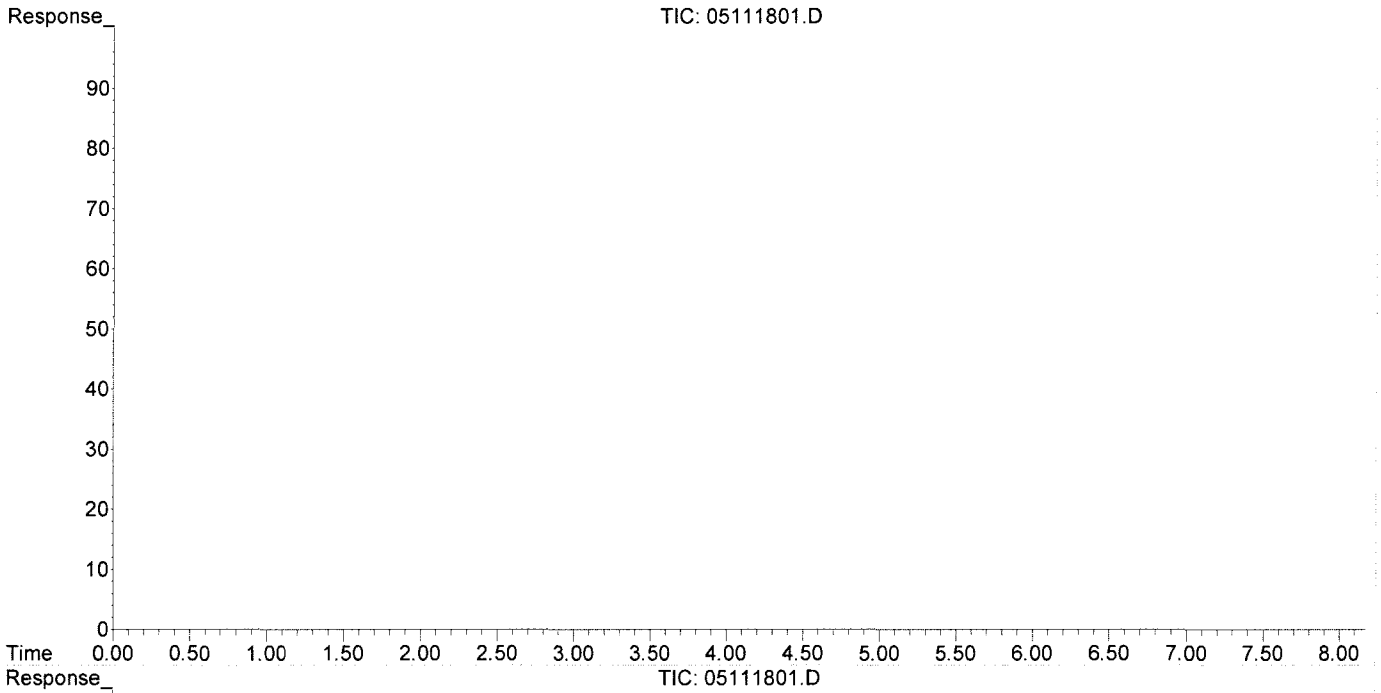
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.108	14891	1.642	ppm
7)	Ethylene	1.663	26570	1.588	ppm
8)	Ethane	1.924	26426	1.559	ppm
9)	Propylene	4.296	38345	1.636	ppm
10)	Propane	4.423	39213	1.576	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.639f	53860	2.024	ppm
13)	n-Butane	6.639f	53860	2.024	ppm

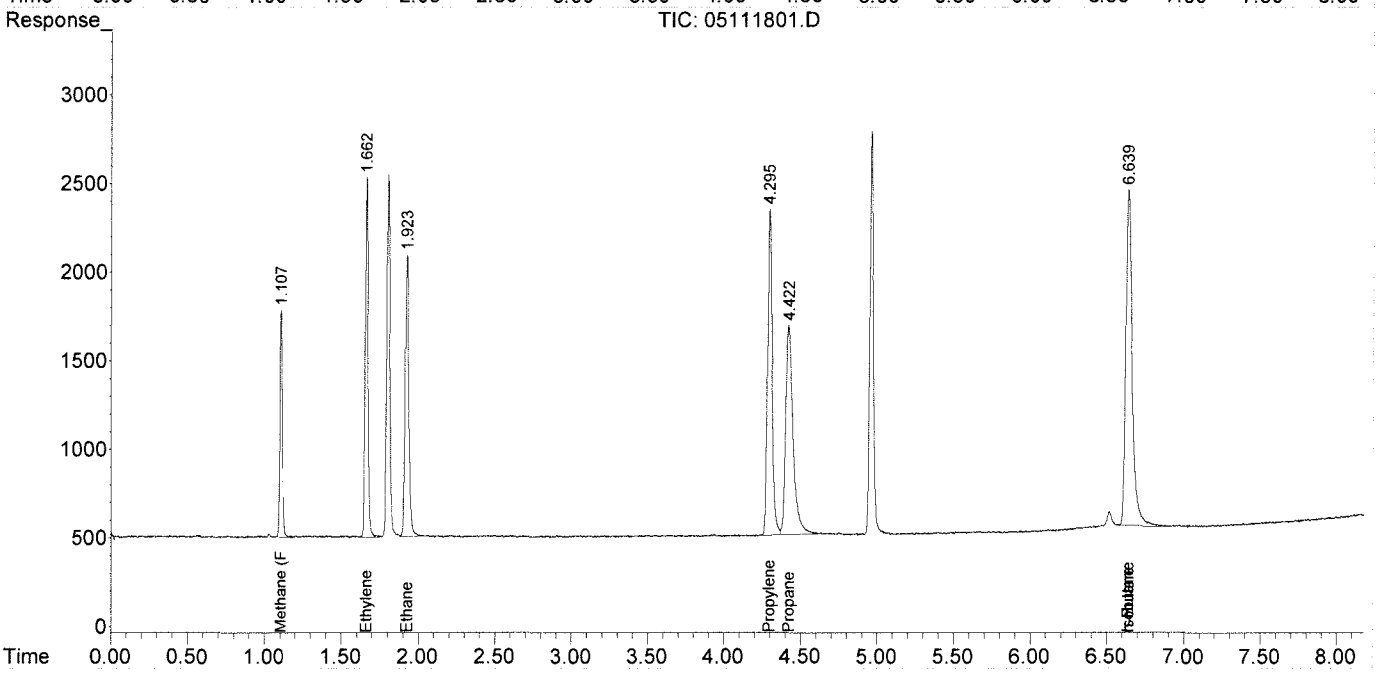
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2018_05\11\
Data File : 05111801.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 13:25:33
Operator : WH
Sample : std s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 11 13:33:56 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Data Path : I:\GC10\DATA\RSK_FID\2018_05\11\
Data File : 05111811.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 15:42:45
Operator : WH
Sample : std s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 11 15:55:10 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

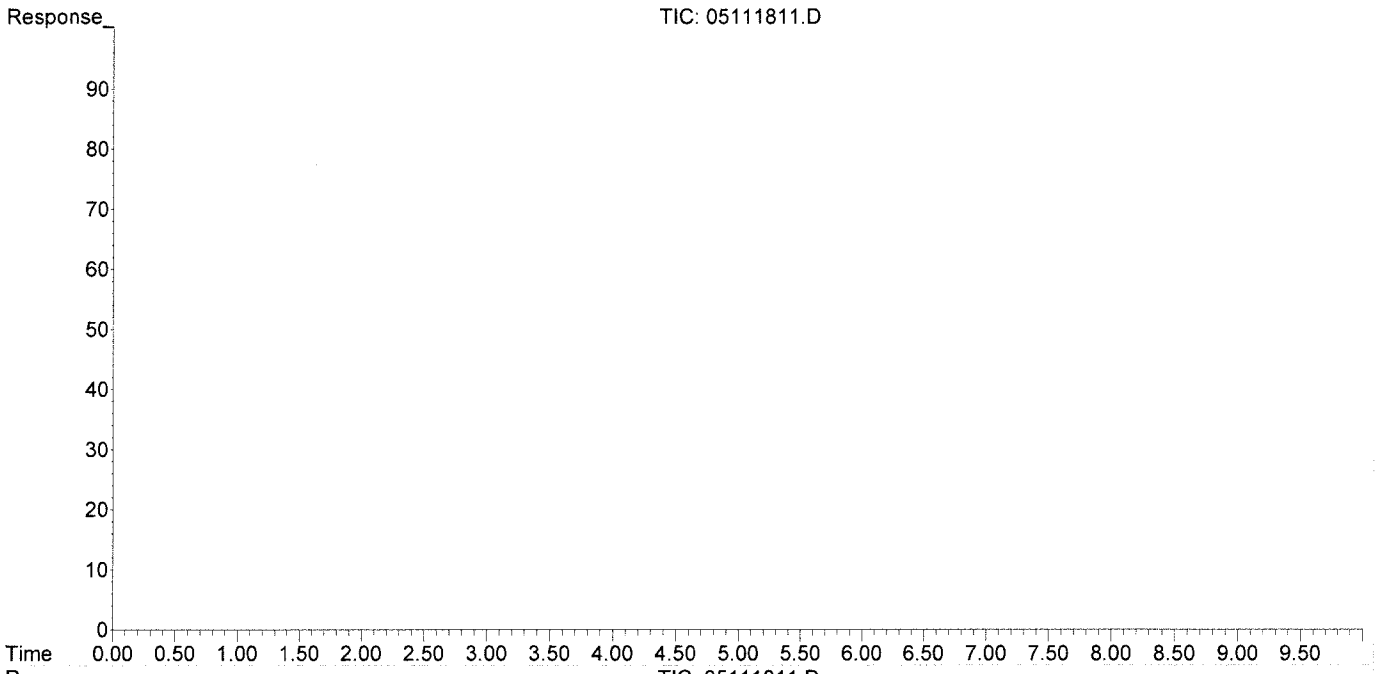
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	0.000	0	N.D.	ppm
2)	Carbon monoxide	0.000	0	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	0.000	0	N.D.	ppm
6)	Methane (FID)	1.104	14308	1.577	ppm
7)	Ethylene	1.651	25975	1.552	ppm
8)	Ethane	1.910	25996	1.534	ppm
9)	Propylene	4.290	38250	1.632	ppm
10)	Propane	4.417	39684	1.595	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	6.637f	54432	2.045	ppm
13)	n-Butane	6.637f	54432	2.045	ppm

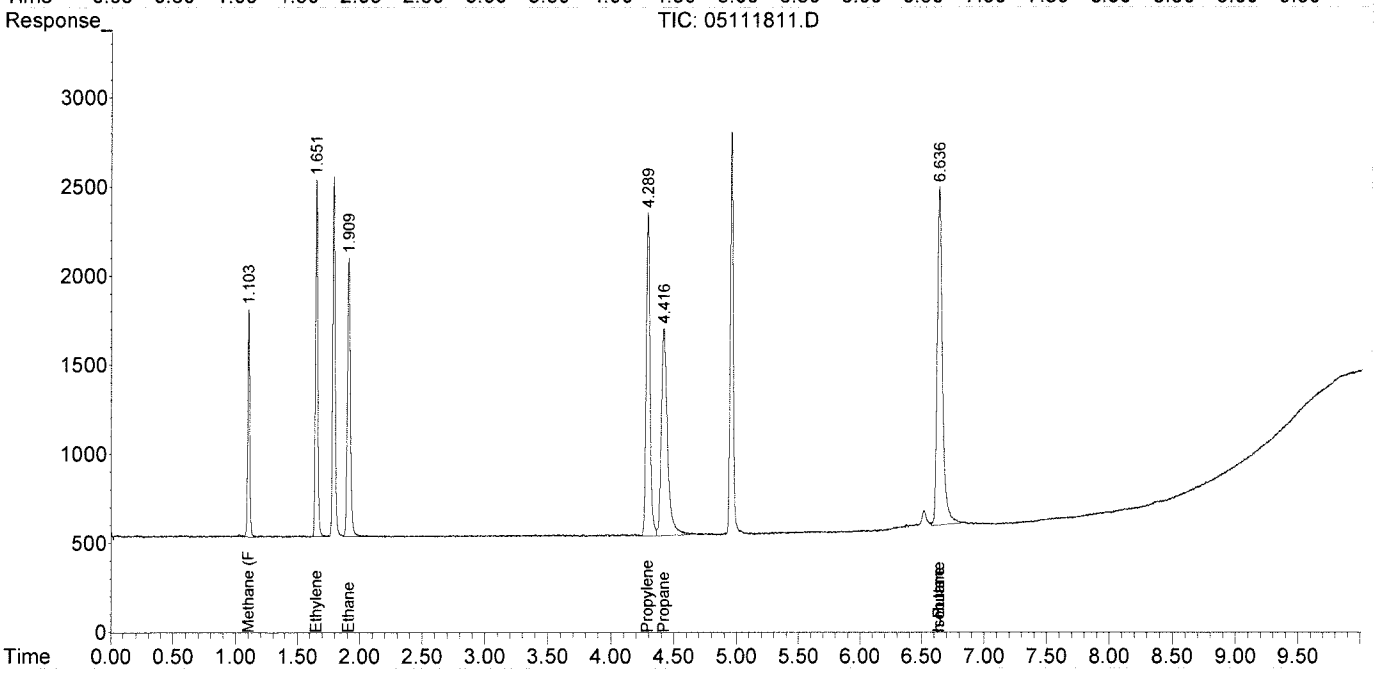
(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC10\DATA\RSK_FID\2018_05\11\
Data File : 05111811.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 15:42:45
Operator : WH
Sample : std s32-09051701
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 11 15:55:10 2018
Quant Method : I:\GC10\METHODS\RS091217_R.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Wed Sep 13 11:14:47 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :





Injection Log

Directory: I:\GC10\DATA\RSK_FID\2017_09\12\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	12-Sep-17, 08:38:08	09121701.D	test		MC	RSKBOTH.M	
2	12-Sep-17, 10:52:40	09121702.D	0.151ppm 0.250ml s32-09121702		MC	RSKBOTH.M	Curve
3	12-Sep-17, 11:05:49	09121703.D	0.302ppm 0.5ml s32-09121702		MC	RSKBOTH.M	Curve
4	12-Sep-17, 11:45:34	09121704.D	1.51ppm 0.1ml s32-09051701		MC	RSKBOTH.M	Curve
5	12-Sep-17, 12:09:33	09121705.D	4.53ppm 0.3ml s32-09051701		MC	RSKBOTH.M	Curve
6	12-Sep-17, 12:30:23	09121706.D	10.57ppm 0.7ml s32-09051701		MC	RSKBOTH.M	Curve
7	12-Sep-17, 12:47:18	09121707.D	200ppm 0.1ml s32-09121701		MC	RSKBOTH.M	Curve
8	12-Sep-17, 13:00:22	09121708.D	600ppm 0.3ml s32-09121701		MC	RSKBOTH.M	Curve
9	12-Sep-17, 13:47:48	09121709.D	1000ppm 0.5ml s32-09121701		MC	RSKBOTH.M	Curve
10	12-Sep-17, 14:07:58	09121710.D	2000ppm 1ml s32-09121701		MC	RSKBOTH.M	Curve
11	12-Sep-17, 14:48:48	09121711.D	4000ppm 0.1ml s32-08231701		MC	RSKBOTH.M	Curve
12	12-Sep-17, 15:21:51	09121712.D	20000ppm 0.5ml s32-08231701		MC	RSKBOTH.M	Curve
13	12-Sep-17, 15:38:59	09121713.D	mb 0.5ml		MC	RSKBOTH.M	Pass
14	12-Sep-17, 15:55:35	09121714.D	mb 0.1ml		MC	RSKBOTH.M	Pass
15	12-Sep-17, 16:15:26	09121715.D	icv s30-05241604		MC	RSKBOTH.M	Pass

Injection Log

Directory: I:\GC10\DATA\RSK_FID\2018_05\11\

	Date/Time	File Name	Sample ID	Misc Info	Operator	Acquisition Method	Comments
1	11-May-18, 13:25:33	05111801.D	std s32-09051701		WH	RSKBOTH.M	pass
2	11-May-18, 13:39:40	05111802.D	rb 0.1ml		WH	RSKBOTH.M	pass
3	11-May-18, 13:57:59	05111803.D	mcs 0.1ml		WH	RSKBOTH.M	pass
4	11-May-18, 14:06:50	05111804.D	fid lcs s30-05241604 0.1ml		WH	RSKBOTH.M	pass
5	11-May-18, 14:25:52	05111805.D	fid lcsd s30-05241604 0.1ml		WH	RSKBOTH.M	pass
6	11-May-18, 14:37:22	05111806.D	P1802242-001 0.1ml		WH	RSKBOTH.M	
7	11-May-18, 14:50:29	05111807.D	P1802242-003 0.1ml		WH	RSKBOTH.M	
8	11-May-18, 15:03:39	05111808.D	P1802242-005 0.1ml		WH	RSKBOTH.M	
9	11-May-18, 15:16:19	05111809.D	P1802242-005ms 0.1ml		WH	RSKBOTH.M	see cn
10	11-May-18, 15:30:19	05111810.D	P1802242-005msd 0.1ml		WH	RSKBOTH.M	see cn
11	11-May-18, 15:42:45	05111811.D	std s32-09051701		WH	RSKBOTH.M	pass

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

May 17, 2018

Sharon Pennington
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS18050072**

Laboratory Results for: **Longhorn Army Ammunition Plant -67/501032**

Dear Sharon,

ALS Environmental received 4 sample(s) on May 02, 2018 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Group Houston, Corp Date: 17-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
Work Order: HS18050072

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18050072-01	67WW13-180501	Groundwater		01-May-2018 09:40	02-May-2018 08:30	☐
HS18050072-02	67WW13-180501-FD	Groundwater		01-May-2018 09:40	02-May-2018 08:30	☐
HS18050072-03	67WW08-180501	Groundwater		01-May-2018 12:10	02-May-2018 08:30	☐
HS18050072-04	67TB01-180501	Water	ALS 021518-50	01-May-2018 00:00	02-May-2018 08:30	☑

ALS Group Houston, Corp Date: 17-May-18

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: Longhorn Army Ammunition Plant -67/501032
Work Order: HS18050072

Work Order Comments

- The analysis for Methane, Methene, Ethane and CO2 by RSK175 was subcontracted to ALS Simi Valley, CA. Final report attached.

GCMS Volatiles by Method SW8260

Batch ID: R315639

Sample ID: 67WW08-180501 (HS18050072-03MS)

- The recovery of the Matrix Spike (MS) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The recovery of the MS may be due to sample matrix interference.

Sample ID: 67WW08-180501 (HS18050072-03MSD)

- The recovery of the Matrix Spike Duplicate (MSD) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The failed recovery of the MSD may be due to sample matrix interference.

WetChemistry by Method SW9056

Batch ID: R316275

Sample ID: 67WW08-180501 (HS18050072-03MS)

- The MS and/or MSD recovery was outside of the control limits; however, the result in the parent sample is greater than 4x the spike amount. (Chloride)

Sample ID: 67WW08-180501 (HS18050072-03MSD)

- The MS and/or MSD recovery was outside of the control limits; however, the result in the parent sample is greater than 4x the spike amount. (Chloride)

WetChemistry by Method SW9060

Batch ID: R316293,R316322

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method E376.1

Batch ID: R315916

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SM3500FED

Batch ID: R315840

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Group Houston, Corp Date: 17-May-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant -67/501032 WorkOrder:HS18050072
Sample ID: 67WW13-180501 Lab ID:HS18050072-01
Collection Date: 01-May-2018 09:40 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 21:15
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 21:15
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 21:15
1,1,2-Trichloroethane	**4.8**		**0.30**	**0.50**	**1.0**	**ug/L**	1	03-May-2018 21:15
1,1-Dichloroethane	**15**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-May-2018 21:15
1,1-Dichloroethene	**160**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-May-2018 21:15
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 21:15
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 21:15
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 21:15
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	03-May-2018 21:15
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 21:15
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 21:15
1,2-Dichloroethane	**27**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-May-2018 21:15
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 21:15
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 21:15
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 21:15
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 21:15
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	03-May-2018 21:15
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	03-May-2018 21:15
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 21:15
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	03-May-2018 21:15
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	03-May-2018 21:15
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 21:15
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 21:15
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 21:15
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 21:15
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 21:15
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 21:15
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	03-May-2018 21:15
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 21:15
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 17-May-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant -67/501032 WorkOrder:HS18050072
Sample ID: 67WW13-180501 Lab ID:HS18050072-01
Collection Date: 01-May-2018 09:40 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
Chloroform	**0.76**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	03-May-2018 21:15
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 21:15
cis-1,2-Dichloroethene	**0.99**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	03-May-2018 21:15
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	03-May-2018 21:15
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 21:15
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	03-May-2018 21:15
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	03-May-2018 21:15
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	03-May-2018 21:15
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 21:15
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 21:15
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 21:15
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 21:15
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 21:15
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 21:15
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 21:15
Surr: 1,2-Dichloroethane-d4	*95.9*			**0**	*70-126*	*%REC*	*1*	*03-May-2018 21:15*
Surr: 4-Bromofluorobenzene	*106*			**0**	*81-113*	*%REC*	*1*	*03-May-2018 21:15*
Surr: Dibromofluoromethane	*104*			**0**	*77-123*	*%REC*	*1*	*03-May-2018 21:15*
Surr: Toluene-d8	*94.5*			**0**	*82-127*	*%REC*	*1*	*03-May-2018 21:15*
SULFIDE BY E376.1		**Method:E376.1**						Analyst: JHD
Sulfide	1.50	U	1.00	1.50	1.00	mg/L	1	08-May-2018 16:14
FERROUS IRON BY SM3500 FE D		**Method:SM3500FED**						Analyst: JHD
Ferrous Iron	0.0400	nU	0.0200	0.0400	0.0500	mg/L	1	02-May-2018 11:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 17-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
Sample ID: 67WW13-180501
Collection Date: 01-May-2018 09:40

ANALYTICAL REPORT
WorkOrder:HS18050072
Lab ID:HS18050072-01
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**1,650**		**4.00**	**10.0**	**10.0**	**mg/L**	20	04-May-2018 16:32
Nitrogen, Nitrate (As N)	**0.674**		**0.0300**	**0.100**	**0.100**	**mg/L**	1	03-May-2018 05:44
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	03-May-2018 05:44
Sulfate	**405**		**4.00**	**10.0**	**10.0**	**mg/L**	20	04-May-2018 16:32
TOTAL INORGANIC CARBON BY SW9060A		**Method:SW9060**						Analyst: KMU
Total Inorganic Carbon	**340**		**1.0**	**1.0**	**1.0**	**mg/L**	1	16-May-2018 17:03
TOTAL ORGANIC CARBON BY SW9060A		**Method:SW9060**						Analyst: AJH
Organic Carbon, Total	**3.07**		**0.500**	**1.25**	**1.00**	**mg/L**	1	16-May-2018 00:10
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	14-May-2018 18:09

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 17-May-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant -67/501032 WorkOrder:HS18050072
Sample ID: 67WW13-180501-FD Lab ID:HS18050072-02
Collection Date: 01-May-2018 09:40 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:07
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 22:07
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 22:07
1,1,2-Trichloroethane	**4.7**		**0.30**	**0.50**	**1.0**	**ug/L**	1	03-May-2018 22:07
1,1-Dichloroethane	**15**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-May-2018 22:07
1,1-Dichloroethene	**170**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-May-2018 22:07
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 22:07
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 22:07
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 22:07
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	03-May-2018 22:07
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:07
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 22:07
1,2-Dichloroethane	**28**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-May-2018 22:07
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 22:07
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 22:07
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 22:07
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:07
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	03-May-2018 22:07
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	03-May-2018 22:07
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 22:07
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	03-May-2018 22:07
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	03-May-2018 22:07
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:07
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 22:07
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:07
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:07
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 22:07
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 22:07
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	03-May-2018 22:07
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 22:07
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 17-May-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant -67/501032 WorkOrder:HS18050072
Sample ID: 67WW13-180501-FD Lab ID:HS18050072-02
Collection Date: 01-May-2018 09:40 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
Chloroform	**0.78**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	03-May-2018 22:07
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:07
cis-1,2-Dichloroethene	**1.0**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-May-2018 22:07
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	03-May-2018 22:07
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:07
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	03-May-2018 22:07
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	03-May-2018 22:07
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	03-May-2018 22:07
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 22:07
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:07
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:07
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:07
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:07
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:07
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:07
Surr: 1,2-Dichloroethane-d4	*99.2*			**0**	*70-126*	*%REC*	*1*	*03-May-2018 22:07*
Surr: 4-Bromofluorobenzene	*106*			**0**	*81-113*	*%REC*	*1*	*03-May-2018 22:07*
Surr: Dibromofluoromethane	*101*			**0**	*77-123*	*%REC*	*1*	*03-May-2018 22:07*
Surr: Toluene-d8	*94.9*			**0**	*82-127*	*%REC*	*1*	*03-May-2018 22:07*
SULFIDE BY E376.1		**Method:E376.1**						Analyst: JHD
Sulfide	1.50	U	1.00	1.50	1.00	mg/L	1	08-May-2018 16:14
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**1,520**		**4.00**	**10.0**	**10.0**	**mg/L**	20	04-May-2018 16:46
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	03-May-2018 06:13
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	03-May-2018 06:13
Sulfate	**370**		**4.00**	**10.0**	**10.0**	**mg/L**	20	04-May-2018 16:46

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 17-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
Sample ID: 67WW13-180501-FD
Collection Date: 01-May-2018 09:40

ANALYTICAL REPORT
WorkOrder:HS18050072
Lab ID:HS18050072-02
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
TOTAL INORGANIC CARBON BY SW9060A		**Method:SW9060**						Analyst: KMU
Total Inorganic Carbon	**350**		**1.0**	**1.0**	**1.0**	**mg/L**	1	16-May-2018 17:03
TOTAL ORGANIC CARBON BY SW9060A		**Method:SW9060**						Analyst: AJH
Organic Carbon, Total	**3.18**		**0.500**	**1.25**	**1.00**	**mg/L**	1	16-May-2018 00:28
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	14-May-2018 18:09

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 17-May-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant -67/501032 WorkOrder:HS18050072
Sample ID: 67WW08-180501 Lab ID:HS18050072-03
Collection Date: 01-May-2018 12:10 Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:58
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 22:58
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 22:58
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
1,1-Dichloroethane	**14**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-May-2018 22:58
1,1-Dichloroethene	**300**		**2.0**	**5.0**	**10**	**ug/L**	10	03-May-2018 23:25
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 22:58
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 22:58
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 22:58
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	03-May-2018 22:58
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:58
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 22:58
1,2-Dichloroethane	**11**		**0.20**	**0.50**	**1.0**	**ug/L**	1	03-May-2018 22:58
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 22:58
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 22:58
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 22:58
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:58
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	03-May-2018 22:58
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	03-May-2018 22:58
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 22:58
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	03-May-2018 22:58
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	03-May-2018 22:58
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:58
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 22:58
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:58
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:58
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 22:58
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 22:58
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	03-May-2018 22:58
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	03-May-2018 22:58
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 17-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
Sample ID: 67WW08-180501
Collection Date: 01-May-2018 12:10

ANALYTICAL REPORT
WorkOrder:HS18050072
Lab ID:HS18050072-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:58
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:58
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:58
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	03-May-2018 22:58
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:58
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	03-May-2018 22:58
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	03-May-2018 22:58
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	03-May-2018 22:58
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	03-May-2018 22:58
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:58
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:58
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:58
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:58
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	03-May-2018 22:58
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	03-May-2018 22:58
Surr: 1,2-Dichloroethane-d4	*96.8*			**0**	*70-126*	*%REC*	*1*	*03-May-2018 22:58*
Surr: 1,2-Dichloroethane-d4	*96.5*			**0**	*70-126*	*%REC*	*10*	*03-May-2018 23:25*
Surr: 4-Bromofluorobenzene	*107*			**0**	*81-113*	*%REC*	*1*	*03-May-2018 22:58*
Surr: 4-Bromofluorobenzene	*104*			**0**	*81-113*	*%REC*	*10*	*03-May-2018 23:25*
Surr: Dibromofluoromethane	*101*			**0**	*77-123*	*%REC*	*1*	*03-May-2018 22:58*
Surr: Dibromofluoromethane	*103*			**0**	*77-123*	*%REC*	*10*	*03-May-2018 23:25*
Surr: Toluene-d8	*96.0*			**0**	*82-127*	*%REC*	*1*	*03-May-2018 22:58*
Surr: Toluene-d8	*94.2*			**0**	*82-127*	*%REC*	*10*	*03-May-2018 23:25*
SULFIDE BY E376.1		**Method:E376.1**						Analyst: JHD
Sulfide	1.50	U	1.00	1.50	1.00	mg/L	1	08-May-2018 16:14

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 17-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
Sample ID: 67WW08-180501
Collection Date: 01-May-2018 12:10

ANALYTICAL REPORT
WorkOrder:HS18050072
Lab ID:HS18050072-03
Matrix:Groundwater

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
FERROUS IRON BY SM3500 FE D		**Method:SM3500FED**						Analyst: JHD
Ferrous Iron	**0.0630**	n	**0.0200**	**0.0400**	**0.0500**	**mg/L**	1	02-May-2018 11:00
ANIONS BY SW9056A		**Method:SW9056**						Analyst: KMU
Chloride	**1,530**		**4.00**	**10.0**	**10.0**	**mg/L**	20	04-May-2018 17:01
Nitrogen, Nitrate (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	03-May-2018 07:55
Nitrogen, Nitrite (As N)	0.100	U	0.0300	0.100	0.100	mg/L	1	03-May-2018 07:55
Sulfate	**407**		**4.00**	**10.0**	**10.0**	**mg/L**	20	04-May-2018 17:01
TOTAL INORGANIC CARBON BY SW9060A		**Method:SW9060**						Analyst: KMU
Total Inorganic Carbon	**150**		**1.0**	**1.0**	**1.0**	**mg/L**	1	16-May-2018 17:03
TOTAL ORGANIC CARBON BY SW9060A		**Method:SW9060**						Analyst: AJH
Organic Carbon, Total	**4.14**		**0.500**	**1.25**	**1.00**	**mg/L**	1	16-May-2018 00:45
SUBCONTRACT ANALYSIS - RSK		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	14-May-2018 18:09

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 17-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R315639	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Groundwater		
HS18050072-01	67WW13-180501	01 May 2018 09:40			03 May 2018 21:15	1
HS18050072-02	67WW13-180501-FD	01 May 2018 09:40			03 May 2018 22:07	1
HS18050072-03	67WW08-180501	01 May 2018 12:10			03 May 2018 23:25	10
HS18050072-03	67WW08-180501	01 May 2018 12:10			03 May 2018 22:58	1
Batch ID R315840	**Test Name :** FERROUS IRON BY SM3500 FE D			**Matrix:** Groundwater		
HS18050072-01	67WW13-180501	01 May 2018 09:40			02 May 2018 11:00	1
HS18050072-03	67WW08-180501	01 May 2018 12:10			02 May 2018 11:00	1
Batch ID R315916	**Test Name :** SULFIDE BY E376.1			**Matrix:** Groundwater		
HS18050072-01	67WW13-180501	01 May 2018 09:40			08 May 2018 16:14	1
HS18050072-02	67WW13-180501-FD	01 May 2018 09:40			08 May 2018 16:14	1
HS18050072-03	67WW08-180501	01 May 2018 12:10			08 May 2018 16:14	1
Batch ID R316140	**Test Name :** SUBCONTRACT ANALYSIS - RSK			**Matrix:** Groundwater		
HS18050072-01	67WW13-180501	01 May 2018 09:40			14 May 2018 18:09	1
HS18050072-02	67WW13-180501-FD	01 May 2018 09:40			14 May 2018 18:09	1
HS18050072-03	67WW08-180501	01 May 2018 12:10			14 May 2018 18:09	1
Batch ID R316275	**Test Name :** ANIONS BY SW9056A			**Matrix:** Groundwater		
HS18050072-01	67WW13-180501	01 May 2018 09:40			04 May 2018 16:32	20
HS18050072-01	67WW13-180501	01 May 2018 09:40			03 May 2018 05:44	1
HS18050072-02	67WW13-180501-FD	01 May 2018 09:40			04 May 2018 16:46	20
HS18050072-02	67WW13-180501-FD	01 May 2018 09:40			03 May 2018 06:13	1
HS18050072-03	67WW08-180501	01 May 2018 12:10			04 May 2018 17:01	20
HS18050072-03	67WW08-180501	01 May 2018 12:10			03 May 2018 07:55	1
Batch ID R316293	**Test Name :** TOTAL ORGANIC CARBON BY SW9060A			**Matrix:** Groundwater		
HS18050072-01	67WW13-180501	01 May 2018 09:40			16 May 2018 00:10	1
HS18050072-02	67WW13-180501-FD	01 May 2018 09:40			16 May 2018 00:28	1
HS18050072-03	67WW08-180501	01 May 2018 12:10			16 May 2018 00:45	1
Batch ID R316322	**Test Name :** TOTAL INORGANIC CARBON BY SW9060A			**Matrix:** Groundwater		
HS18050072-01	67WW13-180501	01 May 2018 09:40			16 May 2018 17:03	1
HS18050072-02	67WW13-180501-FD	01 May 2018 09:40			16 May 2018 17:03	1
HS18050072-03	67WW08-180501	01 May 2018 12:10			16 May 2018 17:03	1

ALS Group Houston, Corp Date: 17-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R315639 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180503** Units: **ug/L** Analysis Date: **03-May-2018 20:50**
Client ID: Run ID: **VOA2_315639** SeqNo: **4547615** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 17-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R315639 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180503** Units: **ug/L** Analysis Date: **03-May-2018 20:50**
Client ID: Run ID: **VOA2_315639** SeqNo: **4547615** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	0.50	1.0								U
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*47.47*	*1.0*	*50*	*0*	*94.9*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*53.23*	*1.0*	*50*	*0*	*106*	*82 - 115*				
Surr: Dibromofluoromethane	*49.83*	*1.0*	*50*	*0*	*99.7*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 17-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R315639 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180503** Units: **ug/L** Analysis Date: **03-May-2018 20:50**
Client ID: Run ID: **VOA2_315639** SeqNo: **4547615** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*47.85*	*1.0*	*50*	*0*	*95.7*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 17-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R315639 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180503** Units: **ug/L** Analysis Date: **03-May-2018 20:01**
Client ID: Run ID: **VOA2_315639** SeqNo: **4547650** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	45.06	1.0	50	0	90.1	77 - 118				
1,1,1-Trichloroethane	49.16	1.0	50	0	98.3	70 - 130				
1,1,2,2-Tetrachloroethane	53.32	1.0	50	0	107	70 - 120				
1,1,2-Trichlor-1,2,2-trifluoroethane	48.19	1.0	50	0	96.4	70 - 130				
1,1,2-Trichloroethane	44.98	1.0	50	0	90.0	77 - 113				
1,1-Dichloroethane	47.13	1.0	50	0	94.3	71 - 122				
1,1-Dichloroethene	50.26	1.0	50	0	101	70 - 130				
1,1-Dichloropropene	52.98	1.0	50	0	106	78 - 118				
1,2,3-Trichlorobenzene	50.44	1.0	50	0	101	70 - 130				
1,2,3-Trichloropropane	45.33	1.0	50	0	90.7	70 - 127				
1,2,4-Trichlorobenzene	50.78	1.0	50	0	102	77 - 126				
1,2,4-Trimethylbenzene	49.8	1.0	50	0	99.6	73 - 121				
1,2-Dibromo-3-chloropropane	48.26	1.0	50	0	96.5	70 - 130				
1,2-Dibromoethane	47.85	1.0	50	0	95.7	76 - 123				
1,2-Dichlorobenzene	49.03	1.0	50	0	98.1	77 - 113				
1,2-Dichloroethane	47.21	1.0	50	0	94.4	70 - 124				
1,2-Dichloropropane	53.48	1.0	50	0	107	72 - 119				
1,3,5-Trimethylbenzene	50.1	1.0	50	0	100	75 - 118				
1,3-Dichlorobenzene	54.15	1.0	50	0	108	78 - 118				
1,3-Dichloropropane	45.4	1.0	50	0	90.8	75 - 116				
1,4-Dichlorobenzene	53.15	1.0	50	0	106	79 - 113				
2,2-Dichloropropane	46.26	1.0	50	0	92.5	70 - 130				
2-Butanone	92.85	2.0	100	0	92.9	70 - 130				
2-Chlorotoluene	54.22	1.0	50	0	108	70 - 128				
2-Hexanone	91.99	2.0	100	0	92.0	70 - 130				
4-Chlorotoluene	55.15	1.0	50	0	110	74 - 126				
4-Isopropyltoluene	46.97	1.0	50	0	93.9	74 - 126				
4-Methyl-2-pentanone	89.22	2.0	100	0	89.2	70 - 130				
Acetone	101.3	2.0	100	0	101	70 - 130				
Benzene	49.26	1.0	50	0	98.5	74 - 120				
Bromobenzene	53.01	1.0	50	0	106	78 - 113				
Bromochloromethane	50.94	1.0	50	0	102	76 - 124				
Bromodichloromethane	53.59	1.0	50	0	107	74 - 122				
Bromoform	50.34	1.0	50	0	101	73 - 128				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 17-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R315639 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180503** Units: **ug/L** Analysis Date: **03-May-2018 20:01**
Client ID: Run ID: **VOA2_315639** SeqNo: **4547650** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	58.29	1.0	50	0	117	70 - 130				
Carbon disulfide	94.89	2.0	100	0	94.9	70 - 130				
Carbon tetrachloride	52.18	1.0	50	0	104	71 - 125				
Chlorobenzene	49.46	1.0	50	0	98.9	76 - 113				
Chloroethane	46.39	1.0	50	0	92.8	70 - 130				
Chloroform	46.27	1.0	50	0	92.5	71 - 121				
Chloromethane	54.61	1.0	50	0	109	70 - 129				
cis-1,2-Dichloroethene	46.75	1.0	50	0	93.5	75 - 122				
cis-1,3-Dichloropropene	47.53	1.0	50	0	95.1	73 - 127				
Dibromochloromethane	46.36	1.0	50	0	92.7	77 - 122				
Dibromomethane	48.37	1.0	50	0	96.7	78 - 121				
Dichlorodifluoromethane	50.27	1.0	50	0	101	70 - 130				
Ethylbenzene	53.22	1.0	50	0	106	77 - 117				
Hexachlorobutadiene	52.04	1.0	50	0	104	70 - 130				
Isopropylbenzene	49.7	1.0	50	0	99.4	73 - 127				
m,p-Xylene	99.48	2.0	100	0	99.5	77 - 122				
Methylene chloride	52.4	2.0	50	0	105	70 - 127				
Naphthalene	51.99	1.0	50	0	104	70 - 130				
n-Butylbenzene	49.38	1.0	50	0	98.8	72 - 130				
n-Propylbenzene	49.64	1.0	50	0	99.3	73 - 124				
o-Xylene	54.6	1.0	50	0	109	75 - 119				
sec-Butylbenzene	48.16	1.0	50	0	96.3	73 - 128				
Styrene	49.3	1.0	50	0	98.6	72 - 126				
tert-Butylbenzene	49.95	1.0	50	0	99.9	73 - 124				
Tetrachloroethene	45.07	1.0	50	0	90.1	76 - 119				
Toluene	49.61	1.0	50	0	99.2	77 - 118				
trans-1,2-Dichloroethene	49.22	1.0	50	0	98.4	72 - 127				
trans-1,3-Dichloropropene	51.71	1.0	50	0	103	77 - 119				
Trichloroethene	46.71	1.0	50	0	93.4	77 - 121				
Trichlorofluoromethane	49.66	1.0	50	0	99.3	70 - 130				
Vinyl chloride	47.99	1.0	50	0	96.0	70 - 130				
Surr: 1,2-Dichloroethane-d4	*48.81*	*1.0*	*50*	*0*	*97.6*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*48.81*	*1.0*	*50*	*0*	*97.6*	*82 - 115*				
Surr: Dibromofluoromethane	*47.44*	*1.0*	*50*	*0*	*94.9*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 17-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R315639 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180503** Units: **ug/L** Analysis Date: **03-May-2018 20:01**
Client ID: Run ID: **VOA2_315639** SeqNo: **4547650** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*41.3*	*1.0*	*50*	*0*	*82.6*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 17-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R315639 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18050072-03MS** Units: **ug/L** Analysis Date: **03-May-2018 23:50**
Client ID: **67WW08-180501** Run ID: **VOA2_315639** SeqNo: **4547637** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	51.87	1.0	50	0	104	70 - 120				
1,1,1-Trichloroethane	57.34	1.0	50	0	115	70 - 130				
1,1,2,2-Tetrachloroethane	58.18	1.0	50	0	116	70 - 123				
1,1,2-Trichlor-1,2,2-trifluoroethane	57.62	1.0	50	0	115	70 - 130				
1,1,2-Trichloroethane	51.86	1.0	50	0	104	70 - 117				
1,1-Dichloroethane	67.53	1.0	50	14.15	107	70 - 127				
1,1-Dichloroethene	327.8	1.0	50	264.6	126	70 - 130				EO
1,1-Dichloropropene	64.63	1.0	50	0	129	70 - 129				S
1,2,3-Trichlorobenzene	52.62	1.0	50	0	105	70 - 130				
1,2,3-Trichloropropane	48.48	1.0	50	0	97.0	70 - 130				
1,2,4-Trichlorobenzene	55.73	1.0	50	0	111	70 - 125				
1,2,4-Trimethylbenzene	58.14	1.0	50	0	116	70 - 125				
1,2-Dibromo-3-chloropropane	50.96	1.0	50	0	102	70 - 130				
1,2-Dibromoethane	53.21	1.0	50	0	106	70 - 124				
1,2-Dichlorobenzene	56.24	1.0	50	0	112	70 - 115				
1,2-Dichloroethane	62.66	1.0	50	11.31	103	70 - 127				
1,2-Dichloropropane	62.38	1.0	50	0	125	70 - 122				S
1,3,5-Trimethylbenzene	58.7	1.0	50	0	117	70 - 126				
1,3-Dichlorobenzene	61.07	1.0	50	0	122	70 - 119				S
1,3-Dichloropropane	50.85	1.0	50	0	102	70 - 121				
1,4-Dichlorobenzene	60.07	1.0	50	0	120	70 - 114				S
2,2-Dichloropropane	51.06	1.0	50	0	102	70 - 130				
2-Butanone	97.62	2.0	100	0	97.6	70 - 130				
2-Chlorotoluene	62.27	1.0	50	0	125	70 - 130				
2-Hexanone	103.2	2.0	100	0	103	70 - 130				
4-Chlorotoluene	63.23	1.0	50	0	126	70 - 130				
4-Isopropyltoluene	55.08	1.0	50	0	110	70 - 130				
4-Methyl-2-pentanone	100.5	2.0	100	0	101	70 - 130				
Acetone	104.4	2.0	100	0	104	70 - 130				
Benzene	58.45	1.0	50	0	117	70 - 127				
Bromobenzene	60.38	1.0	50	0	121	70 - 115				S
Bromochloromethane	55.35	1.0	50	0	111	70 - 127				
Bromodichloromethane	62.03	1.0	50	0	124	70 - 124				S
Bromoform	55.78	1.0	50	0	112	70 - 129				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 17-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R315639 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18050072-03MS** Units: **ug/L** Analysis Date: **03-May-2018 23:50**
Client ID: **67WW08-180501** Run ID: **VOA2_315639** SeqNo: **4547637** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	66.62	1.0	50	0	133	70 - 130				S
Carbon disulfide	111.9	2.0	100	0	112	70 - 130				
Carbon tetrachloride	63.09	1.0	50	0	126	70 - 130				
Chlorobenzene	58.7	1.0	50	0	117	70 - 114				S
Chloroethane	56.84	1.0	50	0	114	70 - 130				
Chloroform	52.17	1.0	50	0	104	70 - 125				
Chloromethane	58.37	1.0	50	0	117	70 - 130				
cis-1,2-Dichloroethene	52.76	1.0	50	0	106	70 - 128				
cis-1,3-Dichloropropene	53.73	1.0	50	0	107	70 - 125				
Dibromochloromethane	52.81	1.0	50	0	106	70 - 124				
Dibromomethane	55.21	1.0	50	0	110	70 - 124				
Dichlorodifluoromethane	62.02	1.0	50	0	124	70 - 130				
Ethylbenzene	64.59	1.0	50	0	129	70 - 124				S
Hexachlorobutadiene	58.22	1.0	50	0	116	70 - 130				
Isopropylbenzene	61.15	1.0	50	0	122	70 - 130				
m,p-Xylene	121.5	2.0	100	0	121	70 - 130				
Methylene chloride	58.7	2.0	50	0	117	70 - 128				
Naphthalene	54.68	1.0	50	0	109	70 - 130				
n-Butylbenzene	57.56	1.0	50	0	115	70 - 130				
n-Propylbenzene	59.36	1.0	50	0	119	70 - 130				
o-Xylene	64.96	1.0	50	0	130	70 - 124				S
sec-Butylbenzene	56.21	1.0	50	0	112	70 - 130				
Styrene	56.31	1.0	50	0	113	70 - 130				
tert-Butylbenzene	59.34	1.0	50	0	119	70 - 130				
Tetrachloroethene	55.58	1.0	50	0	111	70 - 130				
Toluene	60.77	1.0	50	0	122	70 - 123				
trans-1,2-Dichloroethene	57.98	1.0	50	0	116	70 - 130				
trans-1,3-Dichloropropene	56.85	1.0	50	0	114	70 - 121				
Trichloroethene	55.57	1.0	50	0	111	70 - 129				
Trichlorofluoromethane	61.11	1.0	50	0	122	70 - 130				
Vinyl chloride	59.15	1.0	50	0	118	70 - 130				
Surr: 1,2-Dichloroethane-d4	*49.13*	*1.0*	*50*	*0*	*98.3*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*54.1*	*1.0*	*50*	*0*	*108*	*81 - 113*				
Surr: Dibromofluoromethane	*48.36*	*1.0*	*50*	*0*	*96.7*	*77 - 123*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 17-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R315639 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18050072-03MS** Units: **ug/L** Analysis Date: **03-May-2018 23:50**
Client ID: **67WW08-180501** Run ID: **VOA2_315639** SeqNo: **4547637** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*45.6*	*1.0*	*50*	*0*	*91.2*	*82 - 127*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 17-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R315639 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18050072-03MSD** Units: **ug/L** Analysis Date: **04-May-2018 00:14**
Client ID: **67WW08-180501** Run ID: **VOA2_315639** SeqNo: **4547638** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	50.94	1.0	50	0	102	70 - 120	51.87	1.81	20	
1,1,1-Trichloroethane	55.32	1.0	50	0	111	70 - 130	57.34	3.59	20	
1,1,2,2-Tetrachloroethane	57.72	1.0	50	0	115	70 - 123	58.18	0.789	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	55.03	1.0	50	0	110	70 - 130	57.62	4.6	20	
1,1,2-Trichloroethane	51.63	1.0	50	0	103	70 - 117	51.86	0.459	20	
1,1-Dichloroethane	65.35	1.0	50	14.15	102	70 - 127	67.53	3.29	20	
1,1-Dichloroethene	314.1	1.0	50	264.6	99.0	70 - 130	327.8	4.25	20	EO
1,1-Dichloropropene	64.67	1.0	50	0	129	70 - 129	64.63	0.062	20	S
1,2,3-Trichlorobenzene	55.02	1.0	50	0	110	70 - 130	52.62	4.44	20	
1,2,3-Trichloropropane	47.43	1.0	50	0	94.9	70 - 130	48.48	2.19	20	
1,2,4-Trichlorobenzene	55.98	1.0	50	0	112	70 - 125	55.73	0.451	20	
1,2,4-Trimethylbenzene	57.32	1.0	50	0	115	70 - 125	58.14	1.42	20	
1,2-Dibromo-3-chloropropane	52.44	1.0	50	0	105	70 - 130	50.96	2.86	20	
1,2-Dibromoethane	52.52	1.0	50	0	105	70 - 124	53.21	1.31	20	
1,2-Dichlorobenzene	55.5	1.0	50	0	111	70 - 115	56.24	1.32	20	
1,2-Dichloroethane	60.32	1.0	50	11.31	98.0	70 - 127	62.66	3.8	20	
1,2-Dichloropropane	61.75	1.0	50	0	124	70 - 122	62.38	1.01	20	S
1,3,5-Trimethylbenzene	57.76	1.0	50	0	116	70 - 126	58.7	1.61	20	
1,3-Dichlorobenzene	60.83	1.0	50	0	122	70 - 119	61.07	0.382	20	S
1,3-Dichloropropane	51.08	1.0	50	0	102	70 - 121	50.85	0.453	20	
1,4-Dichlorobenzene	59.68	1.0	50	0	119	70 - 114	60.07	0.654	20	S
2,2-Dichloropropane	49.21	1.0	50	0	98.4	70 - 130	51.06	3.7	20	
2-Butanone	95.67	2.0	100	0	95.7	70 - 130	97.62	2.02	20	
2-Chlorotoluene	62.65	1.0	50	0	125	70 - 130	62.27	0.617	20	
2-Hexanone	103	2.0	100	0	103	70 - 130	103.2	0.249	20	
4-Chlorotoluene	61.55	1.0	50	0	123	70 - 130	63.23	2.68	20	
4-Isopropyltoluene	53.95	1.0	50	0	108	70 - 130	55.08	2.08	20	
4-Methyl-2-pentanone	100.7	2.0	100	0	101	70 - 130	100.5	0.158	20	
Acetone	102.5	2.0	100	0	102	70 - 130	104.4	1.85	20	
Benzene	57.9	1.0	50	0	116	70 - 127	58.45	0.942	20	
Bromobenzene	59.4	1.0	50	0	119	70 - 115	60.38	1.63	20	S
Bromochloromethane	54.35	1.0	50	0	109	70 - 127	55.35	1.81	20	
Bromodichloromethane	60.98	1.0	50	0	122	70 - 124	62.03	1.69	20	
Bromoform	55.69	1.0	50	0	111	70 - 129	55.78	0.175	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 17-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R315639 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18050072-03MSD** Units: **ug/L** Analysis Date: **04-May-2018 00:14**
Client ID: **67WW08-180501** Run ID: **VOA2_315639** SeqNo: **4547638** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	62.06	1.0	50	0	124	70 - 130	66.62	7.09	20	
Carbon disulfide	108.3	2.0	100	0	108	70 - 130	111.9	3.23	20	
Carbon tetrachloride	61.32	1.0	50	0	123	70 - 130	63.09	2.85	20	
Chlorobenzene	58.76	1.0	50	0	118	70 - 114	58.7	0.1	20	S
Chloroethane	52.91	1.0	50	0	106	70 - 130	56.84	7.16	20	
Chloroform	51.34	1.0	50	0	103	70 - 125	52.17	1.59	20	
Chloromethane	58.03	1.0	50	0	116	70 - 130	58.37	0.592	20	
cis-1,2-Dichloroethene	51.51	1.0	50	0	103	70 - 128	52.76	2.39	20	
cis-1,3-Dichloropropene	53.84	1.0	50	0	108	70 - 125	53.73	0.199	20	
Dibromochloromethane	52.94	1.0	50	0	106	70 - 124	52.81	0.249	20	
Dibromomethane	54.15	1.0	50	0	108	70 - 124	55.21	1.94	20	
Dichlorodifluoromethane	58.61	1.0	50	0	117	70 - 130	62.02	5.65	20	
Ethylbenzene	63.94	1.0	50	0	128	70 - 124	64.59	1.01	20	S
Hexachlorobutadiene	58.67	1.0	50	0	117	70 - 130	58.22	0.778	20	
Isopropylbenzene	61.18	1.0	50	0	122	70 - 130	61.15	0.0348	20	
m,p-Xylene	120.3	2.0	100	0	120	70 - 130	121.5	0.946	20	
Methylene chloride	56.33	2.0	50	0	113	70 - 128	58.7	4.13	20	
Naphthalene	54.81	1.0	50	0	110	70 - 130	54.68	0.247	20	
n-Butylbenzene	56.45	1.0	50	0	113	70 - 130	57.56	1.94	20	
n-Propylbenzene	57.51	1.0	50	0	115	70 - 130	59.36	3.18	20	
o-Xylene	65.77	1.0	50	0	132	70 - 124	64.96	1.24	20	S
sec-Butylbenzene	55.03	1.0	50	0	110	70 - 130	56.21	2.13	20	
Styrene	56.16	1.0	50	0	112	70 - 130	56.31	0.254	20	
tert-Butylbenzene	58.68	1.0	50	0	117	70 - 130	59.34	1.12	20	
Tetrachloroethene	55.22	1.0	50	0	110	70 - 130	55.58	0.658	20	
Toluene	60.27	1.0	50	0	121	70 - 123	60.77	0.829	20	
trans-1,2-Dichloroethene	54.95	1.0	50	0	110	70 - 130	57.98	5.38	20	
trans-1,3-Dichloropropene	55.94	1.0	50	0	112	70 - 121	56.85	1.61	20	
Trichloroethene	55.15	1.0	50	0	110	70 - 129	55.57	0.752	20	
Trichlorofluoromethane	58.47	1.0	50	0	117	70 - 130	61.11	4.43	20	
Vinyl chloride	56.81	1.0	50	0	114	70 - 130	59.15	4.04	20	
Surr: 1,2-Dichloroethane-d4	*48.63*	*1.0*	*50*	*0*	*97.3*	*70 - 126*	*49.13*	*1.03*	*20*	
Surr: 4-Bromofluorobenzene	*55.21*	*1.0*	*50*	*0*	*110*	*81 - 113*	*54.1*	*2.03*	*20*	
Surr: Dibromofluoromethane	*47.83*	*1.0*	*50*	*0*	*95.7*	*77 - 123*	*48.36*	*1.1*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 17-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R315639 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18050072-03MSD** Units: **ug/L** Analysis Date: **04-May-2018 00:14**
Client ID: **67WW08-180501** Run ID: **VOA2_315639** SeqNo: **4547638** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*45.61*	*1.0*	*50*	*0*	*91.2*	*82 - 127*	*45.6*	*0.015*	*20*	

The following samples were analyzed in this batch: HS18050072-01 HS18050072-02 HS18050072-03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 17-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R315840 **Instrument: UV-2450** **Method: SM3500FED**

MBLK Sample ID: **MBLK-315840** Units: **mg/L** Analysis Date: **02-May-2018 11:00**
Client ID: Run ID: **UV-2450_315840** SeqNo: **4551975** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ferrous Iron	0.0400	0.0500				80 - 120				U

LCS Sample ID: **LCS-315840** Units: **mg/L** Analysis Date: **02-May-2018 11:00**
Client ID: Run ID: **UV-2450_315840** SeqNo: **4551976** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ferrous Iron	0.235	0.0500	0.25	0	94.0	80 - 120				

MS Sample ID: **HS18050072-03MS** Units: **mg/L** Analysis Date: **02-May-2018 11:00**
Client ID: **67WW08-180501** Run ID: **UV-2450_315840** SeqNo: **4551978** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ferrous Iron	0.336	0.0500	0.25	0.063	109	75 - 125				

MSD Sample ID: **HS18050072-03MSD** Units: **mg/L** Analysis Date: **02-May-2018 11:00**
Client ID: **67WW08-180501** Run ID: **UV-2450_315840** SeqNo: **4551979** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ferrous Iron	0.33	0.0500	0.25	0.063	107	75 - 125	0.336	1.8	20	

The following samples were analyzed in this batch: HS18050072-01 HS18050072-03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 17-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R315916 **Instrument: WetChem_HS** **Method: E376.1**

MBLK Sample ID: **MBLK-315916** Units: **mg/L** Analysis Date: **08-May-2018 16:14**
Client ID: Run ID: **WetChem_HS_315916** SeqNo: **4553880** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	1.50	1.00								U

LCS Sample ID: **LCS-315916** Units: **mg/L** Analysis Date: **08-May-2018 16:14**
Client ID: Run ID: **WetChem_HS_315916** SeqNo: **4553881** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	21.64	1.00	25	0	86.6	80 - 120				

LCSD Sample ID: **LCSD-315916** Units: **mg/L** Analysis Date: **08-May-2018 16:14**
Client ID: Run ID: **WetChem_HS_315916** SeqNo: **4553882** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	21.84	1.00	25	0	87.4	80 - 120	21.64	0.92	20	

MS Sample ID: **HS18050072-03MS** Units: **mg/L** Analysis Date: **08-May-2018 16:14**
Client ID: **67WW08-180501** Run ID: **WetChem_HS_315916** SeqNo: **4553883** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	22.44	1.00	25	0.24	88.8	80 - 120				

MSD Sample ID: **HS18050072-03MSD** Units: **mg/L** Analysis Date: **08-May-2018 16:14**
Client ID: **67WW08-180501** Run ID: **WetChem_HS_315916** SeqNo: **4553884** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sulfide	22.84	1.00	25	0.24	90.4	80 - 120	22.44	1.77	20	

The following samples were analyzed in this batch: HS18050072-01 HS18050072-02 HS18050072-03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 17-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R316275 **Instrument: ICS2100** **Method: SW9056**

MBLK Sample ID: **WBLKW1-050318** Units: **mg/L** Analysis Date: **03-May-2018 19:28**
Client ID: Run ID: **ICS2100_316275** SeqNo: **4562763** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	0.500	0.500								U
Nitrogen, Nitrate (As N)	0.100	0.100								U
Nitrogen, Nitrite (As N)	0.100	0.100								U
Sulfate	0.249	0.500								J

LCS Sample ID: **WLCSW1-050318** Units: **mg/L** Analysis Date: **03-May-2018 19:42**
Client ID: Run ID: **ICS2100_316275** SeqNo: **4562764** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.42	0.500	20	0	97.1	80 - 120				
Nitrogen, Nitrate (As N)	3.825	0.100	4	0	95.6	80 - 120				
Nitrogen, Nitrite (As N)	4.188	0.100	4	0	105	80 - 120				
Sulfate	19.32	0.500	20	0	96.6	80 - 120				

LCSD Sample ID: **WLCSDW1-050318** Units: **mg/L** Analysis Date: **03-May-2018 20:16**
Client ID: Run ID: **ICS2100_316275** SeqNo: **4562765** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	19.57	0.500	20	0	97.8	80 - 120	19.42	0.759	20	
Nitrogen, Nitrate (As N)	3.835	0.100	4	0	95.9	80 - 120	3.825	0.261	20	
Nitrogen, Nitrite (As N)	4.271	0.100	4	0	107	80 - 120	4.188	1.96	20	
Sulfate	19.47	0.500	20	0	97.4	80 - 120	19.32	0.748	20	

MS Sample ID: **HS18050072-03MS** Units: **mg/L** Analysis Date: **03-May-2018 06:57**
Client ID: **67WW08-180501** Run ID: **ICS2100_316275** SeqNo: **4562739** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	1814	5.00	100	1622	192	80 - 120				SEO
Nitrogen, Nitrate (As N)	21.33	1.00	20	0	107	80 - 120				
Nitrogen, Nitrite (As N)	21.41	1.00	20	0	107	80 - 120				
Sulfate	557.9	5.00	100	433.6	124	80 - 120				SO

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 17-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R316275 **Instrument: ICS2100** **Method: SW9056**

MS Sample ID: **HS18050072-03MS** Units: **mg/L** Analysis Date: **04-May-2018 17:15**
Client ID: **67WW08-180501** Run ID: **ICS2100_316275** SeqNo: **4562804** PrepDate: DF: **20**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	1818	10.0	200	1529	145	80 - 120				SO
Nitrogen, Nitrate (As N)	41.85	2.00	40	0	105	80 - 120				
Nitrogen, Nitrite (As N)	44.69	2.00	40	0	112	80 - 120				
Sulfate	643.2	10.0	200	406.7	118	80 - 120				

MSD Sample ID: **HS18050072-03MSD** Units: **mg/L** Analysis Date: **04-May-2018 17:52**
Client ID: **67WW08-180501** Run ID: **ICS2100_316275** SeqNo: **4562805** PrepDate: DF: **20**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	1681	10.0	200	1529	75.9	80 - 120	1818	7.86	20	SO
Nitrogen, Nitrate (As N)	38.54	2.00	40	0	96.4	80 - 120	41.85	8.21	20	
Nitrogen, Nitrite (As N)	41.24	2.00	40	0	103	80 - 120	44.69	8.02	20	
Sulfate	591.8	10.0	200	406.7	92.6	80 - 120	643.2	8.31	20	

MSD Sample ID: **HS18050072-03MSD** Units: **mg/L** Analysis Date: **03-May-2018 07:12**
Client ID: **67WW08-180501** Run ID: **ICS2100_316275** SeqNo: **4562740** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	1633	5.00	100	1622	11.0	80 - 120	1814	10.5	20	SEO
Nitrogen, Nitrate (As N)	20.06	1.00	20	0	100	80 - 120	21.33	6.15	20	
Nitrogen, Nitrite (As N)	20.49	1.00	20	0	102	80 - 120	21.41	4.41	20	
Sulfate	509.6	5.00	100	433.6	76.0	80 - 120	557.9	9.05	20	SO

The following samples were analyzed in this batch: HS18050072-01 HS18050072-02 HS18050072-03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 17-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R316293 **Instrument: TOC_02** **Method: SW9060**

MBLK Sample ID: **WBLKW1-051518** Units: **mg/L** Analysis Date: **15-May-2018 23:22**
Client ID: Run ID: **TOC_02_316293** SeqNo: **4563260** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	1.25	1.00								U

LCS Sample ID: **WLCSW2-051518** Units: **mg/L** Analysis Date: **15-May-2018 23:40**
Client ID: Run ID: **TOC_02_316293** SeqNo: **4563261** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	9.636	1.00	10	0	96.4	80 - 120				

LCSD Sample ID: **WLCSDW2-051518** Units: **mg/L** Analysis Date: **15-May-2018 23:55**
Client ID: Run ID: **TOC_02_316293** SeqNo: **4563262** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	9.675	1.00	10	0	96.8	80 - 120	9.636	0.404	20	

MS Sample ID: **HS18050471-01MS** Units: **mg/L** Analysis Date: **16-May-2018 02:58**
Client ID: Run ID: **TOC_02_316293** SeqNo: **4563273** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	11.36	1.00	10	1.26	101	80 - 120				

MS Sample ID: **HS18050072-03MS** Units: **mg/L** Analysis Date: **16-May-2018 01:02**
Client ID: **67WW08-180501** Run ID: **TOC_02_316293** SeqNo: **4563266** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	13.85	1.00	10	4.142	97.1	80 - 120				

MSD Sample ID: **HS18050471-01MSD** Units: **mg/L** Analysis Date: **16-May-2018 03:13**
Client ID: Run ID: **TOC_02_316293** SeqNo: **4563274** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	11.26	1.00	10	1.26	100	80 - 120	11.36	0.884	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 17-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R316293 **Instrument: TOC_02** **Method: SW9060**

MSD Sample ID: **HS18050072-03MSD** Units: **mg/L** Analysis Date: **16-May-2018 01:18**
Client ID: **67WW08-180501** Run ID: **TOC_02_316293** SeqNo: **4563267** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	14.01	1.00	10	4.142	98.7	80 - 120	13.85	1.15	20	

The following samples were analyzed in this batch: HS18050072-01 HS18050072-02 HS18050072-03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 17-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: HS18050072

QC BATCH REPORT

Batch ID: R316322 **Instrument: TOC_02** **Method: SW9060**

MBLK Sample ID: **MBLK-R316322** Units: **mg/L** Analysis Date: **16-May-2018 17:03**
Client ID: Run ID: **TOC_02_316322** SeqNo: **4563826** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Inorganic Carbon	1.0	1.0								U

LCS Sample ID: **LCS-R316322** Units: **mg/L** Analysis Date: **16-May-2018 17:03**
Client ID: Run ID: **TOC_02_316322** SeqNo: **4563825** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Inorganic Carbon	10.28	1.0	10	0	103	80 - 120				

LCSD Sample ID: **LCSD-R316322** Units: **mg/L** Analysis Date: **16-May-2018 17:03**
Client ID: Run ID: **TOC_02_316322** SeqNo: **4563824** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Inorganic Carbon	10.16	1.0	10	0	102	80 - 120	10.28	1.17	20	

The following samples were analyzed in this batch: HS18050072-01 HS18050072-02 HS18050072-03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 17-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant -67/501032
WorkOrder: **HS18050072**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919 2016-2018	31-Jul-2018
Oklahoma	2017-088	31-Aug-2018
North Carolina	624-2018	31-Dec-2018
Louisiana	03087 2017-2018	30-Jun-2018
Arkansas	88-0356	27-Mar-2019
Kansas	E-10352 2017-218	31-Jul-2018

Date: 17-May-18

Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS18050072

Date/Time Received: **02-May-2018 08:30**
Received by: **RPG**

Checklist completed by: *Jared R. Makan* eSignature — 2-May-2018 Date

Reviewed by: *RJ Modashia* eSignature — 2-May-2018 Date

Matrices: **Water**

Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.0c/2.4c UC/C	IR25	
Cooler(s)/Kit(s):	42360		
Date/Time sample(s) sent to storage:	05/02/2018 11:30		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

APTIM

COC ID: 67-MAY2018-GW-ALSHT-1805 01 | TURNAROUND TIME: normal | RUSH:

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name	Longhorn AAP			Lab Name	ALS Laboratories			Email Invoice To	FedInvoices@CBIFederalServices.com		
Project Number	501032			Lab Contact	RJ Modashia						
	LHAAP-67			Email	RJ.Modashia@alsglobal.com			Email Report To	Sharon.Pennington@CBIFederalServices.com		
Address	1203-B East Grand Avenue			Address	10450 Stancliff Rd., Suite 210			Mail Reports To	Sharon Pennington		
	PMB 202							Address	2410 Cherahala Blvd.		
City	Marshall	State	TX	City	Houston	State	TX	City	Knoxville	State	TN
Postal Code	75670	Country	USA	Postal Code	77099	Country	USA	Postal Code	37932	Country	USA
Phone Number	713.243.7264			Phone Number	281.575.2279 or 281.530.5656						
Project Manager	Praveen Srivastav							Shipping Company			

SAMPLE DETAILS / ANALYSIS REQUESTED

Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	ANALYSIS	VOCs in Water by 8260B	Carbon Dioxide in Water by RSK175	Methane, Ethane, Ethene in Water by RSK175	Anions in Water by E300.0	TOC in Water by E415.1	TIC in Water by E415.1	Sulfide in Water by E376.1	Ferrous Iron in Water by SM3500-FE B		
67ww13-180501	LHAAP 67	21.10	21.31		WG	5/1/18	0940	16		X	X	X	X	X	X	X	X		
67ww13-180501-FD	LHAAP 67	21.10	21.31		WG	5/1/18	0940	15		X	X	X	X	X	X	X			
67ww08-180501	LHAAP 67	22.92	23.12		WG	5/1/18	1210	16		X	X	X	X	X	X	X	X		
67ww08-180501-MS	LHAAP 67	22.92	23.12		WG	5/1/18	1210	15		X	X	X	X	X	X	X			
67ww08-180501-MSD	LHAAP 67	22.92	23.12		WG	5/1/18	1210	15		X	X	X	X	X	X	X			

HS18050072

Aptim Environmental & Infrastucture, Inc.

Longhorn Army Ammunition Plant -67/501032

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Anions should include chloride, nitrate, nitrite, and sulfate.	Steven Riesinger / B HATE	5/1/18 1430		
		5/2/18 08	SR	

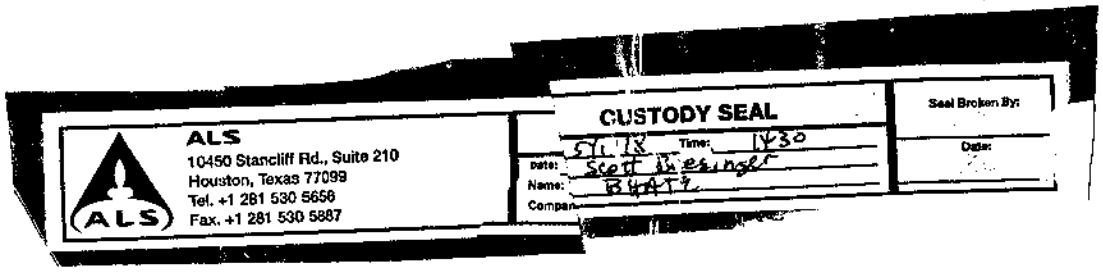
MAX 25 TEMP 5.0

00912389

TRK# 0221 4380 9528 6315

FedEx TRK# 0221 4380 9528 6315

RETURNS MON – SAT
PRIORITY OVERNIGHT
WED – 02 MAY 10:30A
PRIORITY OVERNIGHT
77090



00912390

LABORATORY REPORT

May 14, 2018

RJ Modashia
ALS Laboratory Group
10450 Stancliff Road Suite 210
Houston, TX 77099-4338

RE: HS18050072

Dear RJ:

Enclosed are the results of the samples submitted to our laboratory on May 3, 2018. For your reference, these analyses have been assigned our service request number P1802242.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

Kate Kaneko

By Kate Kaneko at 2:26 pm, 05/14/18

Kate Kaneko
Project Manager

Client: ALS Laboratory Group Service Request No: P1802242
Project: HS18050072

CASE NARRATIVE

The samples were received intact under chain of custody on May 3, 2018 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Carbon Dioxide Analysis

The samples were analyzed for carbon dioxide using a gas chromatograph equipped with a thermal conductivity detector (TCD). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least four hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (carbon dioxide) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175 as described in laboratory SOP VOA-DISGAS. This analyte is included on the laboratory's NELAP and DoD-ELAP scope of accreditation.

The relative percent difference and the recovery of carbon dioxide in the matrix spike duplicate were outside of the DOD control limits due to matrix interference. However the recovery of the laboratory control sample and its duplicate were within all QC parameters.

Methane, Ethene and Ethane Analysis

The samples were also analyzed for methane, ethene and ethane using a gas chromatograph equipped with a flame ionization detector (FID). A known amount of liquid was displaced by injecting 8.0 milliliters of helium creating a headspace in the sample vial. Each sample vial was agitated using a sonic disrupter for fifteen minutes and then allowed to equilibrate for at least two hours. A volume of the headspace was withdrawn using a gas-tight syringe and analyzed using a manual injection technique. The amount of dissolved gases (methane, ethene and ethane) in the original sample was calculated using Henry's Law. This method was performed with guidance from RSK 175. This method is included on the laboratory's NELAP and DoD-ELAP scope of accreditation. Any analytes flagged with an X are not included on the laboratory's NELAP or DoD-ELAP accreditation.

The recovery of ethene and ethane in the matrix spike and its duplicate were outside of the DOD control limits. However the recovery of the laboratory control sample and its duplicate were within all QC parameters.

Client: ALS Laboratory Group Service Request No: P1802242
Project: HS18050072

Manual integrations were performed on the following sample(s) and analyte(s). Refer to the raw data for additional information.

Sample Identification(s)	Analyte(s)
P1802242-005MS	Ethene

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/labcert.htm	2016036
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1347317
New Jersey DEP (NELAP)	http://www.nj.gov/dep/oqa/	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-005
Pennsylvania DEP	http://www.depweb.state.pa.us/labs	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704413-17-8
Utah DOH (NELAP)	http://health.utah.gov/lab/environmental-lab-certification/	CA016272017-8
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: ALS Laboratory Group
Project ID: HS18050072

Service Request: P1802242

Date Received: 5/3/2018
Time Received: 09:10

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	RSK 175 - Gases	RSK 175 - CO2
67WW13-180501	P1802242-001	Water	5/1/2018	09:40	X	
67WW13-180501	P1802242-002	Water	5/1/2018	09:40		X
67WW13-180501-FD	P1802242-003	Water	5/1/2018	09:40	X	
67WW13-180501-FD	P1802242-004	Water	5/1/2018	09:40		X
67WW08-180501	P1802242-005	Water	5/1/2018	12:10	X	
67WW08-180501	P1802242-006	Water	5/1/2018	12:10		X

P1802242

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

COC ID: 9051

SUBCONTRACT TO:

ALS Environmental
2655 Park Center Drive, Suite A
Simi Valley, CA 93065

Phone: +1 805 526 7161

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
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INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS18050072
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS18050072-01**	**67WW13-180501**	**Groundwater**	**01 May 2018 09:40**
	SUB_RSK			16 May 2018
2.	**HS18050072-02**	**67WW13-180501-FD**	**Groundwater**	**01 May 2018 09:40**
	SUB_RSK			16 May 2018
3.	**HS18050072-03**	**67WW08-180501**	**Groundwater**	**01 May 2018 12:10**
	SUB_RSK			16 May 2018

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

HS18050072-03 MS/MSD

QC Level: DOD IV (DoD Data Package)

Relinquished By: _____ Date/Time: 5/2/18 1800.

Received By: _____ Date/Time: 5-3-18 0910

Cooler ID(s): _____ Temperature(s): 2°C WET ICE

ALS Environmental
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P1802242

Project: HS18050072

Sample(s) received on: 5/3/18 Date opened: 5/3/18 by: ADAVID

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☒	☐	☐
	Cooler Temperature: ° C Blank Temperature: 2° C **Wet Ice**			
8	Were **custody seals** on outside of cooler/Box/Container?	☒	☐	☐
	Location of seal(s)? Cooler lid. Sealing Lid?	☒	☐	☐
	Were signature and date included?	☒	☐	☐
	Were seals intact?	☒	☐	☐
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☒	☐	☐
	Is there a client indication that the submitted samples are **pH** preserved?	☒	☐	☐
	Were **VOA vials** checked for presence/absence of air bubbles?	☒	☐	☐
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1802242-001.01	40ml VOA HCL		1		A	wh 5/11/18
P1802242-001.02	40ml VOA HCL				A	
P1802242-001.03	40ml VOA HCL				A	
P1802242-002.01	40mL VOA NP		7		A	wh 5/11/18
P1802242-002.02	40mL VOA NP				A	
P1802242-002.03	40mL VOA NP				A	
P1802242-003.01	40ml VOA HCL		1		A	wh 5/11/18
P1802242-003.02	40ml VOA HCL				A	
P1802242-003.03	40ml VOA HCL				A	
P1802242-004.01	40mL VOA NP		7		A	wh 5/11/18
P1802242-004.02	40mL VOA NP				A	
P1802242-004.03	40mL VOA NP				A	
P1802242-005.01	40ml VOA HCL		1		A	wh 5/11/18
P1802242-005.02	40ml VOA HCL		1		A	wh 5/11/18
P1802242-005.03	40ml VOA HCL		1		A	wh 5/11/18

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS Environmental
Sample Acceptance Check Form

Client: ALS Laboratory Group Work order: P1802242

Project: HS18050072

Sample(s) received on: 5/3/18 Date opened: 5/3/18 by: ADAVID

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1802242-005.04	40ml VOA HCL				A	
P1802242-005.05	40ml VOA HCL				A	
P1802242-005.06	40ml VOA HCL				A	
P1802242-005.07	40ml VOA HCL				A	
P1802242-005.08	40ml VOA HCL				A	
P1802242-005.09	40ml VOA HCL				A	
P1802242-006.01	40mL VOA NP		7		A	wh 5/11/18
P1802242-006.02	40mL VOA NP		7		A	wh 5/11/18
P1802242-006.03	40mL VOA NP		7		A	wh 5/11/18
P1802242-006.04	40mL VOA NP				A	
P1802242-006.05	40mL VOA NP				A	
P1802242-006.06	40mL VOA NP				A	
P1802242-006.07	40mL VOA NP				A	
P1802242-006.08	40mL VOA NP				A	
P1802242-006.09	40mL VOA NP				A	

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Project ID: **HS18050072** ALS Project ID: P1802242

Carbon Dioxide

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date(s) Collected: 5/1/18
Date Received: 5/3/18
Date Analyzed: 5/11/18

Client Sample ID	ALS Sample ID	Injection Volume ml(s)	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
67WW13-180501	P1802242-002	0.050	**870,000**	2,000	1,700	740	
67WW13-180501-FD	P1802242-004	0.050	**860,000**	2,000	1,700	740	
67WW08-180501	P1802242-006	0.050	**420,000**	2,000	1,700	740	
Method Control Sample	P180511-MB	0.10	860	1,000	860	370	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

MATRIX SPIKE / DUPLICATE MATRIX SPIKE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **67WW08-180501**
Client Project ID: **HS18050072**

ALS Project ID: P1802242
ALS Sample ID: P1802242-006MS
P1802242-006DMS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/TCD
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 5/1/18
Date Received: 5/3/18
Date Analyzed: 5/11/18
Volume(s) Analyzed: 0.050 ml(s)

CAS #	Compound	Spike Amount MS / DMS ug/L	Sample Amount ug/L	Result MS ug/L	Result DMS ug/L	% Recovery MS	% Recovery DMS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	45,800	423,000	464,000	484,000	**90**	**133**	80-122	39	30	**R, N**

R = Duplicate precision not met.
N = The matrix spike sample recovery is not within control limits. See case narrative.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P1802242
Client Project ID: **HS18050072** ALS Sample ID: P180511-DLCS

Test Code: RSK 175 Date Collected: NA
Instrument ID: HP5890A/GC10/TCD Date Received: NA
Analyst: Wade Henton Date Analyzed: 5/11/18
Matrix: Water Volume(s) Analyzed: NA ml(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS ug/L	Result$_1$ LCS ug/L	Result$_1$ DLCS ug/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-38-9	Carbon Dioxide	22,900	24,500	26,000	**107**	**114**	80-122	6	15	

$_1$ = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **67WW13-180501**
Client Project ID: **HS18050072**

ALS Project ID: P1802242
ALS Sample ID: P1802242-001

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 5/1/18
Date Received: 5/3/18
Date Analyzed: 5/11/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **67WW13-180501-FD**
Client Project ID: **HS18050072**

ALS Project ID: P1802242
ALS Sample ID: P1802242-003

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 5/1/18
Date Received: 5/3/18
Date Analyzed: 5/11/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **67WW08-180501**
Client Project ID: **HS18050072**

ALS Project ID: P1802242
ALS Sample ID: P1802242-005

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 5/1/18
Date Received: 5/3/18
Date Analyzed: 5/11/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	**2.1**	1.3	1.0	0.51	
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **ALS Laboratory Group**
Client Sample ID: **Method Control Sample**
Client Project ID: **HS18050072**

ALS Project ID: P1802242
ALS Sample ID: P180511-MB

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 5/11/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result µg/L	LOQ µg/L	LOD µg/L	MDL µg/L	Data Qualifier
74-82-8	Methane	1.0	1.3	1.0	0.51	**U**
74-85-1	Ethene	0.55	1.0	0.55	0.24	**U**
74-84-0	Ethane	0.47	0.60	0.47	0.16	**U**

The Method Control Sample is laboratory water carried through the entire analytical process.
U = Compound was analyzed for, but not detected above the laboratory detection limit.
LOQ = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

MATRIX SPIKE / DUPLICATE MATRIX SPIKE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **67WW08-180501**
Client Project ID: **HS18050072**

ALS Project ID: P1802242
ALS Sample ID: P1802242-005MS
P1802242-005DMS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: 5/1/18
Date Received: 5/3/18
Date Analyzed: 5/11/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount MS / DMS µg/L	Sample Amount µg/L	Result MS µg/L	Result DMS µg/L	% Recovery MS	% Recovery DMS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-82-8	Methane	2.52	2.13	4.31	4.33	**87**	**87**	73-125	0	30	
74-85-1	Ethene	4.40	ND	3.13	3.03	**71**	**69**	72-133	3	30	**N**
74-84-0	Ethane	4.72	ND	3.49	3.47	**74**	**74**	74-131	0	30	

N = The matrix spike sample recovery is not within control limits. See case narrative.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **ALS Laboratory Group**
Client Sample ID: **Duplicate Lab Control Sample**
Client Project ID: **HS18050072**

ALS Project ID: P1802242
ALS Sample ID: P180511-LCS
P180511-DLCS

Test Code: RSK 175
Instrument ID: HP5890A/GC10/FID
Analyst: Wade Henton
Matrix: Water
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 5/11/18
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Spike Amount LCS / DLCS µg/L	Result$_1$ LCS µg/L	Result$_1$ DLCS µg/L	% Recovery LCS	% Recovery DLCS	DOD Acceptance Limits	RPD	RPD Limit	Data Qualifier
74-82-8	Methane	2.50	2.42	2.47	**97**	**99**	73-125	2	12	
74-85-1	Ethene	4.37	4.86	5.01	**111**	**115**	72-133	4	7	
74-84-0	Ethane	4.69	4.87	4.96	**104**	**106**	74-131	2	6	

$_1$ = The concentration shown includes a subtraction of the Method Control Sample value, even if the result is less than the MRL.

Data Path : I:\GC10\DATA\RSK_TCD\2018_05\11\
Data File : 05111809.D
Signal(s) : Signal #1: TCD1A.CH Signal #2: FID2B.CH
Acq On : 11-May-2018, 17:47:34
Operator : WH
Sample : P1802242-002 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File signal 1: autoint1.e
Integration File signal 2: autoint2.e
Quant Time: May 13 14:16:24 2018
Quant Method : I:\GC10\METHODS\RS082817_CO2.M
Quant Title : RSK175, VOA-DISGAS, VOA-TO3C1C6
QLast Update : Tue Aug 29 16:13:13 2017
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal #1 Phase : Signal #2 Phase:
Signal #1 Info : Signal #2 Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Oxygen/Argon	1.959f	569987	0.120	ppm
2)	Carbon monoxide	1.959f	569987	N.D.	ppm
3)	Methane (TCD)	0.000	0	N.D.	ppm
4)	Carbon dioxide	5.990	4672083	19904.142	ppm
6)	Methane (FID)	0.000	0	N.D.	ppm
7)	Ethylene	0.000	0	N.D.	ppm
8)	Ethane	0.000	0	N.D.	ppm
9)	Propylene	0.000	0	N.D.	ppm
10)	Propane	0.000	0	N.D.	ppm
11)	Isobutylene	0.000	0	N.D.	ppm
12)	Isobutane	0.000	0	N.D.	ppm
13)	n-Butane	0.000	0	N.D.	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

ADR Data Validation Checklist
Methane, Ethane, Ethene by RSK175

Project Name:	LHAAP-67	SDG/Report No.:	HS18050072 (P1802242)
Project No.:	501032	Lab ID:	ALS Houston
No. of Samples:	2 Originals & 1 FD	Matrix:	GW
1st ADR / 2nds	SP		

Automated Data Review (ADR) was performed for all areas. Review of these areas was performed manually and the results of the validation findings are identified in this report. It should also be noted that the ADR produces "Outlier Reports" for areas where anomalies are noted. If all QC criterions are met, no "Outlier Reports" are generated.

ADR Generated Reports (Copies Attached):

EDD Nonconformance Report
Field QC and Associated Sample Report*
Outlier Reports
Sample Qualification Report with Reason Codes

SHAWVIEW Generated Reports (Copies Attached):

QC Checkprint (QCVALDNT) Report

* Note: If field QC samples (i.e. TB, ER, FB, etc.) are reported in another SDG, the SDG, blanks, detected contaminants, and associated samples are identified in the comment/discussion section provided below

All areas evaluated by **DoD_5.0** and/or SW846 methods and the identification as to whether qualification is necessary are identified below:

Area Evaluated	ADR Outlier Reports	Qualification Necessary (ADR and Manual Validation)	
		YES	NO
1. Hold Time/Preservation.			X
2. BFB Tune.			X
3. ICAL (RRF and/or %RSD)			X
4. CCAL (RRF and/or %D)			X
5. Blanks (Method and/or Field QC)			X
6. LCS			X
7. MS/MSD		X	
8. Field Duplicate			X
10. Form1 vs Database/ADR			X

The following section is intended to specify areas evaluated and to provide an explanation (as applicable) for those areas where changes in ADR qualifiers were identified during the manual review and to provide an explanation (as applicable) for the need of additional qualifiers identified during the manual review.

Comments/Discussion:

Associated samples (3): 67WW13-180501, 67WW13-180501-FD, and 67WW08-180501
1. Hold Time/Preservation (QAPP - Worksheet#19/SW846/ASTM methods).
No Qualification Necessary
Rec'd <6°C; collected: 5/1/2018; analyze: 5/11/2018

ADR Data Validation Checklist
Methane, Ethane, Ethene by RSK175

2. BFB Tune (instr. performance criteria)
No Qualification Necessary
3. ICAL (EPA RSKSOP-175; 20%RSD or R>0.995)
No Qualification Necessary
4. CCAL (EPA RSKSOP-175; 15%D)
No Qualification Necessary
5. Blanks "UB" (EPA Region 3&4: Method and/or Field QC)
No Qualification Necessary
P180511-MB – Results were nondetect.
6. LCS (QAPP – Worksheet#12/#28)
No Qualification Necessary
P180511-LCS/LCSD – Criteria were met.
7. MS/MSD (QAPP – Worksheet#12/#28)
Qualification Necessary
67WW08-180501-MS/MSD – Ethene (71%/69%); Low bias; Qualify ethene in 67WW08-180501 estimated, UJ-08A. NOTE: MSD %R and RPD for Carbon dioxide high; However, parent sample concentration >4 times spike concentration. No qualification was applied.
8. Field Duplicate (QAPP – Worksheet#35 - WATERS 20% / SOILS 50%)
(non-detect & result <RL no qualifiers / non-detect & result >RL "J/UJ" qualifiers)
No Qualification Necessary
67WW13-180501/67WW13-180501-FD
Carbon Dioxide – 870,000 ug/L / 860,000 ug/L; RPD = 1.16
MEE results all nondetect.
9. Form 1 vs Database/ADR
Check laboratory's Form1 against Database; one sample per SDG per fraction; list sample number:
10. Multiple Results
No Qualification Necessary

ADR Data Validation Checklist
Volatile Organics by SW846 8260C

Project Name:	LHAAP-67	SDG/Report No.:	HS18050072
Project No.:		Lab ID:	ALS-Houston
No. of Samples:	2 Originals & 1 FD	Matrix:	GW
1ST ADR / 2nd by	SP		

Automated Data Review (ADR) was performed for all areas evaluate except internal standards. 2ND Review of these areas was performed manually and the results of the validation findings are identified in this report. It should also be noted that the ADR produces "Outlier Reports" for areas where anomalies are noted. If all QC criterions are met, no "Outlier Reports" are generated.

ADR Generated Reports

EDD Nonconformance Report
Field QC and Associated Sample Report*
Outlier Reports
Sample Qualification Report with Reason Codes

EQUiS Generated Reports (Copies Attached):

QC Checkprint (QCVALDNT) Report

* Note: If field QC samples (i.e. TB, ER, FB, etc.) are reported in another SDG, the SDG, blanks, detected contaminants, and associated samples are identified in the comment/discussion section provided below

All areas evaluated by **DoD_5.0** and/or SW846 8260 methods and the identification as to whether qualification is necessary are identified below:

Area Evaluated	ADR Outlier Reports	Qualification Necessary (ADR and Manual Validation)	
		YES	NO
1. Hold Time/Preservation.			X
2. BFB Tune.			X
3. ICAL (RRF and/or %RSD)			X
4. CCAL opening (RRF and/or 20% D)			X
5. CCAL closing (%D<±50%)			X
6. Blanks (Method and/or Field QC)			X
7. LCS			X
8. Surrogates			X
9. MS/MSD			X
10. Field Duplicate			X
11. Internal Standards			X
12. Form1 vs Database/ADR			X

The following section is intended to specify areas evaluated and to provide an explanation (as applicable) for those areas where changes in ADR qualifiers were identified during the manual review and to provide an explanation (as applicable) for the need of additional qualifiers identified during the manual review.

Comments/Discussion:

Associated samples (3): 67WW13-180501, 67WW13-180501-FD, and 67WW08-180501 (MS/MSD)

ADR Data Validation Checklist
Volatile Organics by SW846 8260C

1. Hold Time/Preservation (QAPP - Worksheet#19/SW846/ASTM methods).
No Qualification Necessary
Rec'd <6ºC; collected 5/1/2018; analyzed 5/3/2018
2. BFB Tune (instr. performance criteria)
No Qualification Necessary
3. ICAL (DoD: RSD≤15% or linear R^2≥0.99 and Avg RRF's; 2-butanone & acetone >0.05; J/UJ < recommended criteria)
No Qualification Necessary
4. ICV (20%D only) /CCAL opening (DoD: %D≤20% and/or SW846 8260 Table 4 Avg RRF's: J/UJ < recommended criteria)
No Qualification Necessary
5. Closing CCV (DoD_5.0: %D<±50%) (if applicable by lab)
No Qualification Necessary
6. Blanks "UB" 5X/10X (EPA Region 3&4: Method and/or Field QC)
No Qualification Necessary
TB 67TB01-180501 – Results are nondetect.
VBLKW-180503 – Results are nondetect.
7. LCS (QAPP – Worksheet#12/#28)
No Qualification Necessary
VLCSW-180503 – All criteria were met; Therefore, no qualification required.
8. Surrogates (QAPP - Worksheet#12/#28)
No Qualification Necessary – All recoveries were within acceptance criteria.
9. MS/MSD (DoD/QAPP – Worksheet#12/#28; parent sample only)
No Qualification Necessary
67WW08-180501MS/MSD – %R: 1,1-Dichloropropene (129%/129%), 1,2-Dichloropropane (125%/124%), 1,3-Dichlorobenzene (122%/122%), 1,4-Dichlorobenzene (120%/119%), Bromobenzene (121%/119%), Bromodichloromethane (124%/ok), Bromomethane (133%/ok), Chlorobenzene (117%/118%), Ethylbenzene (129%/128%), o-Xylene (130%/132%); Parent concentration of 1,1-dichloroethene is 4x greater than the spike concentration and therefore, no qualification is required; All other results in parent sample 67WW08-180501 were nondetect; therefore, no qualification required.

ADR Data Validation Checklist
Volatile Organics by SW846 8260C

10. Field Duplicate (QAPP – Worksheet#12 - WATERS ≤20% / SOILS ≤50%)

(non-detect & result <RL or both <RL no qualifiers / non-detect & result >RL "J/UJ" qualifiers)

No Qualification Necessary – Criteria were met.

67WW13-180501/67WW13-180501-FD

VOCs	Method	Units	67WW13-180501	LQ	67WW13-180501-FD	LQ	%RPD
1,1,2-Trichloroethane	8260B	ug/L	4.8		4.7		2.11
1,1-Dichloroethane	8260B	ug/L	15		15		0.00
1,1-Dichloroethene	8260B	ug/L	160		170		6.06
1,2-Dichloroethane	8260B	ug/L	27		28		3.64
Chloroform	8260B	ug/L	0.76	J	0.78	J	2.60
Cis-1,2-Dichloroethene	8260B	ug/L	0.99	J	1.0		1.01

11.Internal Standards (DoD/QAPP – Worksheet#12/#28; -50% to +100% and RT ±0.5sec)

No Qualification Necessary

12. Form 1 vs Database/ADR

Check laboratory's Form1 against Database; one sample per SDG per fraction; list sample number:

13. Multiple Results

No Qualification Necessary

ADR Data Validation Checklist
WetChem

Project Name:	LHAAP-67	SDG/Report No.:	HS18050072
Project No.:	501032	Lab ID:	ALS Houston
No. of Samples:	2 Originals & 1 FD	Analysis:	Anions, TOC, TIC, Sulfide
1st ADR / 2nd by	SP		

Automated Data Review (ADR) was performed for all areas except where professional judgment is applicable. Review of these areas was performed manually by **DoD_5.0** and **SW846 methods** and the results of the validation findings are identified in this report. It should also be noted that the ADR produces "Outlier Reports" for areas where anomalies are noted. If all QC criterions are met, no "Outlier Reports" are generated.

ADR Generated Reports (Copies Attached):

EDD Nonconformance Report
Field QC and Associated Sample Report*
Outlier Reports
Sample Qualification Report with Reason Codes

Generated Reports (Copies Attached):

QC Checkprint (QCVALDNT) Report

* Note: If field QC samples (i.e. TB, ER, FB, etc.) are reported in another SDG, the SDG, blanks, detected contaminants, and associated samples are identified in the comment/discussion section provided below

All areas evaluated by **DoD_5.0** and **SW846** methods and the identification as to whether qualification is necessary are identified below:

Area Evaluated	ADR Outlier Reports	Qualification Necessary (ADR and Manual Validation)	
		YES	NO
1. Hold Time/Preservation.			X
2. ICAL			X
3. CCAL			X
4. Limit of Detection Verification (LODV)			X
5. Blanks (Method, Calibration and/or Field QC)			X
6. LCS			X
7. Duplicate Analysis			X
8. MS/MSD			X
9. Field Duplicate			X
10. Form1 vs Database/ADR			X

The following section is intended to specify areas evaluated and to provide an explanation (as applicable) for those areas where changes in ADR qualifiers were identified during the manual review and to provide an explanation (as applicable) for the need of additional qualifiers identified during the manual review.

Comments/Discussion:

Associated samples (3): 67WW13-180501, 67WW13-180501-FD, and 67WW08-180501 (MS/MSD)

ADR Data Validation Checklist
WetChem

1. Hold Time/Preservation. (QAPP - Worksheet#19/SW846/ASTM methods)
No Qualification Necessary
Rec'd <6ºC; collected 5/1/2018; analyzed: anions – 5/3,4,8,16/2017
2. ICAL (QAPP - Worksheet#19/SW846/ASTM methods: RSD≤20%/r≥0.995)
No Qualification Necessary
3. ICV/CCAL (QAPP - Worksheet#19/SW846/ASTM methods: ±15%D)
No Qualification Necessary
4. Limit of Detection Verification (LODV) (QAAP/DoD_4.2; ±30%D)
No Qualification Necessary
5. Blanks "UB" (EPA Region 3&4: Method and/or Field QC)
No Qualification Necessary
All MBs – Results were nondetect.
MB WMBLKW1-050318 – Sulfate, 0.249 J mg/L (5X=1.245); All results greater than 5X concentration.
6. LCS (QAPP - Worksheet#19/#28)
No Qualification Necessary
All LCS – Criteria were met.
7. Duplicate Analysis (QAPP - Worksheet#19/SW846/ASTM methods DoD-4.2<15%)
No Qualification Necessary
8. MS/MSD (QAPP - Worksheet#19/#28; DoD_4.2= ±20%MS/MSD / 15%RPD)
No Qualification Necessary
67WW08-180501-MS/MSD – Criteria were met where parent sample concentrations did not exceed 4X the spike concentrations.
9. Field Duplicate (QAPP – worksheet#35: 20% waters / 50% soils)
(non-detect & result <RL no qualifiers / non-detect & result >RL "J/UJ" qualifiers)
No Qualification Necessary
67WW13-180501 / 67WW13-180501-FD – All criteria were met.

ADR Data Validation Checklist
WetChem

VOCs	Method	Units	67WW13-180501	LQ	67WW13-180501-FD	LQ	%RPD
Sulfide	E376.1	mg/L	0	U	0	U	#DIV/0!
Chloride	E300.0	mg/L	1650		1520		8.20
Nitrate	E300.0	mg/L	0.674		0	U	200.00
Nitrite	E300.0	mg/L	0	U	0	U	#DIV/0!
Sulfate	E300.0	mg/L	405		370		9.03
TIC	9060	mg/L	340		350		2.90
TOC	9060	mg/L	3.07		3.18		3.52

10. Form 1 vs Database/ADR

Check laboratory's Form1 against Database; minimum one sample per SDG per fraction; list sample number:

11. Multiple Results

No Qualification Necessary

ADR Data Validation Checklist
Inorganic Metals by SW846 6010/6020/7470/7471

Project Name:	LHAAP-37	SDG/Report No.:	HS18050072
Project No.:	501032	Lab ID:	ALS Houston
No. of Samples:	2 Originals & 0 FD	Matrix:	GW
1st ADR / 2nd by	SP		

Automated Data Review (ADR) was performed for all areas except Calibration Blanks, ICP Check Standard Analysis, Serial Dilution Analysis, and areas where professional judgement is applicable. Review of these areas was performed manually and the results of the validation findings are identified in this report. It should also be noted that the ADR produces "Outlier Reports" for areas where anomalies are noted. If all QC criterions are met, no "Outlier Reports" are generated.

ADR Generated Reports (Copies Attached):

EDD Nonconformance Report
Field QC and Associated Sample Report*
Outlier Reports
Sample Qualification Report with Reason Codes

SHAWVIEW Generated Reports (Copies Attached):

QC Checkprint (QCVALDNT) Report

* Note: If field QC samples (i.e. TB, ER, FB, etc.) are reported in another SDG, the SDG, blanks, detected contaminants, and associated samples are identified in the comment/discussion section provided below

All areas evaluated by **DoD_5.0** and SW846 methods and the identification as to whether qualification is necessary are identified below:

Area Evaluated	ADR Outlier Reports	Qualification Necessary (ADR and Manual Validation)	
		YES	NO
1. Hold Time/Preservation.			X
2. ICAL			X
3. CCAL			X
4. LLICV-Low			X
5. Blanks (Method, Calibration and/or Field QC)			X
6. LCS			X
7. ICP Check Standards			X
8. MS/MSD			X
9. Field Duplicate		X	
10. Serial Dilutions			X
11. Internal Standards (6020)			X
12. Form 1 vs Database/ADR			X

The following section is intended to specify areas evaluated and to provide an explanation (as applicable) for those areas where changes in ADR qualifiers were identified during the manual review and to provide an explanation (as applicable) for the need of additional qualifiers identified during the manual review.

Comments/Discussion:

Associated samples (): 17WW13-180501, 17WW08-180501

ADR Data Validation Checklist
Inorganic Metals by SW846 6010/6020/7470/7471

NOTE: this is for Ferrous Iron by method SM3500FED.
1. Hold Time/Preservation. (QAPP - Worksheet#19/SW846)
Qualification Necessary
Received <6.0ºC; collected 5/1/2018; Prepped: 5/2/2018; analyzed: 5/2/2018
Ferrous Iron was analyzed outside the holding time to analysis. Qualify results estimated, J/UJ-02B.
2. ICAL (DoD_5.0/SW846: R^2>0.990)
No Qualification Necessary
3. CCAL (DoD_5.0 and/or SW846: ±10%D)
No Qualification Necessary
4. LLICV-Low Level ICV - CRDL (DoD_5.0 <±20% / SW846<±30%) <±20% applicable
No Qualification Necessary
5. Blanks "UB" 5X(EPA Region#&4: Method and/or Field QC)
No Qualification Necessary
SM3500FED MBLK-315840 – Results were nondetect.
6. LCS (QAPP - Worksheet#12/#28)
No Qualification Necessary
SM3500FED LCS-315840 – Criteria were met.
7. ICP Check Standards (DoD_5.0 and SW846/QAPP – worksheet#12/#28: ±20%)
No Qualification Necessary
8. MS/MSD (QAPP - Worksheet#12/#28 (75%-125%); parent sample only; *note lab limit are tighter*)
No Qualification Necessary
17WW08-180501-MS/MSD – Criteria were met.
9. Field Duplicate (QAPP – worksheet#35: 20% waters / 50% soils)
(non-detect & result <RL or both <RL no qualifiers / non-detect & result >RL "J/UJ" qualifiers)
No Qualification Necessary
17WW13-180501/17WW13-180501-FD
A duplicate for ferrous iron was not included. Also, 17WW13 result was nondetect.
10. Serial Dilutions (DoD_5.0/SW846/QAAP: ±10%; SW6010/6020 >50X MDL; parent sample)
No Qualification Necessary

ADR Data Validation Checklist
Inorganic Metals by SW846 6010/6020/7470/7471

11. Internal Standard (6020 only: DoD5.0: 30-120% and/or NFG 60-125%) applicable by lab
12. Form 1 vs Database/ADR
Check laboratory's Form1 against Database; minimum one sample per SDG per fraction; list sample number:
11. Multiple Results
No Qualification Necessary

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WorkOrder: HS18050286

Longhorn Army Ammunition Plant - 67

Aptim Environmental & Infrastucture, Inc.

Sharon Pennington
2500 City West Blvd., Suite 1700
Houston TX 77042

21-May-2018

10450 Stancliff Rd. Suite 210
Houston, TX 77099
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May 10, 2018

Sharon Pennington
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS18050286**

Laboratory Results for: **Longhorn Army Ammunition Plant - 67**

Dear Sharon,

ALS Environmental received 14 sample(s) on May 04, 2018 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Work Order: HS18050286

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18050286-01	67WW14-180502	GW		02-May-2018 08:15	04-May-2018 08:35	☐
HS18050286-02	67WW15-180502	GW		02-May-2018 09:10	04-May-2018 08:35	☐
HS18050286-03	67WW09-180502	GW		02-May-2018 10:00	04-May-2018 08:35	☐
HS18050286-04	67WW11-180502	GW		02-May-2018 10:55	04-May-2018 08:35	☐
HS18050286-05	67WW05-180503	GW		03-May-2018 07:50	04-May-2018 08:35	☐
HS18050286-06	67WW02-180503	GW		03-May-2018 08:10	04-May-2018 08:35	☐
HS18050286-07	67WW02-180503-FD	GW		03-May-2018 08:10	04-May-2018 08:35	☐
HS18050286-08	67WW07-180503	GW		03-May-2018 08:30	04-May-2018 08:35	☐
HS18050286-09	67WW01-180503	GW		03-May-2018 08:50	04-May-2018 08:35	☐
HS18050286-10	67WW16I-180503	GW		03-May-2018 09:40	04-May-2018 08:35	☐
HS18050286-11	67WW09A-180503	GW		03-May-2018 10:35	04-May-2018 08:35	☐
HS18050286-12	67WW10-180503	GW		03-May-2018 11:25	04-May-2018 08:35	☐
HS18050286-13	67WW12-180503	GW		03-May-2018 12:20	04-May-2018 08:35	☐
HS18050286-14	67TB02-180503’	Water	ALS-041918-50	03-May-2018 00:00	04-May-2018 08:35	☐

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: Longhorn Army Ammunition Plant - 67
Work Order: HS18050286

GCMS Volatiles by Method SW8260

Batch ID: R315785

Sample ID: 67WW10-180503 (HS18050286-12MSD)

- The recovery of the Matrix Spike Duplicate (MSD) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The failed recovery of the MSD may be due to sample matrix interference.

Batch ID: R315922

Sample ID: HS18050395-10MS

- MS and MSD are for an unrelated sample.

Batch ID: R315767

Sample ID: HS18050260-01MS

- MS and MSD are for an unrelated sample

Batch ID: ,R315785,R315922

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW14-180502
Collection Date: 02-May-2018 08:15

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-01
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:01
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:01
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:01
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:01
1,1-Dichloroethene	**4.2**		**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 16:01
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:01
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:01
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:01
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 16:01
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:01
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:01
1,2-Dichloroethane	**1.9**		**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 16:01
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:01
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:01
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:01
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:01
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 16:01
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 16:01
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:01
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	07-May-2018 16:01
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	07-May-2018 16:01
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:01
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:01
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:01
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:01
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:01
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:01
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	07-May-2018 16:01
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:01
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW14-180502
Collection Date: 02-May-2018 08:15

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-01
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:01
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:01
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:01
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	07-May-2018 16:01
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:01
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 16:01
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 16:01
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 16:01
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:01
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:01
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:01
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:01
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:01
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:01
Surr: 1,2-Dichloroethane-d4	*102*			**0**	*70-126*	*%REC*	*1*	*07-May-2018 16:01*
Surr: 4-Bromofluorobenzene	*110*			**0**	*81-113*	*%REC*	*1*	*07-May-2018 16:01*
Surr: Dibromofluoromethane	*107*			**0**	*77-123*	*%REC*	*1*	*07-May-2018 16:01*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*07-May-2018 16:01*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW15-180502
Collection Date: 02-May-2018 09:10

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-02
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:25
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:25
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:25
1,1,2-Trichloroethane	**5.6**		**0.30**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 16:25
1,1-Dichloroethane	**10**		**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 16:25
1,1-Dichloroethene	**380**		**1.0**	**2.5**	**5.0**	**ug/L**	5	09-May-2018 16:56
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:25
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:25
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:25
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 16:25
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:25
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:25
1,2-Dichloroethane	**26**		**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 16:25
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:25
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:25
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:25
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:25
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 16:25
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 16:25
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:25
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	07-May-2018 16:25
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	07-May-2018 16:25
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:25
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:25
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:25
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:25
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:25
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:25
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	07-May-2018 16:25
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:25
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW15-180502
Collection Date: 02-May-2018 09:10

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-02
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:25
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:25
cis-1,2-Dichloroethene	**1.3**		**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 16:25
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	07-May-2018 16:25
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:25
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 16:25
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 16:25
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 16:25
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:25
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:25
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:25
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:25
Trichloroethene	**1.2**		**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 16:25
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:25
Surr: 1,2-Dichloroethane-d4	*102*			**0**	*70-126*	*%REC*	*1*	*07-May-2018 16:25*
Surr: 1,2-Dichloroethane-d4	*101*			**0**	*70-126*	*%REC*	*5*	*09-May-2018 16:56*
Surr: 4-Bromofluorobenzene	*111*			**0**	*81-113*	*%REC*	*1*	*07-May-2018 16:25*
Surr: 4-Bromofluorobenzene	*109*			**0**	*81-113*	*%REC*	*5*	*09-May-2018 16:56*
Surr: Dibromofluoromethane	*108*			**0**	*77-123*	*%REC*	*1*	*07-May-2018 16:25*
Surr: Dibromofluoromethane	*106*			**0**	*77-123*	*%REC*	*5*	*09-May-2018 16:56*
Surr: Toluene-d8	*107*			**0**	*82-127*	*%REC*	*1*	*07-May-2018 16:25*
Surr: Toluene-d8	*108*			**0**	*82-127*	*%REC*	*5*	*09-May-2018 16:56*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW09-180502
Collection Date: 02-May-2018 10:00

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-03
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:50
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:50
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:50
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:50
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:50
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:50
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:50
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:50
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 16:50
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:50
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:50
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:50
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:50
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:50
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:50
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:50
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 16:50
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 16:50
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:50
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	07-May-2018 16:50
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	07-May-2018 16:50
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:50
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:50
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:50
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:50
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:50
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:50
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	07-May-2018 16:50
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:50
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW09-180502
Collection Date: 02-May-2018 10:00

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-03
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:50
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:50
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:50
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	07-May-2018 16:50
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:50
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 16:50
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 16:50
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 16:50
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:50
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:50
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:50
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:50
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:50
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:50
Surr: 1,2-Dichloroethane-d4	*103*			**0**	*70-126*	*%REC*	*1*	*07-May-2018 16:50*
Surr: 4-Bromofluorobenzene	*110*			**0**	*81-113*	*%REC*	*1*	*07-May-2018 16:50*
Surr: Dibromofluoromethane	*109*			**0**	*77-123*	*%REC*	*1*	*07-May-2018 16:50*
Surr: Toluene-d8	*107*			**0**	*82-127*	*%REC*	*1*	*07-May-2018 16:50*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW11-180502
Collection Date: 02-May-2018 10:55

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-04
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:14
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 17:14
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 17:14
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
1,1-Dichloroethane	**3.3**		**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 17:14
1,1-Dichloroethene	**5.5**		**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 17:14
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 17:14
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 17:14
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 17:14
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 17:14
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:14
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 17:14
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:14
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 17:14
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 17:14
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 17:14
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:14
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 17:14
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 17:14
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 17:14
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	07-May-2018 17:14
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	07-May-2018 17:14
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:14
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 17:14
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:14
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:14
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 17:14
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 17:14
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	07-May-2018 17:14
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 17:14
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW11-180502
Collection Date: 02-May-2018 10:55

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-04
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:14
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:14
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:14
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	07-May-2018 17:14
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:14
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 17:14
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 17:14
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 17:14
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 17:14
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:14
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:14
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:14
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:14
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:14
Surr: 1,2-Dichloroethane-d4	*101*			**0**	*70-126*	*%REC*	*1*	*07-May-2018 17:14*
Surr: 4-Bromofluorobenzene	*111*			**0**	*81-113*	*%REC*	*1*	*07-May-2018 17:14*
Surr: Dibromofluoromethane	*108*			**0**	*77-123*	*%REC*	*1*	*07-May-2018 17:14*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*07-May-2018 17:14*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW05-180503
Collection Date: 03-May-2018 07:50

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-05
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:39
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 17:39
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 17:39
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:39
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:39
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 17:39
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 17:39
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 17:39
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 17:39
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:39
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 17:39
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:39
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 17:39
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 17:39
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 17:39
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:39
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 17:39
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 17:39
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 17:39
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	07-May-2018 17:39
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	07-May-2018 17:39
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:39
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 17:39
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:39
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:39
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 17:39
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 17:39
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	07-May-2018 17:39
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 17:39
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW05-180503
Collection Date: 03-May-2018 07:50

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-05
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:39
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:39
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:39
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	07-May-2018 17:39
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:39
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 17:39
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 17:39
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 17:39
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 17:39
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:39
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:39
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:39
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:39
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:39
Surr: 1,2-Dichloroethane-d4	*101*			**0**	*70-126*	*%REC*	*1*	*07-May-2018 17:39*
Surr: 4-Bromofluorobenzene	*109*			**0**	*81-113*	*%REC*	*1*	*07-May-2018 17:39*
Surr: Dibromofluoromethane	*108*			**0**	*77-123*	*%REC*	*1*	*07-May-2018 17:39*
Surr: Toluene-d8	*107*			**0**	*82-127*	*%REC*	*1*	*07-May-2018 17:39*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW02-180503
Collection Date: 03-May-2018 08:10

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-06
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:03
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:03
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:03
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
1,1-Dichloroethane	**7.8**		**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 18:03
1,1-Dichloroethene	**190**		**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 18:03
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:03
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:03
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:03
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 18:03
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:03
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:03
1,2-Dichloroethane	**2.0**		**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 18:03
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:03
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:03
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:03
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:03
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 18:03
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 18:03
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:03
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	07-May-2018 18:03
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	07-May-2018 18:03
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:03
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:03
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:03
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:03
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:03
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:03
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	07-May-2018 18:03
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:03
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW02-180503
Collection Date: 03-May-2018 08:10

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-06
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:03
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:03
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:03
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	07-May-2018 18:03
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:03
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 18:03
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 18:03
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 18:03
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:03
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:03
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:03
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:03
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:03
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:03
Surr: 1,2-Dichloroethane-d4	*101*			**0**	*70-126*	*%REC*	*1*	*07-May-2018 18:03*
Surr: 4-Bromofluorobenzene	*111*			**0**	*81-113*	*%REC*	*1*	*07-May-2018 18:03*
Surr: Dibromofluoromethane	*107*			**0**	*77-123*	*%REC*	*1*	*07-May-2018 18:03*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*07-May-2018 18:03*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW02-180503-FD
Collection Date: 03-May-2018 08:10

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-07
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:28
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:28
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:28
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
1,1-Dichloroethane	**7.7**		**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 18:28
1,1-Dichloroethene	**190**		**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 18:28
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:28
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:28
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:28
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 18:28
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:28
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:28
1,2-Dichloroethane	**1.9**		**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 18:28
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:28
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:28
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:28
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:28
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 18:28
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 18:28
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:28
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	07-May-2018 18:28
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	07-May-2018 18:28
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:28
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:28
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:28
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:28
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:28
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:28
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	07-May-2018 18:28
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:28
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW02-180503-FD
Collection Date: 03-May-2018 08:10

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-07
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:28
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:28
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:28
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	07-May-2018 18:28
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:28
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 18:28
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 18:28
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 18:28
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:28
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:28
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:28
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:28
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:28
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:28
Surr: 1,2-Dichloroethane-d4	*101*			**0**	*70-126*	*%REC*	*1*	*07-May-2018 18:28*
Surr: 4-Bromofluorobenzene	*110*			**0**	*81-113*	*%REC*	*1*	*07-May-2018 18:28*
Surr: Dibromofluoromethane	*104*			**0**	*77-123*	*%REC*	*1*	*07-May-2018 18:28*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*07-May-2018 18:28*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW07-180503
Collection Date: 03-May-2018 08:30

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-08
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:52
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:52
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:52
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:52
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:52
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:52
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:52
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:52
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 18:52
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:52
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:52
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:52
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:52
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:52
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:52
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:52
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 18:52
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 18:52
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:52
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	07-May-2018 18:52
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	07-May-2018 18:52
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:52
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:52
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:52
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:52
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:52
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:52
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	07-May-2018 18:52
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:52
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW07-180503
Collection Date: 03-May-2018 08:30

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-08
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:52
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:52
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:52
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	07-May-2018 18:52
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:52
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 18:52
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 18:52
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 18:52
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:52
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:52
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:52
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:52
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:52
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:52
Surr: 1,2-Dichloroethane-d4	*103*			**0**	*70-126*	*%REC*	*1*	*07-May-2018 18:52*
Surr: 4-Bromofluorobenzene	*111*			**0**	*81-113*	*%REC*	*1*	*07-May-2018 18:52*
Surr: Dibromofluoromethane	*108*			**0**	*77-123*	*%REC*	*1*	*07-May-2018 18:52*
Surr: Toluene-d8	*108*			**0**	*82-127*	*%REC*	*1*	*07-May-2018 18:52*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW01-180503
Collection Date: 03-May-2018 08:50

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-09
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:16
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 19:16
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 19:16
1,1,2-Trichloroethane	**1.2**		**0.30**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 19:16
1,1-Dichloroethane	**15**		**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 19:16
1,1-Dichloroethene	**450**		**1.0**	**2.5**	**5.0**	**ug/L**	5	09-May-2018 17:23
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 19:16
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 19:16
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 19:16
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 19:16
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:16
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 19:16
1,2-Dichloroethane	**22**		**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 19:16
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 19:16
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 19:16
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 19:16
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:16
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 19:16
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 19:16
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 19:16
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	07-May-2018 19:16
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	07-May-2018 19:16
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:16
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 19:16
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:16
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:16
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 19:16
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 19:16
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	07-May-2018 19:16
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 19:16
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW01-180503
Collection Date: 03-May-2018 08:50

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-09
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:16
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:16
cis-1,2-Dichloroethene	**0.95**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 19:16
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	07-May-2018 19:16
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:16
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 19:16
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 19:16
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 19:16
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 19:16
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:16
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:16
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:16
Trichloroethene	**1.7**		**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 19:16
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
Vinyl chloride	**1.4**		**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 19:16
Surr: 1,2-Dichloroethane-d4	*102*			**0**	*70-126*	*%REC*	*1*	*07-May-2018 19:16*
Surr: 1,2-Dichloroethane-d4	*99.9*			**0**	*70-126*	*%REC*	*5*	*09-May-2018 17:23*
Surr: 4-Bromofluorobenzene	*111*			**0**	*81-113*	*%REC*	*1*	*07-May-2018 19:16*
Surr: 4-Bromofluorobenzene	*109*			**0**	*81-113*	*%REC*	*5*	*09-May-2018 17:23*
Surr: Dibromofluoromethane	*107*			**0**	*77-123*	*%REC*	*1*	*07-May-2018 19:16*
Surr: Dibromofluoromethane	*104*			**0**	*77-123*	*%REC*	*5*	*09-May-2018 17:23*
Surr: Toluene-d8	*108*			**0**	*82-127*	*%REC*	*1*	*07-May-2018 19:16*
Surr: Toluene-d8	*108*			**0**	*82-127*	*%REC*	*5*	*09-May-2018 17:23*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW16I-180503
Collection Date: 03-May-2018 09:40

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-10
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:41
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 19:41
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 19:41
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:41
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:41
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 19:41
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 19:41
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 19:41
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 19:41
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:41
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 19:41
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:41
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 19:41
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 19:41
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 19:41
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:41
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 19:41
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 19:41
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 19:41
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	07-May-2018 19:41
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	07-May-2018 19:41
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:41
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 19:41
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:41
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:41
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 19:41
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 19:41
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	07-May-2018 19:41
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 19:41
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW16I-180503
Collection Date: 03-May-2018 09:40

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-10
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:41
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:41
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:41
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	07-May-2018 19:41
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:41
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 19:41
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 19:41
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 19:41
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 19:41
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:41
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:41
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:41
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:41
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:41
Surr: 1,2-Dichloroethane-d4	*101*			**0**	*70-126*	*%REC*	*1*	*07-May-2018 19:41*
Surr: 4-Bromofluorobenzene	*108*			**0**	*81-113*	*%REC*	*1*	*07-May-2018 19:41*
Surr: Dibromofluoromethane	*107*			**0**	*77-123*	*%REC*	*1*	*07-May-2018 19:41*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*07-May-2018 19:41*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW09A-180503
Collection Date: 03-May-2018 10:35

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-11
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 20:05
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 20:05
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 20:05
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 20:05
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 20:05
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 20:05
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 20:05
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 20:05
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 20:05
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 20:05
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 20:05
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 20:05
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 20:05
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 20:05
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 20:05
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 20:05
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 20:05
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 20:05
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 20:05
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	07-May-2018 20:05
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	07-May-2018 20:05
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 20:05
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 20:05
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 20:05
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 20:05
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 20:05
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 20:05
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	07-May-2018 20:05
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 20:05
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW09A-180503
Collection Date: 03-May-2018 10:35

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-11
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 20:05
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 20:05
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 20:05
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	07-May-2018 20:05
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 20:05
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 20:05
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 20:05
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 20:05
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 20:05
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 20:05
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 20:05
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 20:05
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 20:05
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 20:05
Surr: 1,2-Dichloroethane-d4	*100*			**0**	*70-126*	*%REC*	*1*	*07-May-2018 20:05*
Surr: 4-Bromofluorobenzene	*109*			**0**	*81-113*	*%REC*	*1*	*07-May-2018 20:05*
Surr: Dibromofluoromethane	*107*			**0**	*77-123*	*%REC*	*1*	*07-May-2018 20:05*
Surr: Toluene-d8	*108*			**0**	*82-127*	*%REC*	*1*	*07-May-2018 20:05*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW10-180503
Collection Date: 03-May-2018 11:25

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-12
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 01:23
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-May-2018 01:23
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-May-2018 01:23
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 01:23
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 01:23
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-May-2018 01:23
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-May-2018 01:23
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-May-2018 01:23
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	08-May-2018 01:23
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 01:23
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-May-2018 01:23
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 01:23
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-May-2018 01:23
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-May-2018 01:23
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-May-2018 01:23
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 01:23
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	08-May-2018 01:23
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	08-May-2018 01:23
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	08-May-2018 01:23
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	08-May-2018 01:23
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	08-May-2018 01:23
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 01:23
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-May-2018 01:23
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 01:23
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 01:23
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	08-May-2018 01:23
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	08-May-2018 01:23
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	08-May-2018 01:23
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	08-May-2018 01:23
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW10-180503
Collection Date: 03-May-2018 11:25

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-12
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 01:23
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 01:23
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 01:23
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	08-May-2018 01:23
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 01:23
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	08-May-2018 01:23
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	08-May-2018 01:23
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	08-May-2018 01:23
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-May-2018 01:23
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 01:23
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 01:23
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 01:23
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 01:23
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 01:23
Surr: 1,2-Dichloroethane-d4	*100*			**0**	*70-126*	*%REC*	*1*	*08-May-2018 01:23*
Surr: 4-Bromofluorobenzene	*111*			**0**	*81-113*	*%REC*	*1*	*08-May-2018 01:23*
Surr: Dibromofluoromethane	*106*			**0**	*77-123*	*%REC*	*1*	*08-May-2018 01:23*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*08-May-2018 01:23*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW12-180503
Collection Date: 03-May-2018 12:20

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-13
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 03:00
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-May-2018 03:00
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-May-2018 03:00
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 03:00
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 03:00
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-May-2018 03:00
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-May-2018 03:00
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-May-2018 03:00
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	08-May-2018 03:00
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 03:00
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-May-2018 03:00
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 03:00
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-May-2018 03:00
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-May-2018 03:00
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-May-2018 03:00
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 03:00
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	08-May-2018 03:00
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	08-May-2018 03:00
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	08-May-2018 03:00
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	08-May-2018 03:00
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	08-May-2018 03:00
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 03:00
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-May-2018 03:00
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 03:00
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 03:00
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	08-May-2018 03:00
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	08-May-2018 03:00
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	08-May-2018 03:00
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	08-May-2018 03:00
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW12-180503
Collection Date: 03-May-2018 12:20

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-13
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 03:00
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 03:00
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 03:00
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	08-May-2018 03:00
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 03:00
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	08-May-2018 03:00
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	08-May-2018 03:00
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	08-May-2018 03:00
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-May-2018 03:00
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 03:00
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 03:00
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 03:00
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 03:00
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 03:00
Surr: 1,2-Dichloroethane-d4	*99.9*			**0**	*70-126*	*%REC*	*1*	*08-May-2018 03:00*
Surr: 4-Bromofluorobenzene	*109*			**0**	*81-113*	*%REC*	*1*	*08-May-2018 03:00*
Surr: Dibromofluoromethane	*108*			**0**	*77-123*	*%REC*	*1*	*08-May-2018 03:00*
Surr: Toluene-d8	*108*			**0**	*82-127*	*%REC*	*1*	*08-May-2018 03:00*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67TB02-180503'
Collection Date: 03-May-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-14
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 23:45
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 23:45
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 23:45
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 23:45
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 23:45
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 23:45
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 23:45
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 23:45
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 23:45
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 23:45
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 23:45
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 23:45
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 23:45
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 23:45
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 23:45
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 23:45
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 23:45
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 23:45
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 23:45
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	07-May-2018 23:45
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	07-May-2018 23:45
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 23:45
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 23:45
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 23:45
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 23:45
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 23:45
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 23:45
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	07-May-2018 23:45
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 23:45
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67TB02-180503'
Collection Date: 03-May-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-14
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 23:45
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 23:45
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 23:45
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	07-May-2018 23:45
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 23:45
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 23:45
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 23:45
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 23:45
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 23:45
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 23:45
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 23:45
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 23:45
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 23:45
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 23:45
Surr: 1,2-Dichloroethane-d4	*99.9*			**0**	*70-126*	*%REC*	*1*	*07-May-2018 23:45*
Surr: 4-Bromofluorobenzene	*108*			**0**	*81-113*	*%REC*	*1*	*07-May-2018 23:45*
Surr: Dibromofluoromethane	*108*			**0**	*77-123*	*%REC*	*1*	*07-May-2018 23:45*
Surr: Toluene-d8	*105*			**0**	*82-127*	*%REC*	*1*	*07-May-2018 23:45*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R315767	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** GW		
HS18050286-01	67WW14-180502	02 May 2018 08:15			07 May 2018 16:01	1
HS18050286-02	67WW15-180502	02 May 2018 09:10			07 May 2018 16:25	1
HS18050286-03	67WW09-180502	02 May 2018 10:00			07 May 2018 16:50	1
HS18050286-04	67WW11-180502	02 May 2018 10:55			07 May 2018 17:14	1
HS18050286-05	67WW05-180503	03 May 2018 07:50			07 May 2018 17:39	1
HS18050286-06	67WW02-180503	03 May 2018 08:10			07 May 2018 18:03	1
HS18050286-07	67WW02-180503-FD	03 May 2018 08:10			07 May 2018 18:28	1
HS18050286-08	67WW07-180503	03 May 2018 08:30			07 May 2018 18:52	1
HS18050286-09	67WW01-180503	03 May 2018 08:50			07 May 2018 19:16	1
HS18050286-10	67WW16I-180503	03 May 2018 09:40			07 May 2018 19:41	1
HS18050286-11	67WW09A-180503	03 May 2018 10:35			07 May 2018 20:05	1
Batch ID R315785	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS18050286-14	67TB02-180503'	03 May 2018 00:00			07 May 2018 23:45	1
Batch ID R315785	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** GW		
HS18050286-12	67WW10-180503	03 May 2018 11:25			08 May 2018 01:23	1
HS18050286-13	67WW12-180503	03 May 2018 12:20			08 May 2018 03:00	1
Batch ID R315922	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** GW		
HS18050286-02	67WW15-180502	02 May 2018 09:10			09 May 2018 16:56	5
HS18050286-09	67WW01-180503	03 May 2018 08:50			09 May 2018 17:23	5

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315767 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180507** Units: **ug/L** Analysis Date: **07-May-2018 11:32**
Client ID: Run ID: **VOA2_315767** SeqNo: **4550420** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315767 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180507** Units: **ug/L** Analysis Date: **07-May-2018 11:32**
Client ID: Run ID: **VOA2_315767** SeqNo: **4550420** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	0.50	1.0								U
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*49.64*	*1.0*	*50*	*0*	*99.3*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*54.48*	*1.0*	*50*	*0*	*109*	*82 - 115*				
Surr: Dibromofluoromethane	*53.42*	*1.0*	*50*	*0*	*107*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315767 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180507** Units: **ug/L** Analysis Date: **07-May-2018 11:32**
Client ID: Run ID: **VOA2_315767** SeqNo: **4550420** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*53.94*	*1.0*	*50*	*0*	*108*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315767 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180507** Units: **ug/L** Analysis Date: **07-May-2018 10:43**
Client ID: Run ID: **VOA2_315767** SeqNo: **4550418** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	51.87	1.0	50	0	104	77 - 118				
1,1,1-Trichloroethane	50.92	1.0	50	0	102	70 - 130				
1,1,2,2-Tetrachloroethane	46.43	1.0	50	0	92.9	70 - 120				
1,1,2-Trichlor-1,2,2-trifluoroethane	50.41	1.0	50	0	101	70 - 130				
1,1,2-Trichloroethane	50.55	1.0	50	0	101	77 - 113				
1,1-Dichloroethane	50.35	1.0	50	0	101	71 - 122				
1,1-Dichloroethene	52.91	1.0	50	0	106	70 - 130				
1,1-Dichloropropene	44.3	1.0	50	0	88.6	78 - 118				
1,2,3-Trichlorobenzene	48.03	1.0	50	0	96.1	70 - 130				
1,2,3-Trichloropropane	53.86	1.0	50	0	108	70 - 127				
1,2,4-Trichlorobenzene	49.24	1.0	50	0	98.5	77 - 126				
1,2,4-Trimethylbenzene	54.24	1.0	50	0	108	73 - 121				
1,2-Dibromo-3-chloropropane	52.55	1.0	50	0	105	70 - 130				
1,2-Dibromoethane	52.71	1.0	50	0	105	76 - 123				
1,2-Dichlorobenzene	47.93	1.0	50	0	95.9	77 - 113				
1,2-Dichloroethane	50.42	1.0	50	0	101	70 - 124				
1,2-Dichloropropane	49.3	1.0	50	0	98.6	72 - 119				
1,3,5-Trimethylbenzene	45.23	1.0	50	0	90.5	75 - 118				
1,3-Dichlorobenzene	47.09	1.0	50	0	94.2	78 - 118				
1,3-Dichloropropane	50.58	1.0	50	0	101	75 - 116				
1,4-Dichlorobenzene	46.62	1.0	50	0	93.2	79 - 113				
2,2-Dichloropropane	52.93	1.0	50	0	106	70 - 130				
2-Butanone	104.9	2.0	100	0	105	70 - 130				
2-Chlorotoluene	54.24	1.0	50	0	108	70 - 128				
2-Hexanone	100.9	2.0	100	0	101	70 - 130				
4-Chlorotoluene	54.41	1.0	50	0	109	74 - 126				
4-Isopropyltoluene	46.28	1.0	50	0	92.6	74 - 126				
4-Methyl-2-pentanone	96.83	2.0	100	0	96.8	70 - 130				
Acetone	103.8	2.0	100	0	104	70 - 130				
Benzene	48.99	1.0	50	0	98.0	74 - 120				
Bromobenzene	47.64	1.0	50	0	95.3	78 - 113				
Bromochloromethane	54.29	1.0	50	0	109	76 - 124				
Bromodichloromethane	51.64	1.0	50	0	103	74 - 122				
Bromoform	53.6	1.0	50	0	107	73 - 128				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315767 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180507** Units: **ug/L** Analysis Date: **07-May-2018 10:43**
Client ID: Run ID: **VOA2_315767** SeqNo: **4550418** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	44.04	1.0	50	0	88.1	70 - 130				
Carbon disulfide	100.5	2.0	100	0	101	70 - 130				
Carbon tetrachloride	46.4	1.0	50	0	92.8	71 - 125				
Chlorobenzene	48.77	1.0	50	0	97.5	76 - 113				
Chloroethane	55.58	1.0	50	0	111	70 - 130				
Chloroform	49.98	1.0	50	0	100.0	71 - 121				
Chloromethane	56.51	1.0	50	0	113	70 - 129				
cis-1,2-Dichloroethene	51.9	1.0	50	0	104	75 - 122				
cis-1,3-Dichloropropene	54.69	1.0	50	0	109	73 - 127				
Dibromochloromethane	52.72	1.0	50	0	105	77 - 122				
Dibromomethane	53.92	1.0	50	0	108	78 - 121				
Dichlorodifluoromethane	53.98	1.0	50	0	108	70 - 130				
Ethylbenzene	47.39	1.0	50	0	94.8	77 - 117				
Hexachlorobutadiene	46.75	1.0	50	0	93.5	70 - 130				
Isopropylbenzene	48.7	1.0	50	0	97.4	73 - 127				
m,p-Xylene	115.6	2.0	100	0	116	77 - 122				
Methylene chloride	46.96	2.0	50	0	93.9	70 - 127				
Naphthalene	49.21	1.0	50	0	98.4	70 - 130				
n-Butylbenzene	48.48	1.0	50	0	97.0	72 - 130				
n-Propylbenzene	45.69	1.0	50	0	91.4	73 - 124				
o-Xylene	48.94	1.0	50	0	97.9	75 - 119				
sec-Butylbenzene	46.71	1.0	50	0	93.4	73 - 128				
Styrene	50.64	1.0	50	0	101	72 - 126				
tert-Butylbenzene	45.12	1.0	50	0	90.2	73 - 124				
Tetrachloroethene	48.02	1.0	50	0	96.0	76 - 119				
Toluene	47.45	1.0	50	0	94.9	77 - 118				
trans-1,2-Dichloroethene	54.65	1.0	50	0	109	72 - 127				
trans-1,3-Dichloropropene	56.91	1.0	50	0	114	77 - 119				
Trichloroethene	51.48	1.0	50	0	103	77 - 121				
Trichlorofluoromethane	53.39	1.0	50	0	107	70 - 130				
Vinyl chloride	50.83	1.0	50	0	102	70 - 130				
Surr: 1,2-Dichloroethane-d4	*52.05*	*1.0*	*50*	*0*	*104*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*57.3*	*1.0*	*50*	*0*	*115*	*82 - 115*				
Surr: Dibromofluoromethane	*50.21*	*1.0*	*50*	*0*	*100*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315767 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180507** Units: **ug/L** Analysis Date: **07-May-2018 10:43**
Client ID: Run ID: **VOA2_315767** SeqNo: **4550418** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*51.58*	*1.0*	*50*	*0*	*103*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315767 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18050260-01MS** Units: **ug/L** Analysis Date: **07-May-2018 14:47**
Client ID: Run ID: **VOA2_315767** SeqNo: **4550800** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	48.07	1.0	50	0	96.1	70 - 120				
1,1,1-Trichloroethane	53.93	1.0	50	0	108	70 - 130				
1,1,2,2-Tetrachloroethane	42.99	1.0	50	0	86.0	70 - 123				
1,1,2-Trichlor-1,2,2-trifluoroethane	59.89	1.0	50	0	120	70 - 130				
1,1,2-Trichloroethane	47.09	1.0	50	0	94.2	70 - 117				
1,1-Dichloroethane	49.21	1.0	50	0	98.4	70 - 127				
1,1-Dichloroethene	57	1.0	50	0	114	70 - 130				
1,1-Dichloropropene	47.16	1.0	50	0	94.3	70 - 129				
1,2,3-Trichlorobenzene	39.17	1.0	50	0	78.3	70 - 130				
1,2,3-Trichloropropane	52.41	1.0	50	0	105	70 - 130				
1,2,4-Trichlorobenzene	38.68	1.0	50	0	77.4	70 - 125				
1,2,4-Trimethylbenzene	51.55	1.0	50	0	103	70 - 125				
1,2-Dibromo-3-chloropropane	46.7	1.0	50	0	93.4	70 - 130				
1,2-Dibromoethane	49.09	1.0	50	0	98.2	70 - 124				
1,2-Dichlorobenzene	43.23	1.0	50	0	86.5	70 - 115				
1,2-Dichloroethane	50.24	1.0	50	0	100	70 - 127				
1,2-Dichloropropane	48.36	1.0	50	0	96.7	70 - 122				
1,3,5-Trimethylbenzene	43.58	1.0	50	0	87.2	70 - 126				
1,3-Dichlorobenzene	42.12	1.0	50	0	84.2	70 - 119				
1,3-Dichloropropane	47.93	1.0	50	0	95.9	70 - 121				
1,4-Dichlorobenzene	40.56	1.0	50	0	81.1	70 - 114				
2,2-Dichloropropane	54.15	1.0	50	0	108	70 - 130				
2-Butanone	95.33	2.0	100	6.139	89.2	70 - 130				
2-Chlorotoluene	50.57	1.0	50	0	101	70 - 130				
2-Hexanone	104.3	2.0	100	0	104	70 - 130				
4-Chlorotoluene	50.38	1.0	50	0	101	70 - 130				
4-Isopropyltoluene	45.88	1.0	50	0	91.8	70 - 130				
4-Methyl-2-pentanone	101.9	2.0	100	0	102	70 - 130				
Acetone	98	2.0	100	11.45	86.6	70 - 130				
Benzene	48.28	1.0	50	0	96.6	70 - 127				
Bromobenzene	43.82	1.0	50	0	87.6	70 - 115				
Bromochloromethane	52.49	1.0	50	0	105	70 - 127				
Bromodichloromethane	49.34	1.0	50	0	98.7	70 - 124				
Bromoform	48.34	1.0	50	0	96.7	70 - 129				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315767 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18050260-01MS** Units: **ug/L** Analysis Date: **07-May-2018 14:47**
Client ID: Run ID: **VOA2_315767** SeqNo: **4550800** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	27.84	1.0	50	0	55.7	70 - 130				S
Carbon disulfide	106.4	2.0	100	0	106	70 - 130				
Carbon tetrachloride	50.16	1.0	50	0	100	70 - 130				
Chlorobenzene	46.19	1.0	50	0	92.4	70 - 114				
Chloroethane	49.99	1.0	50	0	100.0	70 - 130				
Chloroform	48.69	1.0	50	0	97.4	70 - 125				
Chloromethane	48.23	1.0	50	0	96.5	70 - 130				
cis-1,2-Dichloroethene	54.02	1.0	50	3.843	100	70 - 128				
cis-1,3-Dichloropropene	51.99	1.0	50	0	104	70 - 125				
Dibromochloromethane	49.03	1.0	50	0	98.1	70 - 124				
Dibromomethane	51.26	1.0	50	0	103	70 - 124				
Dichlorodifluoromethane	53.77	1.0	50	0	108	70 - 130				
Ethylbenzene	47.26	1.0	50	0	94.5	70 - 124				
Hexachlorobutadiene	41.83	1.0	50	0	83.7	70 - 130				
Isopropylbenzene	49.52	1.0	50	0	99.0	70 - 130				
m,p-Xylene	113.8	2.0	100	0	114	70 - 130				
Methylene chloride	45.95	2.0	50	0	91.9	70 - 128				
Naphthalene	42.51	1.0	50	0	85.0	70 - 130				
n-Butylbenzene	46.03	1.0	50	0	92.1	70 - 130				
n-Propylbenzene	44.77	1.0	50	0	89.5	70 - 130				
o-Xylene	47.58	1.0	50	0	95.2	70 - 124				
sec-Butylbenzene	46.61	1.0	50	0	93.2	70 - 130				
Styrene	46.55	1.0	50	0	93.1	70 - 130				
tert-Butylbenzene	46.42	1.0	50	0	92.8	70 - 130				
Tetrachloroethene	49.74	1.0	50	0	99.5	70 - 130				
Toluene	46.9	1.0	50	0.3202	93.2	70 - 123				
trans-1,2-Dichloroethene	55.8	1.0	50	0	112	70 - 130				
trans-1,3-Dichloropropene	52.22	1.0	50	0	104	70 - 121				
Trichloroethene	54.64	1.0	50	2.291	105	70 - 129				
Trichlorofluoromethane	56.7	1.0	50	0	113	70 - 130				
Vinyl chloride	53.38	1.0	50	0	107	70 - 130				
Surr: 1,2-Dichloroethane-d4	*52.66*	*1.0*	*50*	*0*	*105*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*56.63*	*1.0*	*50*	*0*	*113*	*81 - 113*				S
Surr: Dibromofluoromethane	*50.76*	*1.0*	*50*	*0*	*102*	*77 - 123*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315767 **Instrument:** VOA2 **Method:** SW8260

MS Sample ID: **HS18050260-01MS** Units: **ug/L** Analysis Date: **07-May-2018 14:47**
Client ID: Run ID: **VOA2_315767** SeqNo: **4550800** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*51.44*	*1.0*	*50*	*0*	*103*	*82 - 127*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315767 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18050260-01MSD** Units: **ug/L** Analysis Date: **07-May-2018 15:12**
Client ID: Run ID: **VOA2_315767** SeqNo: **4550801** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	48.39	1.0	50	0	96.8	70 - 120	48.07	0.649	20	
1,1,1-Trichloroethane	53.9	1.0	50	0	108	70 - 130	53.93	0.0482	20	
1,1,2,2-Tetrachloroethane	44.05	1.0	50	0	88.1	70 - 123	42.99	2.43	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	58.59	1.0	50	0	117	70 - 130	59.89	2.18	20	
1,1,2-Trichloroethane	48.01	1.0	50	0	96.0	70 - 117	47.09	1.92	20	
1,1-Dichloroethane	49.44	1.0	50	0	98.9	70 - 127	49.21	0.46	20	
1,1-Dichloroethene	56.19	1.0	50	0	112	70 - 130	57	1.43	20	
1,1-Dichloropropene	46.98	1.0	50	0	94.0	70 - 129	47.16	0.366	20	
1,2,3-Trichlorobenzene	40.13	1.0	50	0	80.3	70 - 130	39.17	2.43	20	
1,2,3-Trichloropropane	52.55	1.0	50	0	105	70 - 130	52.41	0.269	20	
1,2,4-Trichlorobenzene	38.58	1.0	50	0	77.2	70 - 125	38.68	0.269	20	
1,2,4-Trimethylbenzene	52.13	1.0	50	0	104	70 - 125	51.55	1.13	20	
1,2-Dibromo-3-chloropropane	48.78	1.0	50	0	97.6	70 - 130	46.7	4.34	20	
1,2-Dibromoethane	50.31	1.0	50	0	101	70 - 124	49.09	2.45	20	
1,2-Dichlorobenzene	43.39	1.0	50	0	86.8	70 - 115	43.23	0.356	20	
1,2-Dichloroethane	49.16	1.0	50	0	98.3	70 - 127	50.24	2.17	20	
1,2-Dichloropropane	47.68	1.0	50	0	95.4	70 - 122	48.36	1.4	20	
1,3,5-Trimethylbenzene	43.95	1.0	50	0	87.9	70 - 126	43.58	0.852	20	
1,3-Dichlorobenzene	41.83	1.0	50	0	83.7	70 - 119	42.12	0.709	20	
1,3-Dichloropropane	48.75	1.0	50	0	97.5	70 - 121	47.93	1.68	20	
1,4-Dichlorobenzene	40.71	1.0	50	0	81.4	70 - 114	40.56	0.37	20	
2,2-Dichloropropane	53.15	1.0	50	0	106	70 - 130	54.15	1.87	20	
2-Butanone	97.63	2.0	100	6.139	91.5	70 - 130	95.33	2.38	20	
2-Chlorotoluene	50.47	1.0	50	0	101	70 - 130	50.57	0.203	20	
2-Hexanone	108.8	2.0	100	0	109	70 - 130	104.3	4.28	20	
4-Chlorotoluene	49.72	1.0	50	0	99.4	70 - 130	50.38	1.32	20	
4-Isopropyltoluene	45.8	1.0	50	0	91.6	70 - 130	45.88	0.18	20	
4-Methyl-2-pentanone	106.2	2.0	100	0	106	70 - 130	101.9	4.14	20	
Acetone	100.1	2.0	100	11.45	88.7	70 - 130	98	2.13	20	
Benzene	48.17	1.0	50	0	96.3	70 - 127	48.28	0.229	20	
Bromobenzene	43.62	1.0	50	0	87.2	70 - 115	43.82	0.452	20	
Bromochloromethane	51.79	1.0	50	0	104	70 - 127	52.49	1.34	20	
Bromodichloromethane	48.76	1.0	50	0	97.5	70 - 124	49.34	1.2	20	
Bromoform	48.94	1.0	50	0	97.9	70 - 129	48.34	1.24	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315767 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18050260-01MSD** Units: **ug/L** Analysis Date: **07-May-2018 15:12**
Client ID: Run ID: **VOA2_315767** SeqNo: **4550801** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	27.99	1.0	50	0	56.0	70 - 130	27.84	0.544	20	S
Carbon disulfide	105.5	2.0	100	0	105	70 - 130	106.4	0.885	20	
Carbon tetrachloride	49.89	1.0	50	0	99.8	70 - 130	50.16	0.535	20	
Chlorobenzene	46.46	1.0	50	0	92.9	70 - 114	46.19	0.575	20	
Chloroethane	49.3	1.0	50	0	98.6	70 - 130	49.99	1.4	20	
Chloroform	48.7	1.0	50	0	97.4	70 - 125	48.69	0.0111	20	
Chloromethane	46.37	1.0	50	0	92.7	70 - 130	48.23	3.93	20	
cis-1,2-Dichloroethene	54.35	1.0	50	3.843	101	70 - 128	54.02	0.601	20	
cis-1,3-Dichloropropene	50.92	1.0	50	0	102	70 - 125	51.99	2.07	20	
Dibromochloromethane	49.39	1.0	50	0	98.8	70 - 124	49.03	0.743	20	
Dibromomethane	51.84	1.0	50	0	104	70 - 124	51.26	1.12	20	
Dichlorodifluoromethane	52.97	1.0	50	0	106	70 - 130	53.77	1.49	20	
Ethylbenzene	46.59	1.0	50	0	93.2	70 - 124	47.26	1.42	20	
Hexachlorobutadiene	43.05	1.0	50	0	86.1	70 - 130	41.83	2.86	20	
Isopropylbenzene	49.1	1.0	50	0	98.2	70 - 130	49.52	0.852	20	
m,p-Xylene	113	2.0	100	0	113	70 - 130	113.8	0.749	20	
Methylene chloride	46.42	2.0	50	0	92.8	70 - 128	45.95	1.02	20	
Naphthalene	44.27	1.0	50	0	88.5	70 - 130	42.51	4.06	20	
n-Butylbenzene	45.99	1.0	50	0	92.0	70 - 130	46.03	0.0724	20	
n-Propylbenzene	44.76	1.0	50	0	89.5	70 - 130	44.77	0.0215	20	
o-Xylene	47.66	1.0	50	0	95.3	70 - 124	47.58	0.168	20	
sec-Butylbenzene	46.4	1.0	50	0	92.8	70 - 130	46.61	0.46	20	
Styrene	46.34	1.0	50	0	92.7	70 - 130	46.55	0.461	20	
tert-Butylbenzene	46.44	1.0	50	0	92.9	70 - 130	46.42	0.035	20	
Tetrachloroethene	50.15	1.0	50	0	100	70 - 130	49.74	0.815	20	
Toluene	46.89	1.0	50	0.3202	93.1	70 - 123	46.9	0.0175	20	
trans-1,2-Dichloroethene	53.97	1.0	50	0	108	70 - 130	55.8	3.34	20	
trans-1,3-Dichloropropene	52.61	1.0	50	0	105	70 - 121	52.22	0.741	20	
Trichloroethene	54.54	1.0	50	2.291	105	70 - 129	54.64	0.176	20	
Trichlorofluoromethane	56.92	1.0	50	0	114	70 - 130	56.7	0.395	20	
Vinyl chloride	52.38	1.0	50	0	105	70 - 130	53.38	1.88	20	
Surr: 1,2-Dichloroethane-d4	*53.35*	*1.0*	*50*	*0*	*107*	*70 - 126*	*52.66*	*1.3*	*20*	
Surr: 4-Bromofluorobenzene	*56.96*	*1.0*	*50*	*0*	*114*	*81 - 113*	*56.63*	*0.584*	*20*	S
Surr: Dibromofluoromethane	*50.54*	*1.0*	*50*	*0*	*101*	*77 - 123*	*50.76*	*0.447*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315767 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18050260-01MSD** Units: **ug/L** Analysis Date: **07-May-2018 15:12**
Client ID: Run ID: **VOA2_315767** SeqNo: **4550801** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*51.37*	*1.0*	*50*	*0*	*103*	*82 - 127*	*51.44*	*0.129*	*20*	

The following samples were analyzed in this batch:

HS18050286-01	HS18050286-02	HS18050286-03	HS18050286-04
HS18050286-05	HS18050286-06	HS18050286-07	HS18050286-08
HS18050286-09	HS18050286-10	HS18050286-11	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315785 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180507** Units: **ug/L** Analysis Date: **07-May-2018 23:21**
Client ID: Run ID: **VOA2_315785** SeqNo: **4550958** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315785 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180507** Units: **ug/L** Analysis Date: **07-May-2018 23:21**
Client ID: Run ID: **VOA2_315785** SeqNo: **4550958** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	0.50	1.0								U
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*48.46*	*1.0*	*50*	*0*	*96.9*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*54.47*	*1.0*	*50*	*0*	*109*	*82 - 115*				
Surr: Dibromofluoromethane	*53.32*	*1.0*	*50*	*0*	*107*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315785 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180507** Units: **ug/L** Analysis Date: **07-May-2018 23:21**
Client ID: Run ID: **VOA2_315785** SeqNo: **4550958** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*52.89*	*1.0*	*50*	*0*	*106*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315785 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180507** Units: **ug/L** Analysis Date: **07-May-2018 22:32**
Client ID: Run ID: **VOA2_315785** SeqNo: **4550956** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	50.4	1.0	50	0	101	77 - 118				
1,1,1-Trichloroethane	50.21	1.0	50	0	100	70 - 130				
1,1,2,2-Tetrachloroethane	45.25	1.0	50	0	90.5	70 - 120				
1,1,2-Trichlor-1,2,2-trifluoroethane	49.4	1.0	50	0	98.8	70 - 130				
1,1,2-Trichloroethane	50.44	1.0	50	0	101	77 - 113				
1,1-Dichloroethane	50.33	1.0	50	0	101	71 - 122				
1,1-Dichloroethene	52.14	1.0	50	0	104	70 - 130				
1,1-Dichloropropene	43.79	1.0	50	0	87.6	78 - 118				
1,2,3-Trichlorobenzene	46.95	1.0	50	0	93.9	70 - 130				
1,2,3-Trichloropropane	52.45	1.0	50	0	105	70 - 127				
1,2,4-Trichlorobenzene	46.98	1.0	50	0	94.0	77 - 126				
1,2,4-Trimethylbenzene	52.42	1.0	50	0	105	73 - 121				
1,2-Dibromo-3-chloropropane	51.22	1.0	50	0	102	70 - 130				
1,2-Dibromoethane	51.79	1.0	50	0	104	76 - 123				
1,2-Dichlorobenzene	47.21	1.0	50	0	94.4	77 - 113				
1,2-Dichloroethane	51.98	1.0	50	0	104	70 - 124				
1,2-Dichloropropane	50.1	1.0	50	0	100	72 - 119				
1,3,5-Trimethylbenzene	43.49	1.0	50	0	87.0	75 - 118				
1,3-Dichlorobenzene	46	1.0	50	0	92.0	78 - 118				
1,3-Dichloropropane	49.85	1.0	50	0	99.7	75 - 116				
1,4-Dichlorobenzene	45.59	1.0	50	0	91.2	79 - 113				
2,2-Dichloropropane	47.48	1.0	50	0	95.0	70 - 130				
2-Butanone	101	2.0	100	0	101	70 - 130				
2-Chlorotoluene	52.37	1.0	50	0	105	70 - 128				
2-Hexanone	96.53	2.0	100	0	96.5	70 - 130				
4-Chlorotoluene	53.19	1.0	50	0	106	74 - 126				
4-Isopropyltoluene	44.22	1.0	50	0	88.4	74 - 126				
4-Methyl-2-pentanone	94.79	2.0	100	0	94.8	70 - 130				
Acetone	104.5	2.0	100	0	105	70 - 130				
Benzene	48.99	1.0	50	0	98.0	74 - 120				
Bromobenzene	46.89	1.0	50	0	93.8	78 - 113				
Bromochloromethane	54.04	1.0	50	0	108	76 - 124				
Bromodichloromethane	51.72	1.0	50	0	103	74 - 122				
Bromoform	52.66	1.0	50	0	105	73 - 128				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315785 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180507** Units: **ug/L** Analysis Date: **07-May-2018 22:32**
Client ID: Run ID: **VOA2_315785** SeqNo: **4550956** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	41	1.0	50	0	82.0	70 - 130				
Carbon disulfide	98.43	2.0	100	0	98.4	70 - 130				
Carbon tetrachloride	45.87	1.0	50	0	91.7	71 - 125				
Chlorobenzene	47.46	1.0	50	0	94.9	76 - 113				
Chloroethane	55.71	1.0	50	0	111	70 - 130				
Chloroform	50.16	1.0	50	0	100	71 - 121				
Chloromethane	53.69	1.0	50	0	107	70 - 129				
cis-1,2-Dichloroethene	51.89	1.0	50	0	104	75 - 122				
cis-1,3-Dichloropropene	53.34	1.0	50	0	107	73 - 127				
Dibromochloromethane	52.1	1.0	50	0	104	77 - 122				
Dibromomethane	54.82	1.0	50	0	110	78 - 121				
Dichlorodifluoromethane	52.76	1.0	50	0	106	70 - 130				
Ethylbenzene	46.02	1.0	50	0	92.0	77 - 117				
Hexachlorobutadiene	43.68	1.0	50	0	87.4	70 - 130				
Isopropylbenzene	46.5	1.0	50	0	93.0	73 - 127				
m,p-Xylene	111.5	2.0	100	0	112	77 - 122				
Methylene chloride	47.19	2.0	50	0	94.4	70 - 127				
Naphthalene	48.25	1.0	50	0	96.5	70 - 130				
n-Butylbenzene	44.86	1.0	50	0	89.7	72 - 130				
n-Propylbenzene	43.93	1.0	50	0	87.9	73 - 124				
o-Xylene	47.86	1.0	50	0	95.7	75 - 119				
sec-Butylbenzene	43.98	1.0	50	0	88.0	73 - 128				
Styrene	49.91	1.0	50	0	99.8	72 - 126				
tert-Butylbenzene	44.02	1.0	50	0	88.0	73 - 124				
Tetrachloroethene	45.59	1.0	50	0	91.2	76 - 119				
Toluene	46.13	1.0	50	0	92.3	77 - 118				
trans-1,2-Dichloroethene	53.43	1.0	50	0	107	72 - 127				
trans-1,3-Dichloropropene	56.42	1.0	50	0	113	77 - 119				
Trichloroethene	51.26	1.0	50	0	103	77 - 121				
Trichlorofluoromethane	52.77	1.0	50	0	106	70 - 130				
Vinyl chloride	50.69	1.0	50	0	101	70 - 130				
Surr: 1,2-Dichloroethane-d4	*52.2*	*1.0*	*50*	*0*	*104*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*57.02*	*1.0*	*50*	*0*	*114*	*82 - 115*				
Surr: Dibromofluoromethane	*50.82*	*1.0*	*50*	*0*	*102*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315785 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180507** Units: **ug/L** Analysis Date: **07-May-2018 22:32**
Client ID: Run ID: **VOA2_315785** SeqNo: **4550956** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*52.02*	*1.0*	*50*	*0*	*104*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315785 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18050286-12MS** Units: **ug/L** Analysis Date: **08-May-2018 01:47**
Client ID: **67WW10-180503** Run ID: **VOA2_315785** SeqNo: **4550964** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	47.19	1.0	50	0	94.4	70 - 120				
1,1,1-Trichloroethane	50.98	1.0	50	0	102	70 - 130				
1,1,2,2-Tetrachloroethane	40.28	1.0	50	0	80.6	70 - 123				
1,1,2-Trichlor-1,2,2-trifluoroethane	51.01	1.0	50	0	102	70 - 130				
1,1,2-Trichloroethane	46.01	1.0	50	0	92.0	70 - 117				
1,1-Dichloroethane	48.05	1.0	50	0	96.1	70 - 127				
1,1-Dichloroethene	52.62	1.0	50	0	105	70 - 130				
1,1-Dichloropropene	44.49	1.0	50	0	89.0	70 - 129				
1,2,3-Trichlorobenzene	42.16	1.0	50	0	84.3	70 - 130				
1,2,3-Trichloropropane	52.61	1.0	50	0	105	70 - 130				
1,2,4-Trichlorobenzene	43.46	1.0	50	0	86.9	70 - 125				
1,2,4-Trimethylbenzene	51.65	1.0	50	0	103	70 - 125				
1,2-Dibromo-3-chloropropane	42.88	1.0	50	0	85.8	70 - 130				
1,2-Dibromoethane	46.56	1.0	50	0	93.1	70 - 124				
1,2-Dichlorobenzene	44.1	1.0	50	0	88.2	70 - 115				
1,2-Dichloroethane	46.32	1.0	50	0	92.6	70 - 127				
1,2-Dichloropropane	46.23	1.0	50	0	92.5	70 - 122				
1,3,5-Trimethylbenzene	43.54	1.0	50	0	87.1	70 - 126				
1,3-Dichlorobenzene	43.89	1.0	50	0	87.8	70 - 119				
1,3-Dichloropropane	45.6	1.0	50	0	91.2	70 - 121				
1,4-Dichlorobenzene	43.12	1.0	50	0	86.2	70 - 114				
2,2-Dichloropropane	44.34	1.0	50	0	88.7	70 - 130				
2-Butanone	86.57	2.0	100	0	86.6	70 - 130				
2-Chlorotoluene	51.61	1.0	50	0	103	70 - 130				
2-Hexanone	84.13	2.0	100	0	84.1	70 - 130				
4-Chlorotoluene	51	1.0	50	0	102	70 - 130				
4-Isopropyltoluene	44.87	1.0	50	0	89.7	70 - 130				
4-Methyl-2-pentanone	82.82	2.0	100	0	82.8	70 - 130				
Acetone	86.91	2.0	100	0	86.9	70 - 130				
Benzene	46.9	1.0	50	0	93.8	70 - 127				
Bromobenzene	44.17	1.0	50	0	88.3	70 - 115				
Bromochloromethane	49.63	1.0	50	0	99.3	70 - 127				
Bromodichloromethane	47.91	1.0	50	0	95.8	70 - 124				
Bromoform	46.53	1.0	50	0	93.1	70 - 129				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315785 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18050286-12MS** Units: **ug/L** Analysis Date: **08-May-2018 01:47**
Client ID: **67WW10-180503** Run ID: **VOA2_315785** SeqNo: **4550964** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	38.84	1.0	50	0	77.7	70 - 130				
Carbon disulfide	100.1	2.0	100	0	100	70 - 130				
Carbon tetrachloride	47.83	1.0	50	0	95.7	70 - 130				
Chlorobenzene	45.11	1.0	50	0	90.2	70 - 114				
Chloroethane	51.37	1.0	50	0	103	70 - 130				
Chloroform	46.74	1.0	50	0	93.5	70 - 125				
Chloromethane	45.41	1.0	50	0	90.8	70 - 130				
cis-1,2-Dichloroethene	49.19	1.0	50	0	98.4	70 - 128				
cis-1,3-Dichloropropene	49.24	1.0	50	0	98.5	70 - 125				
Dibromochloromethane	47.47	1.0	50	0	94.9	70 - 124				
Dibromomethane	49.01	1.0	50	0	98.0	70 - 124				
Dichlorodifluoromethane	44.26	1.0	50	0	88.5	70 - 130				
Ethylbenzene	45.6	1.0	50	0	91.2	70 - 124				
Hexachlorobutadiene	43.48	1.0	50	0	87.0	70 - 130				
Isopropylbenzene	47.55	1.0	50	0	95.1	70 - 130				
m,p-Xylene	111.7	2.0	100	0	112	70 - 130				
Methylene chloride	43.52	2.0	50	0	87.0	70 - 128				
Naphthalene	42.28	1.0	50	0	84.6	70 - 130				
n-Butylbenzene	45.76	1.0	50	0	91.5	70 - 130				
n-Propylbenzene	44.49	1.0	50	0	89.0	70 - 130				
o-Xylene	46.36	1.0	50	0	92.7	70 - 124				
sec-Butylbenzene	45.59	1.0	50	0	91.2	70 - 130				
Styrene	46.81	1.0	50	0	93.6	70 - 130				
tert-Butylbenzene	45.2	1.0	50	0	90.4	70 - 130				
Tetrachloroethene	47.73	1.0	50	0	95.5	70 - 130				
Toluene	45.17	1.0	50	0	90.3	70 - 123				
trans-1,2-Dichloroethene	53.25	1.0	50	0	107	70 - 130				
trans-1,3-Dichloropropene	49.27	1.0	50	0	98.5	70 - 121				
Trichloroethene	50.31	1.0	50	0	101	70 - 129				
Trichlorofluoromethane	52.97	1.0	50	0	106	70 - 130				
Vinyl chloride	49.5	1.0	50	0	99.0	70 - 130				
Surr: 1,2-Dichloroethane-d4	*52.31*	*1.0*	*50*	*0*	*105*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*56.34*	*1.0*	*50*	*0*	*113*	*81 - 113*				
Surr: Dibromofluoromethane	*50.39*	*1.0*	*50*	*0*	*101*	*77 - 123*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315785 **Instrument:** VOA2 **Method:** SW8260

MS Sample ID: **HS18050286-12MS** Units: **ug/L** Analysis Date: **08-May-2018 01:47**
Client ID: **67WW10-180503** Run ID: **VOA2_315785** SeqNo: **4550964** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*51.17*	*1.0*	*50*	*0*	*102*	*82 - 127*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315785 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18050286-12MSD** Units: **ug/L** Analysis Date: **08-May-2018 02:11**
Client ID: **67WW10-180503** Run ID: **VOA2_315785** SeqNo: **4550965** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	49.07	1.0	50	0	98.1	70 - 120	47.19	3.91	20	
1,1,1-Trichloroethane	50.79	1.0	50	0	102	70 - 130	50.98	0.368	20	
1,1,2,2-Tetrachloroethane	40.42	1.0	50	0	80.8	70 - 123	40.28	0.352	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	50.51	1.0	50	0	101	70 - 130	51.01	0.981	20	
1,1,2-Trichloroethane	45.88	1.0	50	0	91.8	70 - 117	46.01	0.277	20	
1,1-Dichloroethane	48.05	1.0	50	0	96.1	70 - 127	48.05	0.0128	20	
1,1-Dichloroethene	52.65	1.0	50	0	105	70 - 130	52.62	0.0681	20	
1,1-Dichloropropene	45.12	1.0	50	0	90.2	70 - 129	44.49	1.4	20	
1,2,3-Trichlorobenzene	42.09	1.0	50	0	84.2	70 - 130	42.16	0.165	20	
1,2,3-Trichloropropane	54.19	1.0	50	0	108	70 - 130	52.61	2.94	20	
1,2,4-Trichlorobenzene	44.81	1.0	50	0	89.6	70 - 125	43.46	3.06	20	
1,2,4-Trimethylbenzene	52	1.0	50	0	104	70 - 125	51.65	0.682	20	
1,2-Dibromo-3-chloropropane	44.31	1.0	50	0	88.6	70 - 130	42.88	3.3	20	
1,2-Dibromoethane	46.55	1.0	50	0	93.1	70 - 124	46.56	0.0193	20	
1,2-Dichlorobenzene	44.78	1.0	50	0	89.6	70 - 115	44.1	1.52	20	
1,2-Dichloroethane	47.8	1.0	50	0	95.6	70 - 127	46.32	3.15	20	
1,2-Dichloropropane	46.92	1.0	50	0	93.8	70 - 122	46.23	1.47	20	
1,3,5-Trimethylbenzene	44.13	1.0	50	0	88.3	70 - 126	43.54	1.33	20	
1,3-Dichlorobenzene	44.36	1.0	50	0	88.7	70 - 119	43.89	1.07	20	
1,3-Dichloropropane	46.3	1.0	50	0	92.6	70 - 121	45.6	1.54	20	
1,4-Dichlorobenzene	43.81	1.0	50	0	87.6	70 - 114	43.12	1.58	20	
2,2-Dichloropropane	44.13	1.0	50	0	88.3	70 - 130	44.34	0.467	20	
2-Butanone	85.31	2.0	100	0	85.3	70 - 130	86.57	1.47	20	
2-Chlorotoluene	51.7	1.0	50	0	103	70 - 130	51.61	0.175	20	
2-Hexanone	87.04	2.0	100	0	87.0	70 - 130	84.13	3.39	20	
4-Chlorotoluene	52.18	1.0	50	0	104	70 - 130	51	2.29	20	
4-Isopropyltoluene	45.39	1.0	50	0	90.8	70 - 130	44.87	1.15	20	
4-Methyl-2-pentanone	83.98	2.0	100	0	84.0	70 - 130	82.82	1.4	20	
Acetone	88.51	2.0	100	0	88.5	70 - 130	86.91	1.82	20	
Benzene	46.76	1.0	50	0	93.5	70 - 127	46.9	0.3	20	
Bromobenzene	43.98	1.0	50	0	88.0	70 - 115	44.17	0.438	20	
Bromochloromethane	49.77	1.0	50	0	99.5	70 - 127	49.63	0.291	20	
Bromodichloromethane	48.14	1.0	50	0	96.3	70 - 124	47.91	0.483	20	
Bromoform	48.03	1.0	50	0	96.1	70 - 129	46.53	3.17	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315785 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18050286-12MSD** Units: **ug/L** Analysis Date: **08-May-2018 02:11**
Client ID: **67WW10-180503** Run ID: **VOA2_315785** SeqNo: **4550965** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	38.84	1.0	50	0	77.7	70 - 130	38.84	0.00661	20	
Carbon disulfide	99.14	2.0	100	0	99.1	70 - 130	100.1	1.01	20	
Carbon tetrachloride	47.95	1.0	50	0	95.9	70 - 130	47.83	0.254	20	
Chlorobenzene	46.92	1.0	50	0	93.8	70 - 114	45.11	3.93	20	
Chloroethane	53.07	1.0	50	0	106	70 - 130	51.37	3.25	20	
Chloroform	47.26	1.0	50	0	94.5	70 - 125	46.74	1.13	20	
Chloromethane	46.74	1.0	50	0	93.5	70 - 130	45.41	2.89	20	
cis-1,2-Dichloroethene	48.01	1.0	50	0	96.0	70 - 128	49.19	2.42	20	
cis-1,3-Dichloropropene	48.69	1.0	50	0	97.4	70 - 125	49.24	1.13	20	
Dibromochloromethane	48.45	1.0	50	0	96.9	70 - 124	47.47	2.06	20	
Dibromomethane	48.27	1.0	50	0	96.5	70 - 124	49.01	1.52	20	
Dichlorodifluoromethane	42.98	1.0	50	0	86.0	70 - 130	44.26	2.94	20	
Ethylbenzene	47.08	1.0	50	0	94.2	70 - 124	45.6	3.2	20	
Hexachlorobutadiene	43.84	1.0	50	0	87.7	70 - 130	43.48	0.824	20	
Isopropylbenzene	48.59	1.0	50	0	97.2	70 - 130	47.55	2.16	20	
m,p-Xylene	113.8	2.0	100	0	114	70 - 130	111.7	1.84	20	
Methylene chloride	43.48	2.0	50	0	87.0	70 - 128	43.52	0.0958	20	
Naphthalene	44.13	1.0	50	0	88.3	70 - 130	42.28	4.3	20	
n-Butylbenzene	46.18	1.0	50	0	92.4	70 - 130	45.76	0.918	20	
n-Propylbenzene	45.05	1.0	50	0	90.1	70 - 130	44.49	1.25	20	
o-Xylene	47.8	1.0	50	0	95.6	70 - 124	46.36	3.07	20	
sec-Butylbenzene	46.31	1.0	50	0	92.6	70 - 130	45.59	1.57	20	
Styrene	48.13	1.0	50	0	96.3	70 - 130	46.81	2.78	20	
tert-Butylbenzene	45.11	1.0	50	0	90.2	70 - 130	45.2	0.208	20	
Tetrachloroethene	49.56	1.0	50	0	99.1	70 - 130	47.73	3.75	20	
Toluene	46.36	1.0	50	0	92.7	70 - 123	45.17	2.6	20	
trans-1,2-Dichloroethene	53.57	1.0	50	0	107	70 - 130	53.25	0.601	20	
trans-1,3-Dichloropropene	48.75	1.0	50	0	97.5	70 - 121	49.27	1.06	20	
Trichloroethene	50.21	1.0	50	0	100	70 - 129	50.31	0.183	20	
Trichlorofluoromethane	52.03	1.0	50	0	104	70 - 130	52.97	1.8	20	
Vinyl chloride	48.42	1.0	50	0	96.8	70 - 130	49.5	2.21	20	
Surr: 1,2-Dichloroethane-d4	*51.65*	*1.0*	*50*	*0*	*103*	*70 - 126*	*52.31*	*1.26*	*20*	
Surr: 4-Bromofluorobenzene	*57.48*	*1.0*	*50*	*0*	*115*	*81 - 113*	*56.34*	*2*	*20*	S
Surr: Dibromofluoromethane	*50.37*	*1.0*	*50*	*0*	*101*	*77 - 123*	*50.39*	*0.0294*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315785 **Instrument:** VOA2 **Method:** SW8260

MSD Sample ID: **HS18050286-12MSD** Units: **ug/L** Analysis Date: **08-May-2018 02:11**
Client ID: **67WW10-180503** Run ID: **VOA2_315785** SeqNo: **4550965** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*51.94*	*1.0*	*50*	*0*	*104*	*82 - 127*	*51.17*	*1.49*	*20*	

The following samples were analyzed in this batch: HS18050286-12 HS18050286-13 HS18050286-14

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315922 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180509** Units: **ug/L** Analysis Date: **09-May-2018 11:11**
Client ID: Run ID: **VOA2_315922** SeqNo: **4554182** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1-Dichloroethene	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*49.57*	*1.0*	*50*	*0*	*99.1*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*54.92*	*1.0*	*50*	*0*	*110*	*82 - 115*				
Surr: Dibromofluoromethane	*52.69*	*1.0*	*50*	*0*	*105*	*73 - 126*				
Surr: Toluene-d8	*53.26*	*1.0*	*50*	*0*	*107*	*81 - 120*				

LCS Sample ID: **VLCSW-180509** Units: **ug/L** Analysis Date: **09-May-2018 10:18**
Client ID: Run ID: **VOA2_315922** SeqNo: **4554180** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1-Dichloroethene	54.58	1.0	50	0	109	70 - 130				
Surr: 1,2-Dichloroethane-d4	*52.42*	*1.0*	*50*	*0*	*105*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*57.46*	*1.0*	*50*	*0*	*115*	*82 - 115*				
Surr: Dibromofluoromethane	*50.28*	*1.0*	*50*	*0*	*101*	*73 - 126*				
Surr: Toluene-d8	*51.28*	*1.0*	*50*	*0*	*103*	*81 - 120*				

MS Sample ID: **HS18050395-10MS** Units: **ug/L** Analysis Date: **09-May-2018 16:04**
Client ID: Run ID: **VOA2_315922** SeqNo: **4554194** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1-Dichloroethene	55.99	1.0	50	0	112	70 - 130				
Surr: 1,2-Dichloroethane-d4	*52.27*	*1.0*	*50*	*0*	*105*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*56.73*	*1.0*	*50*	*0*	*113*	*81 - 113*				S
Surr: Dibromofluoromethane	*49.9*	*1.0*	*50*	*0*	*99.8*	*77 - 123*				
Surr: Toluene-d8	*51.75*	*1.0*	*50*	*0*	*103*	*82 - 127*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315922 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18050395-10MSD** Units: **ug/L** Analysis Date: **09-May-2018 16:29**
Client ID: Run ID: **VOA2_315922** SeqNo: **4554195** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1-Dichloroethene	55.43	1.0	50	0	111	70 - 130	55.99	1.01	20	
Surr: 1,2-Dichloroethane-d4	*52.6*	*1.0*	*50*	*0*	*105*	*70 - 126*	*52.27*	*0.631*	*20*	
Surr: 4-Bromofluorobenzene	*57.57*	*1.0*	*50*	*0*	*115*	*81 - 113*	*56.73*	*1.46*	*20*	S
Surr: Dibromofluoromethane	*49.62*	*1.0*	*50*	*0*	*99.2*	*77 - 123*	*49.9*	*0.562*	*20*	
Surr: Toluene-d8	*51.71*	*1.0*	*50*	*0*	*103*	*82 - 127*	*51.75*	*0.0647*	*20*	

The following samples were analyzed in this batch: HS18050286-02 HS18050286-09

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: **HS18050286**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919 2016-2018	31-Jul-2018
Oklahoma	2017-088	31-Aug-2018
North Carolina	624-2018	31-Dec-2018
Louisiana	03087 2017-2018	30-Jun-2018
Arkansas	88-0356	27-Mar-2019
Kansas	E-10352 2017-218	31-Jul-2018

Date: 10-May-18

Sample Receipt Checklist

Client Name:	CBI-Houston	Date/Time Received:	**04-May-2018 08:35**
Work Order:	HS18050286	Received by:	**RPG**

Checklist completed by: *Pablo Marinez* eSignature — 5-May-2018 Date

Reviewed by: *RJ Modashia* eSignature — 7-May-2018 Date

Matrices: **WATER**

Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.6C/1.0C UC/C	IR # 25	
Cooler(s)/Kit(s):	24554		
Date/Time sample(s) sent to storage:	5/5/2018 14:50		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

APTIM

Page 1 of _____

COC ID: 67-MAY2018-GW-ALSHT-1805 | TURNAROUND TIME: normal | RUSH:

PROJECT/CLIENT INFO

Facility Name	Longhorn AAP		
Project Number	501032		
	LHAAP-67		
Address	1203-B East Grand Avenue		
	PMB 202		
City	Marshall	State	TX
Postal Code	75670	Country	USA
Phone Number	713.243.7264		
Project Manager	Praveen Srivastav		

LABORATORY

Lab Name	ALS Laboratories		
Lab Contact	RJ Modashia		
Email	RJ.Modashia@alsglobal.com		
Address	10450 Stancliff Rd., Suite 210		
City	Houston	State	TX
Postal Code	77099	Country	USA
Phone Number	281.575.2279 or 281.530.5656		

OTHER INFO

Email Invoice To	FedInvoices@CBIFederalServices.com		
Email Report To	Sharon.Pennington@CBIFederalServices.com		
Mail Reports To	Sharon Pennington		
Address	2410 Cherahala Blvd.		
City	Knoxville	State	TN
Postal Code	37932	Country	USA
Shipping Company			

SAMPLE DETAILS

ANALYSIS REQUESTED

Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	ANALYSIS	VOCs in Water by 8260B	Carbon Dioxide in Water by RSK175	Methane, Ethane, Ethene in Water by RSK175	Anions in Water by E300.0	TOC in Water by E415.1	TIC in Water by E415.1	Sulfide in Water by E376.1	Ferrous Iron in Water by SM3500-FE B
67wwl4-180502	LHAAP 67	19.90	20.15		WG	5/2/18	0815	3		X							
67ww15-180502	LHAAP 67	23.00	23.23		WG	5/2/18	0910	3		X							
67ww09-180502	LHAAP 67	20.95	21.21		WG	5/2/18	1000	3		X							
67wwll-180502	LHAAP 67	22.37	22.54		WG	5/2/18	1055	3		X							
67wwO5-180503	LHAAP 67	25.80	25.80		WG	5/3/18	0750	3		X							
67wwO2-180503	LHAAP 67	24.15	24.15		WG	5/3/18	0810	3		X							
67wwO2-180503-FD	LHAAP 67	24.15	24.15		WG	5/3/18	0810	3		X							
67wwO7-180503	LHAAP 67	24.25	24.25		WG	5/3/18	0830	3		X							
67wwO1-180503	LHAAP 67	24.00	24.00		WG	5/3/18	0850	3		X							
67wwl6I-180503	LHAAP 67	22.75	22.91		WG	5/3/18	0940	3		X							
67wwO9A-180503	LHAAP 67	25.78	26.01		WG	5/3/18	1035	3		X							
67ww10-180503	LHAAP 67	23.77	23.93		WG	5/3/18	1125	3		X							
67wwl2-180503	LHAAP 67	24.85	25.03		WG	5/3/18	1220	3		X							
TRip Blank						5/3/18		2		X							

HS18050286

Aptim Environmental & Infrastucture, Inc.

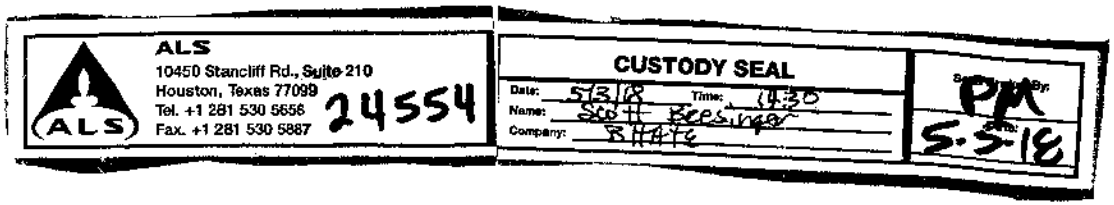
Longhorn Army Ammunition Plant - 67

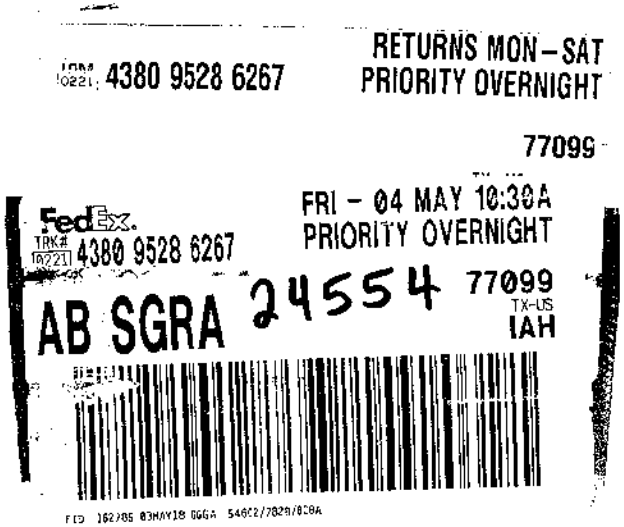
ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

Anions should include chloride, nitrate, nitrite, and sulfate.

RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Sweet Beeson / BHATE	5/3/18 1330	RC. J	5/4/18 08:35
		24554	VIC. 1-6-C #25 CIF-0-6

00912482


ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887
24554
CUSTODY SEAL
Date: 5/3/18
Time: 14:30
Name: Scott Beesinger
Company: Bhate
PM
5-5-18


TRK# 4380 9528 6267
RETURNS MON-SAT
PRIORITY OVERNIGHT
77099
FedEx.
TRK# 4380 9528 6267
FRI - 04 MAY 10:30A
PRIORITY OVERNIGHT
AB SGRA 24554 77099
TX-US
IAH

00912483

Volatile Organics Raw Data

Aptim Environmental Associates, Inc. Project:
LONGHORN ARMY AMMUNITION
PLANT - 67
ALS WO# HS18050286

FORM 2
WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050286

	CLIENT SAMPLE NO.	SMC1 #	SMC2 (TOL) #	SMC3 (DCE) #	OTHER #	TOT OUT
01	VLCSW-180507	100	103	104	114	0
02	VBLKW-180507	107	108	99	109	0
03	HS18050260-01	102	103	105	113	0
04	HS18050260-01	101	103	107	114	0
05	HS18050286-01	107	106	102	110	0
06	HS18050286-02	108	106	102	111	0
07	HS18050286-03	108	107	102	110	0
08	HS18050286-04	108	106	101	111	0
09	HS18050286-05	108	107	101	109	0
10	HS18050286-06	106	106	101	111	0
11	HS18050286-07	104	106	101	110	0
12	HS18050286-08	108	108	103	111	0
13	HS18050286-09	107	108	102	110	0
14	HS18050286-10	107	106	101	108	0
15	HS18050286-11	107	108	100	109	0
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						

		QC LIMITS
SMC1	= Dibromofluoromethane	(85-115)
SMC2 (TOL)	= Toluene-d8	(85-115)
SMC3 (DCE)	= 1,2-Dichloroethane-d4	(70-120)
OTHER	= 4-Bromofluorobenzene	(75-120)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

FORM 2
WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050286

	CLIENT SAMPLE NO.	SMC1 #	SMC2 (TOL) #	SMC3 (DCE) #	OTHER #	TOT OUT
01	VLCSW-180507	102	104	104	114	0
02	VBLKW-180507	107	106	97	109	0
03	HS18050286-14	108	105	100	108	0
04	HS18050286-12	106	106	100	111	0
05	HS18050286-12	101	102	105	113	0
06	HS18050286-12	101	104	103	115	0
07	HS18050286-13	108	108	100	109	0
08						
09						
10						
11						
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19						
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21						
22						
23						
24						
25						
26						
27						
28						

		QC LIMITS
SMC1	= Dibromofluoromethane	(85-115)
SMC2 (TOL)	= Toluene-d8	(85-115)
SMC3 (DCE)	= 1,2-Dichloroethane-d4	(70-120)
OTHER	= 4-Bromofluorobenzene	(75-120)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

FORM II VOA

FORM 2
WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050286

	CLIENT SAMPLE NO.	SMC1 #	SMC2 (TOL) #	SMC3 (DCE) #	OTHER #	TOT OUT
01	VLCSW-180509	100	102	105	115	0
02	VBLKW-180509	105	106	99	110	0
03	HS18050395-10	100	103	104	113	0
04	HS18050395-10	99	103	105	115	0
05	HS18050286-02	106	108	101	109	0
06	HS18050286-09	104	108	100	109	0
07						
08						
09						
10						
11						
12						
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22						
23						
24						
25						
26						
27						
28						

		QC LIMITS
SMC1	= Dibromofluoromethane	(85-115)
SMC2 (TOL)	= Toluene-d8	(85-115)
SMC3 (DCE)	= 1,2-Dichloroethane-d4	(70-120)
OTHER	= 4-Bromofluorobenzene	(75-120)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

FORM 3
WATER VOLATILE METHOD SPIKE RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050286

Matrix Spike - Sample No.: VSTD-ICV

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT ()	% REC #	QC. LIMITS REC.
Dichlorodifluoromethane	50.00	53.10	106	80-120
1,2-Dichloroethylene (t	100.00	104.13	104	80-120
Chloromethane	50.00	53.68	107	80-120
Vinyl Chloride	50.00	51.64	103	80-120
Bromomethane	50.00	41.07	82	80-120
Chloroethane	50.00	53.92	108	80-120
Trichlorofluoromethane	50.00	54.87	110	80-120
Acetone	100.00	102.09	102	80-120
1,1-Dichloroethene	50.00	52.72	105	80-120
Methylene Chloride	50.00	46.67	93	80-120
Methyl tert-butyl ether	50.00	48.16	96	80-120
Carbon Disulfide	100.00	100.30	100	80-120
trans-1,2-Dichloroethen	50.00	54.01	108	80-120
1,1-Dichloroethane	50.00	48.95	98	80-120
2-Butanone	100.00	100.51	100	80-120
2,2-Dichloropropane	50.00	51.46	103	80-120
cis-1,2-Dichloroethene	50.00	50.11	100	80-120
Chloroform	50.00	48.73	97	80-120
Bromochloromethane	50.00	52.79	106	80-120
1,1,1-Trichloroethane	50.00	51.43	103	80-120
1,1-Dichloropropene	50.00	45.16	90	80-120
1,2-Dichloroethane	50.00	49.32	99	80-120
Carbon Tetrachloride	50.00	48.06	96	80-120
Benzene	50.00	46.61	93	80-120
Trichloroethene	50.00	50.16	100	80-120
Bromodichloromethane	50.00	48.33	97	80-120
1,2-Dichloropropane	50.00	46.53	93	80-120
Dibromomethane	50.00	50.99	102	80-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM III VOA

FORM 3
WATER VOLATILE METHOD SPIKE RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050286

Matrix Spike - Sample No.: VSTD-ICV

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT ()	% REC #	QC. LIMITS REC.
4-Methyl-2-Pentanone	100.00	92.91	93	80-120
cis-1,3-Dichloropropene	50.00	51.55	103	80-120
Toluene	50.00	45.47	91	80-120
trans-1,3-Dichloroprope	50.00	54.22	108	80-120
2-Hexanone	100.00	97.97	98	80-120
1,1,2-Trichloroethane	50.00	47.82	96	80-120
1,3-Dichloropropane	50.00	48.02	96	80-120
Dibromochloromethane	50.00	49.92	100	80-120
Tetrachloroethene	50.00	49.00	98	80-120
1,2-Dibromoethane	50.00	50.23	100	80-120
1-Chlorohexane	50.00	54.93	110	80-120
Chlorobenzene	50.00	46.33	93	80-120
1,1,1,2-Tetrachloroetha	50.00	48.27	96	80-120
Ethylbenzene	50.00	47.18	94	80-120
m,p-Xylenes	100.00	112.80	113	80-120
o-Xylene	50.00	47.82	96	80-120
Styrene	50.00	49.10	98	80-120
Bromoform	50.00	50.99	102	80-120
Isopropylbenzene	50.00	48.27	96	80-120
1,1,2,2-Tetrachloroetha	50.00	45.64	91	80-120
1,2,3-Trichloropropane	50.00	52.24	104	80-120
n-Propylbenzene	50.00	47.44	95	80-120
Bromobenzene	50.00	48.25	96	80-120
1,3,5-Trimethylbenzene	50.00	46.77	94	80-120
2-Chlorotoluene	50.00	54.60	109	80-120
4-Chlorotoluene	50.00	55.63	111	80-120
tert-Butylbenzene	50.00	47.99	96	80-120
1,2,4-Trimethylbenzene	50.00	56.40	113	80-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER VOLATILE METHOD SPIKE RECOVERY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050286

Matrix Spike - Sample No.: VSTD-ICV

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE AMOUNT ()	% REC #	QC. LIMITS REC.
sec-Butylbenzene	50.00	50.01	100	80-120
p-Isopropyltoluene	50.00	49.43	99	80-120
1,3-Dichlorobenzene	50.00	48.13	96	80-120
1,4-Dichlorobenzene	50.00	47.22	94	80-120
n-Butylbenzene	50.00	51.85	104	80-120
1,2-Dichlorobenzene	50.00	48.27	96	80-120
1,2-Dibromo-3-Chloropro	50.00	52.00	104	80-120
1,2,4-Trichlorobenzene	50.00	52.35	105	80-120
Hexachlorobutadiene	50.00	52.20	104	80-120
Naphthalene	50.00	51.79	104	80-120
1,2,3-Trichlorobenzene	50.00	49.83	100	80-120
Methyl acetate	50.00	47.14	94	80-120
Freon TF	50.00	54.31	109	80-120
Methylcyclohexane	50.00	49.74	99	80-120
Cyclohexane	50.00	53.79	108	80-120
Xylenes (total)	150.00	160.63	107	80-120

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

_____

FORM III VOA

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050286

Lab File ID: D050401 BFB Injection Date: 05/04/18

Instrument ID: VOA2 BFB Injection Time: 1455

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.5
75	30.0 - 60.0% of mass 95	48.0
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.0
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	83.5
175	5.0 - 9.0% of mass 174	7.0 (8.4)1
176	95.0 - 101.0% of mass 174	79.9 (95.7)1
177	5.0 - 9.0% of mass 176	5.9 (7.3)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD00.5	VSTD00.5	D050402	05/04/18	1519
02	VSTD001	VSTD001	D050403	05/04/18	1543
03	VSTD002	VSTD002	D050404	05/04/18	1608
04	VSTD005	VSTD005	D050405	05/04/18	1632
05	VSTD010	VSTD010	D050406	05/04/18	1656
06	VSTD020	VSTD020	D050407	05/04/18	1721
07	VSTD050	VSTD050	D050408	05/04/18	1745
08	VSTD100	VSTD100	D050409	05/04/18	1809
09	VSTD200	VSTD200	D050410	05/04/18	1834
10					
11					
12					
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FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050286

Instrument ID: VOA2 Calibration Date(s): 05/04/18 05/04/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1519 1834

LAB FILE ID: RF0.5: D050402 RF1: D050403 RF2: D050404
RF5: D050405 RF10: D050406 RF20: D050407

COMPOUND	RF0.5	RF1	RF2	RF5	RF10	RF20
Iodomethane	908	1852	4199	13424	36689	95749
Dichlorodifluoromethane	811	2981	7390	16634	34343	71401
1,2-Dichloroethylene (total)	0.477	0.480	0.437	0.495	0.326	0.514
Chloromethane	4673	8950	15710	36344	63352	130241
tert-Amyl alcohol	0.040	0.041	0.038	0.043	0.038	0.044
Vinyl Chloride	0.566	0.640	0.620	0.642	0.631	0.702
Bromomethane	0.422	0.420	0.385	0.409	0.351	0.354
Chloroethane	826	2325	6397	11400	24091	55952
tert-Butyl ethyl ether	0.793	0.830	0.754	0.854	0.754	0.875
Trichlorofluoromethane	0.409	0.581	0.574	0.589	0.609	0.697
Acrolein	526	1199	3349	8739	16945	33060
Acetone	3867	5388	7902	14626	26679	49743
1,1-Dichloroethene	0.321	0.368	0.348	0.415	0.387	0.404
Isobutyl Alcohol	60	176	300	1867	3536	7038
Acetonitrile	0.067	0.070	0.066	0.055	0.058	0.064
Allyl Chloride	1.724	1.875	1.637	1.454	1.404	1.663
Acrylonitrile	0.168	0.218	0.216	0.267	0.175	0.236
Methylene Chloride	0.622	0.641	0.544	0.540	0.464	0.516
Methyl tert-butyl ether	1.528	1.675	1.388	1.520	1.347	1.508
Carbon Disulfide	0.923	0.899	0.845	0.877	0.821	0.915
trans-1,2-Dichloroethene	1429	3416	6251	16439	14477	65763
Vinyl Acetate	0.672	0.766	0.622	0.717	0.591	0.695
1,1-Dichloroethane	1.020	1.096	0.952	1.090	0.958	1.053
2-Butanone	0.234	0.264	0.225	0.283	0.250	0.286
Methacrylonitrile	0.672	0.668	0.554	0.668	0.583	0.650
2,2-Dichloropropane	0.565	0.670	0.691	0.723	0.665	0.754
cis-1,2-Dichloroethene	0.580	0.509	0.492	0.544	0.462	0.557
Chloroform	0.908	0.906	0.890	0.933	0.828	0.906
Bromochloromethane	0.240	0.241	0.216	0.275	0.242	0.266
tert-Amyl methyl ether	1.717	1.817	1.607	1.788	1.607	1.722
1,1,1-Trichloroethane	0.677	0.720	0.714	0.759	0.711	0.800
1,1-Dichloropropene	0.576	0.569	0.417	0.418	0.390	0.410
1,2-Dichloroethane	0.502	0.553	0.412	0.517	0.463	0.490
Carbon Tetrachloride	0.553	0.435	0.449	0.459	0.413	0.448
3,3-Dimethyl-1-butanol	0.034	0.033	0.028	0.032	0.031	0.036
Benzene	1.454	1.456	1.303	1.404	1.188	1.292
Trichloroethene	0.338	0.339	0.325	0.344	0.314	0.350
Bromodichloromethane	0.500	0.510	0.449	0.498	0.438	0.482
Methyl Methacrylate	0.603	0.596	0.549	0.618	0.561	0.641
2-Chloroethylvinyl ether	0.065	0.059	0.057	0.064	0.054	0.059
1,2-Dichloropropane	0.426	0.420	0.385	0.428	0.358	0.396
tert-Butyl formate	0.938	0.952	0.880	0.940	0.830	0.921
Dibromomethane	0.173	0.194	0.181	0.211	0.185	0.202
4-Methyl-2-Pentanone	0.521	0.508	0.461	0.493	0.425	0.478

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805028

Instrument ID: VOA2 Calibration Date(s): 05/04/18 05/04/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1519 1834

LAB FILE ID: RF0.5: D050402 RF1: D050403 RF2: D050404
RF5: D050405 RF10: D050406 RF20: D050407

COMPOUND	RF0.5	RF1	RF2	RF5	RF10	RF20
cis-1,3-Dichloropropene	0.512	0.502	0.478	0.572	0.499	0.554
1,3,5-Trichlorobenzene	1.173	1.011	0.942	1.305	0.993	1.155
Ethyl Methacrylate	4038	6033	11086	28787	50649	104310
Toluene	1.873	1.750	1.559	1.678	1.440	1.537
trans-1,3-Dichloropropene	0.348	0.431	0.378	0.479	0.408	0.461
2-Hexanone	0.309	0.302	0.275	0.310	0.262	0.301
1,1,2-Trichloroethane	0.294	0.328	0.291	0.316	0.274	0.289
1,3-Dichloropropane	0.616	0.619	0.562	0.621	0.551	0.587
Dibromochloromethane	0.432	0.432	0.405	0.465	0.402	0.437
Tetrachloroethene	0.363	0.305	0.311	0.312	0.290	0.315
1,2-Dibromoethane	0.366	0.367	0.341	0.396	0.336	0.378
1-Chlorohexane	7042	8884	5291	23114	41316	79441
Chlorobenzene	1.221	1.062	0.956	1.037	0.875	0.954
1,1,1,2-Tetrachloroethane	0.391	0.406	0.375	0.430	0.367	0.388
Ethylbenzene	0.662	0.572	0.505	0.558	0.477	0.514
m,p-Xylenes	8714	14801	28486	70246	125344	249353
o-Xylene	0.770	0.691	0.652	0.721	0.619	0.654
Styrene	1.154	1.060	1.058	1.186	1.007	1.086
Bromoform	0.270	0.321	0.286	0.321	0.285	0.320
Isopropylbenzene	1.809	1.752	1.516	1.680	1.496	1.636
1,1,2,2-Tetrachloroethane	1.249	1.257	1.127	1.254	1.030	1.134
Ethanol	0.050	0.054	0.032	0.044	0.042	0.047
1,2,3-Trichloropropane	5517	4425	6121	12511	23472	44805
trans-1,4-Dichloro-2-butene	308	721	2058	5862	10789	23370
n-Propylbenzene	4.670	4.367	3.905	4.332	3.679	3.989
Bromobenzene	1.148	1.054	1.034	1.135	0.926	1.009
1,3,5-Trimethylbenzene	3.665	3.191	2.986	3.384	2.789	3.016
2-Chlorotoluene	7021	12620	24838	60449	108687	221609
4-Chlorotoluene	7552	13276	25669	66016	121891	243997
tert-Butylbenzene	3.007	2.534	2.277	2.752	2.289	2.511
1,2,4-Trimethylbenzene	8310	14136	27909	72111	127826	260489
sec-Butylbenzene	3.744	3.179	3.083	3.717	3.162	3.452
p-Isopropyltoluene	3.256	2.780	2.637	3.168	2.640	2.896
1,3-Dichlorobenzene	2.147	1.820	1.698	1.838	1.549	1.710
1,4-Dichlorobenzene	2.214	1.797	1.579	1.719	1.481	1.607
n-Butylbenzene	2.358	1.972	1.802	2.510	1.995	2.221
1,2-Dichlorobenzene	1.792	1.720	1.603	1.806	1.534	1.673
1,2-Dibromo-3-Chloropropane	0.158	0.152	0.162	0.191	0.173	0.192
1,2,4-Trichlorobenzene	643	1481	4916	18861	35798	79809
Hexachlorobutadiene	1253	1556	3032	10646	16436	35809
Naphthalene	1615	1823	4856	35272	83218	198251
1,2,3-Trichlorobenzene	411	946	3702	16133	30812	66775
Methyl acetate	0.627	0.677	0.595	0.665	0.529	0.596
Freon TF	1062	2610	4698	13149	30530	61420

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805028

Instrument ID: VOA2 Calibration Date(s): 05/04/18 05/04/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1519 1834

LAB FILE ID: RF0.5: D050402 RF1: D050403 RF2: D050404
RF5: D050405 RF10: D050406 RF20: D050407

COMPOUND	RF0.5	RF1	RF2	RF5	RF10	RF20
1,2,3-Trimethylbenzene	3.625	2.970	2.800	3.095	2.586	2.862
Methylcyclohexane	0.494	0.445	0.404	0.436	0.435	0.477
1,4-Dioxane	113	690	1405	3801	6381	13691
n-Butanol	0.021	0.023	0.015	0.019	0.016	0.019
Methyl Acrylate	0.740	0.808	0.754	0.858	0.836	0.940
Ethyl Acrylate	1.553	1.469	1.439	1.524	1.503	1.659
n-Hexane	0.522	0.576	0.555	0.552	0.588	0.672
Cyclohexane	0.786	0.777	0.816	0.752	0.848	0.957
Isopropyl alcohol	0.042	0.041	0.037	0.040	0.035	0.038
Tert-butyl alcohol	0.063	0.066	0.048	0.063	0.053	0.064
Xylenes (total)	0.743	0.646	0.588	0.643	0.543	0.577
Propionitrile	0.178	0.183	0.167	0.170	0.157	0.184
2-Nitropropane	1.339	1.318	1.220	1.324	1.167	1.340
Ethyl Acetate	1.334	1.378	1.196	1.196	1.179	1.324
Diethyl ether	0.801	1.023	0.886	0.962	0.876	0.949
Tetrahydrofuran	0.181	0.230	0.200	0.219	0.192	0.212
4-Methyl-2-pentanol	0.100	0.101	0.091	0.105	0.090	0.106
Diisopropyl ether	2.277	2.461	1.971	2.288	2.021	2.230
2-Methylnaphthalene	948	734	1017	2313	4532	17472
Dichlorofluoromethane	0.956	1.036	0.892	0.964	0.856	0.983
1-Methylnaphthalene	844	914	1005	2396	4903	22016
Isobutylene		0.441	0.446	0.518	0.499	0.596
Dibromofluoromethane		4558	7916	18421	34934	66765
Toluene-d8		23273	34734	74973	138297	257970
1,2-Dichloroethane-d4	4399	5880	9916	23445	43519	86791
4-Bromofluorobenzene	11709	9609	13070	28190	50489	96704

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805028

Instrument ID: VOA2 Calibration Date(s): 05/04/18 05/04/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1519 1834

LAB FILE ID: RF50: D050408 RF100: D050409 RF200: D050410

COMPOUND	RF50	RF100	RF200
Iodomethane	287361	593037	1249302
Dichlorodifluoromethane	187813	343934	702772
1,2-Dichloroethylene (total)	0.511	0.443	0.441
Chloromethane	317456	602360	1207423
tert-Amyl alcohol	0.044	0.042	0.039
Vinyl Chloride	0.679	0.566	0.565
Bromomethane	0.339	0.273	
Chloroethane	136214	254833	499449
tert-Butyl ethyl ether	0.886	0.838	0.786
Trichlorofluoromethane	0.706	0.571	0.576
Acrolein	84761	191202	381410
Acetone	125590	250202	492850
1,1-Dichloroethene	0.432	0.360	0.363
Isobutyl Alcohol	17826	39310	
Acetonitrile	0.068	0.063	0.062
Allyl Chloride	1.762	1.566	1.557
Acrylonitrile	0.259	0.227	0.231
Methylene Chloride	0.522	0.458	0.448
Methyl tert-butyl ether	1.474	1.287	1.250
Carbon Disulfide	0.924	0.784	0.792
trans-1,2-Dichloroethene	164665	314877	630396
Vinyl Acetate	0.634	0.556	0.539
1,1-Dichloroethane	1.049	0.914	0.903
2-Butanone	0.284	0.263	0.250
Methacrylonitrile	0.641	0.581	0.556
2,2-Dichloropropane	0.758	0.643	0.643
cis-1,2-Dichloroethene	0.552	0.480	0.474
Chloroform	0.897	0.774	0.754
Bromochloromethane	0.278	0.246	0.241
tert-Amyl methyl ether	1.690	1.498	1.416
1,1,1-Trichloroethane	0.812	0.679	0.672
1,1-Dichloropropene	0.411	0.347	0.342
1,2-Dichloroethane	0.475	0.419	0.413
Carbon Tetrachloride	0.436	0.371	0.379
3,3-Dimethyl-1-butanol	0.038	0.034	0.032
Benzene	1.272	1.064	1.004
Trichloroethene	0.353	0.303	0.292
Bromodichloromethane	0.474	0.409	0.394
Methyl Methacrylate	0.636	0.566	0.544
2-Chloroethylvinyl ether	0.057	0.049	0.049
1,2-Dichloropropane	0.381	0.323	0.315
tert-Butyl formate	0.883	0.767	0.769
Dibromomethane	0.208	0.181	0.178
4-Methyl-2-Pentanone	0.459	0.403	0.381

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805028

Instrument ID: VOA2 Calibration Date(s): 05/04/18 05/04/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1519 1834

LAB FILE ID: RF50: D050408 RF100: D050409 RF200: D050410

COMPOUND	RF50	RF100	RF200
cis-1,3-Dichloropropene	0.563	0.488	0.466
1,3,5-Trichlorobenzene	1.148	1.040	1.026
Ethyl Methacrylate	266010	516544	982185
Toluene	1.488	1.249	1.171
trans-1,3-Dichloropropene	0.488	0.433	0.420
2-Hexanone	0.300	0.269	0.258
1,1,2-Trichloroethane	0.293	0.252	0.246
1,3-Dichloropropane	0.572	0.507	0.490
Dibromochloromethane	0.438	0.388	0.381
Tetrachloroethene	0.317	0.267	0.266
1,2-Dibromoethane	0.374	0.336	0.329
1-Chlorohexane	198340	370336	722126
Chlorobenzene	0.936	0.806	0.755
1,1,1,2-Tetrachloroethane	0.389	0.340	0.329
Ethylbenzene	0.508	0.441	0.422
m,p-Xylenes	611125	1138513	2087186
o-Xylene	0.654	0.562	0.531
Styrene	1.062	0.910	0.854
Bromoform	0.318	0.286	0.279
Isopropylbenzene	1.619	1.346	1.238
1,1,2,2-Tetrachloroethane	1.072	0.933	0.915
Ethanol	0.046	0.041	0.038
1,2,3-Trichloropropane	109708	210995	405365
trans-1,4-Dichloro-2-butene	64084	133141	273122
n-Propylbenzene	3.914	3.290	3.150
Bromobenzene	1.002	0.870	0.854
1,3,5-Trimethylbenzene	2.913	2.437	2.300
2-Chlorotoluene	552517	1043252	1946835
4-Chlorotoluene	609251	1137519	2097579
tert-Butylbenzene	2.532	2.100	2.047
1,2,4-Trimethylbenzene	648084	1208466	2216630
sec-Butylbenzene	3.424	2.872	2.768
p-Isopropyltoluene	2.883	2.450	2.371
1,3-Dichlorobenzene	1.699	1.485	1.449
1,4-Dichlorobenzene	1.625	1.438	1.419
n-Butylbenzene	2.281	1.950	1.932
1,2-Dichlorobenzene	1.604	1.381	1.332
1,2-Dibromo-3-Chloropropane	0.199	0.189	0.194
1,2,4-Trichlorobenzene	211499	444824	861637
Hexachlorobutadiene	92968	187228	376631
Naphthalene	525810	1071893	2071564
1,2,3-Trichlorobenzene	177731	381509	758156
Methyl acetate	0.605	0.556	0.543
Freon TF	150866	279713	561005

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805028

Instrument ID: VOA2 Calibration Date(s): 05/04/18 05/04/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1519 1834

LAB FILE ID: RF50: D050408 RF100: D050409 RF200: D050410

COMPOUND	RF50	RF100	RF200
1,2,3-Trimethylbenzene	2.788	2.383	2.294
Methylcyclohexane	0.477	0.392	0.391
1,4-Dioxane	35743	71709	138351
n-Butanol	0.018	0.016	0.016
Methyl Acrylate	0.947	0.848	0.816
Ethyl Acrylate	1.654	1.435	1.404
n-Hexane	0.708	0.594	0.612
Cyclohexane	0.956	0.794	0.793
Isopropyl alcohol	0.038	0.035	0.036
Tert-butyl alcohol	0.065	0.059	0.056
Xylenes (total)	0.568	0.474	
Propionitrile	0.190	0.169	0.160
2-Nitropropane	1.297	1.135	1.062
Ethyl Acetate	1.291	1.113	1.078
Diethyl ether	0.913	0.806	0.775
Tetrahydrofuran	0.209	0.183	0.177
4-Methyl-2-pentanol	0.105	0.088	0.078
Diisopropyl ether	2.179	1.888	1.812
2-Methylnaphthalene	147779	411151	895104
Dichlorofluoromethane	0.968	0.820	0.798
1-Methylnaphthalene	162419	403943	838915
Isobutylene	0.544	0.423	0.405
Dibromofluoromethane	161085	308649	584635
Toluene-d8	611504	1145767	
1,2-Dichloroethane-d4	212338	423867	804250
4-Bromofluorobenzene	235072	459019	852556

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805028

Instrument ID: VOA2 Calibration Date(s): 05/04/18 05/04/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1519 1834

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2	MAX %RSD OR R^2
Iodomethane	LINR	8.189e-002	2.46335476		0.9991102	0.9900000
Dichlorodifluoromethane	LINR	-1.92e-002	2.19991391		0.9977154	0.9900000
1,2-Dichloroethylene (total)	AVRG		0.45816206		12.572	15.000
Chloromethane	LINR	-3.53e-002	1.28409200		0.9984324	0.9900000
tert-Amyl alcohol	AVRG		4.095e-002		6.040	20.000
Vinyl Chloride	AVRG		0.62359143		8.051	15.000
Bromomethane	AVRG		0.36929500		13.707	15.000
Chloroethane	LINR	-3.23e-002	3.07923819		0.9973153	0.9900000
tert-Butyl ethyl ether	AVRG		0.81895199		6.040	20.000
Trichlorofluoromethane	AVRG		0.59017758		14.561	15.000
Acrolein	LINR	-7.83e-003	8.11796688		0.9995181	0.9900000
Acetone	LINR	-7.42e-002	6.29263964		0.9993250	0.9900000
1,1-Dichloroethene	AVRG		0.37751366		9.310	15.000
Isobutyl Alcohol	LINR	0.22430274	391.223339		0.9998638	0.9900000
Acetonitrile	AVRG		6.383e-002		7.570	15.000
Allyl Chloride	AVRG		1.62703303		9.186	15.000
Acrylonitrile	AVRG		0.22187087		14.951	15.000
Methylene Chloride	AVRG		0.52836197		12.945	15.000
Methyl tert-butyl ether	AVRG		1.44180586		9.364	15.000
Carbon Disulfide	AVRG		0.86450338		6.448	15.000
trans-1,2-Dichloroethene	LINR	-6.6e-003	2.43638553		0.9974880	0.9900000
Vinyl Acetate	AVRG		0.64364705		11.757	15.000
1,1-Dichloroethane	AVRG		1.00417451		7.347	15.000
2-Butanone	AVRG		0.25994514		8.409	15.000
Methacrylonitrile	AVRG		0.61913674		8.056	15.000
2,2-Dichloropropane	AVRG		0.67900374		9.012	15.000
cis-1,2-Dichloroethene	AVRG		0.51662595		8.236	15.000
Chloroform	AVRG		0.86628053		7.472	15.000
Bromochloromethane	AVRG		0.24932446		7.949	15.000
tert-Amyl methyl ether	AVRG		1.65126939		8.010	20.000
1,1,1-Trichloroethane	AVRG		0.72725901		7.172	15.000
1,1-Dichloropropene	AVRG		0.43095089		19.750	15.000
1,2-Dichloroethane	AVRG		0.47160607		10.508	15.000
Carbon Tetrachloride	AVRG		0.43824169		12.077	15.000
3,3-Dimethyl-1-butanol	AVRG		3.327e-002		8.454	20.000
Benzene	AVRG		1.27097369		12.689	15.000
Trichloroethene	AVRG		0.32898077		6.578	15.000
Bromodichloromethane	AVRG		0.46161921		8.953	15.000
Methyl Methacrylate	AVRG		0.59079374		6.249	15.000
2-Chloroethylvinyl ether	AVRG		5.706e-002		9.715	15.000
1,2-Dichloropropane	AVRG		0.38141520		11.039	15.000
tert-Butyl formate	AVRG		0.87542044		8.216	20.000
Dibromomethane	AVRG		0.19042867		7.347	15.000
4-Methyl-2-Pentanone	AVRG		0.45881731		10.380	15.000

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805028

Instrument ID: VOA2 Calibration Date(s): 05/04/18 05/04/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1519 1834

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2	MAX %RSD OR R^2
cis-1,3-Dichloropropene	AVRG		0.51508472		7.544	15.000
1,3,5-Trichlorobenzene	AVRG		1.08812993		10.523	20.000
Ethyl Methacrylate	LINR	-4.54e-002	2.48619322		0.9973218	0.9900000
Toluene	AVRG		1.52725800		14.767	15.000
trans-1,3-Dichloropropene	AVRG		0.42746512		10.662	15.000
2-Hexanone	AVRG		0.28750947		7.279	15.000
1,1,2-Trichloroethane	AVRG		0.28686074		9.303	15.000
1,3-Dichloropropane	AVRG		0.56948690		8.359	15.000
Dibromochloromethane	AVRG		0.42004436		6.527	15.000
Tetrachloroethene	AVRG		0.30523513		9.588	15.000
1,2-Dibromoethane	AVRG		0.35811597		6.487	15.000
1-Chlorohexane	LINR	-5.88e-002	3.40929522		0.9971719	0.9900000
Chlorobenzene	AVRG		0.95571951		14.713	15.000
1,1,1,2-Tetrachloroethane	AVRG		0.37945450		8.252	15.000
Ethylbenzene	AVRG		0.51791421		14.064	15.000
m,p-Xylenes	LINR	-0.1344974	2.04592126		0.9954426	0.9900000
o-Xylene	AVRG		0.65039936		11.401	15.000
Styrene	AVRG		1.04192927		10.200	15.000
Bromoform	AVRG		0.29840970		7.039	15.000
Isopropylbenzene	AVRG		1.56586944		11.898	15.000
1,1,2,2-Tetrachloroethane	AVRG		1.10788977		11.932	15.000
Ethanol	AVRG		4.38e-002		14.407	15.000
1,2,3-Trichloropropane	LINR	-5.21e-002	2.29870153		0.9990095	0.9900000
trans-1,4-Dichloro-2-butene	LINR	1.543e-002	7.89416251		0.9995944	0.9900000
n-Propylbenzene	AVRG		3.92184130		12.699	15.000
Bromobenzene	AVRG		1.00360302		10.434	15.000
1,3,5-Trimethylbenzene	AVRG		2.96468255		14.482	15.000
2-Chlorotoluene	LINR	-4.73e-002	0.47352840		0.9978258	0.9900000
4-Chlorotoluene	LINR	-5.33e-002	0.43852809		0.9971166	0.9900000
tert-Butylbenzene	AVRG		2.44993705		12.577	15.000
1,2,4-Trimethylbenzene	LINR	-5.59e-002	0.41467645		0.9968763	0.9900000
sec-Butylbenzene	AVRG		3.26693980		10.529	15.000
p-Isopropyltoluene	AVRG		2.78673905		10.739	15.000
1,3-Dichlorobenzene	AVRG		1.71066117		12.475	15.000
1,4-Dichlorobenzene	AVRG		1.65308224		14.795	15.000
n-Butylbenzene	AVRG		2.11326574		11.193	15.000
1,2-Dichlorobenzene	AVRG		1.60513122		10.398	15.000
1,2-Dibromo-3-Chloropropane	AVRG		0.17885592		9.980	15.000
1,2,4-Trichlorobenzene	LINR	8.689e-003	1.06786014		0.9998126	0.9900000
Hexachlorobutadiene	LINR	-5.59e-004	2.46565106		0.9992458	0.9900000
Naphthalene	LINR	1.026e-002	0.44283851		0.9994513	0.9900000
1,2,3-Trichlorobenzene	LINR	2.046e-002	1.21724769		0.9997504	0.9900000
Methyl acetate	AVRG		0.59921227		8.570	15.000
Freon TF	LINR	-2.9e-002	2.75277887		0.9976496	0.9900000

FORM VI VOA

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805028

Instrument ID: VOA2 Calibration Date(s): 05/04/18 05/04/18

Column: DB624 ID: 0.18 (mm) Calibration Time(s): 1519 1834

COMPOUND	CURVE	COEFFICENTS A0	A1	A2	%RSD OR R^2	MAX %RSD OR R^2
1,2,3-Trimethylbenzene	AVRG		2.82248193		14.128	15.000
Methylcyclohexane	AVRG		0.43895621		8.674	15.000
1,4-Dioxane	LINR	-0.4032007	221.786386		0.9987196	0.9900000
n-Butanol	AVRG		1.823e-002		14.617	15.000
Methyl Acrylate	AVRG		0.83874099		8.510	15.000
Ethyl Acrylate	AVRG		1.51559692		6.104	15.000
n-Hexane	AVRG		0.59755237		9.898	15.000
Cyclohexane	AVRG		0.83108987		9.102	15.000
Isopropyl alcohol	AVRG		3.801e-002		6.909	15.000
Tert-butyl alcohol	AVRG		5.976e-002		10.202	15.000
Xylenes (total)	AVRG		0.59780977		13.452	15.000
Propionitrile	AVRG		0.17328970		6.503	15.000
2-Nitropropane	AVRG		1.24476677		8.241	15.000
Ethyl Acetate	AVRG		1.23229311		8.458	15.000
Diethyl ether	AVRG		0.88790529		9.365	15.000
Tetrahydrofuran	AVRG		0.20038573		9.298	15.000
4-Methyl-2-pentanol	AVRG		9.614e-002		10.060	15.000
Diisopropyl ether	AVRG		2.12537869		10.061	15.000
2-Methylnaphthalene	2ORDR	0.10631846	1.25517173	-6.55e-002	0.9948166	0.9900000
Dichlorofluoromethane	AVRG		0.91934791		8.824	15.000
1-Methylnaphthalene	2ORDR	9.678e-002	1.22233030	-4.15e-002	0.9959842	0.9900000
Isobutylene	AVRG		0.48384642		13.701	15.000
Dibromofluoromethane	2ORDR	-1.57e-002	2.22255691	0.28885730	0.9993429	0.9900000
Toluene-d8	2ORDR	2.428e-003	0.64565832	0.14421290	0.9996227	0.9900000
1,2-Dichloroethane-d4	LINR	-4.11e-002	1.91112683		0.9982824	0.9900000
4-Bromofluorobenzene	2ORDR	-2.62e-002	2.14770503	0.25219752	0.9996603	0.9900000

FORM VI VOA

MSVOA02 -Logbook

Batch: 31755
Date: 05-04-2018
Method: 8260
Comments:

Analyst: Anjana Poluri
Reviewer:
Laboratory: Houston

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
1	BFB	TUNE	05-04-2018 02:55 pm	1.00	50 mL	50 mL	D050401.D	Liquid	Y	NA
	Auto find/purged									
2	VSTD00.5	ICAL1	05-04-2018 03:19 pm	1.00	50 mL	50 mL	D050402.D	Liquid	Y	NA
	0.5 uL cal std/250 ml DI									
3	VSTD001	ICAL2	05-04-2018 03:43 pm	1.00	50 mL	50 mL	D050403.D	Liquid	Y	NA
	1 uL cal std/250 ml DI									
4	VSTD002	ICAL3	05-04-2018 04:08 pm	1.00	50 mL	50 mL	D050404.D	Liquid	Y	NA
	2 uL cal std/250 ml DI									
5	VSTD005	ICAL4	05-04-2018 04:32 pm	1.00	50 mL	50 mL	D050405.D	Liquid	Y	NA
	5 uL cal std/250 ml DI									
6	VSTD010	ICAL5	05-04-2018 04:56 pm	1.00	50 mL	50 mL	D050406.D	Liquid	Y	NA
	2 uL cal std/50 ml DI									
7	VSTD020	ICAL6	05-04-2018 05:21 pm	1.00	50 mL	50 mL	D050407.D	Liquid	Y	NA
	4 uL cal std/50 ml DI									
8	VSTD050	ICAL7	05-04-2018 05:45 pm	1.00	50 mL	50 mL	D050408.D	Liquid	Y	NA
	10 uL cal std/50 ml DI									
9	VSTD100	ICAL8	05-04-2018 06:09 pm	1.00	50 mL	50 mL	D050409.D	Liquid	Y	NA
	20 uL cal std/50 ml DI									
10	VSTD200	ICAL9	05-04-2018 06:34 pm	1.00	50 mL	50 mL	D050410.D	Liquid	Y	NA
	40 uL cal std/50 ml DI									
11	BLK	SAMP	05-04-2018 06:58 pm	1.00	50 mL	50 mL	D050411.D	Liquid	Y	NA
12	VSTD-ICV	ICV	05-04-2018 07:22 pm	1.00	50 mL	50 mL	D050412.D	Liquid	Y	NA
	10 uL ICV std/50 ml DI									
13	BFB	TUNE	05-04-2018 08:11 pm	1.00	50 mL	50 mL	E050401.D	Liquid	Y	NA
14	CCV	CCV	05-04-2018 08:35 pm	1.00	50 mL	50 mL	E050402.D	Liquid	Y	NA
	10 uL cal std/50 ml DI									
15	CCV	CCV	05-04-2018 09:00 pm	1.00	50 mL	50 mL	E050403.D	Liquid	Y	NA
	10 uL cal std/50 ml DI									
16	CCB	SAMP	05-04-2018 09:24 pm	1.00	50 mL	50 mL	E050404.D	Liquid	Y	NA
	CCB									
17	VLCSW-180504	LCS	05-04-2018 09:48 pm	1.00	50 mL	50 mL	E050405.D	Liquid	Y	NA
18	VBLKM-180504	SAMP	05-04-2018 10:12 pm	50.00	1 mL	50 mL	E050406.D	Liquid	Y	NA
19	VBLKW-180504	MBLK	05-04-2018 10:38 pm	1.00	50 mL	50 mL	E050407.D	Liquid	Y	NA
20	VBLKW-180504	MBLK	05-04-2018 11:01 pm	1.00	50 mL	50 mL	E050408.D	Liquid	Y	NA
21	HS18050238-01	SAMP	05-04-2018 11:25 pm	1.00	50 mL	50 mL	E050409.D	Liquid	Y	NA
22	HS18041008-05	SAMP	05-04-2018 11:49 pm	1.00	50 mL	50 mL	E050410.D	Liquid	Y	NA
23	HS18050153-15	SAMP	05-05-2018 12:14 am	1.00	50 mL	50 mL	E050411.D	Liquid	Y	<2
24	HS18050153-15MS	MS	05-05-2018 12:38 am	1.00	50 mL	50 mL	E050412.D	Liquid	Y	<2
	8 uL cal std/40 ml sample									
25	HS18050153-15MSD	MSD	05-05-2018 01:02 am	1.00	50 mL	50 mL	E050413.D	Liquid	Y	<2
	8 uL cal std/40 ml sample									
26	HS18050153-18	SAMP	05-05-2018 01:27 am	1.00	50 mL	50 mL	E050414.D	Liquid	Y	<2
27	HS18050153-01	SAMP	05-05-2018 01:51 am	1.00	50 mL	50 mL	E050415.D	Liquid	Y	<2
28	HS18050153-02	SAMP	05-05-2018 02:16 am	1.00	50 mL	50 mL	E050416.D	Liquid	Y	<2
29	HS18050153-03	SAMP	05-05-2018 02:40 am	1.00	50 mL	50 mL	E050417.D	Liquid	Y	<2
30	HS18050153-04	SAMP	05-05-2018 03:04 am	1.00	50 mL	50 mL	E050418.D	Liquid	Y	<2
31	HS18050153-05	SAMP	05-05-2018 03:29 am	1.00	50 mL	50 mL	E050419.D	Liquid	Y	<2
32	HS18050153-06	SAMP	05-05-2018 03:53 am	1.00	50 mL	50 mL	E050420.D	Liquid	Y	<2
33	HS18050153-07	SAMP	05-05-2018 04:17 am	1.00	50 mL	50 mL	E050421.D	Liquid	Y	<2

MSVOA02 -Logbook

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
34	HS18050153-08	SAMP	05-05-2018 04:42 am	1.00	50 mL	50 mL	E050422.D	Liquid	Y	<2
35	HS18050153-09	SAMP	05-05-2018 05:06 am	1.00	50 mL	50 mL	E050423.D	Liquid	Y	<2
36	HS18050153-10	SAMP	05-05-2018 05:31 am	1.00	50 mL	50 mL	E050424.D	Liquid	Y	<2
37	HS18050153-11	SAMP	05-05-2018 05:55 am	1.00	50 mL	50 mL	E050425.D	Liquid	Y	<2
38	HS18050153-12	SAMP	05-05-2018 06:19 am	1.00	50 mL	50 mL	E050426.D	Liquid	Y	<2
39	HS18050153-13	SAMP	05-05-2018 06:44 am	1.00	50 mL	50 mL	E050427.D	Liquid	Y	<2
40	HS18050153-14	SAMP	05-05-2018 07:08 am	1.00	50 mL	50 mL	E050428.D	Liquid	Y	<2
41	HS18050153-16	SAMP	05-05-2018 07:33 am	1.00	50 mL	50 mL	E050429.D	Liquid	Y	<2
42	HS18050153-17	SAMP	05-05-2018 07:57 am	1.00	50 mL	50 mL	E050430.D	Liquid	Y	<2

Chemical	Value
SURR ID	30603-16-03
IS ID	30603-16-04
ICV STD ID	30603-16-02
LCS/MS ID	30603-16-01
CAL STD ID	30603-16-01
BFB ID	30603-16-03

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050401.D

Date : 04-MAY-2018 14:55

Client ID: BFB

Instrument: VOA2.i

Sample Info: BFB;BFB;3;;BFB

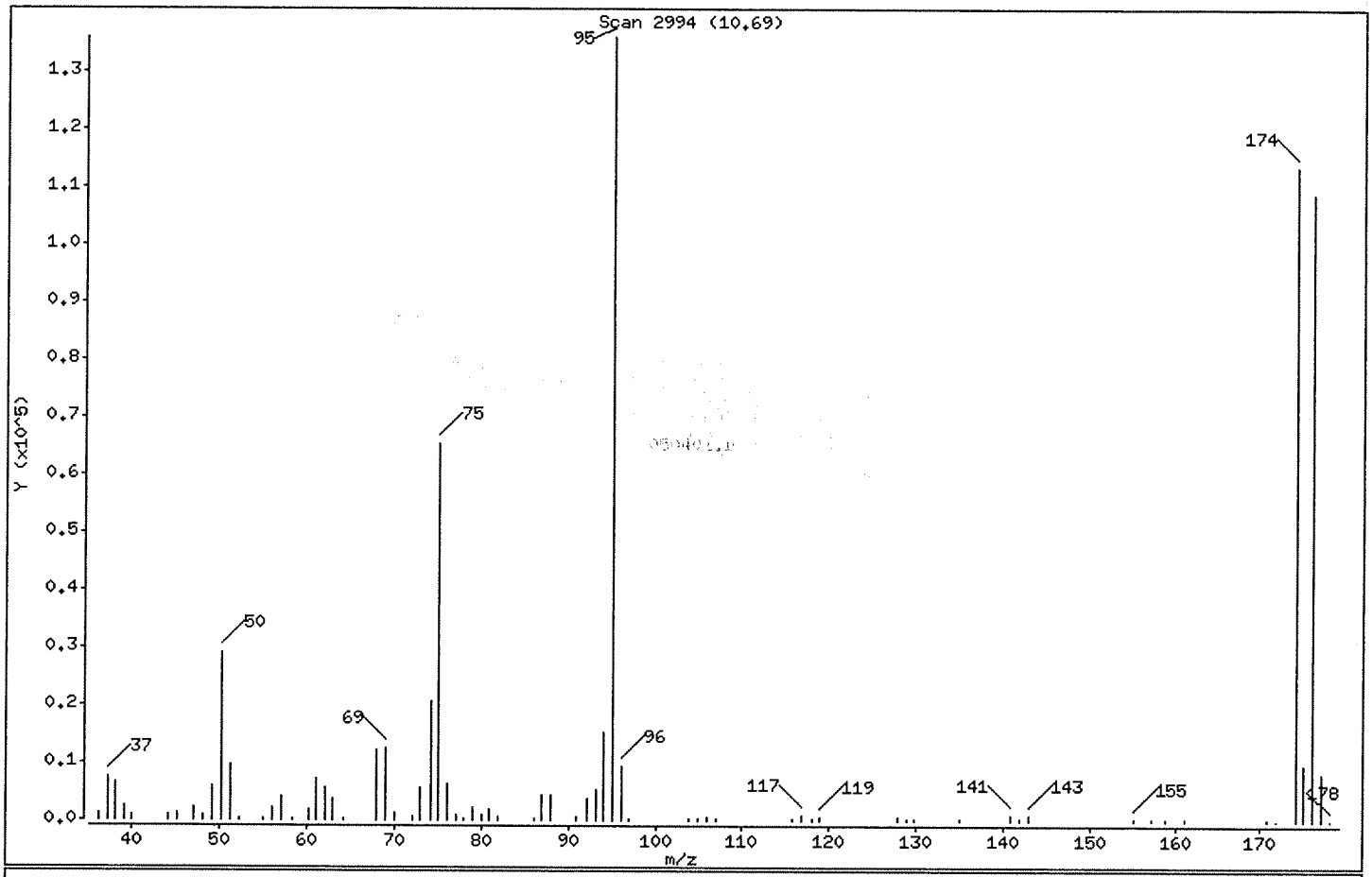
Volume Injected (uL): 2.0

Operator: AP

Column phase: DB624

Column diameter: 0.18

1 bfb



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	21.47
75	30.00 - 60.00% of mass 95	47.97
96	5.00 - 9.00% of mass 95	6.97
173	Less than 2.00% of mass 174	0.00 (0.00)
174	Greater than 50.00% of mass 95	83.53
175	5.00 - 9.00% of mass 174	7.02 (8.41)
176	95.00 - 101.00% of mass 174	79.92 (95.68)
177	5.00 - 9.00% of mass 176	5.87 (7.34)

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050401.D

Date : 04-MAY-2018 14:55

Client ID: BFB

Instrument: VOA2.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: AP

Column phase: DB624

Column diameter: 0.18

Data File: D050401.D
Spectrum: Scan 2994 (10.69)
Location of Maximum: 95.10
Number of points: 72

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.10	1405	62.10	5772	88.00	4497	134.90	157
37.10	7380	63.00	3785	91.00	496	140.90	862
38.10	6551	64.20	300	92.10	3889	141.80	209
39.10	2452	68.00	12134	93.10	5254	142.90	1014
40.00	890	69.00	12441	94.10	15326	155.00	301
44.00	831	70.10	1157	95.10	136064	157.10	297
45.10	1152	72.00	775	96.10	9482	158.80	217
47.10	2317	73.00	5765	97.00	198	161.10	265
48.00	869	74.10	20544	103.90	271	170.80	158
49.10	5957	75.10	65272	105.00	231	171.70	156
50.10	29216	76.10	6197	105.90	665	174.00	113648
51.10	9780	77.10	877	106.90	352	175.00	9558
52.20	327	78.00	385	115.70	233	176.00	108736
54.90	456	78.90	2155	116.90	930	177.00	7985
56.00	2046	80.00	818	118.00	451	178.10	152
57.10	3950	80.90	1942	118.90	697		
58.20	221	81.90	642	127.90	534		
60.10	1857	86.00	290	128.90	225		
61.10	7253	87.00	4446	129.80	309		

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050401.D

Date : 04-MAY-2018 14:55

Client ID: BFB

Instrument: VOA2.i

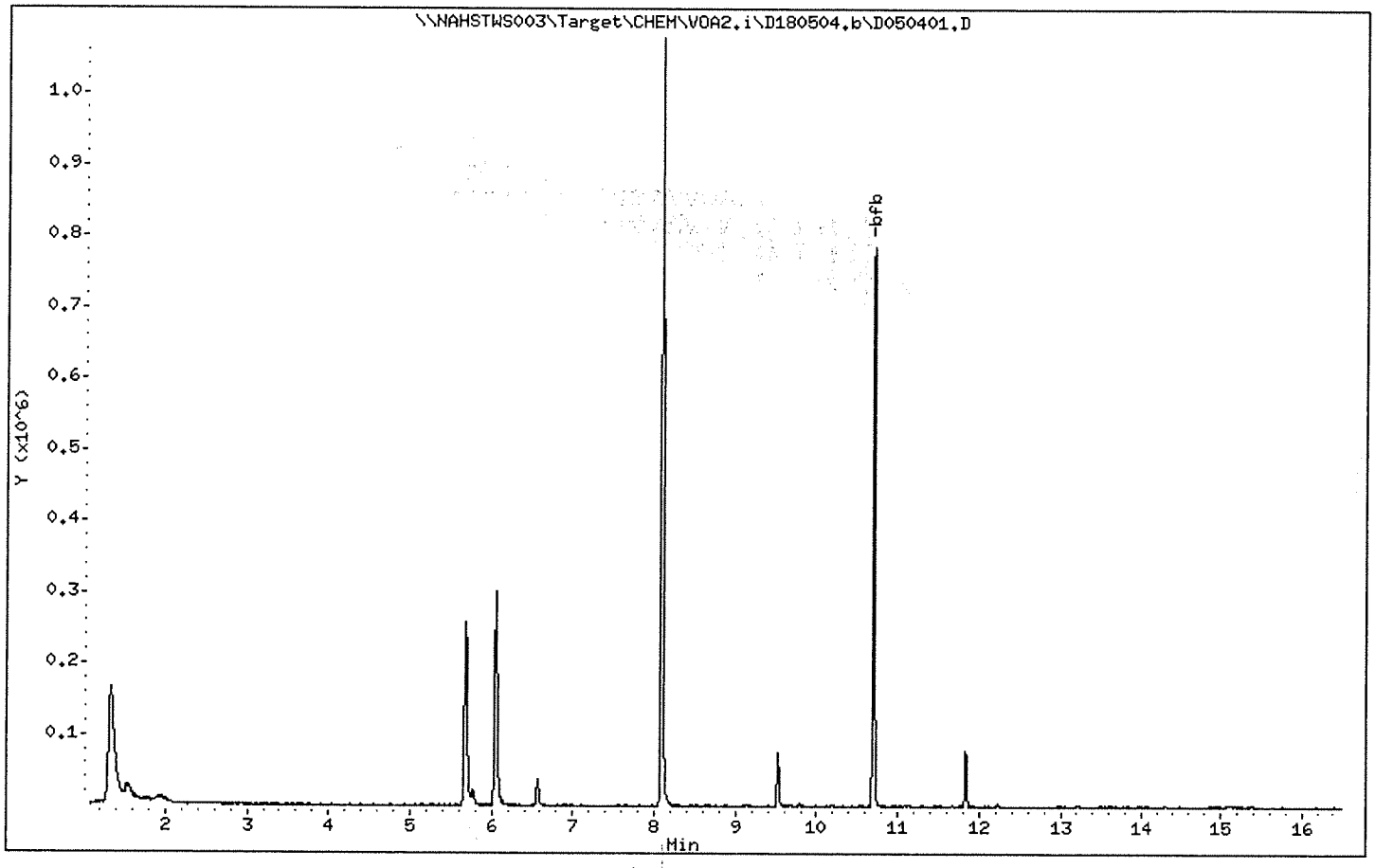
Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: AP

Column phase: DB624

Column diameter: 0.18



ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050402.D
Lab Smp Id: VSTD00.5 Client Smp ID: VSTD00.5
Inj Date : 04-MAY-2018 15:19
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD00.5;VSTD00.5;1;1;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\8260LL.m
Meth Date : 14-May-2018 17:07 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 2 Calibration Sample, Level: 1
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	5.773	5.773	(1.000)	382189	50.0000	
186 Isobutylene	56	1.646	1.646	(0.285)	1409	0.50000	0.38 (aAM)
4 Propionitrile	54	5.246	5.246	(0.909)	6824	5.00000	5.15 (aM)
5 Vinyl Chloride	62	1.678	1.678	(0.291)	2163	0.50000	0.45 (aM)
6 Bromomethane	94	1.938	1.938	(0.336)	1615	0.50000	0.57 (aM)
159 Dichlorofluoromethane	67	2.211	2.211	(0.383)	3654	0.50000	0.51 (aM)
12 Isobutyl Alcohol	74	6.231	6.231	(1.079)	60	10.0000	14.28 (TM)
13 Acetonitrile	39	3.164	3.164	(0.548)	2548	5.00000	5.22 (aM)
14 Allyl Chloride	41	3.151	3.151	(0.546)	6589	0.50000	0.52 (aM)
15 Iodomethane	142	2.894	2.894	(0.501)	308	1.00000	4.38 (M)
16 Acrylonitrile	53	3.725	3.725	(0.645)	1284	1.00000	0.75 (aM)
17 Methylene Chloride	84	3.327	3.327	(0.576)	2378	0.50000	0.58 (aM)
18 Methyl tert-butyl ether	73	3.684	3.684	(0.638)	5840	0.50000	0.52 (aM)
19 Carbon Disulfide	76	2.936	2.936	(0.509)	7054	1.00000	1.06 (aM)
21 Vinyl Acetate	43	5.246	5.246	(0.909)	5135	1.00000	1.04 (M)
22 1,1-Dichloroethane	63	4.255	4.255	(0.737)	3900	0.50000	0.50 (aM)
24 2-Butanone	43	5.166	5.166	(0.895)	1793	1.00000	0.90 (aM)
25 Methacrylonitrile	41	5.413	5.413	(0.938)	2568	0.50000	0.54 (aM)
26 2,2-Dichloropropane	77	5.034	5.034	(0.872)	2158	0.50000	0.41 (aM)
27 cis-1,2-Dichloroethene	96	5.070	5.070	(0.878)	2217	0.50000	0.56 (aM)
28 Chloroform	83	5.490	5.490	(0.951)	3472	0.50000	0.52 (aM)

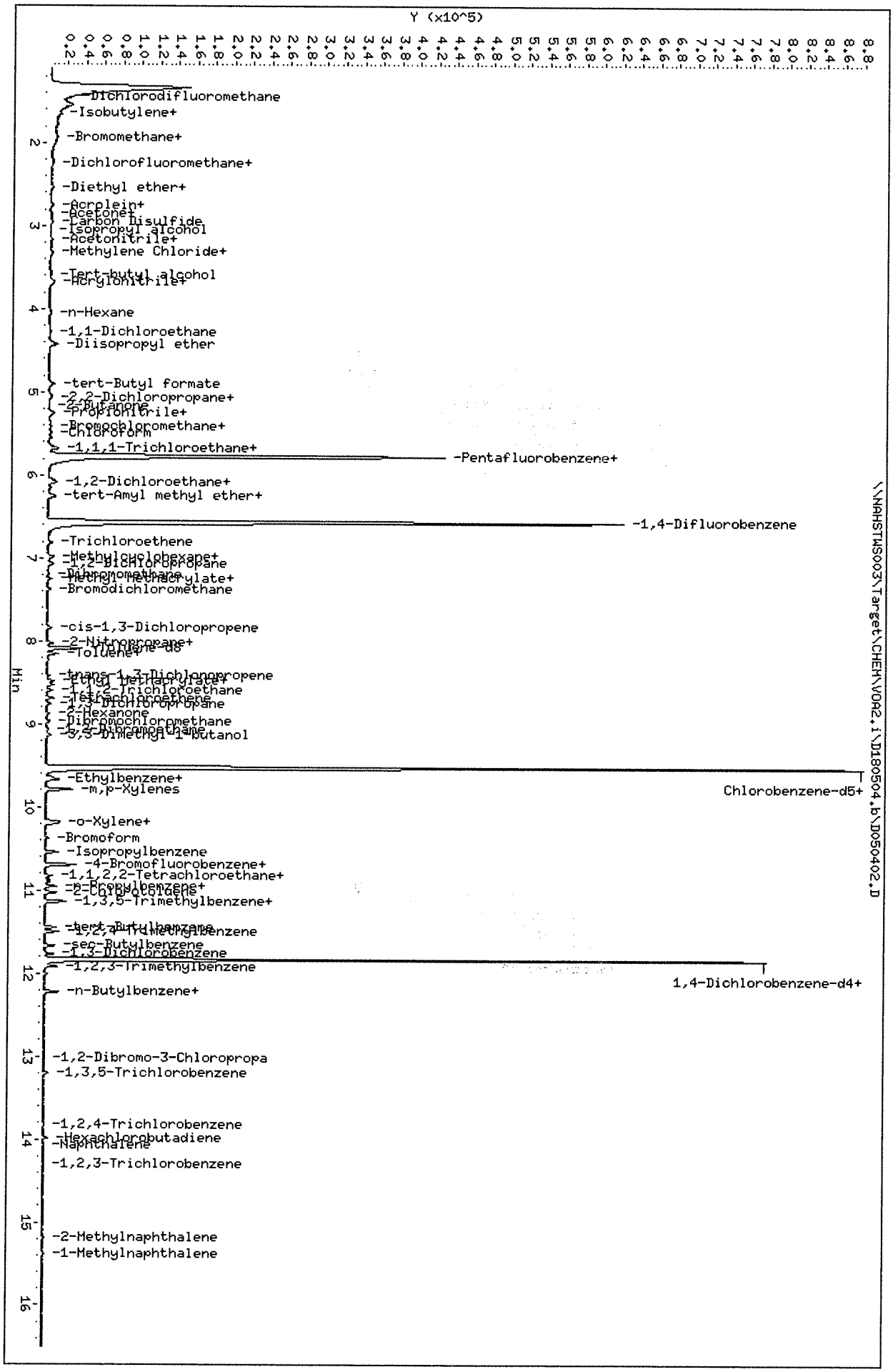
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050402.D Page 2
Report Date: 14-May-2018 17:07

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
	29 Bromochloromethane	128	5.352	5.352	(0.927)	916	0.50000	0.48 (aM)
$	30 Dibromofluoromethane	113	5.676	5.676	(0.983)	4661	0.50000	0.57 (aM)
	31 1,1,1-Trichloroethane	97	5.647	5.647	(0.978)	2588	0.50000	0.46 (a)
	32 1,1-Dichloropropene	75	5.850	5.850	(0.891)	3227	0.50000	0.66 (aM)
	33 1,2-Dichloroethane	62	6.145	6.145	(0.936)	2814	0.50000	0.53 (Ta)
	34 Carbon Tetrachloride	117	5.827	5.827	(0.888)	3099	0.50000	0.63 (aM)
$	35 1,2-Dichloroethane-d4	65	6.055	6.055	(1.049)	4399	0.50000	(Ta)
*	36 1,4-Difluorobenzene	114	6.565	6.565	(1.000)	560342	50.0000	
	37 Benzene	78	6.093	6.093	(0.928)	8149	0.50000	0.57 (Ta)
	38 Trichloroethene	130	6.812	6.812	(1.038)	1897	0.50000	0.51 (aM)
	39 Bromodichloromethane	83	7.367	7.367	(1.122)	2801	0.50000	0.54 (aM)
	40 Methyl Methacrylate	41	7.249	7.249	(1.256)	2305	0.50000	0.51 (aM)
	41 2-Chloroethylvinyl ether	63	8.157	8.157	(1.242)	732	1.00000	1.14 (aM)
	42 1,2-Dichloropropane	63	7.059	7.059	(1.075)	2387	0.50000	0.55 (aM)
	43 2-Nitropropane	43	8.032	8.032	(1.391)	5117	0.50000	0.53 (aM)
	44 Dibromomethane	93	7.194	7.194	(1.096)	969	0.50000	0.45 (aM)
	45 4-Methyl-2-Pentanone	43	8.032	8.032	(0.843)	5117	1.00000	1.13 (aM)
	46 cis-1,3-Dichloropropene	75	7.846	7.846	(1.195)	2872	0.50000	0.49 (aM)
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	490857	50.0000	
$	48 Toluene-d8	98	8.089	8.089	(0.849)	25814	0.50000	1.83
	50 Toluene	91	8.150	8.150	(0.856)	9194	0.50000	0.61 (Ta)
	51 trans-1,3-Dichloropropene	75	8.413	8.413	(1.282)	1951	0.50000	0.40 (aM)
	52 2-Hexanone	43	8.872	8.872	(0.932)	3032	1.00000	1.07 (aM)
	53 1,1,2-Trichloroethane	83	8.596	8.596	(0.903)	1442	0.50000	0.51 (aM)
	54 1,3-Dichloropropane	76	8.754	8.754	(0.919)	3026	0.50000	0.54 (aM)
	55 Dibromochloromethane	129	8.965	8.965	(0.941)	2123	0.50000	0.51 (aM)
	56 Tetrachloroethene	164	8.686	8.686	(0.912)	1784	0.50000	0.59 (aM)
	57 1,2-Dibromoethane	107	9.071	9.071	(0.952)	1798	0.50000	0.51 (aM)
	59 Chlorobenzene	112	9.553	9.553	(1.003)	5995	0.50000	0.63 (Ta)
	60 1,1,1,2-Tetrachloroethane	131	9.642	9.642	(1.012)	1919	0.50000	0.51 (aM)
	61 Ethylbenzene	106	9.665	9.665	(1.015)	3251	0.50000	0.63 (a)
	63 o-Xylene	106	10.175	10.175	(1.068)	3780	0.50000	0.59 (a)
	64 Styrene	104	10.194	10.194	(1.070)	5663	0.50000	0.55 (a)
	66 Bromoform	173	10.377	10.377	(1.090)	1328	0.50000	0.45 (aM)
	67 Isopropylbenzene	105	10.544	10.544	(1.107)	8878	0.50000	0.57 (aM)
	68 1,1,2,2-Tetrachloroethane	83	10.878	10.878	(0.919)	2473	0.50000	0.56 (aM)
$	69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	11709	0.50000	1.25
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	197955	50.0000	
	71 1,2,3-Trichloropropane	75	10.692	10.692	(0.903)	5517	0.50000	0.59 (Ta)
	72 trans-1,4-Dichloro-2-butene	53	10.945	10.945	(1.149)	308	0.50000	1.01 (M)
	73 n-Propylbenzene	91	10.955	10.955	(0.926)	9244	0.50000	0.59 (Ta)
	74 Bromobenzene	156	10.827	10.827	(0.915)	2273	0.50000	0.57 (aM)
	75 1,3,5-Trimethylbenzene	105	11.138	11.138	(0.941)	7256	0.50000	0.61 (a)
	78 tert-Butylbenzene	119	11.446	11.446	(0.967)	5952	0.50000	0.61 (Ta)
	81 sec-Butylbenzene	105	11.667	11.667	(0.986)	7412	0.50000	0.57 (aM)
	82 p-Isopropyltoluene	119	11.815	11.815	(0.998)	6445	0.50000	0.58 (aM)
	83 1,3-Dichlorobenzene	146	11.770	11.770	(0.995)	4250	0.50000	0.62 (a)
	84 1,4-Dichlorobenzene	146	11.853	11.853	(1.002)	4382	0.50000	0.66 (a)
	87 n-Butylbenzene	91	12.229	12.229	(1.033)	4668	0.50000	0.55 (Ta)
	88 1,2-Dichlorobenzene	146	12.226	12.226	(1.033)	3547	0.50000	0.55 (a)
	90 1,2,4-Trichlorobenzene	180	13.820	13.820	(1.168)	643	0.50000	0.60 (aM)
	92 Naphthalene	128	14.068	14.068	(1.189)	1615	0.50000	0.69 (aM)
	93 1,2,3-Trichlorobenzene	182	14.305	14.305	(1.209)	411	0.50000	1.14 (M)
	146 Methyl acetate	43	3.244	3.244	(0.562)	2398	0.50000	0.52 (aM)

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
139 Diethyl ether	59	2.535	2.535	(0.439)	3060	0.50000	0.45(aM)
147 Methylcyclohexane	83	6.976	6.976	(1.063)	2766	0.50000	0.56(Ta)
131 Methyl Acrylate	55	5.272	5.272	(0.913)	2829	0.50000	0.44(aM)
133 Ethyl Acrylate	55	7.018	7.018	(1.216)	5935	0.50000	0.51(aM)
141 Cyclohexane	56	5.683	5.683	(0.984)	3004	0.50000	0.47(aM)
142 Tetrahydrofuran	42	5.426	5.426	(0.940)	1382	1.00000	0.90(aM)
148 Tert-butyl alcohol	59	3.574	3.574	(0.619)	4807	10.0000	10.52(M)
149 Isopropyl alcohol	45	3.074	3.074	(0.533)	3252	10.0000	11.19(TaM)
151 4-Methyl-2-pentanol	45	8.478	8.478	(0.890)	9850	10.0000	10.43(aM)
166 1,2,3-Trimethylbenzene	105	11.918	11.918	(1.007)	7176	0.50000	0.64(Ta)
170 1,3,5-Trichlorobenzene	180	13.211	13.211	(1.116)	2323	0.50000	0.53(aM)
175 tert-Butyl ethyl ether	59	6.244	6.244	(1.082)	3031	0.50000	0.48(Ta)
157 2-Methylnaphthalene	142	15.191	15.191	(1.284)	948	0.50000	5.61(M)
156 Diisopropyl ether	45	4.425	4.425	(0.767)	8702	0.50000	0.53(aM)
171 1-Methylnaphthalene	142	15.390	15.390	(1.300)	844	0.50000	5.09(M)
130 Ethyl Acetate	43	5.246	5.246	(0.909)	5100	0.50000	0.54(aM)

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount Below Limit Of Quantitation(BLOQ).
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050402.D
Date : 04-MAY-2018 15:19
Client ID: VSTD00.5
Sample Info: VSTD00.5;VSTD00.5;1;1;
Purge Volume: 5.0
Column phase: DB624

\\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050402.D

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050403.D Page 1
Report Date: 14-May-2018 17:07

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050403.D
Lab Smp Id: VSTD001 Client Smp ID: VSTD001
Inj Date : 04-MAY-2018 15:43
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD001;VSTD001;1;2;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\8260LL.m
Meth Date : 14-May-2018 17:07 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 3 Calibration Sample, Level: 2
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1 Pentafluorobenzene	168	5.773	5.773	(1.000)	378806	50.0000	
186 Isobutylene	56	1.656	1.656	(0.287)	3339	1.00000	0.91 (aAM)
4 Propionitrile	54	5.240	5.240	(0.908)	13838	10.0000	10.54 (M)
5 Vinyl Chloride	62	1.669	1.669	(0.289)	4852	1.00000	1.02 (M)
6 Bromomethane	94	1.938	1.938	(0.336)	3182	1.00000	1.13 (M)
159 Dichlorofluoromethane	67	2.220	2.220	(0.385)	7851	1.00000	1.12 (M)
8 Trichlorofluoromethane	101	2.243	2.243	(0.389)	4402	1.00000	0.98 (TaM)
11 1,1-Dichloroethene	96	2.744	2.744	(0.475)	2789	1.00000	0.97 (aM)
12 Isobutyl Alcohol	74	6.164	6.164	(1.068)	176	20.0000	20.30 (M)
13 Acetonitrile	39	3.170	3.170	(0.549)	5343	10.0000	11.04 (M)
14 Allyl Chloride	41	3.164	3.164	(0.548)	14206	1.00000	1.15 (M)
15 Iodomethane	142	2.901	2.901	(0.503)	1852	2.00000	4.69 (M)
16 Acrylonitrile	53	3.700	3.700	(0.641)	3300	2.00000	1.96 (aM)
17 Methylene Chloride	84	3.318	3.318	(0.575)	4855	1.00000	1.21 (aM)
18 Methyl tert-butyl ether	73	3.668	3.668	(0.635)	12688	1.00000	1.16 (M)
19 Carbon Disulfide	76	2.946	2.946	(0.510)	13619	2.00000	2.07 (M)
20 trans-1,2-Dichloroethene	96	3.658	3.658	(0.634)	3416	1.00000	0.76 (aM)
21 Vinyl Acetate	43	5.243	5.243	(0.908)	11611	2.00000	2.38 (M)
22 1,1-Dichloroethane	63	4.274	4.274	(0.740)	8304	1.00000	1.09 (M)
24 2-Butanone	43	5.150	5.150	(0.892)	3998	2.00000	2.03 (M)
25 Methacrylonitrile	41	5.407	5.407	(0.937)	5060	1.00000	1.07 (aM)

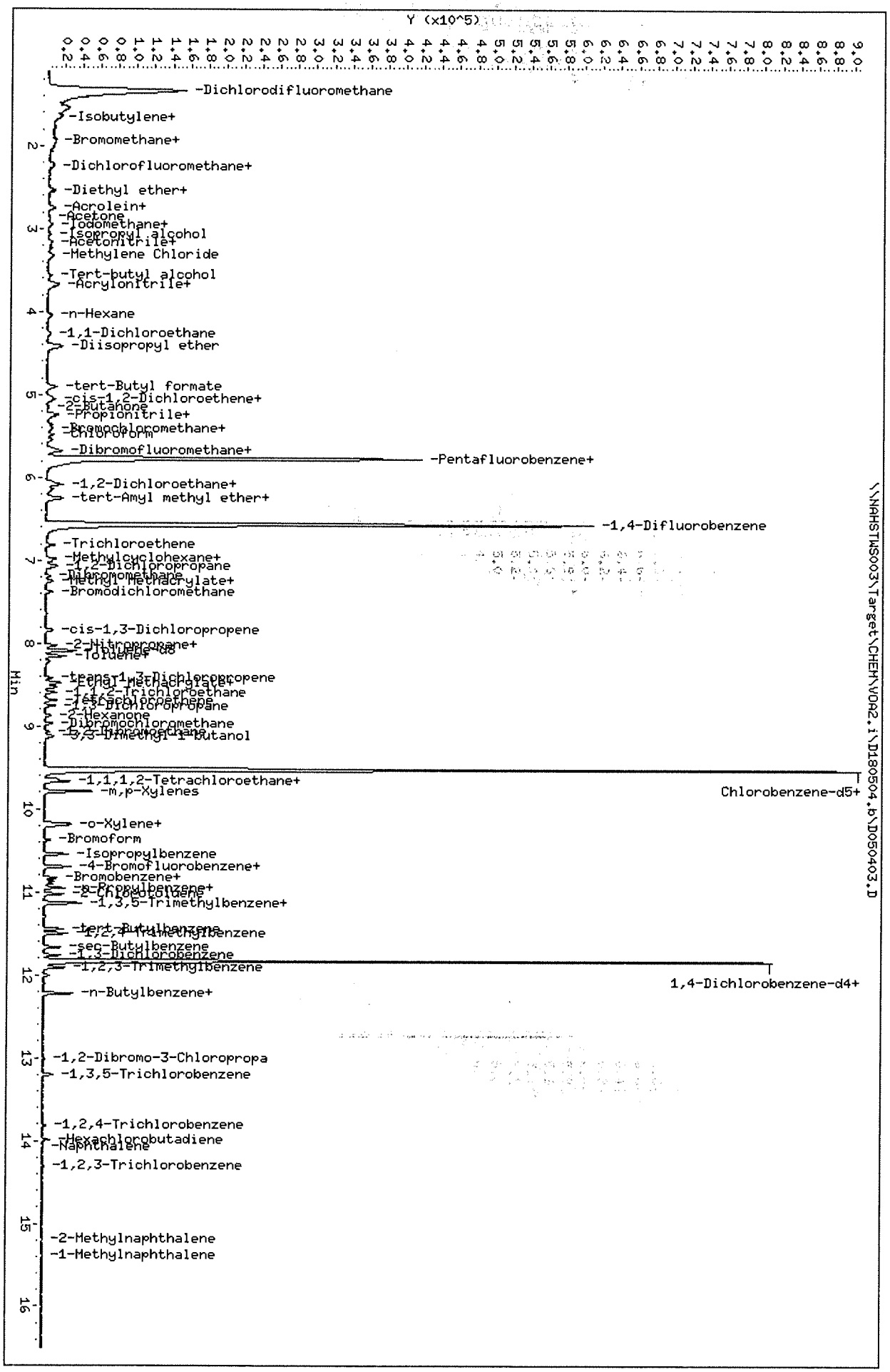
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050403.D Page 2
Report Date: 14-May-2018 17:07

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
	26 2,2-Dichloropropane	77	5.038	5.038	(0.873)	5075	1.00000	0.98 (aM)
	27 cis-1,2-Dichloroethene	96	5.067	5.067	(0.878)	3857	1.00000	0.98 (a)
	28 Chloroform	83	5.490	5.490	(0.951)	6867	1.00000	1.04 (T)
	29 Bromochloromethane	128	5.365	5.365	(0.929)	1825	1.00000	0.96 (aM)
$	30 Dibromofluoromethane	113	5.680	5.680	(0.984)	4558	1.00000	0.55 (a)
	31 1,1,1-Trichloroethane	97	5.651	5.651	(0.979)	5457	1.00000	0.99 (a)
	32 1,1-Dichloropropene	75	5.843	5.843	(0.890)	6332	1.00000	1.31 (M)
	33 1,2-Dichloroethane	62	6.145	6.145	(0.936)	6154	1.00000	1.17
	34 Carbon Tetrachloride	117	5.824	5.824	(0.887)	4846	1.00000	0.99 (Ta)
$	35 1,2-Dichloroethane-d4	65	6.062	6.062	(1.050)	5880	1.00000	(aM)
*	36 1,4-Difluorobenzene	114	6.565	6.565	(1.000)	556696	50.0000	
	37 Benzene	78	6.084	6.084	(0.927)	16213	1.00000	1.14
	38 Trichloroethene	130	6.812	6.812	(1.038)	3776	1.00000	1.03 (M)
	39 Bromodichloromethane	83	7.374	7.374	(1.123)	5674	1.00000	1.10 (T)
	40 Methyl Methacrylate	41	7.246	7.246	(1.255)	4518	1.00000	1.00 (Ta)
	41 2-Chloroethylvinyl ether	63	8.157	8.157	(1.242)	1312	2.00000	2.06 (aM)
	42 1,2-Dichloropropane	63	7.063	7.063	(1.076)	4675	1.00000	1.10 (M)
	43 2-Nitropropane	43	8.029	8.029	(1.391)	9984	1.00000	1.05 (Ta)
	44 Dibromomethane	93	7.191	7.191	(1.095)	2157	1.00000	1.01 (M)
	45 4-Methyl-2-Pentanone	43	8.029	8.029	(0.843)	9984	2.00000	2.21
	46 cis-1,3-Dichloropropene	75	7.839	7.839	(1.194)	5594	1.00000	0.97 (aM)
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	491624	50.0000	
$	48 Toluene-d8	98	8.090	8.090	(0.849)	23273	1.00000	1.66 (M)
	50 Toluene	91	8.154	8.154	(0.856)	17211	1.00000	1.14 (T)
	51 trans-1,3-Dichloropropene	75	8.420	8.420	(1.282)	4796	1.00000	1.00 (M)
	52 2-Hexanone	43	8.869	8.869	(0.931)	5938	2.00000	2.10
	53 1,1,2-Trichloroethane	83	8.590	8.590	(0.902)	3223	1.00000	1.14
	54 1,3-Dichloropropane	76	8.754	8.754	(0.919)	6083	1.00000	1.08 (M)
	55 Dibromochloromethane	129	8.966	8.966	(0.941)	4243	1.00000	1.02 (T)
	56 Tetrachloroethene	164	8.680	8.680	(0.911)	2998	1.00000	0.99 (a)
	57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	3611	1.00000	1.02 (T)
	59 Chlorobenzene	112	9.553	9.553	(1.003)	10439	1.00000	1.11
	60 1,1,1,2-Tetrachloroethane	131	9.646	9.646	(1.013)	3990	1.00000	1.06
	61 Ethylbenzene	106	9.668	9.668	(1.015)	5630	1.00000	1.10
	63 o-Xylene	106	10.172	10.172	(1.068)	6791	1.00000	1.06
	64 Styrene	104	10.201	10.201	(1.071)	10422	1.00000	1.01
	66 Bromoform	173	10.371	10.371	(1.089)	3153	1.00000	1.07 (M)
	67 Isopropylbenzene	105	10.548	10.548	(1.107)	17227	1.00000	1.11
	68 1,1,2,2-Tetrachloroethane	83	10.868	10.868	(0.918)	5176	1.00000	1.13 (M)
$	69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	9609	1.00000	0.79 (a)
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	205822	50.0000	
	72 trans-1,4-Dichloro-2-butene	53	10.933	10.933	(1.148)	721	1.00000	1.35 (M)
	73 n-Propylbenzene	91	10.952	10.952	(0.925)	17978	1.00000	1.11 (T)
	74 Bromobenzene	156	10.830	10.830	(0.915)	4337	1.00000	1.04
	75 1,3,5-Trimethylbenzene	105	11.128	11.128	(0.940)	13135	1.00000	1.07
	78 tert-Butylbenzene	119	11.449	11.449	(0.967)	10431	1.00000	1.03
	81 sec-Butylbenzene	105	11.664	11.664	(0.986)	13088	1.00000	0.97 (a)
	82 p-Isopropyltoluene	119	11.818	11.818	(0.999)	11443	1.00000	0.99 (a)
	83 1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	7494	1.00000	1.06
	84 1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	7397	1.00000	1.08
	87 n-Butylbenzene	91	12.219	12.219	(1.033)	8116	1.00000	0.93 (a)
	88 1,2-Dichlorobenzene	146	12.226	12.226	(1.033)	7081	1.00000	1.07
	89 1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	627	1.00000	0.85 (aM)
	90 1,2,4-Trichlorobenzene	180	13.817	13.817	(1.168)	1481	1.00000	0.81 (aM)

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
92 Naphthalene	128	14.065	14.065	(1.188)	1823	1.00000	0.70(aM)
93 1,2,3-Trichlorobenzene	182	14.299	14.299	(1.208)	946	1.00000	1.30(M)
146 Methyl acetate	43	3.241	3.241	(0.561)	5130	1.00000	1.13(aM)
139 Diethyl ether	59	2.535	2.535	(0.439)	7750	1.00000	1.15(M)
147 Methylcyclohexane	83	6.989	6.989	(1.065)	4954	1.00000	1.01(T)
132 n-Butanol	56	6.995	6.995	(1.212)	3492	20.0000	25.28(M)
131 Methyl Acrylate	55	5.272	5.272	(0.913)	6121	1.00000	0.96(TaM)
133 Ethyl Acrylate	55	7.011	7.011	(1.215)	11130	1.00000	0.96(aM)
136 n-Hexane	57	4.046	4.046	(0.701)	4365	1.00000	0.96(aM)
141 Cyclohexane	56	5.686	5.686	(0.985)	5885	1.00000	0.93(aH)
142 Tetrahydrofuran	42	5.423	5.423	(0.939)	3484	2.00000	2.29(M)
148 Tert-butyl alcohol	59	3.562	3.562	(0.617)	9997	20.0000	22.08(TM)
149 Isopropyl alcohol	45	3.071	3.071	(0.532)	6200	20.0000	21.53(M)
151 4-Methyl-2-pentanol	45	8.475	8.475	(0.890)	19907	20.0000	21.05
166 1,2,3-Trimethylbenzene	105	11.911	11.911	(1.007)	12224	1.00000	1.05(T)
167 Ethanol	45	2.529	2.529	(0.438)	8147	20.0000	24.55(TM)
170 1,3,5-Trichlorobenzene	180	13.201	13.201	(1.116)	4162	1.00000	0.92(Ta)
172 tert-Butyl formate	59	4.900	4.900	(0.849)	14427	2.00000	2.17
173 3,3-Dimethyl-1-butanol	57	9.123	9.123	(0.958)	6570	20.0000	20.08
174 tert-Amyl methyl ether	73	6.254	6.254	(1.083)	13767	1.00000	1.10(T)
175 tert-Butyl ethyl ether	59	6.238	6.238	(1.081)	6285	1.00000	1.01(T)
176 tert-Amyl alcohol	59	6.238	6.238	(1.081)	6285	20.0000	20.25
157 2-Methylnaphthalene	142	15.191	15.191	(1.284)	734	1.00000	5.53(M)
156 Diisopropyl ether	45	4.412	4.412	(0.764)	18648	1.00000	1.15(M)
171 1-Methylnaphthalene	142	15.393	15.393	(1.301)	914	1.00000	5.11(M)
130 Ethyl Acetate	43	5.243	5.243	(0.908)	10442	1.00000	1.11(aM)

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount Below Limit Of Quantitation(BLOQ).
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050403.D
Date : 04-MAY-2018 15:43
Client ID: VSTD001
Sample Info: VSTD001;VSTD001;1;2;
Purge Volume: 5.0
Column phase: DB624

\\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050403.D

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050404.D Page 1
Report Date: 14-May-2018 17:07

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050404.D
Lab Smp Id: VSTD002 Client Smp ID: VSTD002
Inj Date : 04-MAY-2018 16:08
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD002;VSTD002;1;3;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\8260LL.m
Meth Date : 14-May-2018 17:07 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:43 Cal File: D050403.D
Als bottle: 4 Calibration Sample, Level: 3
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
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Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

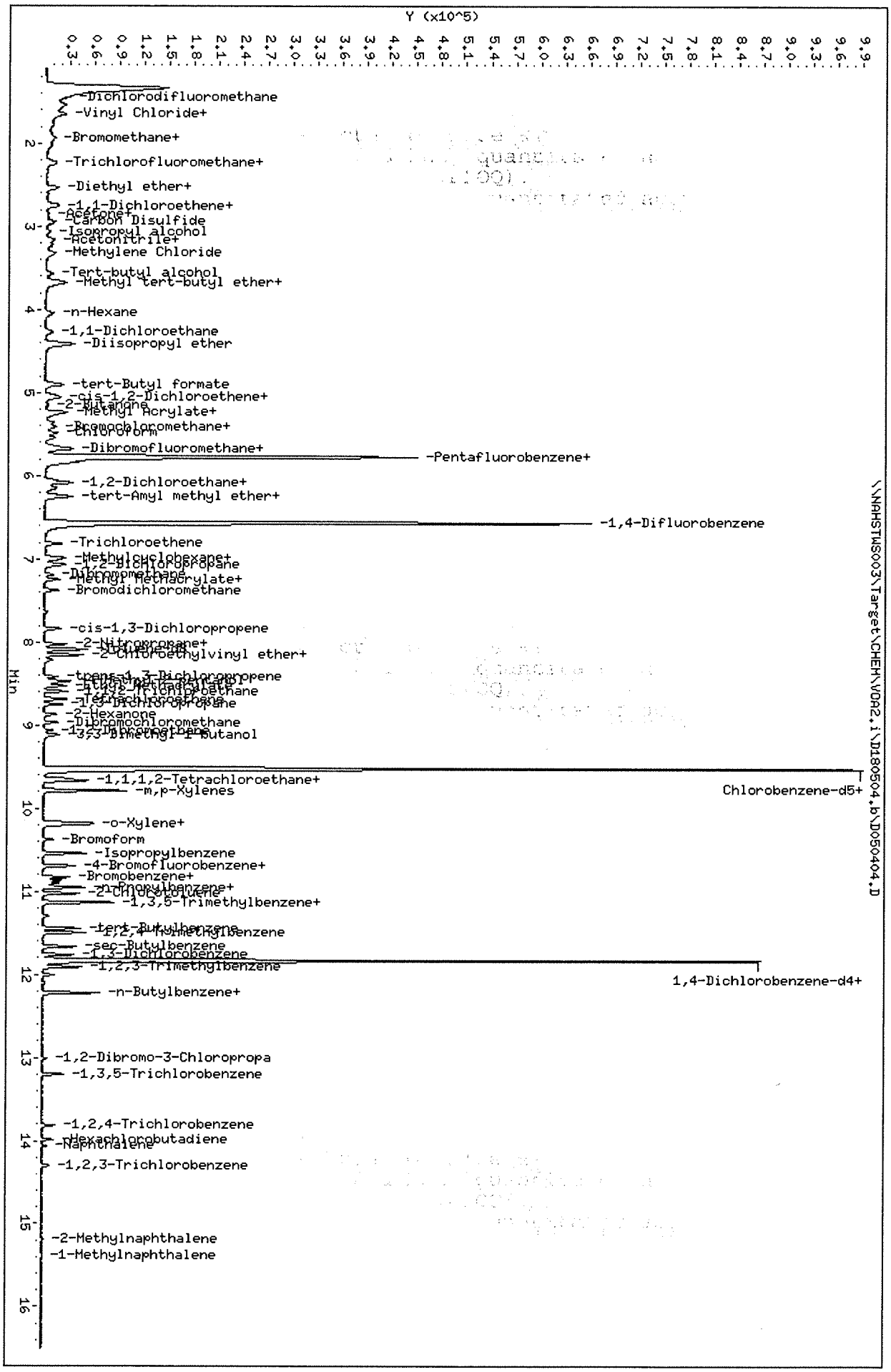
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	5.770	5.770	(1.000)	408537	50.0000	
2 Dichlorodifluoromethane	85	1.438	1.438	(0.249)	7390	2.00000	1.02(M)
186 Isobutylene	56	1.640	1.640	(0.284)	7283	2.00000	1.84(aAM)
3 Chloromethane	50	1.585	1.585	(0.275)	15710	2.00000	0.70(aM)
4 Propionitrile	54	5.227	5.227	(0.906)	27267	20.0000	19.25(M)
5 Vinyl Chloride	62	1.675	1.675	(0.290)	10131	2.00000	1.98
6 Bromomethane	94	1.941	1.941	(0.337)	6295	2.00000	2.08(TM)
7 Chloroethane	64	2.031	2.031	(0.352)	6397	2.00000	0.79(aM)
159 Dichlorofluoromethane	67	2.217	2.217	(0.384)	14585	2.00000	1.94(M)
8 Trichlorofluoromethane	101	2.240	2.240	(0.388)	9388	2.00000	1.94(T)
9 Acrolein	56	2.692	2.692	(0.467)	3349	4.00000	2.93(M)
10 Acetone	43	2.853	2.853	(0.494)	7902	4.00000	2.37(M)
11 1,1-Dichloroethene	96	2.744	2.744	(0.476)	5688	2.00000	1.84
12 Isobutyl Alcohol	74	6.164	6.164	(1.068)	300	40.0000	25.57(M)
13 Acetonitrile	39	3.158	3.158	(0.547)	10786	20.0000	20.68(M)
14 Allyl Chloride	41	3.158	3.158	(0.547)	26751	2.00000	2.01(TM)
15 Iodomethane	142	2.895	2.895	(0.502)	4199	4.00000	5.36(M)
16 Acrylonitrile	53	3.716	3.716	(0.644)	7073	4.00000	3.90(M)
17 Methylene Chloride	84	3.328	3.328	(0.577)	8887	2.00000	2.05(M)
18 Methyl tert-butyl ether	73	3.671	3.671	(0.636)	22687	2.00000	1.92(T)
19 Carbon Disulfide	76	2.939	2.939	(0.510)	27610	4.00000	3.90(M)

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.655	3.655	(0.634)	6251	2.00000	1.53
	21 Vinyl Acetate	43	5.237	5.237	(0.908)	20320	4.00000	3.86 (M)
	22 1,1-Dichloroethane	63	4.278	4.278	(0.741)	15565	2.00000	1.89 (TM)
	24 2-Butanone	43	5.147	5.147	(0.892)	7364	4.00000	3.46 (M)
	25 Methacrylonitrile	41	5.407	5.407	(0.937)	9046	2.00000	1.78 (aH)
	26 2,2-Dichloropropane	77	5.032	5.032	(0.872)	11289	2.00000	2.03 (M)
	27 cis-1,2-Dichloroethene	96	5.070	5.070	(0.879)	8037	2.00000	1.90
	28 Chloroform	83	5.481	5.481	(0.950)	14540	2.00000	2.05
	29 Bromochloromethane	128	5.359	5.359	(0.929)	3530	2.00000	1.73
$	30 Dibromofluoromethane	113	5.683	5.683	(0.985)	7916	2.00000	1.37
	31 1,1,1-Trichloroethane	97	5.638	5.638	(0.977)	11672	2.00000	1.96
	32 1,1-Dichloropropene	75	5.850	5.850	(0.891)	10081	2.00000	1.93 (M)
	33 1,2-Dichloroethane	62	6.136	6.136	(0.934)	9963	2.00000	1.74
	34 Carbon Tetrachloride	117	5.831	5.831	(0.888)	10845	2.00000	2.04 (M)
$	35 1,2-Dichloroethane-d4	65	6.059	6.059	(1.050)	9916	2.00000	0.26 (Ta)
*	36 1,4-Difluorobenzene	114	6.569	6.569	(1.000)	603837	50.0000	
	37 Benzene	78	6.084	6.084	(0.926)	31478	2.00000	2.05
	38 Trichloroethene	130	6.813	6.813	(1.037)	7859	2.00000	1.97
	39 Bromodichloromethane	83	7.371	7.371	(1.122)	10838	2.00000	1.94 (T)
	40 Methyl Methacrylate	41	7.246	7.246	(1.256)	8977	2.00000	1.85 (Ta)
	41 2-Chloroethylvinyl ether	63	8.151	8.151	(1.241)	2748	4.00000	3.98 (Ta)
	42 1,2-Dichloropropane	63	7.066	7.066	(1.076)	9305	2.00000	2.02 (M)
	43 2-Nitropropane	43	8.032	8.032	(1.392)	19944	2.00000	1.96 (Ta)
	44 Dibromomethane	93	7.191	7.191	(1.095)	4373	2.00000	1.90
	45 4-Methyl-2-Pentanone	43	8.032	8.032	(0.843)	19944	4.00000	4.02
	46 cis-1,3-Dichloropropene	75	7.836	7.836	(1.193)	11552	2.00000	1.85
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	540359	50.0000	
$	48 Toluene-d8	98	8.090	8.090	(0.849)	34734	2.00000	2.22
	50 Toluene	91	8.154	8.154	(0.856)	33700	2.00000	2.04
	51 trans-1,3-Dichloropropene	75	8.414	8.414	(1.281)	9140	2.00000	1.77
	52 2-Hexanone	43	8.870	8.870	(0.931)	11905	4.00000	3.83
	53 1,1,2-Trichloroethane	83	8.590	8.590	(0.902)	6288	2.00000	2.02
	54 1,3-Dichloropropane	76	8.748	8.748	(0.918)	12138	2.00000	1.97
	55 Dibromochloromethane	129	8.966	8.966	(0.941)	8759	2.00000	1.92 (T)
	56 Tetrachloroethene	164	8.687	8.687	(0.912)	6719	2.00000	2.03
	57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	7371	2.00000	1.90 (T)
	59 Chlorobenzene	112	9.553	9.553	(1.003)	20671	2.00000	2.00
	60 1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.012)	8097	2.00000	1.97
	61 Ethylbenzene	106	9.665	9.665	(1.015)	10915	2.00000	1.95
	63 o-Xylene	106	10.176	10.176	(1.068)	14102	2.00000	2.00
	64 Styrene	104	10.198	10.198	(1.071)	22878	2.00000	2.03
	66 Bromoform	173	10.375	10.375	(1.089)	6171	2.00000	1.91 (T)
	67 Isopropylbenzene	105	10.545	10.545	(1.107)	32768	2.00000	1.93
	68 1,1,2,2-Tetrachloroethane	83	10.869	10.869	(0.918)	10142	2.00000	2.03 (M)
$	69 4-Bromofluorobenzene	95	10.699	10.699	(1.123)	13070	2.00000	1.29
*	70 1,4-Dichlorobenzene-d4	152	11.835	11.835	(1.000)	225031	50.0000	
	71 1,2,3-Trichloropropane	75	10.699	10.699	(0.904)	6121	2.00000	0.52 (a)
	72 trans-1,4-Dichloro-2-butene	53	10.933	10.933	(1.148)	2058	2.00000	2.27 (M)
	73 n-Propylbenzene	91	10.949	10.949	(0.925)	35151	2.00000	1.99
	74 Bromobenzene	156	10.827	10.827	(0.915)	9306	2.00000	2.06
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	26879	2.00000	2.01
	78 tert-Butylbenzene	119	11.450	11.450	(0.967)	20496	2.00000	1.85
	81 sec-Butylbenzene	105	11.661	11.661	(0.985)	27748	2.00000	1.88
	82 p-Isopropyltoluene	119	11.815	11.815	(0.998)	23739	2.00000	1.89

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
83	1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	15281	2.00000	1.98
84	1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	14210	2.00000	1.90
87	n-Butylbenzene	91	12.223	12.223	(1.033)	16217	2.00000	1.70
88	1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	14433	2.00000	1.99
89	1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	1454	2.00000	1.80(M)
90	1,2,4-Trichlorobenzene	180	13.814	13.814	(1.167)	4916	2.00000	1.60(T)
91	Hexachlorobutadiene	225	13.988	13.988	(1.182)	3032	2.00000	1.63(M)
92	Naphthalene	128	14.058	14.058	(1.188)	4856	2.00000	0.99(a)
93	1,2,3-Trichlorobenzene	182	14.299	14.299	(1.208)	3702	2.00000	2.02(T)
146	Methyl acetate	43	3.228	3.228	(0.560)	9717	2.00000	1.98(aM)
139	Diethyl ether	59	2.532	2.532	(0.439)	14477	2.00000	1.99
147	Methylcyclohexane	83	6.983	6.983	(1.063)	9765	2.00000	1.84
132	n-Butanol	56	6.983	6.983	(1.210)	5000	40.0000	33.57
131	Methyl Acrylate	55	5.260	5.260	(0.912)	12328	2.00000	1.79(a)
133	Ethyl Acrylate	55	7.015	7.015	(1.216)	23518	2.00000	1.89(M)
136	n-Hexane	57	4.040	4.040	(0.700)	9072	2.00000	1.85
141	Cyclohexane	56	5.683	5.683	(0.985)	13340	2.00000	1.96(aH)
142	Tetrahydrofuran	42	5.423	5.423	(0.940)	6546	4.00000	3.99(M)
148	Tert-butyl alcohol	59	3.559	3.559	(0.617)	15804	40.0000	32.36
149	Isopropyl alcohol	45	3.065	3.065	(0.531)	12046	40.0000	38.79(M)
151	4-Methyl-2-pentanol	45	8.472	8.472	(0.889)	39442	40.0000	37.96
166	1,2,3-Trimethylbenzene	105	11.915	11.915	(1.007)	25205	2.00000	1.98
167	Ethanol	45	2.535	2.535	(0.439)	10631	40.0000	29.70(T)
170	1,3,5-Trichlorobenzene	180	13.205	13.205	(1.116)	8475	2.00000	1.73(T)
172	tert-Butyl formate	59	4.903	4.903	(0.850)	28750	4.00000	4.01
173	3,3-Dimethyl-1-butanol	57	9.117	9.117	(0.957)	12313	40.0000	34.24
174	tert-Amyl methyl ether	73	6.251	6.251	(1.083)	26257	2.00000	1.94
175	tert-Butyl ethyl ether	59	6.238	6.238	(1.081)	12322	2.00000	1.84
176	tert-Amyl alcohol	59	6.238	6.238	(1.081)	12322	40.0000	36.82
157	2-Methylnaphthalene	142	15.191	15.191	(1.284)	1017	2.00000	5.59(M)
156	Diisopropyl ether	45	4.409	4.409	(0.764)	32209	2.00000	1.85(T)
171	1-Methylnaphthalene	142	15.384	15.384	(1.300)	1005	2.00000	5.11(M)
130	Ethyl Acetate	43	5.237	5.237	(0.908)	19554	2.00000	1.94(aM)

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount Below Limit Of Quantitation(BLOQ).
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.


Y (x10^5)
Min
-Dichlorodifluoromethane
-Vinyl Chloride+
-Bromomethane+
-Trichlorofluoromethane+
-Diethyl ether+
-1,1-Dichloroethene+
-Acetone+
-Carbon Disulfide
-Isopropyl alcohol
-Acetonitrile+
-Methylene Chloride
-Tert-butyl alcohol
-Methyl tert-butyl ether+
-n-Hexane
-1,1-Dichloroethane
-Diisopropyl ether
-tert-Butyl formate
-cis-1,2-Dichloroethene+
-2-Butanone
-Methyl Acrylate+
-Bromochloromethane+
-Chloroform
-Dibromofluoromethane+
-Pentafluorobenzene+
-1,2-Dichloroethane+
-tert-Amyl methyl ether+
-1,4-Difluorobenzene
-Trichloroethene
-Methylcyclohexane+
-1,2-Dichloropropane
-Dibromomethane
-Methyl Methacrylate+
-Bromodichloromethane
-cis-1,3-Dichloropropene
-2-Nitropropane+
-4-Methyl-2-pentanone
-2-Chloroethylvinyl ether+
-trans-1,3-Dichloropropene
-Ethyl Methacrylate+
-1,1,2-Trichloroethane
-Tetrachloroethene
-1,3-Dichloropropane
-2-Hexanone
-Dibromochloromethane
-1,2-Dibromoethane
-3,3-Dimethyl-1-butanol
-1,1,1,2-Tetrachloroethane+
-m,p-Xylenes
Chlorobenzene-d5+
-o-Xylene+
-Bromoform
-Isopropylbenzene
-4-Bromofluorobenzene+
-Bromobenzene+
-n-Propylbenzene+
-2-Chlorotoluene
-1,3,5-Trimethylbenzene+
-tert-Butylbenzene
1,2,4-Trimethylbenzene
-sec-Butylbenzene
-1,3-Dichlorobenzene
-1,2,3-Trimethylbenzene
1,4-Dichlorobenzene-d4+
-n-Butylbenzene+
-1,2-Dibromo-3-Chloropropa
-1,3,5-Trichlorobenzene
-1,2,4-Trichlorobenzene
-Hexachlorobutadiene
-Naphthalene
-1,2,3-Trichlorobenzene
-2-Methylnaphthalene
-1-Methylnaphthalene
\\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050404.D
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050404.D
Date : 04-MAY-2018 16:08
Client ID: VSTD002
Sample Info: VSTD002;VSTD002;1;3;
Purge Volume: 5.0
Column phase: DB624
Instrument: VOA2.i
Operator: AP
Column diameter: 0.18
Page 4

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050405.D
Lab Smp Id: VSTD005 Client Smp ID: VSTD005
Inj Date : 04-MAY-2018 16:32
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD005;VSTD005;1;4;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\8260LL.m
Meth Date : 14-May-2018 17:07 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 16:08 Cal File: D050404.D
Als bottle: 5 Calibration Sample, Level: 4
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
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Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

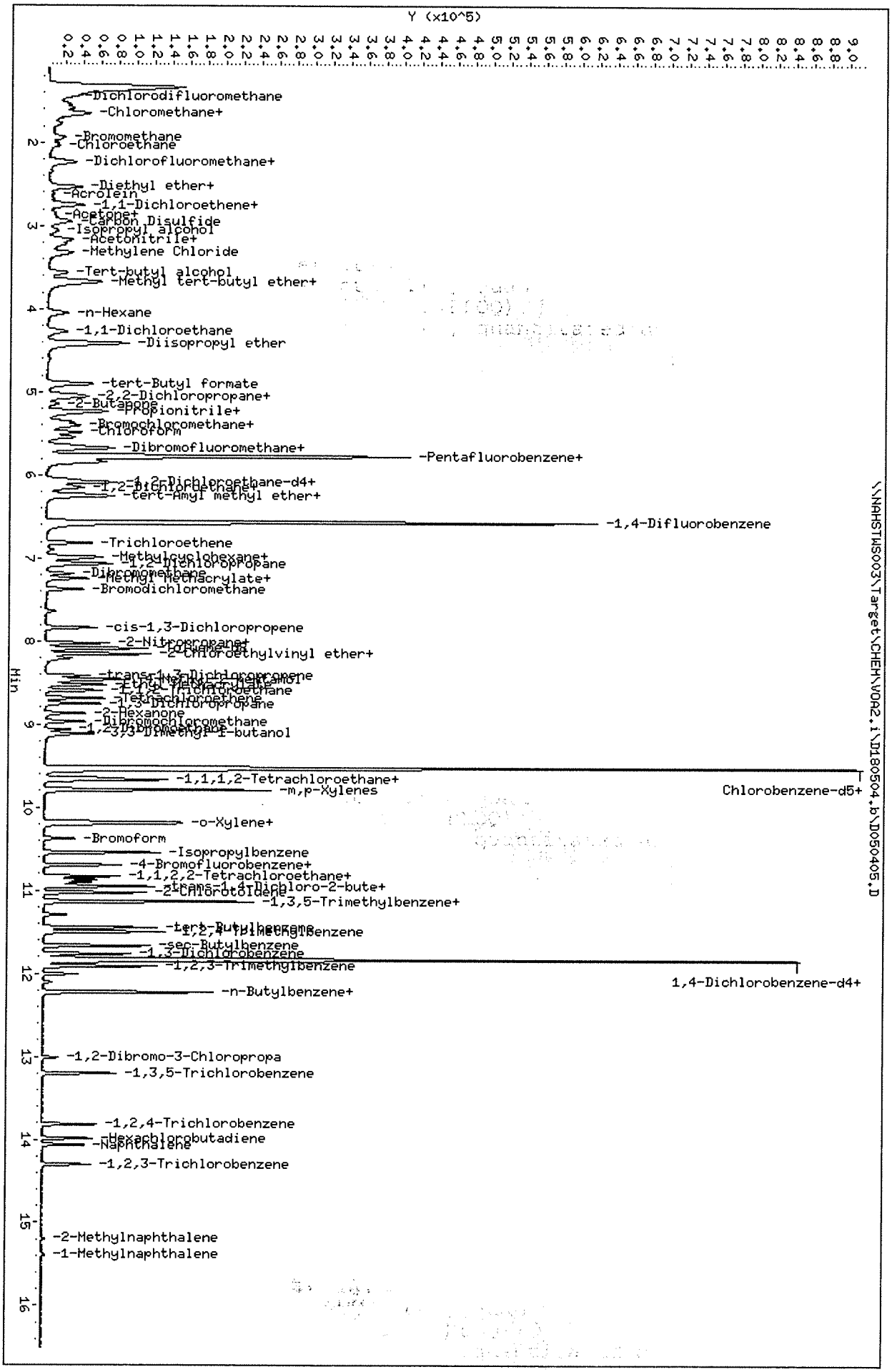
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1	Pentafluorobenzene	168	5.773	5.773	(1.000)	368815	50.0000	
2	Dichlorodifluoromethane	85	1.444	1.444	(0.250)	16634	5.00000	3.99(T)
186	Isobutylene	56	1.643	1.643	(0.285)	19089	5.00000	5.34(AM)
3	Chloromethane	50	1.592	1.592	(0.276)	36344	5.00000	4.56(Ta)
4	Propionitrile	54	5.231	5.231	(0.906)	62776	50.0000	49.11
5	Vinyl Chloride	62	1.669	1.669	(0.289)	23697	5.00000	5.15
6	Bromomethane	94	1.935	1.935	(0.335)	15086	5.00000	5.53(M)
7	Chloroethane	64	2.034	2.034	(0.352)	11400	5.00000	3.14
159	Dichlorofluoromethane	67	2.217	2.217	(0.384)	35542	5.00000	5.24
8	Trichlorofluoromethane	101	2.246	2.246	(0.389)	21717	5.00000	4.98(T)
9	Acrolein	56	2.683	2.683	(0.465)	8739	10.0000	9.22
10	Acetone	43	2.853	2.853	(0.494)	14626	10.0000	8.76
11	1,1-Dichloroethene	96	2.744	2.744	(0.475)	15301	5.00000	5.49
12	Isobutyl Alcohol	74	6.164	6.164	(1.068)	1867	100.000	110.23(AM)
13	Acetonitrile	39	3.161	3.161	(0.548)	20400	50.0000	43.32
14	Allyl Chloride	41	3.167	3.167	(0.549)	53628	5.00000	4.46
15	Iodomethane	142	2.894	2.894	(0.501)	13424	10.0000	8.57(T)
16	Acrylonitrile	53	3.684	3.684	(0.638)	19689	10.0000	12.03(M)
17	Methylene Chloride	84	3.312	3.312	(0.574)	19899	5.00000	5.10
18	Methyl tert-butyl ether	73	3.681	3.681	(0.638)	56045	5.00000	5.26(T)
19	Carbon Disulfide	76	2.949	2.949	(0.511)	64712	10.0000	10.14

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.652	3.652	(0.633)	16439	5.00000	5.09
	21 Vinyl Acetate	43	5.231	5.231	(0.906)	52898	10.0000	11.14(M)
	22 1,1-Dichloroethane	63	4.265	4.265	(0.739)	40191	5.00000	5.42(T)
	24 2-Butanone	43	5.144	5.144	(0.891)	20865	10.0000	10.88
	25 Methacrylonitrile	41	5.401	5.401	(0.936)	24625	5.00000	5.39(H)
	26 2,2-Dichloropropane	77	5.032	5.032	(0.872)	26675	5.00000	5.32
	27 cis-1,2-Dichloroethene	96	5.064	5.064	(0.877)	20047	5.00000	5.26
	28 Chloroform	83	5.484	5.484	(0.950)	34425	5.00000	5.38
	29 Bromochloromethane	128	5.365	5.365	(0.929)	10128	5.00000	5.50
$	30 Dibromofluoromethane	113	5.680	5.680	(0.984)	18421	5.00000	4.80
	31 1,1,1-Trichloroethane	97	5.648	5.648	(0.978)	27980	5.00000	5.21
	32 1,1-Dichloropropene	75	5.843	5.843	(0.890)	22939	5.00000	4.84
	33 1,2-Dichloroethane	62	6.132	6.132	(0.934)	28375	5.00000	5.47
	34 Carbon Tetrachloride	117	5.824	5.824	(0.887)	25192	5.00000	5.23(M)
$	35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	23445	5.00000	4.01
*	36 1,4-Difluorobenzene	114	6.565	6.565	(1.000)	549263	50.0000	
	37 Benzene	78	6.087	6.087	(0.927)	77141	5.00000	5.52
	38 Trichloroethene	130	6.816	6.816	(1.038)	18924	5.00000	5.23
	39 Bromodichloromethane	83	7.377	7.377	(1.124)	27353	5.00000	5.39(T)
	40 Methyl Methacrylate	41	7.243	7.243	(1.255)	22802	5.00000	5.23
	41 2-Chloroethylvinyl ether	63	8.154	8.154	(1.242)	6981	10.0000	11.13(T)
	42 1,2-Dichloropropane	63	7.060	7.060	(1.075)	23531	5.00000	5.61(M)
	43 2-Nitropropane	43	8.026	8.026	(1.390)	48813	5.00000	5.31(T)
	44 Dibromomethane	93	7.191	7.191	(1.095)	11613	5.00000	5.55
	45 4-Methyl-2-Pentanone	43	8.026	8.026	(0.843)	48813	10.0000	10.75
	46 cis-1,3-Dichloropropene	75	7.839	7.839	(1.194)	31441	5.00000	5.55
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	494726	50.0000	
$	48 Toluene-d8	98	8.090	8.090	(0.849)	74973	5.00000	5.17
	49 Ethyl Methacrylate	69	8.526	8.526	(1.299)	28787	5.00000	4.24
	50 Toluene	91	8.157	8.157	(0.856)	83038	5.00000	5.49
	51 trans-1,3-Dichloropropene	75	8.414	8.414	(1.282)	26311	5.00000	5.60
	52 2-Hexanone	43	8.866	8.866	(0.931)	30707	10.0000	10.79
	53 1,1,2-Trichloroethane	83	8.587	8.587	(0.902)	15628	5.00000	5.50
	54 1,3-Dichloropropane	76	8.748	8.748	(0.918)	30718	5.00000	5.45
	55 Dibromochloromethane	129	8.963	8.963	(0.941)	23010	5.00000	5.53
	56 Tetrachloroethene	164	8.687	8.687	(0.912)	15423	5.00000	5.10
	57 1,2-Dibromoethane	107	9.062	9.062	(0.951)	19577	5.00000	5.52
	58 1-Chlorohexane	55	9.547	9.547	(1.454)	23114	5.00000	4.23
	59 Chlorobenzene	112	9.553	9.553	(1.003)	51312	5.00000	5.42
	60 1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.012)	21297	5.00000	5.67
	61 Ethylbenzene	106	9.668	9.668	(1.015)	27630	5.00000	5.39
	62 m,p-Xylenes	106	9.787	9.787	(1.028)	70246	10.0000	7.80
	63 o-Xylene	106	10.172	10.172	(1.068)	35661	5.00000	5.54
	64 Styrene	104	10.195	10.195	(1.070)	58682	5.00000	5.69
	66 Bromoform	173	10.374	10.374	(1.089)	15879	5.00000	5.37(T)
	67 Isopropylbenzene	105	10.545	10.545	(1.107)	83116	5.00000	5.36
	68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.919)	26404	5.00000	5.65
$	69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	28190	5.00000	4.84
*	70 1,4-Dichlorobenzene-d4	152	11.835	11.835	(1.000)	210568	50.0000	
	71 1,2,3-Trichloropropane	75	10.695	10.695	(0.904)	12511	5.00000	4.22
	72 trans-1,4-Dichloro-2-butene	53	10.930	10.930	(1.148)	5862	5.00000	5.44
	73 n-Propylbenzene	91	10.952	10.952	(0.925)	91215	5.00000	5.52
	74 Bromobenzene	156	10.833	10.833	(0.915)	23897	5.00000	5.65
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	71255	5.00000	5.70

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
76 2-Chlorotoluene	91	11.026	11.026	(0.932)	60449	5.00000	4.43
77 4-Chlorotoluene	91	11.135	11.135	(0.941)	66016	5.00000	4.21
78 tert-Butylbenzene	119	11.449	11.449	(0.967)	57950	5.00000	5.61
79 1,2,4-Trimethylbenzene	105	11.498	11.498	(0.972)	72111	5.00000	4.30
81 sec-Butylbenzene	105	11.668	11.668	(0.986)	78275	5.00000	5.68
82 p-Isopropyltoluene	119	11.815	11.815	(0.998)	66698	5.00000	5.68
83 1,3-Dichlorobenzene	146	11.764	11.764	(0.994)	38711	5.00000	5.37
84 1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	36191	5.00000	5.19
87 n-Butylbenzene	91	12.223	12.223	(1.033)	52844	5.00000	5.93
88 1,2-Dichlorobenzene	146	12.220	12.220	(1.033)	38032	5.00000	5.62
89 1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	4014	5.00000	5.32
90 1,2,4-Trichlorobenzene	180	13.821	13.821	(1.168)	18861	5.00000	5.21
91 Hexachlorobutadiene	225	13.988	13.988	(1.182)	10646	5.00000	6.20
92 Naphthalene	128	14.061	14.061	(1.188)	35272	5.00000	4.22
93 1,2,3-Trichlorobenzene	182	14.302	14.302	(1.209)	16133	5.00000	5.68
146 Methyl acetate	43	3.225	3.225	(0.559)	24517	5.00000	5.54
138 Freon TF	101	2.756	2.756	(0.478)	13149	5.00000	3.45
139 Diethyl ether	59	2.535	2.535	(0.439)	35484	5.00000	5.41
147 Methylcyclohexane	83	6.983	6.983	(1.064)	23938	5.00000	4.96
135 1,4-Dioxane	88	7.239	7.239	(1.254)	3801	100.000	94.12
132 n-Butanol	56	6.986	6.986	(1.210)	14101	100.000	104.88(T)
131 Methyl Acrylate	55	5.256	5.256	(0.911)	31657	5.00000	5.11(T)
133 Ethyl Acrylate	55	7.005	7.005	(1.213)	56205	5.00000	5.02(M)
136 n-Hexane	57	4.050	4.050	(0.702)	20349	5.00000	4.61
141 Cyclohexane	56	5.680	5.680	(0.984)	27757	5.00000	4.52(aH)
142 Tetrahydrofuran	42	5.420	5.420	(0.939)	16181	10.0000	10.94
148 Tert-butyl alcohol	59	3.556	3.556	(0.616)	46267	100.000	104.95(T)
149 Isopropyl alcohol	45	3.055	3.055	(0.529)	29228	100.000	104.25(M)
151 4-Methyl-2-pentanol	45	8.459	8.459	(0.888)	104204	100.000	109.54
166 1,2,3-Trimethylbenzene	105	11.912	11.912	(1.007)	65165	5.00000	5.48
167 Ethanol	45	2.532	2.532	(0.439)	32609	100.000	100.93(T)
170 1,3,5-Trichlorobenzene	180	13.201	13.201	(1.116)	27478	5.00000	5.99
172 tert-Butyl formate	59	4.906	4.906	(0.850)	69303	10.0000	10.73
173 3,3-Dimethyl-1-butanol	57	9.113	9.113	(0.957)	31712	100.000	96.32
174 tert-Amyl methyl ether	73	6.254	6.254	(1.083)	65931	5.00000	5.41
175 tert-Butyl ethyl ether	59	6.235	6.235	(1.080)	31493	5.00000	5.21
176 tert-Amyl alcohol	59	6.235	6.235	(1.080)	31493	100.000	104.26
157 2-Methylnaphthalene	142	15.191	15.191	(1.284)	2313	5.00000	6.00(M)
156 Diisopropyl ether	45	4.412	4.412	(0.764)	84402	5.00000	5.38(T)
171 1-Methylnaphthalene	142	15.387	15.387	(1.300)	2396	5.00000	5.53(M)
130 Ethyl Acetate	43	5.231	5.231	(0.906)	44132	5.00000	4.85(a)

QC Flag Legend

T - Target compound detected outside RT window.
a - Target compound detected but, quantitated amount Below Limit Of Quantitation(BLOQ).
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.


Y (x10^5)
Min
-Dichlorodifluoromethane
-Chloromethane+
-Bromomethane
-Chloroethane
-Dichlorofluoromethane+
-Diethyl ether+
-Acrolein
-1,1-Dichloroethene+
-Acetone+
-Carbon Disulfide
-Isopropyl alcohol
-Acetonitrile+
-Methylene Chloride
-Tert-butyl alcohol
-Methyl tert-butyl ether+
-n-Hexane
-1,1-Dichloroethane
-Diisopropyl ether
-tert-Butyl formate
-2,2-Dichloropropane+
-2-Butanone
-Propionitrile+
-Bromochloromethane+
-Chloroform
-Dibromofluoromethane+
-Pentafluorobenzene+
-1,2-Dichloroethane-d4+
-tert-Amyl methyl ether+
-1,4-Difluorobenzene
-Trichloroethene
-Methylcyclohexane+
-1,2-Dichloropropane
-Dibromomethane
-Methyl Methacrylate+
-Bromodichloromethane
-cis-1,3-Dichloropropene
-2-Nitropropane+
-2-Chloroethylvinyl ether+
-trans-1,3-Dichloropropene
-Ethyl Methacrylate
-1,1,2-Trichloroethane
-Tetrachloroethene
-1,3-Dichloropropane
-2-Hexanone
-Dibromochloromethane
-1,2,3-Trichloropropane
-1,3,5-Trimethyl-1-butanol
-1,1,1,2-Tetrachloroethane+
-m,p-Xylenes
Chlorobenzene-d5+
-o-Xylene+
-Bromoform
-Isopropylbenzene
-4-Bromofluorobenzene+
-1,1,2,2-Tetrachloroethane+
-trans-1,4-Dichloro-2-bute+
-2-Chlorotoluene
-1,3,5-Trimethylbenzene+
-tert-Butylbenzene
-1,2,4-Trimethylbenzene
-sec-Butylbenzene
-1,3-Dichlorobenzene
-1,2,3-Trimethylbenzene
1,4-Dichlorobenzene-d4+
-n-Butylbenzene+
-1,2-Dibromo-3-Chloropropa
-1,3,5-Trichlorobenzene
-1,2,4-Trichlorobenzene
-Hexachlorobutadiene
-Naphthalene
-1,2,3-Trichlorobenzene
-2-Methylnaphthalene
-1-Methylnaphthalene
\\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050405.D
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050405.D
Date : 04-MAY-2018 16:32
Client ID: VSTD005
Sample Info: VSTD005;VSTD005;1;4;
Purge Volume: 5.0
Column phase: DB624
Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050406.D Page 1
Report Date: 14-May-2018 17:07

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050406.D
Lab Smp Id: VSTD010 Client Smp ID: VSTD010
Inj Date : 04-MAY-2018 16:56
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD010;VSTD010;1;5;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\8260LL.m
Meth Date : 14-May-2018 17:07 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 16:32 Cal File: D050405.D
Als bottle: 6 Calibration Sample, Level: 5
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

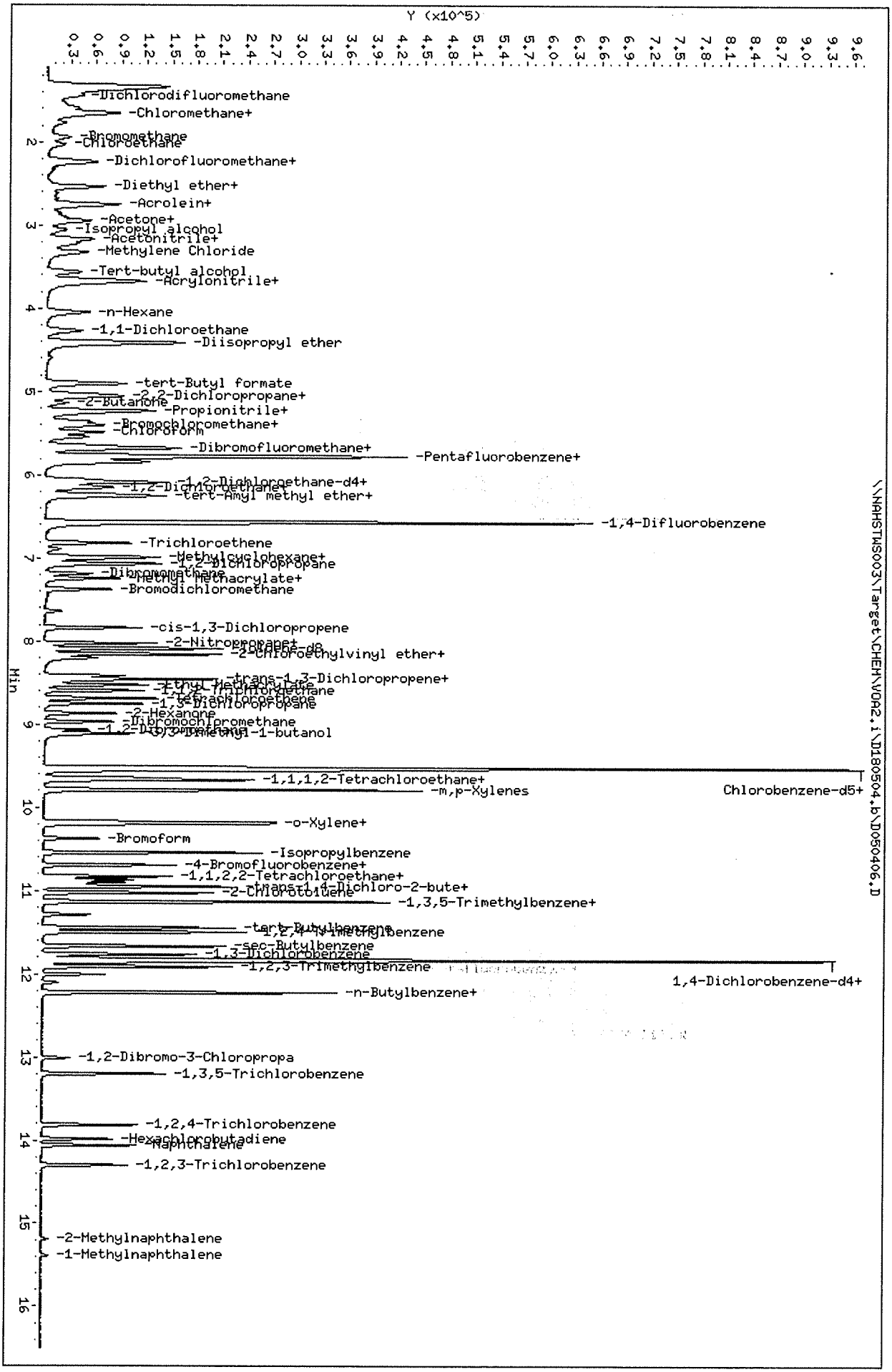
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	5.773	5.773	(1.000)	382417	50.0000	
2 Dichlorodifluoromethane	85	1.441	1.441	(0.250)	34343	10.0000	8.91
186 Isobutylene	56	1.646	1.646	(0.285)	38157	10.0000	10.31(AM)
3 Chloromethane	50	1.585	1.585	(0.275)	63352	10.0000	8.87(T)
4 Propionitrile	54	5.231	5.231	(0.906)	120091	100.000	90.60
5 Vinyl Chloride	62	1.672	1.672	(0.290)	48240	10.0000	10.11
6 Bromomethane	94	1.941	1.941	(0.336)	26816	10.0000	9.49(M)
7 Chloroethane	64	2.025	2.025	(0.351)	24091	10.0000	8.08
159 Dichlorofluoromethane	67	2.221	2.221	(0.385)	65485	10.0000	9.31
8 Trichlorofluoromethane	101	2.240	2.240	(0.388)	46559	10.0000	10.31
9 Acrolein	56	2.680	2.680	(0.464)	16945	10.0000	17.59
10 Acetone	43	2.853	2.853	(0.494)	26679	20.0000	18.23
11 1,1-Dichloroethene	96	2.744	2.744	(0.475)	29578	10.0000	10.24
12 Isobutyl Alcohol	74	6.158	6.158	(1.067)	3536	200.000	192.08(AM)
13 Acetonitrile	39	3.158	3.158	(0.547)	44568	100.000	91.29
14 Allyl Chloride	41	3.164	3.164	(0.548)	107425	10.0000	8.63
15 Iodomethane	142	2.891	2.891	(0.501)	36689	20.0000	15.91
16 Acrylonitrile	53	3.690	3.690	(0.639)	26809	20.0000	15.79
17 Methylene Chloride	84	3.321	3.321	(0.575)	35507	10.0000	8.78
18 Methyl tert-butyl ether	73	3.671	3.671	(0.636)	103031	10.0000	9.34
19 Carbon Disulfide	76	2.943	2.943	(0.510)	125648	20.0000	19.00

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.655	3.655	(0.633)	14477	10.0000	4.28
	21 Vinyl Acetate	43	5.231	5.231	(0.906)	90381	20.0000	18.35(M)
	22 1,1-Dichloroethane	63	4.271	4.271	(0.740)	73301	10.0000	9.54
	24 2-Butanone	43	5.138	5.138	(0.890)	38309	20.0000	19.26
	25 Methacrylonitrile	41	5.401	5.401	(0.936)	44608	10.0000	9.42(H)
	26 2,2-Dichloropropane	77	5.028	5.028	(0.871)	50840	10.0000	9.78
	27 cis-1,2-Dichloroethene	96	5.057	5.057	(0.876)	35362	10.0000	8.94
	28 Chloroform	83	5.484	5.484	(0.950)	63334	10.0000	9.55
	29 Bromochloromethane	128	5.362	5.362	(0.929)	18517	10.0000	9.71
$	30 Dibromofluoromethane	113	5.683	5.683	(0.984)	34934	10.0000	9.48
	31 1,1,1-Trichloroethane	97	5.651	5.651	(0.979)	54412	10.0000	9.78
	32 1,1-Dichloropropene	75	5.850	5.850	(0.891)	45588	10.0000	9.05
	33 1,2-Dichloroethane	62	6.142	6.142	(0.935)	54107	10.0000	9.81
	34 Carbon Tetrachloride	117	5.824	5.824	(0.887)	48322	10.0000	9.43(M)
$	35 1,2-Dichloroethane-d4	65	6.055	6.055	(1.049)	43519	10.0000	8.81
*	36 1,4-Difluorobenzene	114	6.569	6.569	(1.000)	584344	50.0000	
	37 Benzene	78	6.084	6.084	(0.926)	138877	10.0000	9.34
	38 Trichloroethene	130	6.816	6.816	(1.038)	36754	10.0000	9.55
	39 Bromodichloromethane	83	7.374	7.374	(1.123)	51244	10.0000	9.49
	40 Methyl Methacrylate	41	7.239	7.239	(1.254)	42920	10.0000	9.49
	41 2-Chloroethylvinyl ether	63	8.148	8.148	(1.240)	12708	20.0000	19.05(T)
	42 1,2-Dichloropropane	63	7.060	7.060	(1.075)	41828	10.0000	9.38(M)
	43 2-Nitropropane	43	8.022	8.022	(1.390)	89256	10.0000	9.37
	44 Dibromomethane	93	7.191	7.191	(1.095)	21661	10.0000	9.73
	45 4-Methyl-2-Pentanone	43	8.022	8.022	(0.842)	89256	20.0000	18.52
	46 cis-1,3-Dichloropropene	75	7.836	7.836	(1.193)	58307	10.0000	9.68
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	525130	50.0000	
$	48 Toluene-d8	98	8.087	8.087	(0.849)	138297	10.0000	9.12
	49 Ethyl Methacrylate	69	8.529	8.529	(1.298)	50649	10.0000	8.50
	50 Toluene	91	8.154	8.154	(0.856)	151189	10.0000	9.42
	51 trans-1,3-Dichloropropene	75	8.417	8.417	(1.281)	47668	10.0000	9.54
	52 2-Hexanone	43	8.866	8.866	(0.931)	55066	20.0000	18.23
	53 1,1,2-Trichloroethane	83	8.594	8.594	(0.902)	28779	10.0000	9.55
	54 1,3-Dichloropropane	76	8.748	8.748	(0.918)	57901	10.0000	9.68
	55 Dibromochloromethane	129	8.969	8.969	(0.942)	42245	10.0000	9.57
	56 Tetrachloroethene	164	8.687	8.687	(0.912)	30503	10.0000	9.51
	57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	35307	10.0000	9.38
	58 1-Chlorohexane	55	9.547	9.547	(1.453)	41316	10.0000	9.11
	59 Chlorobenzene	112	9.553	9.553	(1.003)	91882	10.0000	9.15
	60 1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.012)	38571	10.0000	9.67
	61 Ethylbenzene	106	9.669	9.669	(1.015)	50060	10.0000	9.20
	62 m,p-Xylenes	106	9.787	9.787	(1.028)	125344	20.0000	17.69
	63 o-Xylene	106	10.176	10.176	(1.068)	64974	10.0000	9.51
	64 Styrene	104	10.195	10.195	(1.070)	105799	10.0000	9.66
	66 Bromoform	173	10.374	10.374	(1.089)	29901	10.0000	9.54
	67 Isopropylbenzene	105	10.545	10.545	(1.107)	157147	10.0000	9.55
	68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.919)	47008	10.0000	9.29
$	69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	50489	10.0000	9.13
*	70 1,4-Dichlorobenzene-d4	152	11.831	11.831	(1.000)	228196	50.0000	
	71 1,2,3-Trichloropropane	75	10.695	10.695	(0.904)	23472	10.0000	9.21
	72 trans-1,4-Dichloro-2-butene	53	10.926	10.926	(1.147)	10789	10.0000	8.88
	73 n-Propylbenzene	91	10.952	10.952	(0.926)	167906	10.0000	9.38
	74 Bromobenzene	156	10.830	10.830	(0.915)	42282	10.0000	9.23
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	127283	10.0000	9.40

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
76 2-Chlorotoluene	91	11.026	11.026	(0.932)	108687	10.0000	8.91
77 4-Chlorotoluene	91	11.138	11.138	(0.941)	121891	10.0000	9.04
78 tert-Butylbenzene	119	11.446	11.446	(0.967)	104486	10.0000	9.34
79 1,2,4-Trimethylbenzene	105	11.498	11.498	(0.972)	127826	10.0000	8.82
81 sec-Butylbenzene	105	11.668	11.668	(0.986)	144328	10.0000	9.67
82 p-Isopropyltoluene	119	11.815	11.815	(0.999)	120510	10.0000	9.47
83 1,3-Dichlorobenzene	146	11.764	11.764	(0.994)	70713	10.0000	9.05
84 1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	67589	10.0000	8.95
87 n-Butylbenzene	91	12.223	12.223	(1.033)	91053	10.0000	9.44
88 1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	70001	10.0000	9.55
89 1,2-Dibromo-3-Chloropropane	75	13.012	13.012	(1.100)	7903	10.0000	9.68
90 1,2,4-Trichlorobenzene	180	13.818	13.818	(1.168)	35798	10.0000	8.81
91 Hexachlorobutadiene	225	13.988	13.988	(1.182)	16436	10.0000	8.85
92 Naphthalene	128	14.062	14.062	(1.188)	83218	10.0000	8.58
93 1,2,3-Trichlorobenzene	182	14.299	14.299	(1.209)	30812	10.0000	9.24
146 Methyl acetate	43	3.222	3.222	(0.558)	40480	10.0000	8.83
138 Freon TF	101	2.760	2.760	(0.478)	30530	10.0000	9.53
139 Diethyl ether	59	2.532	2.532	(0.439)	67010	10.0000	9.86
147 Methylcyclohexane	83	6.986	6.986	(1.064)	50863	10.0000	9.91
135 1,4-Dioxane	88	7.239	7.239	(1.254)	6381	200.000	164.87
132 n-Butanol	56	6.979	6.979	(1.209)	25115	200.000	180.16
131 Methyl Acrylate	55	5.259	5.259	(0.911)	63965	10.0000	9.97
133 Ethyl Acrylate	55	7.008	7.008	(1.214)	114943	10.0000	9.91
136 n-Hexane	57	4.043	4.043	(0.700)	44987	10.0000	9.84
141 Cyclohexane	56	5.683	5.683	(0.984)	64836	10.0000	10.20(H)
142 Tetrahydrofuran	42	5.414	5.414	(0.938)	29323	20.0000	19.13
148 Tert-butyl alcohol	59	3.562	3.562	(0.617)	81132	200.000	177.50
149 Isopropyl alcohol	45	3.049	3.049	(0.528)	53396	200.000	183.69(M)
151 4-Methyl-2-pentanol	45	8.452	8.452	(0.887)	189165	200.000	187.33
166 1,2,3-Trimethylbenzene	105	11.912	11.912	(1.007)	118022	10.0000	9.16
167 Ethanol	45	2.532	2.532	(0.439)	63839	200.000	190.56
170 1,3,5-Trichlorobenzene	180	13.202	13.202	(1.116)	45331	10.0000	9.12
172 tert-Butyl formate	59	4.903	4.903	(0.849)	126914	20.0000	18.95
173 3,3-Dimethyl-1-butanol	57	9.110	9.110	(0.957)	65672	200.000	187.92
174 tert-Amyl methyl ether	73	6.251	6.251	(1.083)	122900	10.0000	9.73
175 tert-Butyl ethyl ether	59	6.229	6.229	(1.079)	57687	10.0000	9.20
176 tert-Amyl alcohol	59	6.229	6.229	(1.079)	57687	200.000	184.19
157 2-Methylnaphthalene	142	15.194	15.194	(1.284)	4532	10.0000	6.56(T)
156 Diisopropyl ether	45	4.412	4.412	(0.764)	154561	10.0000	9.50(T)
171 1-Methylnaphthalene	142	15.387	15.387	(1.301)	4903	10.0000	6.15(T)
130 Ethyl Acetate	43	5.231	5.231	(0.906)	90208	10.0000	9.57

QC Flag Legend

T - Target compound detected outside RT window.
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050406.D
Date : 04-MAY-2018 16:56
Client ID: VSTD010
Sample Info: VSTD010;VSTD010;1;5;
Purge Volume: 5.0
Column phase: DB624

\\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050406.D

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050407.D Page 1
Report Date: 14-May-2018 17:07

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050407.D
Lab Smp Id: VSTD020 Client Smp ID: VSTD020
Inj Date : 04-MAY-2018 17:21
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD020;VSTD020;1;6;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\8260LL.m
Meth Date : 14-May-2018 17:07 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 16:56 Cal File: D050406.D
Als bottle: 7 Calibration Sample, Level: 6
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

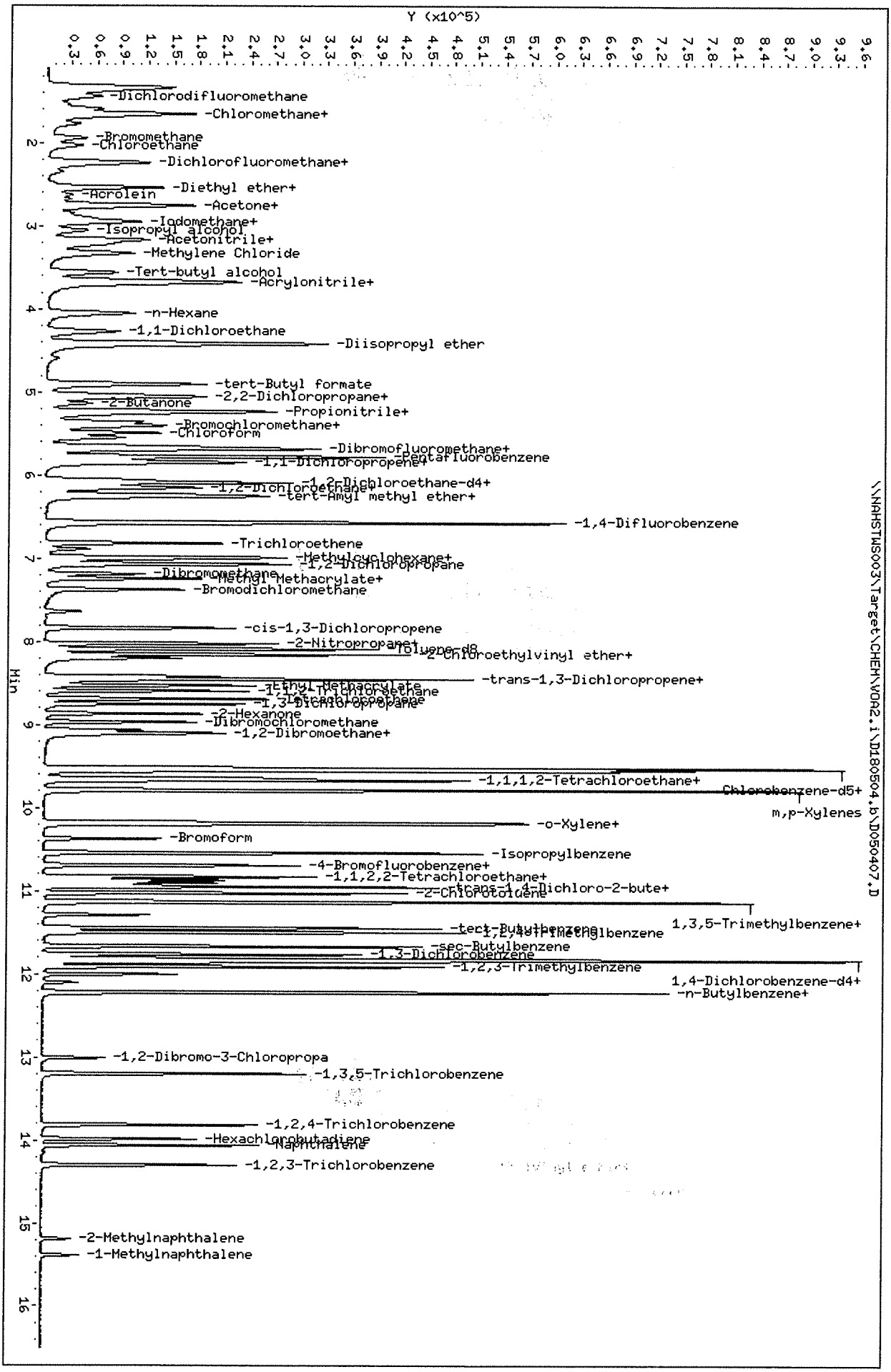
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1	Pentafluorobenzene	168	5.772	5.772	(1.000)	349139	50.0000	
2	Dichlorodifluoromethane	85	1.437	1.437	(0.249)	71401	20.0000	21.53
186	Isobutylene	56	1.646	1.646	(0.285)	83233	20.0000	24.63(AM)
3	Chloromethane	50	1.585	1.585	(0.275)	130241	20.0000	22.18
4	Propionitrile	54	5.224	5.224	(0.905)	257578	200.000	212.86
5	Vinyl Chloride	62	1.671	1.671	(0.290)	98115	20.0000	22.53
6	Bromomethane	94	1.938	1.938	(0.336)	49519	20.0000	19.20
7	Chloroethane	64	2.031	2.031	(0.352)	55952	20.0000	23.06
159	Dichlorofluoromethane	67	2.220	2.220	(0.385)	137229	20.0000	21.37
8	Trichlorofluoromethane	101	2.243	2.243	(0.389)	97406	20.0000	23.63
9	Acrolein	56	2.676	2.676	(0.464)	33060	40.0000	38.04
10	Acetone	43	2.846	2.846	(0.493)	49743	40.0000	41.11
11	1,1-Dichloroethene	96	2.750	2.750	(0.476)	56471	20.0000	21.42
12	Isobutyl Alcohol	74	6.157	6.157	(1.067)	7038	400.000	405.53(AM)
13	Acetonitrile	39	3.170	3.170	(0.549)	90061	200.000	202.06
14	Allyl Chloride	41	3.167	3.167	(0.549)	232316	20.0000	20.44
15	Iodomethane	142	2.904	2.904	(0.503)	95749	40.0000	37.87
16	Acrylonitrile	53	3.687	3.687	(0.639)	65793	40.0000	42.46
17	Methylene Chloride	84	3.327	3.327	(0.576)	72041	20.0000	19.52
18	Methyl tert-butyl ether	73	3.680	3.680	(0.638)	210597	20.0000	20.91
19	Carbon Disulfide	76	2.942	2.942	(0.510)	255686	40.0000	42.35

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.655	3.655	(0.633)	65763	20.0000	22.61
	21 Vinyl Acetate	43	5.233	5.233	(0.907)	194220	40.0000	43.21(M)
	22 1,1-Dichloroethane	63	4.267	4.267	(0.739)	147120	20.0000	20.98
	24 2-Butanone	43	5.134	5.134	(0.889)	79772	40.0000	43.94
	25 Methacrylonitrile	41	5.394	5.394	(0.934)	90721	20.0000	20.98(H)
	26 2,2-Dichloropropane	77	5.038	5.038	(0.873)	105239	20.0000	22.19
	27 cis-1,2-Dichloroethene	96	5.060	5.060	(0.877)	77848	20.0000	21.57
	28 Chloroform	83	5.490	5.490	(0.951)	126506	20.0000	20.91
	29 Bromochloromethane	128	5.362	5.362	(0.929)	37197	20.0000	21.36
$	30 Dibromofluoromethane	113	5.679	5.679	(0.984)	66765	20.0000	20.99
	31 1,1,1-Trichloroethane	97	5.647	5.647	(0.978)	111797	20.0000	22.01
	32 1,1-Dichloropropene	75	5.849	5.849	(0.891)	89289	20.0000	19.00
	33 1,2-Dichloroethane	62	6.138	6.138	(0.935)	106949	20.0000	20.80
	34 Carbon Tetrachloride	117	5.830	5.830	(0.888)	97675	20.0000	20.44(MH)
$	35 1,2-Dichloroethane-d4	65	6.048	6.048	(1.048)	86791	20.0000	21.69
*	36 1,4-Difluorobenzene	114	6.565	6.565	(1.000)	545071	50.0000	
	37 Benzene	78	6.090	6.090	(0.928)	281645	20.0000	20.32
	38 Trichloroethene	130	6.815	6.815	(1.038)	76419	20.0000	21.30
	39 Bromodichloromethane	83	7.374	7.374	(1.123)	105096	20.0000	20.88
	40 Methyl Methacrylate	41	7.245	7.245	(1.255)	89556	20.0000	21.70
	41 2-Chloroethylvinyl ether	63	8.153	8.153	(1.242)	25768	40.0000	41.42(T)
	42 1,2-Dichloropropane	63	7.059	7.059	(1.075)	86252	20.0000	20.74
	43 2-Nitropropane	43	8.022	8.022	(1.390)	187193	20.0000	21.53
	44 Dibromomethane	93	7.184	7.184	(1.094)	44155	20.0000	21.26
	45 4-Methyl-2-Pentanone	43	8.022	8.022	(0.842)	187193	40.0000	41.64
	46 cis-1,3-Dichloropropene	75	7.839	7.839	(1.194)	120790	20.0000	21.51
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	489834	50.0000	
$	48 Toluene-d8	98	8.086	8.086	(0.849)	257970	20.0000	19.12
	49 Ethyl Methacrylate	69	8.526	8.526	(1.299)	104310	20.0000	21.51
	50 Toluene	91	8.153	8.153	(0.856)	301116	20.0000	20.12
	51 trans-1,3-Dichloropropene	75	8.417	8.417	(1.282)	100604	20.0000	21.58
	52 2-Hexanone	43	8.863	8.863	(0.931)	117912	40.0000	41.86
	53 1,1,2-Trichloroethane	83	8.593	8.593	(0.902)	56618	20.0000	20.14
	54 1,3-Dichloropropane	76	8.747	8.747	(0.918)	114958	20.0000	20.60
	55 Dibromochloromethane	129	8.968	8.968	(0.942)	85643	20.0000	20.81
	56 Tetrachloroethene	164	8.689	8.689	(0.912)	61687	20.0000	20.62
	57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	74048	20.0000	21.10
	58 1-Chlorohexane	55	9.549	9.549	(1.455)	79441	20.0000	21.90
	59 Chlorobenzene	112	9.553	9.553	(1.003)	186888	20.0000	19.96
	60 1,1,1,2-Tetrachloroethane	131	9.642	9.642	(1.012)	76030	20.0000	20.45
	61 Ethylbenzene	106	9.668	9.668	(1.015)	100751	20.0000	19.85
	62 m,p-Xylenes	106	9.787	9.787	(1.028)	249353	40.0000	45.34
	63 o-Xylene	106	10.175	10.175	(1.068)	128206	20.0000	20.12
	64 Styrene	104	10.197	10.197	(1.071)	212786	20.0000	20.84
	66 Bromoform	173	10.374	10.374	(1.089)	62785	20.0000	21.47
	67 Isopropylbenzene	105	10.544	10.544	(1.107)	320662	20.0000	20.90
	68 1,1,2,2-Tetrachloroethane	83	10.871	10.871	(0.919)	97153	20.0000	20.46
$	69 4-Bromofluorobenzene	95	10.692	10.692	(1.123)	96704	20.0000	20.38
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	214276	50.0000	
	71 1,2,3-Trichloropropane	75	10.695	10.695	(0.904)	44805	20.0000	21.42
	72 trans-1,4-Dichloro-2-butene	53	10.926	10.926	(1.147)	23370	20.0000	19.60
	73 n-Propylbenzene	91	10.952	10.952	(0.925)	341924	20.0000	20.34
	74 Bromobenzene	156	10.833	10.833	(0.915)	86488	20.0000	20.10
	75 1,3,5-Trimethylbenzene	105	11.128	11.128	(0.940)	258546	20.0000	20.34

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
76	2-Chlorotoluene	91	11.025	11.025	(0.932)	221609	20.0000	22.12
77	4-Chlorotoluene	91	11.134	11.134	(0.941)	243997	20.0000	22.30
78	tert-Butylbenzene	119	11.449	11.449	(0.967)	215240	20.0000	20.50
79	1,2,4-Trimethylbenzene	105	11.497	11.497	(0.972)	260489	20.0000	22.41
81	sec-Butylbenzene	105	11.664	11.664	(0.986)	295848	20.0000	21.13
82	p-Isopropyltoluene	119	11.815	11.815	(0.998)	248221	20.0000	20.78
83	1,3-Dichlorobenzene	146	11.763	11.763	(0.994)	146530	20.0000	19.98
84	1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	137777	20.0000	19.44
87	n-Butylbenzene	91	12.222	12.222	(1.033)	190336	20.0000	21.01
88	1,2-Dichlorobenzene	146	12.222	12.222	(1.033)	143392	20.0000	20.84
89	1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	16482	20.0000	21.50
90	1,2,4-Trichlorobenzene	180	13.817	13.817	(1.168)	79809	20.0000	20.32
91	Hexachlorobutadiene	225	13.987	13.987	(1.182)	35809	20.0000	20.57
92	Naphthalene	128	14.061	14.061	(1.188)	198251	20.0000	20.99
93	1,2,3-Trichlorobenzene	182	14.298	14.298	(1.208)	66775	20.0000	19.98
146	Methyl acetate	43	3.221	3.221	(0.558)	83175	20.0000	19.87
138	Freon TF	101	2.753	2.753	(0.477)	61420	20.0000	22.76
139	Diethyl ether	59	2.531	2.531	(0.439)	132597	20.0000	21.38
147	Methylcyclohexane	83	6.985	6.985	(1.064)	103943	20.0000	21.72
135	1,4-Dioxane	88	7.236	7.236	(1.253)	13691	400.000	414.69
132	n-Butanol	56	6.982	6.982	(1.210)	53244	400.000	418.35
131	Methyl Acrylate	55	5.259	5.259	(0.911)	131269	20.0000	22.41
133	Ethyl Acrylate	55	7.005	7.005	(1.213)	231736	20.0000	21.89
136	n-Hexane	57	4.049	4.049	(0.702)	93793	20.0000	22.47
141	Cyclohexane	56	5.683	5.683	(0.984)	133600	20.0000	23.02(H)
142	Tetrahydrofuran	42	5.407	5.407	(0.937)	59334	40.0000	42.40
148	Tert-butyl alcohol	59	3.555	3.555	(0.616)	179831	400.000	430.94
149	Isopropyl alcohol	45	3.048	3.048	(0.528)	107029	400.000	403.30(M)
151	4-Methyl-2-pentanol	45	8.449	8.449	(0.887)	414823	400.000	440.42
166	1,2,3-Trimethylbenzene	105	11.911	11.911	(1.007)	245288	20.0000	20.27
167	Ethanol	45	2.535	2.535	(0.439)	131873	400.000	431.17
170	1,3,5-Trichlorobenzene	180	13.201	13.201	(1.116)	98974	20.0000	21.22
172	tert-Butyl formate	59	4.906	4.906	(0.850)	257312	40.0000	42.09
173	3,3-Dimethyl-1-butanol	57	9.100	9.100	(0.956)	142103	400.000	435.94
174	tert-Amyl methyl ether	73	6.254	6.254	(1.083)	240484	20.0000	20.85
175	tert-Butyl ethyl ether	59	6.225	6.225	(1.078)	122247	20.0000	21.37
176	tert-Amyl alcohol	59	6.225	6.225	(1.078)	122247	400.000	427.54
157	2-Methylnaphthalene	142	15.191	15.191	(1.284)	17472	20.0000	10.41
156	Diisopropyl ether	45	4.418	4.418	(0.765)	311485	20.0000	20.98(T)
171	1-Methylnaphthalene	142	15.390	15.390	(1.300)	22016	20.0000	11.09
130	Ethyl Acetate	43	5.233	5.233	(0.907)	184870	20.0000	21.48

QC Flag Legend

T - Target compound detected outside RT window.
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.


Y (x10^5)
Min
-Dichlorodifluoromethane
-Chloromethane+
-Bromomethane
-Chloroethane
-Dichlorofluoromethane+
-Acrolein
-Diethyl ether+
-Acetone+
-Iodomethane+
-Isopropyl alcohol
-Acetonitrile+
-Methylene Chloride
-Tert-butyl alcohol
-Acrylonitrile+
-n-Hexane
-1,1-Dichloroethane
-Diisopropyl ether
-tert-Butyl formate
-2,2-Dichloropropane+
-2-Butanone
-Propionitrile+
-Bromochloromethane+
-Chloroform
-Dibromofluoromethane+
-Pentafluorobenzene
-1,1-Dichloropropene+
-1,2-Dichloroethane
-1,2-Dichloroethane-d4+
-tert-Amyl methyl ether+
-1,4-Difluorobenzene
-Trichloroethene
-Methylcyclohexane+
-1,2-Dichloropropane
-Dibromomethane
-Methyl Methacrylate+
-Bromodichloromethane
-cis-1,3-Dichloropropene
-2-Nitropropane+
-Toluene-d8
-2-Chloroethylvinyl ether+
-trans-1,3-Dichloropropene+
-Ethyl Methacrylate
-1,1,2-Trichloroethane
-Tetrachloroethane
-1,3-Dichloropropane
-2-Hexanone
-Dibromochloromethane
-1,2-Dibromoethane+
-1,1,1,2-Tetrachloroethane+
Chlorobenzene-d5+
m,p-Xylenes
-o-Xylene+
-Bromoform
-Isopropylbenzene
-4-Bromofluorobenzene+
-1,1,2,2-Tetrachloroethane+
trans-1,4-Dichloro-2-bute+
-2-Chlorotoluene
1,3,5-Trimethylbenzene+
-tert-Butylbenzene
1,2,4-Trimethylbenzene
-sec-Butylbenzene
-1,3-Dichlorobenzene
-1,2,3-Trimethylbenzene
1,4-Dichlorobenzene-d4+
-n-Butylbenzene+
-1,2-Dibromo-3-Chloropropa
-1,3,5-Trichlorobenzene
-1,2,4-Trichlorobenzene
-Hexachlorobutadiene
-Naphthalene
-1,2,3-Trichlorobenzene
-2-Methylnaphthalene
-1-Methylnaphthalene
\\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050407.D
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050407.D
Date : 04-MAY-2018 17:21
Client ID: VSTD020
Sample Info: VSTD020;VSTD020;1;6;
Purge Volume: 5.0
Column phase: DB624
Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050408.D Page 1
Report Date: 14-May-2018 17:07

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050408.D
Lab Smp Id: VSTD050 Client Smp ID: VSTD050
Inj Date : 04-MAY-2018 17:45
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD050;VSTD050;1;7;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\8260LL.m
Meth Date : 14-May-2018 17:07 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 17:21 Cal File: D050407.D
Als bottle: 8 Calibration Sample, Level: 7
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1 Pentafluorobenzene	168	5.776	5.776	(1.000)	350686	50.0000	
2 Dichlorodifluoromethane	85	1.438	1.438	(0.249)	187813	50.0000	57.94
186 Isobutylene	56	1.646	1.646	(0.285)	190723	50.0000	56.20(AM)
3 Chloromethane	50	1.588	1.588	(0.275)	317456	50.0000	56.35
4 Propionitrile	54	5.230	5.230	(0.906)	666410	500.000	548.30
5 Vinyl Chloride	62	1.672	1.672	(0.289)	238278	50.0000	54.47
6 Bromomethane	94	1.938	1.938	(0.336)	118894	50.0000	45.90
7 Chloroethane	64	2.025	2.025	(0.351)	136214	50.0000	58.18
159 Dichlorofluoromethane	67	2.221	2.221	(0.384)	339623	50.0000	52.67
8 Trichlorofluoromethane	101	2.243	2.243	(0.388)	247524	50.0000	59.79
9 Acrolein	56	2.670	2.670	(0.462)	84761	100.000	97.71
10 Acetone	43	2.843	2.843	(0.492)	125590	100.000	108.96
11 1,1-Dichloroethene	96	2.737	2.737	(0.474)	151526	50.0000	57.22
12 Isobutyl Alcohol	74	6.158	6.158	(1.066)	17826	1000.00	1005.54(AM)
13 Acetonitrile	39	3.161	3.161	(0.547)	239911	500.000	535.88
14 Allyl Chloride	41	3.167	3.167	(0.548)	617975	50.0000	54.15
15 Iodomethane	142	2.898	2.898	(0.502)	287361	100.000	105.02
16 Acrylonitrile	53	3.687	3.687	(0.638)	181398	100.000	116.56
17 Methylene Chloride	84	3.328	3.328	(0.576)	183050	50.0000	49.39
18 Methyl tert-butyl ether	73	3.677	3.677	(0.637)	516807	50.0000	51.10
19 Carbon Disulfide	76	2.946	2.946	(0.510)	648043	100.000	106.87

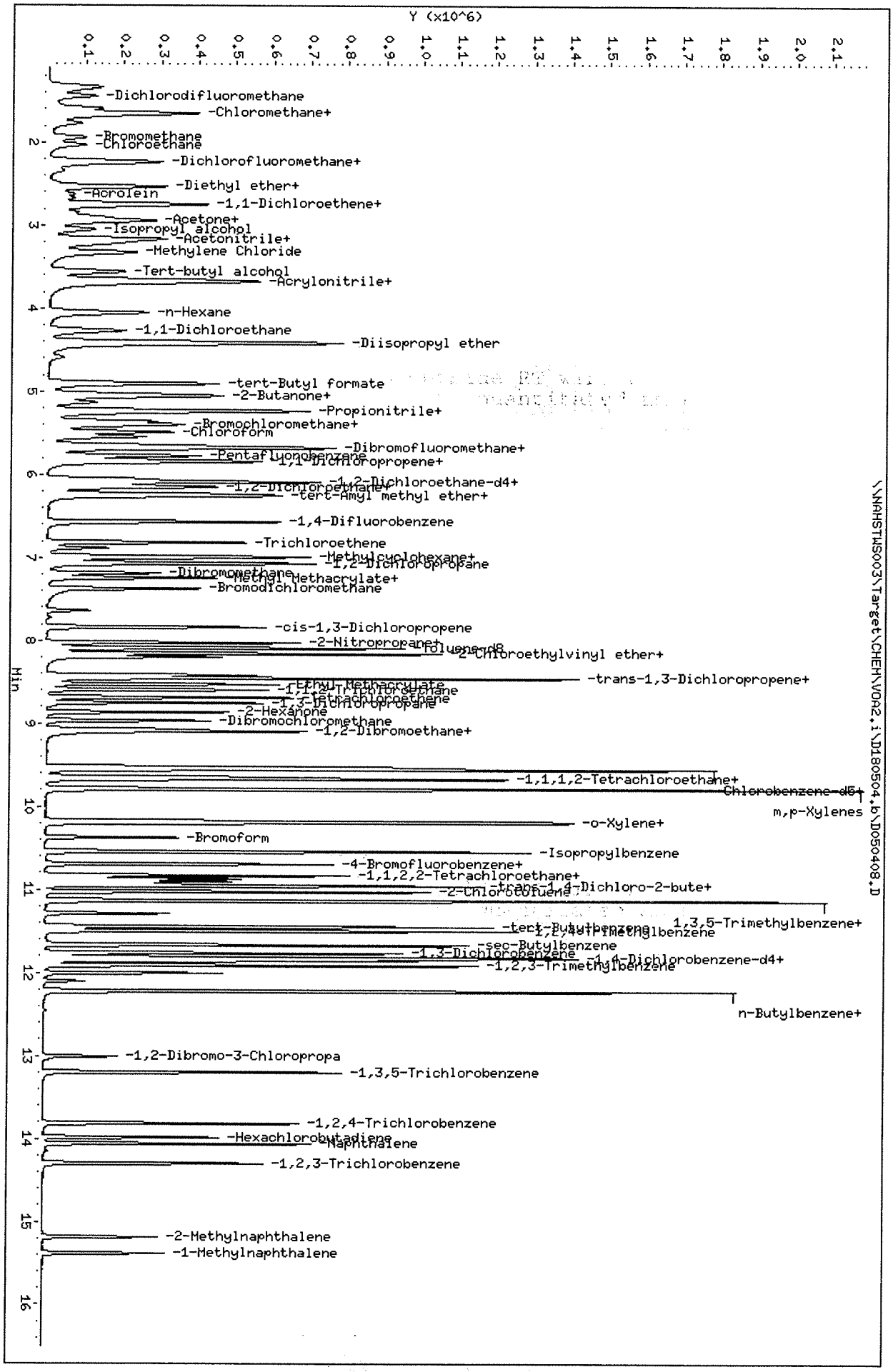
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.658	3.658	(0.633)	164665	50.0000	56.87
	21 Vinyl Acetate	43	5.237	5.237	(0.907)	444824	100.000	98.53
	22 1,1-Dichloroethane	63	4.265	4.265	(0.738)	368035	50.0000	52.25
	24 2-Butanone	43	5.134	5.134	(0.889)	199091	100.000	109.19
	25 Methacrylonitrile	41	5.401	5.401	(0.935)	224737	50.0000	51.75(H)
	26 2,2-Dichloropropane	77	5.038	5.038	(0.872)	265984	50.0000	55.85
	27 cis-1,2-Dichloroethene	96	5.057	5.057	(0.876)	193540	50.0000	53.41
	28 Chloroform	83	5.490	5.490	(0.951)	314451	50.0000	51.75
	29 Bromochloromethane	128	5.359	5.359	(0.928)	97371	50.0000	55.68
$	30 Dibromofluoromethane	113	5.677	5.677	(0.983)	161085	50.0000	53.31
	31 1,1,1-Trichloroethane	97	5.651	5.651	(0.978)	284593	50.0000	55.79
	32 1,1-Dichloropropene	75	5.850	5.850	(0.891)	225428	50.0000	47.68
	33 1,2-Dichloroethane	62	6.139	6.139	(0.935)	260346	50.0000	50.32
	34 Carbon Tetrachloride	117	5.831	5.831	(0.888)	239306	50.0000	49.77(H)
$	35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	212338	50.0000	55.80
*	36 1,4-Difluorobenzene	114	6.569	6.569	(1.000)	548473	50.0000	
	37 Benzene	78	6.087	6.087	(0.927)	697898	50.0000	50.05
	38 Trichloroethene	130	6.816	6.816	(1.038)	193685	50.0000	53.67
	39 Bromodichloromethane	83	7.374	7.374	(1.123)	260198	50.0000	51.38
	40 Methyl Methacrylate	41	7.246	7.246	(1.254)	223241	50.0000	53.87
	41 2-Chloroethylvinyl ether	63	8.157	8.157	(1.242)	62277	100.000	99.50(T)
	42 1,2-Dichloropropane	63	7.063	7.063	(1.075)	208974	50.0000	49.94
	43 2-Nitropropane	43	8.025	8.025	(1.389)	454901	50.0000	52.10
	44 Dibromomethane	93	7.188	7.188	(1.094)	113995	50.0000	54.57
	45 4-Methyl-2-Pentanone	43	8.025	8.025	(0.843)	454901	100.000	100.03
	46 cis-1,3-Dichloropropene	75	7.836	7.836	(1.193)	308972	50.0000	54.68
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	495545	50.0000	
$	48 Toluene-d8	98	8.090	8.090	(0.849)	611504	50.0000	50.93
	49 Ethyl Methacrylate	69	8.529	8.529	(1.298)	266010	50.0000	58.02
	50 Toluene	91	8.154	8.154	(0.856)	737279	50.0000	48.70
	51 trans-1,3-Dichloropropene	75	8.414	8.414	(1.281)	267533	50.0000	57.05
	52 2-Hexanone	43	8.863	8.863	(0.931)	297754	100.000	104.49
	53 1,1,2-Trichloroethane	83	8.593	8.593	(0.902)	145070	50.0000	51.02
	54 1,3-Dichloropropane	76	8.751	8.751	(0.919)	283622	50.0000	50.25
	55 Dibromochloromethane	129	8.969	8.969	(0.942)	216917	50.0000	52.10
	56 Tetrachloroethene	164	8.686	8.686	(0.912)	157120	50.0000	51.93
	57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	185246	50.0000	52.19
	58 1-Chlorohexane	55	9.550	9.550	(1.454)	198340	50.0000	58.70
	59 Chlorobenzene	112	9.553	9.553	(1.003)	463607	50.0000	48.94
	60 1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.012)	192645	50.0000	51.22
	61 Ethylbenzene	106	9.668	9.668	(1.015)	251848	50.0000	49.06
	62 m,p-Xylenes	106	9.790	9.790	(1.028)	611125	100.000	119.43
	63 o-Xylene	106	10.175	10.175	(1.068)	323883	50.0000	50.24
	64 Styrene	104	10.195	10.195	(1.070)	526444	50.0000	50.98
	66 Bromoform	173	10.374	10.374	(1.089)	157552	50.0000	53.27
	67 Isopropylbenzene	105	10.544	10.544	(1.107)	802370	50.0000	51.70
	68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.919)	234466	50.0000	48.38
$	69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	235072	50.0000	52.46
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	218685	50.0000	
	71 1,2,3-Trichloropropane	75	10.695	10.695	(0.904)	109708	50.0000	55.05
	72 trans-1,4-Dichloro-2-butene	53	10.926	10.926	(1.147)	64084	50.0000	51.81
	73 n-Propylbenzene	91	10.952	10.952	(0.925)	855905	50.0000	49.89
	74 Bromobenzene	156	10.833	10.833	(0.915)	219152	50.0000	49.92
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	637021	50.0000	49.12

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050408.D Page 3
Report Date: 14-May-2018 17:07

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
76	2-Chlorotoluene	91	11.026	11.026	(0.932)	552517	50.0000	57.45
77	4-Chlorotoluene	91	11.138	11.138	(0.941)	609251	50.0000	58.42
78	tert-Butylbenzene	119	11.449	11.449	(0.967)	553745	50.0000	51.67
79	1,2,4-Trimethylbenzene	105	11.497	11.497	(0.972)	648084	50.0000	58.65
81	sec-Butylbenzene	105	11.664	11.664	(0.986)	748824	50.0000	52.40
82	p-Isopropyltoluene	119	11.815	11.815	(0.998)	630469	50.0000	51.72
83	1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	371616	50.0000	49.66
84	1,4-Dichlorobenzene	146	11.860	11.860	(1.002)	355327	50.0000	49.14
87	n-Butylbenzene	91	12.219	12.219	(1.033)	498858	50.0000	53.97
88	1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	350866	50.0000	49.97
89	1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	43462	50.0000	55.55
90	1,2,4-Trichlorobenzene	180	13.818	13.818	(1.168)	211499	50.0000	52.07
91	Hexachlorobutadiene	225	13.988	13.988	(1.182)	92968	50.0000	52.38
92	Naphthalene	128	14.061	14.061	(1.188)	525810	50.0000	53.75
93	1,2,3-Trichlorobenzene	182	14.299	14.299	(1.208)	177731	50.0000	50.48
146	Methyl acetate	43	3.218	3.218	(0.557)	212044	50.0000	50.45
138	Freon TF	101	2.753	2.753	(0.477)	150866	50.0000	57.76
139	Diethyl ether	59	2.532	2.532	(0.438)	320037	50.0000	51.39
147	Methylcyclohexane	83	6.986	6.986	(1.064)	261508	50.0000	54.30
135	1,4-Dioxane	88	7.233	7.233	(1.252)	35743	1000.00	1110.09
132	n-Butanol	56	6.992	6.992	(1.211)	125296	1000.00	980.14
131	Methyl Acrylate	55	5.253	5.253	(0.909)	332179	50.0000	56.46
133	Ethyl Acrylate	55	7.005	7.005	(1.213)	580097	50.0000	54.57
136	n-Hexane	57	4.053	4.053	(0.702)	248185	50.0000	59.21
141	Cyclohexane	56	5.683	5.683	(0.984)	335256	50.0000	57.51(H)
142	Tetrahydrofuran	42	5.410	5.410	(0.937)	146733	100.000	104.40
148	Tert-butyl alcohol	59	3.552	3.552	(0.615)	458271	1000.00	1093.35
149	Isopropyl alcohol	45	3.045	3.045	(0.527)	265448	1000.00	995.83(T)
151	4-Methyl-2-pentanol	45	8.452	8.452	(0.887)	1040452	1000.00	1091.92
166	1,2,3-Trimethylbenzene	105	11.915	11.915	(1.007)	609823	50.0000	49.39
167	Ethanol	45	2.529	2.529	(0.438)	319345	1000.00	1039.53
170	1,3,5-Trichlorobenzene	180	13.201	13.201	(1.116)	251018	50.0000	52.74
172	tert-Butyl formate	59	4.903	4.903	(0.849)	619085	100.000	100.82
173	3,3-Dimethyl-1-butanol	57	9.094	9.094	(0.955)	375304	1000.00	1138.10
174	tert-Amyl methyl ether	73	6.251	6.251	(1.082)	592618	50.0000	51.16
175	tert-Butyl ethyl ether	59	6.228	6.228	(1.078)	310903	50.0000	54.12
176	tert-Amyl alcohol	59	6.228	6.228	(1.078)	310903	1000.00	1082.55
157	2-Methylnaphthalene	142	15.188	15.188	(1.283)	147779	50.0000	46.22
156	Diisopropyl ether	45	4.415	4.415	(0.764)	764306	50.0000	51.27(T)
171	1-Methylnaphthalene	142	15.383	15.383	(1.300)	162419	50.0000	49.08
130	Ethyl Acetate	43	5.237	5.237	(0.907)	452615	50.0000	52.36

QC Flag Legend

T - Target compound detected outside RT window.
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050408.D
Date : 04-MAY-2018 17:45
Client ID: VSTD050
Sample Info: VSTD050;VSTD050;1;7;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050409.D Page 1
Report Date: 14-May-2018 17:07

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050409.D
Lab Smp Id: VSTD100 Client Smp ID: VSTD100
Inj Date : 04-MAY-2018 18:09
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD100;VSTD100;1;8;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\8260LL.m
Meth Date : 14-May-2018 17:07 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 17:45 Cal File: D050408.D
Als bottle: 9 Calibration Sample, Level: 8
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

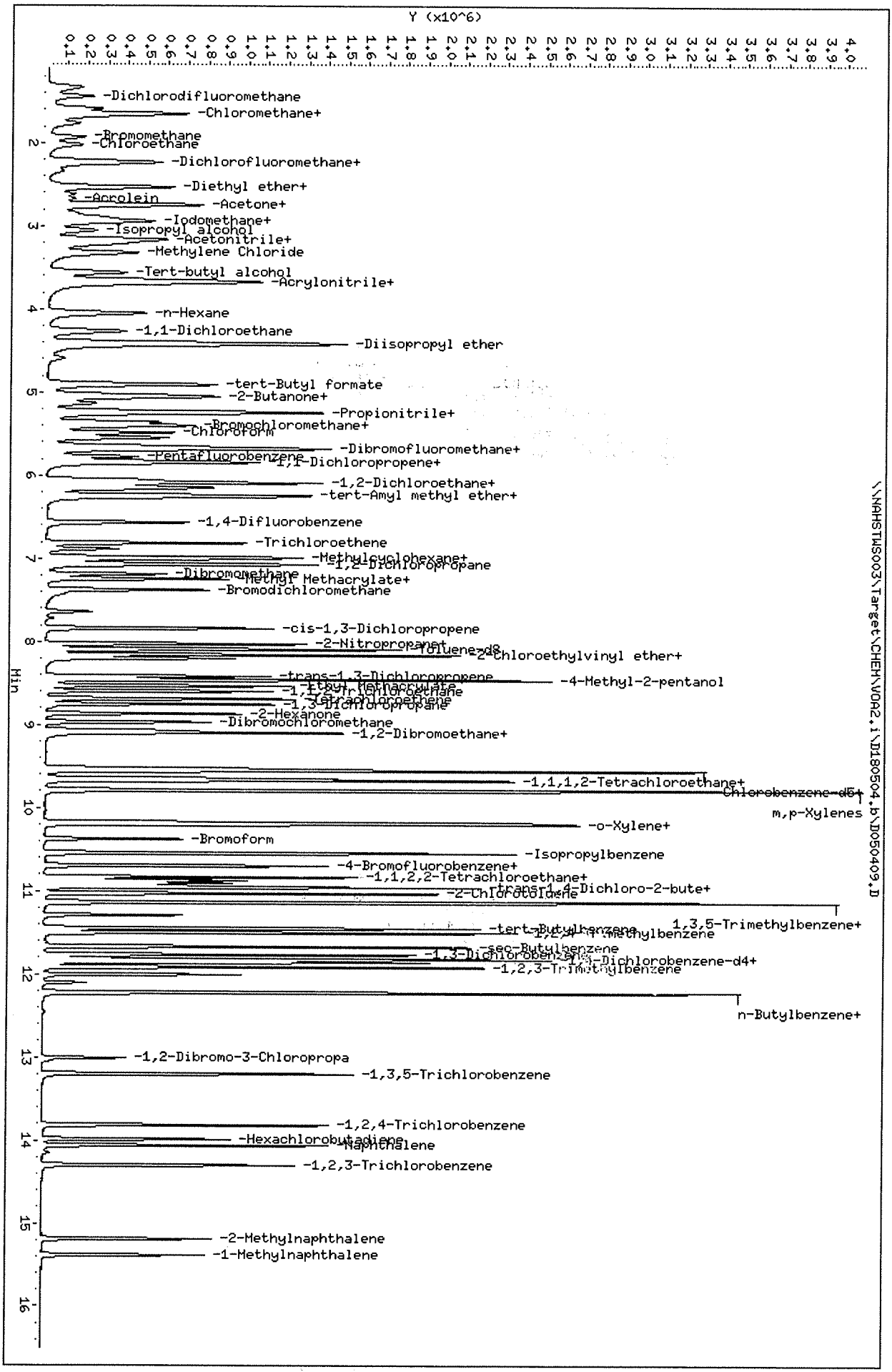
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	5.776	5.776	(1.000)	387338	50.0000	
2 Dichlorodifluoromethane	85	1.438	1.438	(0.249)	343934	100.000	96.70
186 Isobutylene	56	1.640	1.640	(0.284)	327597	100.000	87.40(AM)
3 Chloromethane	50	1.585	1.585	(0.274)	602360	100.000	98.08
4 Propionitrile	54	5.240	5.240	(0.907)	1312512	1000.00	977.71
5 Vinyl Chloride	62	1.669	1.669	(0.289)	438115	100.000	90.69
6 Bromomethane	94	1.928	1.928	(0.334)	211727	100.000	74.00
7 Chloroethane	64	2.025	2.025	(0.351)	254833	100.000	99.68
159 Dichlorofluoromethane	67	2.217	2.217	(0.384)	635538	100.000	89.23
8 Trichlorofluoromethane	101	2.240	2.240	(0.388)	442242	100.000	96.72
9 Acrolein	56	2.676	2.676	(0.463)	191202	200.000	199.97
10 Acetone	43	2.840	2.840	(0.492)	250202	200.000	199.52
11 1,1-Dichloroethene	96	2.740	2.740	(0.474)	278753	100.000	95.31
12 Isobutyl Alcohol	74	6.164	6.164	(1.067)	39310	2000.00	1996.43(AM)
13 Acetonitrile	39	3.157	3.157	(0.547)	485819	1000.00	982.48
14 Allyl Chloride	41	3.164	3.164	(0.548)	1213192	100.000	96.25
15 Iodomethane	142	2.898	2.898	(0.502)	593037	200.000	192.67
16 Acrylonitrile	53	3.681	3.681	(0.637)	352303	200.000	204.97
17 Methylene Chloride	84	3.324	3.324	(0.576)	355236	100.000	86.78
18 Methyl tert-butyl ether	73	3.674	3.674	(0.636)	997217	100.000	89.28
19 Carbon Disulfide	76	2.942	2.942	(0.509)	1214197	200.000	181.30

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.652	3.652	(0.632)	314877	100.000	98.69
	21 Vinyl Acetate	43	5.243	5.243	(0.908)	862066	200.000	172.89
	22 1,1-Dichloroethane	63	4.265	4.265	(0.738)	708167	100.000	91.03
	24 2-Butanone	43	5.134	5.134	(0.889)	408035	200.000	202.62
	25 Methacrylonitrile	41	5.397	5.397	(0.934)	450364	100.000	93.89(M)
	26 2,2-Dichloropropane	77	5.031	5.031	(0.871)	498071	100.000	94.68
	27 cis-1,2-Dichloroethene	96	5.060	5.060	(0.876)	371650	100.000	92.86
	28 Chloroform	83	5.487	5.487	(0.950)	599403	100.000	89.31
	29 Bromochloromethane	128	5.362	5.362	(0.928)	190373	100.000	98.56
$	30 Dibromofluoromethane	113	5.676	5.676	(0.983)	308649	100.000	96.93
	31 1,1,1-Trichloroethane	97	5.644	5.644	(0.977)	526141	100.000	93.38
	32 1,1-Dichloropropene	75	5.850	5.850	(0.891)	427075	100.000	80.47
	33 1,2-Dichloroethane	62	6.139	6.139	(0.935)	516083	100.000	88.86
	34 Carbon Tetrachloride	117	5.831	5.831	(0.888)	457167	100.000	84.71(H)
$	35 1,2-Dichloroethane-d4	65	6.055	6.055	(1.048)	423867	100.000	102.51
*	36 1,4-Difluorobenzene	114	6.565	6.565	(1.000)	615694	50.0000	
	37 Benzene	78	6.087	6.087	(0.927)	1309865	100.000	83.69
	38 Trichloroethene	130	6.812	6.812	(1.038)	373414	100.000	92.17
	39 Bromodichloromethane	83	7.374	7.374	(1.123)	504183	100.000	88.69
	40 Methyl Methacrylate	41	7.246	7.246	(1.254)	438915	100.000	95.90
	41 2-Chloroethylvinyl ether	63	8.157	8.157	(1.242)	121413	200.000	172.81(A)
	42 1,2-Dichloropropane	63	7.066	7.066	(1.076)	398256	100.000	84.79
	43 2-Nitropropane	43	8.029	8.029	(1.390)	879605	100.000	91.21
	44 Dibromomethane	93	7.185	7.185	(1.094)	223210	100.000	95.18
	45 4-Methyl-2-Pentanone	43	8.029	8.029	(0.843)	879605	200.000	175.72
	46 cis-1,3-Dichloropropene	75	7.836	7.836	(1.194)	601144	100.000	94.77
*	47 Chlorobenzene-d5	117	9.527	9.527	(1.000)	545483	50.0000	
$	48 Toluene-d8	98	8.090	8.090	(0.849)	1145767	100.000	99.74
	49 Ethyl Methacrylate	69	8.532	8.532	(1.300)	516544	100.000	102.02
	50 Toluene	91	8.157	8.157	(0.856)	1362659	100.000	81.78
	51 trans-1,3-Dichloropropene	75	8.414	8.414	(1.282)	533443	100.000	101.34
	52 2-Hexanone	43	8.866	8.866	(0.931)	587124	200.000	187.18
	53 1,1,2-Trichloroethane	83	8.597	8.597	(0.902)	274614	100.000	87.74
	54 1,3-Dichloropropane	76	8.754	8.754	(0.919)	553206	100.000	89.04
	55 Dibromochloromethane	129	8.969	8.969	(0.941)	423304	100.000	92.37
	56 Tetrachloroethene	164	8.686	8.686	(0.912)	291588	100.000	87.56
	57 1,2-Dibromoethane	107	9.068	9.068	(0.952)	366099	100.000	93.70
	58 1-Chlorohexane	55	9.553	9.553	(1.455)	370336	100.000	99.59
	59 Chlorobenzene	112	9.553	9.553	(1.003)	879204	100.000	84.32
	60 1,1,1,2-Tetrachloroethane	131	9.646	9.646	(1.012)	370903	100.000	89.59
	61 Ethylbenzene	106	9.672	9.672	(1.015)	481450	100.000	85.20
	62 m,p-Xylenes	106	9.790	9.790	(1.028)	1138513	200.000	206.78
	63 o-Xylene	106	10.179	10.179	(1.068)	612664	100.000	86.34
	64 Styrene	104	10.198	10.198	(1.070)	992298	100.000	87.29
	66 Bromoform	173	10.374	10.374	(1.089)	311532	100.000	95.69
	67 Isopropylbenzene	105	10.548	10.548	(1.107)	1468464	100.000	85.96
	68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.918)	448846	100.000	84.19
$	69 4-Bromofluorobenzene	95	10.698	10.698	(1.123)	459019	100.000	97.98
*	70 1,4-Dichlorobenzene-d4	152	11.838	11.838	(1.000)	240587	50.0000	
	71 1,2,3-Trichloropropane	75	10.695	10.695	(0.903)	210995	100.000	98.19
	72 trans-1,4-Dichloro-2-butene	53	10.929	10.929	(1.147)	133141	100.000	97.11
	73 n-Propylbenzene	91	10.958	10.958	(0.926)	1583226	100.000	83.89
	74 Bromobenzene	156	10.833	10.833	(0.915)	418632	100.000	86.68
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.940)	1172773	100.000	82.21

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
76 2-Chlorotoluene	91	11.032	11.032	(0.932)	1043252	100.000	100.30
77 4-Chlorotoluene	91	11.141	11.141	(0.941)	1137519	100.000	101.00
78 tert-Butylbenzene	119	11.453	11.453	(0.967)	1010400	100.000	85.71
79 1,2,4-Trimethylbenzene	105	11.501	11.501	(0.972)	1208466	100.000	101.35
81 sec-Butylbenzene	105	11.671	11.671	(0.986)	1381860	100.000	87.90
82 p-Isopropyltoluene	119	11.822	11.822	(0.999)	1178802	100.000	87.91
83 1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	714434	100.000	86.79
84 1,4-Dichlorobenzene	146	11.860	11.860	(1.002)	691697	100.000	86.95
87 n-Butylbenzene	91	12.223	12.223	(1.033)	938234	100.000	92.26
88 1,2-Dichlorobenzene	146	12.226	12.226	(1.033)	664542	100.000	86.04
89 1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	90887	100.000	105.60
90 1,2,4-Trichlorobenzene	180	13.818	13.818	(1.167)	444824	100.000	99.15
91 Hexachlorobutadiene	225	13.988	13.988	(1.182)	187228	100.000	95.91
92 Naphthalene	128	14.061	14.061	(1.188)	1071893	100.000	99.16
93 1,2,3-Trichlorobenzene	182	14.302	14.302	(1.208)	381509	100.000	97.53
146 Methyl acetate	43	3.218	3.218	(0.557)	430908	100.000	92.82
138 Freon TF	101	2.753	2.753	(0.477)	279713	100.000	97.94
139 Diethyl ether	59	2.529	2.529	(0.438)	624845	100.000	90.84
147 Methylcyclohexane	83	6.986	6.986	(1.064)	482683	100.000	89.29
135 1,4-Dioxane	88	7.236	7.236	(1.253)	71709	2000.00	2032.83
132 n-Butanol	56	6.989	6.989	(1.210)	246373	2000.00	1744.92
131 Methyl Acrylate	55	5.259	5.259	(0.911)	656838	100.000	101.09
133 Ethyl Acrylate	55	7.008	7.008	(1.213)	1111716	100.000	94.68
136 n-Hexane	57	4.053	4.053	(0.702)	459982	100.000	99.36
141 Cyclohexane	56	5.680	5.680	(0.983)	615427	100.000	95.58
142 Tetrahydrofuran	42	5.410	5.410	(0.937)	283688	200.000	182.74
148 Tert-butyl alcohol	59	3.559	3.559	(0.616)	910410	2000.00	1966.53
149 Isopropyl alcohol	45	3.052	3.052	(0.528)	549951	2000.00	1867.93(T)
151 4-Methyl-2-pentanol	45	8.462	8.462	(0.868)	1921741	2000.00	1832.17
166 1,2,3-Trimethylbenzene	105	11.918	11.918	(1.007)	1146469	100.000	84.41
167 Ethanol	45	2.529	2.529	(0.438)	631759	2000.00	1861.91
170 1,3,5-Trichlorobenzene	180	13.201	13.201	(1.115)	500662	100.000	95.62
172 tert-Butyl formate	59	4.906	4.906	(0.849)	1187774	200.000	175.14
173 3,3-Dimethyl-1-butanol	57	9.097	9.097	(0.955)	743085	2000.00	2047.10
174 tert-Amyl methyl ether	73	6.254	6.254	(1.083)	1160484	100.000	90.71
175 tert-Butyl ethyl ether	59	6.235	6.235	(1.079)	648877	100.000	102.27
176 tert-Amyl alcohol	59	6.235	6.235	(1.079)	648877	2000.00	2045.56
157 2-Methylnaphthalene	142	15.191	15.191	(1.283)	411151	100.000	103.00(M)
156 Diisopropyl ether	45	4.415	4.415	(0.764)	1462659	100.000	88.83
171 1-Methylnaphthalene	142	15.387	15.387	(1.300)	403943	100.000	101.60
130 Ethyl Acetate	43	5.243	5.243	(0.908)	862066	100.000	90.30

QC Flag Legend

T - Target compound detected outside RT window.
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.
H - Operator selected an alternate compound hit.



Data File: \\NAHSTWS003\Target\CHEM\VOA2,i\D180504,b\D050409,D
Date : 04-MAY-2018 18:09
Client ID: VSTD100
Sample Info: VSTD100;VSTD100;1;8;
Purge Volume: 5.0
Column phase: DB624

\\NAHSTWS003\Target\CHEM\VOA2,i\D180504,b\D050409,D

Instrument: VOA2,i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050410.D Page 1
Report Date: 14-May-2018 17:07

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050410.D
Lab Smp Id: VSTD200 Client Smp ID: VSTD200
Inj Date : 04-MAY-2018 18:34
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD200;VSTD200;1;9;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\8260LL.m
Meth Date : 14-May-2018 17:07 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 18:09 Cal File: D050409.D
Als bottle: 10 Calibration Sample, Level: 9
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

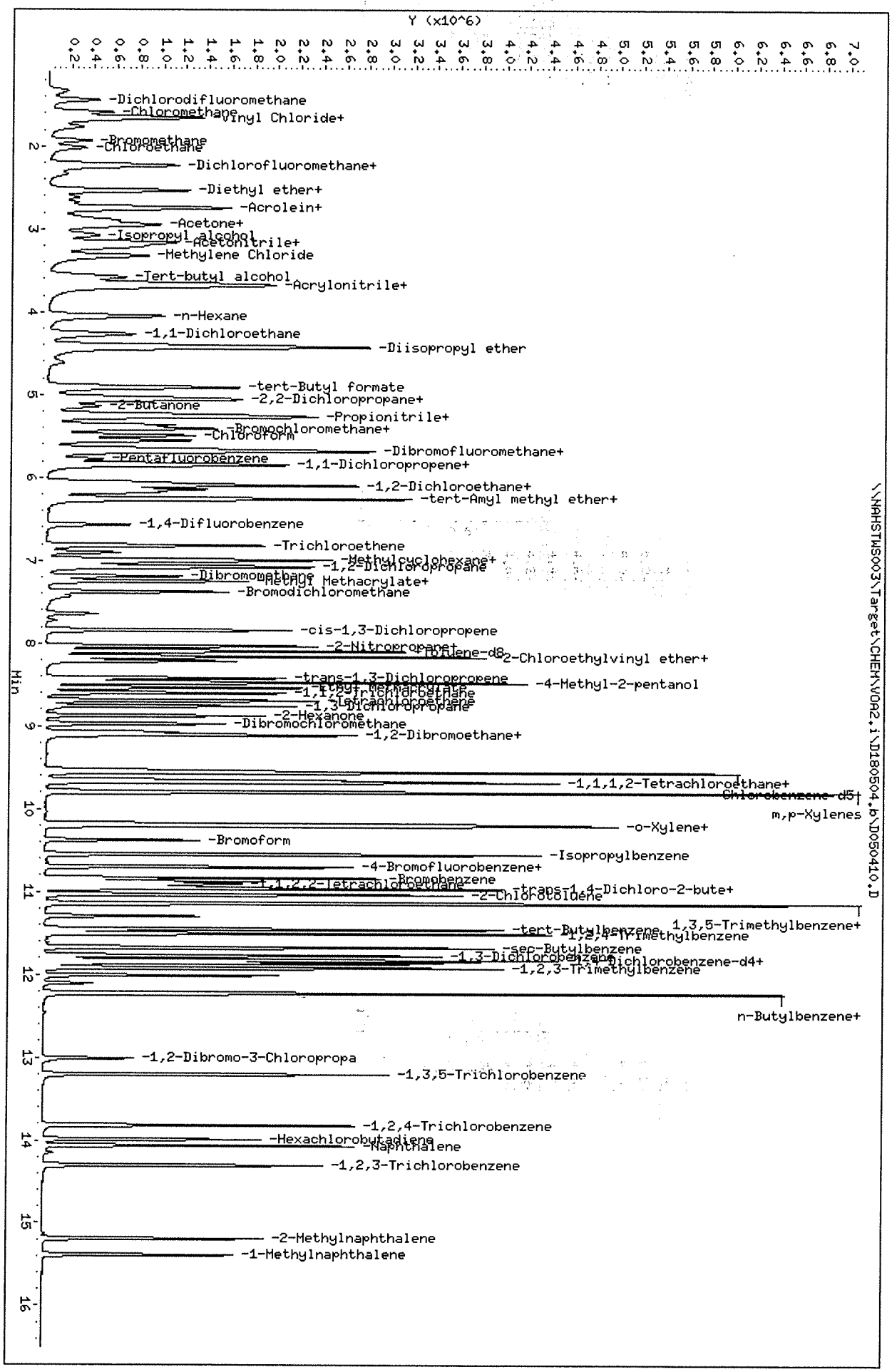
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1 Pentafluorobenzene	168	5.779	5.779	(1.000)	386220	50.0000	
2 Dichlorodifluoromethane	85	1.438	1.438	(0.249)	702772	200.000	199.18
186 Isobutylene	56	1.643	1.643	(0.284)	625943	200.000	167.47(AM)
3 Chloromethane	50	1.585	1.585	(0.274)	1207423	200.000	198.95(A)
4 Propionitrile	54	5.266	5.266	(0.911)	2478374	2000.00	1851.52
5 Vinyl Chloride	62	1.669	1.669	(0.289)	873139	200.000	181.26
6 Bromomethane	94	1.929	1.929	(0.334)	369198	200.000	129.42
7 Chloroethane	64	2.015	2.015	(0.349)	499449	200.000	197.48
159 Dichlorofluoromethane	67	2.217	2.217	(0.384)	1232681	200.000	173.58(A)
8 Trichlorofluoromethane	101	2.237	2.237	(0.387)	889267	200.000	195.06
9 Acrolein	56	2.676	2.676	(0.463)	381410	400.000	400.45(A)
10 Acetone	43	2.859	2.859	(0.495)	492850	400.000	397.78
11 1,1-Dichloroethene	96	2.737	2.737	(0.474)	560434	200.000	192.18
12 Isobutyl Alcohol	74	6.177	6.177	(1.069)	67493	4000.00	3429.58(AM)
13 Acetonitrile	39	3.158	3.158	(0.546)	959063	2000.00	1945.16
14 Allyl Chloride	41	3.170	3.170	(0.549)	2405098	200.000	191.36
15 Iodomethane	142	2.898	2.898	(0.501)	1249302	400.000	402.50(A)
16 Acrylonitrile	53	3.690	3.690	(0.639)	713421	400.000	416.27(A)
17 Methylene Chloride	84	3.325	3.325	(0.575)	692452	200.000	169.66
18 Methyl tert-butyl ether	73	3.677	3.677	(0.636)	1930364	200.000	173.32
19 Carbon Disulfide	76	2.949	2.949	(0.510)	2448110	400.000	366.60

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.652	3.652	(0.632)	630396	200.000	198.50
	21 Vinyl Acetate	43	5.247	5.247	(0.908)	1665534	400.000	334.99(A)
	22 1,1-Dichloroethane	63	4.268	4.268	(0.739)	1395618	200.000	179.92
	24 2-Butanone	43	5.138	5.138	(0.889)	771325	400.000	384.14
	25 Methacrylonitrile	41	5.407	5.407	(0.936)	859160	200.000	179.64(M)
	26 2,2-Dichloropropane	77	5.035	5.035	(0.871)	992977	200.000	189.32
	27 cis-1,2-Dichloroethene	96	5.061	5.061	(0.876)	731765	200.000	183.37
	28 Chloroform	83	5.491	5.491	(0.950)	1165117	200.000	174.11
	29 Bromochloromethane	128	5.369	5.369	(0.929)	372129	200.000	193.22
$	30 Dibromofluoromethane	113	5.683	5.683	(0.983)	584635	200.000	200.52(A)
	31 1,1,1-Trichloroethane	97	5.651	5.651	(0.978)	1038682	200.000	184.89
	32 1,1-Dichloropropene	75	5.853	5.853	(0.891)	839177	200.000	158.48
	33 1,2-Dichloroethane	62	6.142	6.142	(0.935)	1015284	200.000	175.21
	34 Carbon Tetrachloride	117	5.831	5.831	(0.888)	931768	200.000	173.04
$	35 1,2-Dichloroethane-d4	65	6.055	6.055	(1.048)	804250	200.000	196.92
*	36 1,4-Difluorobenzene	114	6.569	6.569	(1.000)	614331	50.0000	
	37 Benzene	78	6.094	6.094	(0.928)	2467969	200.000	158.04
	38 Trichloroethene	130	6.819	6.819	(1.038)	717187	200.000	177.43
	39 Bromodichloromethane	83	7.377	7.377	(1.123)	968251	200.000	170.71
	40 Methyl Methacrylate	41	7.249	7.249	(1.254)	841202	200.000	184.33
	41 2-Chloroethylvinyl ether	63	8.160	8.160	(1.242)	242260	400.000	345.58(A)
	42 1,2-Dichloropropane	63	7.066	7.066	(1.076)	774714	200.000	165.31
	43 2-Nitropropane	43	8.035	8.035	(1.390)	1641027	200.000	170.67
	44 Dibromomethane	93	7.188	7.188	(1.094)	436776	200.000	186.67
	45 4-Methyl-2-Pentanone	43	8.035	8.035	(0.843)	1641027	400.000	332.14
	46 cis-1,3-Dichloropropene	75	7.843	7.843	(1.194)	1144272	200.000	180.80
*	47 Chlorobenzene-d5	117	9.527	9.527	(1.000)	538415	50.0000	
$	48 Toluene-d8	98	8.096	8.096	(0.950)	2114605	200.000	238.13(A)
	49 Ethyl Methacrylate	69	8.536	8.536	(1.299)	982185	200.000	196.47
	50 Toluene	91	8.164	8.164	(0.857)	2521971	200.000	153.34
	51 trans-1,3-Dichloropropene	75	8.417	8.417	(1.281)	1033374	200.000	196.75
	52 2-Hexanone	43	8.873	8.873	(0.931)	1113325	400.000	359.60
	53 1,1,2-Trichloroethane	83	8.600	8.600	(0.903)	529641	200.000	171.46
	54 1,3-Dichloropropane	76	8.757	8.757	(0.919)	1055986	200.000	172.19
	55 Dibromochloromethane	129	8.972	8.972	(0.942)	820409	200.000	181.37
	56 Tetrachloroethene	164	8.693	8.693	(0.912)	574051	200.000	174.65
	57 1,2-Dibromoethane	107	9.072	9.072	(0.952)	709119	200.000	183.88
	58 1-Chlorohexane	55	9.556	9.556	(1.455)	722126	200.000	197.43
	59 Chlorobenzene	112	9.556	9.556	(1.003)	1625569	200.000	157.95
	60 1,1,1,2-Tetrachloroethane	131	9.649	9.649	(1.013)	709047	200.000	173.52
	61 Ethylbenzene	106	9.678	9.678	(1.016)	909838	200.000	163.13
	62 m,p-Xylenes	106	9.800	9.800	(1.029)	2087186	400.000	389.82(M)
	63 o-Xylene	106	10.182	10.182	(1.069)	1144526	200.000	163.41
	64 Styrene	104	10.204	10.204	(1.071)	1838822	200.000	163.89
	66 Bromoform	173	10.378	10.378	(1.089)	601655	200.000	187.23
	67 Isopropylbenzene	105	10.551	10.551	(1.107)	2666209	200.000	158.12
	68 1,1,2,2-Tetrachloroethane	83	10.878	10.878	(0.919)	844339	200.000	165.21
$	69 4-Bromofluorobenzene	95	10.699	10.699	(1.123)	852556	200.000	200.34(A)
*	70 1,4-Dichlorobenzene-d4	152	11.841	11.841	(1.000)	230646	50.0000	
	71 1,2,3-Trichloropropane	75	10.699	10.699	(0.904)	405365	200.000	199.39
	72 trans-1,4-Dichloro-2-butene	53	10.936	10.936	(1.148)	273122	200.000	200.99(A)
	73 n-Propylbenzene	91	10.962	10.962	(0.926)	2906123	200.000	160.63
	74 Bromobenzene	156	10.837	10.837	(0.915)	788067	200.000	170.22
	75 1,3,5-Trimethylbenzene	105	11.138	11.138	(0.941)	2121973	200.000	155.16

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
76 2-Chlorotoluene	91	11.036	11.036	(0.932)	1946835	200.000	197.48
77 4-Chlorotoluene	91	11.145	11.145	(0.941)	2097579	200.000	196.74
78 tert-Butylbenzene	119	11.456	11.456	(0.967)	1888477	200.000	167.10
79 1,2,4-Trimethylbenzene	105	11.507	11.507	(0.972)	2216630	200.000	196.46
81 sec-Butylbenzene	105	11.674	11.674	(0.986)	2554233	200.000	169.48
82 p-Isopropyltoluene	119	11.825	11.825	(0.999)	2187279	200.000	170.15
83 1,3-Dichlorobenzene	146	11.774	11.774	(0.994)	1337147	200.000	169.44
84 1,4-Dichlorobenzene	146	11.867	11.867	(1.002)	1309141	200.000	171.67
87 n-Butylbenzene	91	12.226	12.226	(1.033)	1782095	200.000	182.81
88 1,2-Dichlorobenzene	146	12.229	12.229	(1.033)	1229142	200.000	166.00
89 1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	179466	200.000	217.52(A)
90 1,2,4-Trichlorobenzene	180	13.821	13.821	(1.167)	861637	200.000	199.89
91 Hexachlorobutadiene	225	13.991	13.991	(1.182)	376631	200.000	201.28(A)
92 Naphthalene	128	14.065	14.065	(1.188)	2071564	200.000	199.38
93 1,2,3-Trichlorobenzene	182	14.305	14.305	(1.208)	758156	200.000	201.08(A)
146 Methyl acetate	43	3.222	3.222	(0.558)	839236	200.000	181.31(A)
138 Freon TF	101	2.753	2.753	(0.476)	561005	200.000	198.47
139 Diethyl ether	59	2.532	2.532	(0.438)	1196889	200.000	174.51
147 Methylcyclohexane	83	6.989	6.989	(1.064)	961284	200.000	178.23
135 1,4-Dioxane	88	7.246	7.246	(1.254)	138351	4000.00	3952.23
132 n-Butanol	56	6.989	6.989	(1.209)	494053	4000.00	3509.22
131 Methyl Acrylate	55	5.276	5.276	(0.913)	1261234	200.000	194.67
133 Ethyl Acrylate	55	7.015	7.015	(1.214)	2168785	200.000	185.25
136 n-Hexane	57	4.050	4.050	(0.701)	944930	200.000	204.71(A)
141 Cyclohexane	56	5.683	5.683	(0.983)	1225578	200.000	190.90(A)
142 Tetrahydrofuran	42	5.417	5.417	(0.937)	545809	400.000	352.62
148 Tert-butyl alcohol	59	3.581	3.581	(0.620)	1741948	4000.00	3773.60
149 Isopropyl alcohol	45	3.077	3.077	(0.533)	1097936	4000.00	3739.97
151 4-Methyl-2-pentanol	45	8.478	8.478	(0.890)	3368065	4000.00	3253.24
166 1,2,3-Trimethylbenzene	105	11.921	11.921	(1.007)	2116203	200.000	162.53
167 Ethanol	45	2.529	2.529	(0.438)	1192097	4000.00	3523.50
170 1,3,5-Trichlorobenzene	180	13.205	13.205	(1.115)	946359	200.000	188.53
172 tert-Butyl formate	59	4.910	4.910	(0.850)	2375854	400.000	351.34
173 3,3-Dimethyl-1-butanol	57	9.110	9.110	(0.956)	1361525	4000.00	3800.05
174 tert-Amyl methyl ether	73	6.261	6.261	(1.083)	2186944	200.000	171.45
175 tert-Butyl ethyl ether	59	6.251	6.251	(1.082)	1214646	200.000	192.01
176 tert-Amyl alcohol	59	6.251	6.251	(1.082)	1214646	4000.00	3840.22
157 2-Methylnaphthalene	142	15.191	15.191	(1.283)	895104	200.000	199.53(M)
156 Diisopropyl ether	45	4.422	4.422	(0.765)	2799123	200.000	170.49
171 1-Methylnaphthalene	142	15.390	15.390	(1.300)	838915	200.000	199.70
130 Ethyl Acetate	43	5.247	5.247	(0.908)	1665534	200.000	174.97

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050410.D
Date : 04-MAY-2018 18:34
Client ID: VSTD200
Sample Info: VSTD200;VSTD200;1;9;
Purge Volume: 5.0
Column phase: DB624

\\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050410.D
Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050412.D Page 1
Report Date: 23-May-2018 12:26

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050412.D
Lab Smp Id: VSTD-ICV Client Smp ID: VSTD-ICV
Inj Date : 04-MAY-2018 19:22
Operator : AP Inst ID: VOA2.i
Smp Info : VSTD050;VSTD050;2;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\8260LL.m
Meth Date : 23-May-2018 12:15 Cesar.Lira Quant Type: ISTD
Cal Date : 04-MAY-2018 18:34 Cal File: D050410.D
Als bottle: 12 QC Sample: METHSPIKE
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1	Pentafluorobenzene	168	5.773	5.779	(1.000)	357022	50.0000	
2	Dichlorodifluoromethane	85	1.438	1.438	(0.249)	175501	53.1092	53.10
3	Chloromethane	50	1.585	1.585	(0.275)	308312	53.6814	53.68
4	Propionitrile	54	5.227	5.266	(0.906)	609889	492.893	492.89
5	Vinyl Chloride	62	1.675	1.669	(0.290)	229971	51.6473	51.64
6	Bromomethane	94	1.938	1.929	(0.336)	108319	41.0777	41.07
7	Chloroethane	64	2.031	2.015	(0.352)	128783	53.9236	53.92
159	Dichlorofluoromethane	67	2.221	2.217	(0.385)	319863	48.7258	48.72
8	Trichlorofluoromethane	101	2.240	2.237	(0.388)	231238	54.8721	54.87
9	Acrolein	56	2.676	2.676	(0.464)	81061	91.7670	91.76
10	Acetone	43	2.846	2.859	(0.493)	120061	102.094	102.09
11	1,1-Dichloroethene	96	2.737	2.737	(0.474)	142132	52.7271	52.72
12	Isobutyl Alcohol	74	6.248	6.177	(1.082)	29392	1621.60	1621.59(A)
13	Acetonitrile	39	3.154	3.158	(0.546)	229961	504.548	504.54
14	Allyl Chloride	41	3.164	3.170	(0.548)	584685	50.3269	50.32
15	Iodomethane	142	2.901	2.898	(0.503)	243781	88.1954	88.19
16	Acrylonitrile	53	3.677	3.690	(0.637)	165242	104.303	104.30
17	Methylene Chloride	84	3.328	3.325	(0.576)	176083	46.6725	46.67
18	Methyl tert-butyl ether	73	3.671	3.677	(0.636)	495877	48.1662	48.16
19	Carbon Disulfide	76	2.939	2.949	(0.509)	619148	100.300	100.30
20	trans-1,2-Dichloroethene	96	3.658	3.652	(0.634)	159266	54.0129	54.01

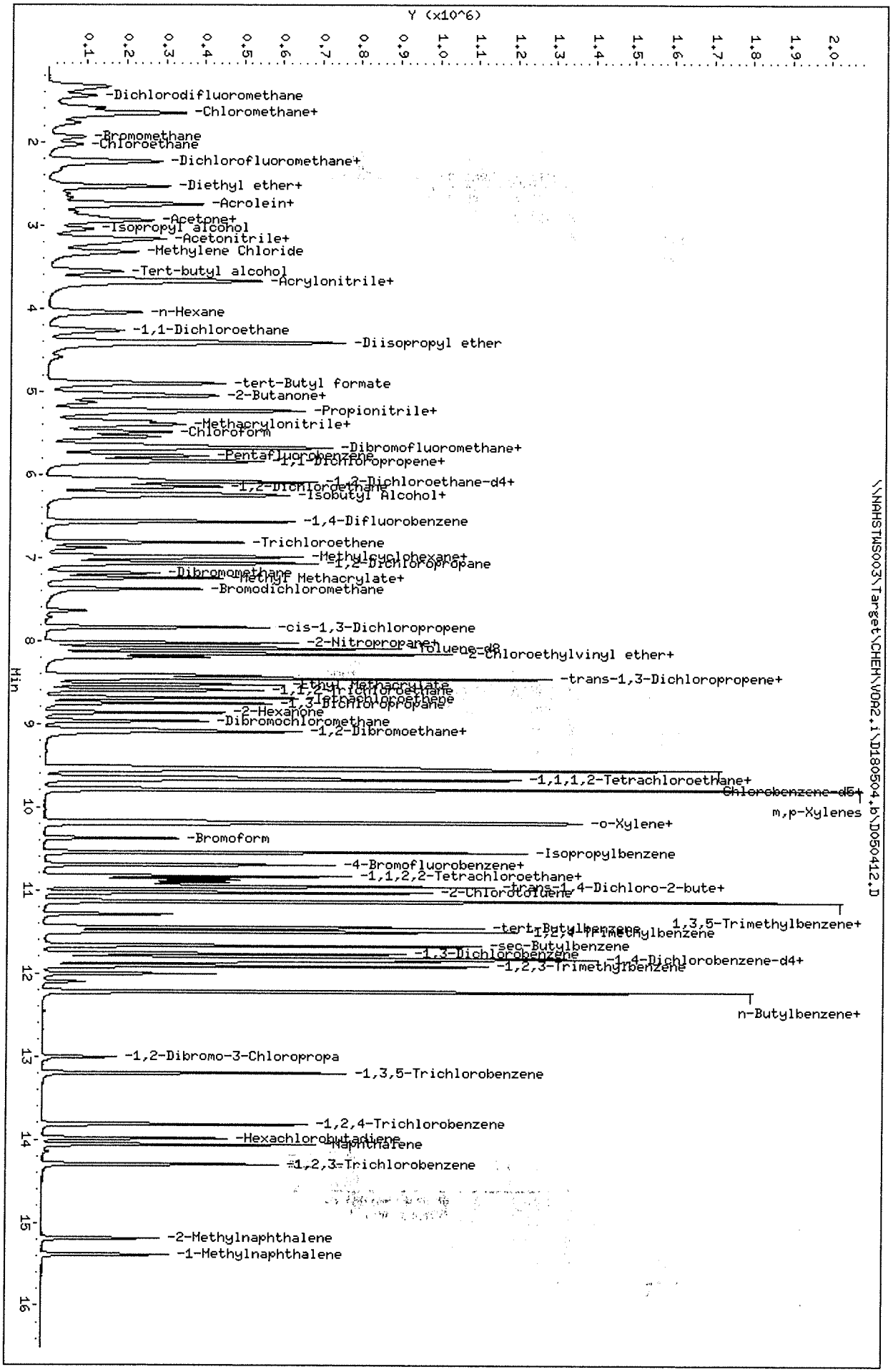
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050412.D Page 2
Report Date: 23-May-2018 12:26

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
	21 Vinyl Acetate	43	5.234	5.247	(0.907)	412309	89.7119	89.71
	22 1,1-Dichloroethane	63	4.271	4.268	(0.740)	351016	48.9545	48.95
	24 2-Butanone	43	5.134	5.138	(0.889)	186570	100.516	100.51
	25 Methacrylonitrile	41	5.394	5.407	(0.934)	215324	48.7058	48.70
	26 2,2-Dichloropropane	77	5.032	5.035	(0.872)	249512	51.4629	51.46
	27 cis-1,2-Dichloroethene	96	5.057	5.061	(0.876)	184886	50.1191	50.11
	28 Chloroform	83	5.484	5.491	(0.950)	301427	48.7302	48.73
	29 Bromochloromethane	128	5.356	5.369	(0.928)	93985	52.7921	52.79
$	30 Dibromofluoromethane	113	5.677	5.683	(0.983)	154230	49.9185	49.91
	31 1,1,1-Trichloroethane	97	5.644	5.651	(0.978)	267082	51.4317	51.43
	32 1,1-Dichloropropene	75	5.850	5.853	(0.891)	217794	45.1688	45.16
	33 1,2-Dichloroethane	62	6.139	6.142	(0.935)	260249	49.3208	49.32
	34 Carbon Tetrachloride	117	5.831	5.831	(0.888)	235694	48.0679	48.06
$	35 1,2-Dichloroethane-d4	65	6.052	6.055	(1.048)	207851	53.5738	53.57
*	36 1,4-Difluorobenzene	114	6.569	6.569	(1.000)	559435	50.0000	
	37 Benzene	78	6.090	6.094	(0.927)	662907	46.6162	46.61
	38 Trichloroethene	130	6.816	6.819	(1.038)	184669	50.1700	50.16
	39 Bromodichloromethane	83	7.374	7.377	(1.123)	249639	48.3336	48.33
	40 Methyl Methacrylate	41	7.242	7.249	(1.255)	212832	50.4517	50.45
	41 2-Chloroethylvinyl ether	63	8.154	8.160	(1.241)	61489	96.3209	96.32(T)
	42 1,2-Dichloropropane	63	7.063	7.066	(1.075)	198603	46.5381	46.53
	43 2-Nitropropane	43	8.025	8.035	(1.390)	428521	48.2124	48.21
	44 Dibromomethane	93	7.188	7.188	(1.094)	108649	50.9934	50.99
	45 4-Methyl-2-Pentanone	43	8.025	8.035	(0.843)	428521	92.9156	92.91
	46 cis-1,3-Dichloropropene	75	7.836	7.843	(1.193)	297131	51.5572	51.55
*	47 Chlorobenzene-d5	117	9.524	9.527	(1.000)	502590	50.0000	
$	48 Toluene-d8	98	8.090	8.096	(0.849)	587310	47.6926	47.69
	49 Ethyl Methacrylate	69	8.529	8.536	(1.298)	255620	54.5302	54.53
	50 Toluene	91	8.154	8.164	(0.856)	698058	45.4711	45.47
	51 trans-1,3-Dichloropropene	75	8.414	8.417	(1.281)	259340	54.2237	54.22
	52 2-Hexanone	43	8.863	8.873	(0.931)	283151	97.9765	97.97
	53 1,1,2-Trichloroethane	83	8.590	8.600	(0.902)	137900	47.8244	47.82
	54 1,3-Dichloropropane	76	8.751	8.757	(0.919)	274941	48.0299	48.02
	55 Dibromochloromethane	129	8.966	8.972	(0.941)	210780	49.9218	49.92
	56 Tetrachloroethene	164	8.686	8.693	(0.912)	150367	49.0088	49.00
	57 1,2-Dibromoethane	107	9.065	9.072	(0.952)	180829	50.2343	50.23
	58 1-Chlorohexane	55	9.550	9.556	(1.454)	189935	54.9327	54.93
	59 Chlorobenzene	112	9.553	9.556	(1.003)	445152	46.3377	46.33
	60 1,1,1,2-Tetrachloroethane	131	9.643	9.649	(1.012)	184136	48.2764	48.27
	61 Ethylbenzene	106	9.668	9.678	(1.015)	245621	47.1806	47.18
	62 m,p-Xylenes	106	9.790	9.800	(1.028)	587270	112.807	112.80
	63 o-Xylene	106	10.175	10.182	(1.068)	312674	47.8264	47.82
	64 Styrene	104	10.198	10.204	(1.071)	514288	49.1048	49.10
	66 Bromoform	173	10.374	10.378	(1.089)	152964	50.9956	50.99
	67 Isopropylbenzene	105	10.544	10.551	(1.107)	759849	48.2756	48.27
	68 1,1,2,2-Tetrachloroethane	83	10.872	10.878	(0.919)	223836	45.6497	45.64
$	69 4-Bromofluorobenzene	95	10.695	10.699	(1.123)	231019	50.7138	50.71
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.841	(1.000)	221292	50.0000	
	71 1,2,3-Trichloropropane	75	10.695	10.699	(0.904)	105613	52.2487	52.24
	72 trans-1,4-Dichloro-2-butene	53	10.926	10.936	(1.147)	61863	49.3556	49.35
	73 n-Propylbenzene	91	10.952	10.962	(0.925)	823548	47.4464	47.44
	74 Bromobenzene	156	10.830	10.837	(0.915)	214332	48.2536	48.25
	75 1,3,5-Trimethylbenzene	105	11.132	11.138	(0.941)	613753	46.7756	46.77
	76 2-Chlorotoluene	91	11.029	11.036	(0.932)	532531	54.6098	54.60

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
77	4-Chlorotoluene	91	11.138	11.145	(0.941)	588388	55.6363	55.63
78	tert-Butylbenzene	119	11.446	11.456	(0.967)	520459	47.9994	47.99
79	1,2,4-Trimethylbenzene	105	11.501	11.507	(0.972)	631820	56.4046	56.40
81	sec-Butylbenzene	105	11.668	11.674	(0.986)	723210	50.0181	50.01
82	p-Isopropyltoluene	119	11.818	11.825	(0.999)	609665	49.4310	49.43
83	1,3-Dichlorobenzene	146	11.767	11.774	(0.994)	364428	48.1340	48.13
84	1,4-Dichlorobenzene	146	11.857	11.867	(1.002)	345513	47.2252	47.22
87	n-Butylbenzene	91	12.219	12.226	(1.033)	485020	51.8573	51.85
88	1,2-Dichlorobenzene	146	12.223	12.229	(1.033)	342980	48.2795	48.27
89	1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	41165	52.0031	52.00
90	1,2,4-Trichlorobenzene	180	13.818	13.821	(1.168)	215174	52.3513	52.35
91	Hexachlorobutadiene	225	13.988	13.991	(1.182)	93757	52.2044	52.20
92	Naphthalene	128	14.061	14.065	(1.188)	512528	51.7954	51.79
93	1,2,3-Trichlorobenzene	182	14.299	14.305	(1.208)	177489	49.8383	49.83
146	Methyl acetate	43	3.215	3.222	(0.557)	201705	47.1423	47.14
138	Freon TF	101	2.753	2.753	(0.477)	144639	54.3103	54.31
139	Diethyl ether	59	2.532	2.532	(0.439)	321139	50.6526	50.65
147	Methylcyclohexane	83	6.986	6.989	(1.064)	244328	49.7476	49.74
135	1,4-Dioxane	88	7.239	7.246	(1.254)	32183	979.463	979.46
132	n-Butanol	56	6.986	6.989	(1.210)	122610	942.115	942.11
131	Methyl Acrylate	55	5.259	5.276	(0.911)	318487	53.1788	53.17
133	Ethyl Acrylate	55	7.002	7.015	(1.213)	546872	50.5332	50.53
136	n-Hexane	57	4.046	4.050	(0.701)	223778	52.4465	52.44
141	Cyclohexane	56	5.683	5.683	(0.984)	319251	53.7972	53.79
142	Tetrahydrofuran	42	5.407	5.417	(0.937)	136501	95.3991	95.39
148	Tert-butyl alcohol	59	3.555	3.581	(0.616)	417806	979.118	979.11
149	Isopropyl alcohol	45	3.045	3.077	(0.528)	245359	904.137	904.13
151	4-Methyl-2-pentanol	45	8.449	8.478	(0.887)	977046	1011.01	1011.00
166	1,2,3-Trimethylbenzene	105	11.915	11.921	(1.007)	594057	47.5556	47.55
167	Ethanol	45	2.525	2.529	(0.438)	299751	958.439	958.43
170	1,3,5-Trichlorobenzene	180	13.201	13.205	(1.116)	248529	51.6060	51.60
172	tert-Butyl formate	59	4.900	4.910	(0.849)	627330	100.359	100.35
173	3,3-Dimethyl-1-butanol	57	9.094	9.110	(0.955)	355019	1061.50	1061.49
174	tert-Amyl methyl ether	73	6.251	6.261	(1.083)	598324	50.7450	50.74
175	tert-Butyl ethyl ether	59	6.228	6.251	(1.079)	301447	51.5499	51.54
176	tert-Amyl alcohol	59	6.228	6.251	(1.079)	301447	1031.00	1030.99
157	2-Methylnaphthalene	142	15.191	15.191	(1.284)	145628	45.1975	45.19
156	Diisopropyl ether	45	4.412	4.422	(0.764)	733521	48.3338	48.33(T)
171	1-Methylnaphthalene	142	15.387	15.390	(1.300)	160032	47.9522	47.95
130	Ethyl Acetate	43	5.234	5.247	(0.907)	412309	46.8580	46.85
M 94	1,2-Dichloroethylene (total)	96				344152	104.132	104.13
M 95	Xylenes (total)	106				899944	160.633	160.63

QC Flag Legend

T - Target compound detected outside RT window.
A - Target compound detected but, quantitated amount exceeded maximum amount.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180504.b\D050412.D
Date : 04-MAY-2018 19:22
Client ID: VSTD-ICV
Sample Info: VSTD050;VSTD050;2;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050286

Lab File ID: D050701 BFB Injection Date: 05/07/18

Instrument ID: VOA2 BFB Injection Time: 0906

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.9
75	30.0 - 60.0% of mass 95	48.3
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.9
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	83.8
175	5.0 - 9.0% of mass 174	6.3 (7.5)1
176	95.0 - 101.0% of mass 174	80.3 (95.7)1
177	5.0 - 9.0% of mass 176	6.0 (7.5)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CCV	CCV	D050703	05/07/18	0954
02	VLCSW-180507	VLCSW-180507	D050705	05/07/18	1043
03	VBLKW-180507	VBLKW-180507	D050707	05/07/18	1132
04	HS18050260-0	HS18050260-01M	D050715	05/07/18	1447
05	HS18050260-0	HS18050260-01M	D050716	05/07/18	1512
06	HS18050286-0	HS18050286-01	D050718	05/07/18	1601
07	HS18050286-0	HS18050286-02	D050719	05/07/18	1625
08	HS18050286-0	HS18050286-03	D050720	05/07/18	1650
09	HS18050286-0	HS18050286-04	D050721	05/07/18	1714
10	HS18050286-0	HS18050286-05	D050722	05/07/18	1739
11	HS18050286-0	HS18050286-06	D050723	05/07/18	1803
12	HS18050286-0	HS18050286-07	D050724	05/07/18	1828
13	HS18050286-0	HS18050286-08	D050725	05/07/18	1852
14	HS18050286-0	HS18050286-09	D050726	05/07/18	1916
15	HS18050286-1	HS18050286-10	D050727	05/07/18	1941
16	HS18050286-1	HS18050286-11	D050728	05/07/18	2005
17	CCV_END	CCV_END	D050729	05/07/18	2030
18					
19					
20					
21					
22					

FORM V VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050286

Instrument ID: VOA2 Calibration Date: 05/07/18 Time: 0954

Lab File ID: D050703 Init. Calib. Date(s): 05/04/18 05/04/18

Init. Calib. Times: 1519 1834

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Iodomethane	97.845177	100.00000	0.3805822	0.1	-2.15	20.00	LINR
Dichlorodifluoromethane	56.125210	50.000000	0.5189884	0.1	12.25	20.00	LINR
1,2-Dichloroethylene (total)	0.4580000	0.4842350	0.4842350	0.1	5.73	20.00	AVRG
Chloromethane	56.875817	50.000000	0.9133201	0.1	13.75	20.00	LINR
tert-Amyl alcohol	4.1e-002	3.89e-002	3.89e-002	0.005	-5.12	20.00	AVRG
Vinyl Chloride	0.6230000	0.6443472	0.6443472	0.1	3.43	20.00	AVRG
Bromomethane	0.3690000	0.3241877	0.3241877	0.1	-12.14	20.00	AVRG
Chloroethane	55.756605	50.000000	0.3726201	0.1	11.51	20.00	LINR
tert-Butyl ethyl ether	0.8190000	0.7773509	0.7773509	0.1	-5.08	20.00	AVRG
Trichlorofluoromethane	0.5900000	0.6342356	0.6342356	0.1	7.50	20.00	AVRG
Acrolein	88.977021	100.00000	0.1100870	0.01	-11.02	20.00	LINR
Acetone	98.025814	100.00000	0.1616781	0.1	-1.97	20.00	LINR
1,1-Dichloroethene	0.3780000	0.3905853	0.3905853	0.1	3.33	20.00	AVRG
Isobutyl Alcohol	806.19668	1000.0000	2.03e-003	0.001	-19.38	20.00	LINR
Acetonitrile	6.4e-002	6.66e-002	6.66e-002	0.01	4.06	20.00	AVRG
Allyl Chloride	1.6270000	1.6359918	1.6359918	0.05	0.55	20.00	AVRG
Acrylonitrile	0.2220000	0.2176018	0.2176018	0.05	-1.98	20.00	AVRG
Methylene Chloride	0.5280000	0.4966736	0.4966736	0.1	-5.93	20.00	AVRG
Methyl tert-butyl ether	1.4420000	1.3618179	1.3618179	0.1	-5.56	20.00	AVRG
Carbon Disulfide	0.8640000	0.8702029	0.8702029	0.1	0.72	20.00	AVRG
trans-1,2-Dichloroethene	53.027048	50.000000	0.4380028	0.1	6.05	20.00	LINR
Vinyl Acetate	0.6440000	0.5803344	0.5803344	0.1	-9.88	20.00	AVRG
1,1-Dichloroethane	1.0040000	1.0180018	1.0180018	0.2	1.39	20.00	AVRG
2-Butanone	0.2600000	0.2565146	0.2565146	0.1	-1.34	20.00	AVRG
Methacrylonitrile	0.6190000	0.5923122	0.5923122	0.01	-4.31	20.00	AVRG
2,2-Dichloropropane	0.6790000	0.7372090	0.7372090	0.1	8.57	20.00	AVRG
cis-1,2-Dichloroethene	0.5170000	0.5304672	0.5304672	0.1	2.60	20.00	AVRG
Chloroform	0.8660000	0.8687920	0.8687920	0.2	0.32	20.00	AVRG
Bromochloromethane	0.2490000	0.2722824	0.2722824	0.1	9.35	20.00	AVRG
tert-Amyl methyl ether	1.6510000	1.6423936	1.6423936	0.05	-0.52	20.00	AVRG
1,1,1-Trichloroethane	0.7270000	0.7428469	0.7428469	0.1	2.18	20.00	AVRG
1,1-Dichloropropene	0.4310000	0.3798184	0.3798184	0.1	-11.88	20.00	AVRG
1,2-Dichloroethane	0.4720000	0.4911881	0.4911881	0.1	4.06	20.00	AVRG
Carbon Tetrachloride	0.4380000	0.4130581	0.4130581	0.1	-5.69	20.00	AVRG
3,3-Dimethyl-1-butanol	3.3e-002	3.26e-002	3.26e-002	0.005	-1.21	20.00	AVRG
Benzene	1.2710000	1.2549023	1.2549023	0.5	-1.27	20.00	AVRG
Trichloroethene	0.3290000	0.3423013	0.3423013	0.2	4.04	20.00	AVRG
Bromodichloromethane	0.4620000	0.4798758	0.4798758	0.2	3.87	20.00	AVRG
Methyl Methacrylate	0.5900000	0.5940345	0.5940345	0.05	0.68	20.00	AVRG
2-Chloroethylvinyl ether	5.7e-002	5.64e-002	5.64e-002	0.05	-1.05	20.00	AVRG
1,2-Dichloropropane	0.3810000	0.3805886	0.3805886	0.1	-0.11	20.00	AVRG
tert-Butyl formate	0.8760000	0.8901822	0.8901822	0.1	1.62	20.00	AVRG

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805028

Instrument ID: VOA2 Calibration Date: 05/07/18 Time: 0954

Lab File ID: D050703 Init. Calib. Date(s): 05/04/18 05/04/18

Init. Calib. Times: 1519 1834

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Dibromomethane	0.1900000	0.2087593	0.2087593	0.1	9.87	20.00	AVRG
4-Methyl-2-Pentanone	0.4590000	0.4346801	0.4346801	0.1	-5.30	20.00	AVRG
cis-1,3-Dichloropropene	0.5150000	0.5676487	0.5676487	0.2	10.22	20.00	AVRG
1,3,5-Trichlorobenzene	1.0880000	1.0816598	1.0816598	0.1	-0.58	20.00	AVRG
Ethyl Methacrylate	54.709898	50.000000	0.4583710	0.01	9.42	20.00	LINR
Toluene	1.5270000	1.4634978	1.4634978	0.4	-4.16	20.00	AVRG
trans-1,3-Dichloropropene	0.4270000	0.4925697	0.4925697	0.1	15.36	20.00	AVRG
2-Hexanone	0.2870000	0.2826958	0.2826958	0.1	-1.50	20.00	AVRG
1,1,2-Trichloroethane	0.2870000	0.2883062	0.2883062	0.1	0.46	20.00	AVRG
1,3-Dichloropropane	0.5690000	0.5683119	0.5683119	0.1	-0.12	20.00	AVRG
Dibromochloromethane	0.4200000	0.4369811	0.4369811	0.1	4.04	20.00	AVRG
Tetrachloroethene	0.3050000	0.3015791	0.3015791	0.2	-1.12	20.00	AVRG
1,2-Dibromoethane	0.3580000	0.3675588	0.3675588	0.1	2.67	20.00	AVRG
1-Chlorohexane	54.895988	50.000000	0.3392970	0.1	9.79	20.00	LINR
Chlorobenzene	0.9560000	0.9337248	0.9337248	0.5	-2.33	20.00	AVRG
1,1,1,2-Tetrachloroethane	0.3790000	0.3871883	0.3871883	0.1	2.16	20.00	AVRG
Ethylbenzene	0.5180000	0.4969289	0.4969289	0.1	-4.07	20.00	AVRG
m,p-Xylenes	117.33065	100.00000	0.6063553	0.1	17.33	20.00	LINR
o-Xylene	0.6500000	0.6474542	0.6474542	0.3	-0.39	20.00	AVRG
Styrene	1.0420000	1.0652574	1.0652574	0.3	2.23	20.00	AVRG
Bromoform	0.2980000	0.3121962	0.3121962	0.1	4.76	20.00	AVRG
Isopropylbenzene	1.5660000	1.5545831	1.5545831	0.1	-0.73	20.00	AVRG
1,1,2,2-Tetrachloroethane	1.1080000	0.9780312	0.9780312	0.3	-11.73	20.00	AVRG
Ethanol	4.4e-002	4.36e-002	4.36e-002	0.001	-0.91	20.00	AVRG
1,2,3-Trichloropropane	54.004932	50.000000	0.4925364	0.1	8.01	20.00	LINR
trans-1,4-Dichloro-2-butene	50.882098	50.000000	0.1269557	0.05	1.76	20.00	LINR
n-Propylbenzene	3.9220000	3.6269314	3.6269314	0.1	-7.52	20.00	AVRG
Bromobenzene	1.0040000	0.9487318	0.9487318	0.1	-5.50	20.00	AVRG
1,3,5-Trimethylbenzene	2.9640000	2.6875477	2.6875477	0.1	-9.33	20.00	AVRG
2-Chlorotoluene	54.310078	50.000000	2.3938052	0.1	8.62	20.00	LINR
4-Chlorotoluene	55.401976	50.000000	2.6481870	0.1	10.80	20.00	LINR
tert-Butylbenzene	2.4500000	2.2663299	2.2663299	0.1	-7.50	20.00	AVRG
1,2,4-Trimethylbenzene	55.259732	50.000000	2.7999242	0.1	10.52	20.00	LINR
sec-Butylbenzene	3.2670000	3.0932243	3.0932243	0.1	-5.32	20.00	AVRG
p-Isopropyltoluene	2.7870000	2.6266380	2.6266380	0.1	-5.75	20.00	AVRG
1,3-Dichlorobenzene	1.7100000	1.6316889	1.6316889	0.6	-4.58	20.00	AVRG
1,4-Dichlorobenzene	1.6530000	1.5523041	1.5523041	0.4	-6.09	20.00	AVRG
n-Butylbenzene	2.1130000	2.0905701	2.0905701	0.05	-1.06	20.00	AVRG
1,2-Dichlorobenzene	1.6050000	1.5155569	1.5155569	0.4	-5.57	20.00	AVRG
1,2-Dibromo-3-Chloropropane	0.1790000	0.1814292	0.1814292	0.05	1.36	20.00	AVRG
1,2,4-Trichlorobenzene	50.416730	50.000000	0.9361202	0.2	0.83	20.00	LINR
Hexachlorobutadiene	50.450644	50.000000	0.4094547	0.1	0.90	20.00	LINR

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805028

Instrument ID: VOA2 Calibration Date: 05/07/18 Time: 0954

Lab File ID: D050703 Init. Calib. Date(s): 05/04/18 05/04/18

Init. Calib. Times: 1519 1834

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Naphthalene	50.321790	50.000000	2.2495159	0.2	0.64	20.00	LINR
1,2,3-Trichlorobenzene	49.082305	50.000000	0.7896371	0.1	-1.84	20.00	LINR
Methyl acetate	0.5990000	0.5494444	0.5494444	0.1	-8.27	20.00	AVRG
Freon TF	50.988937	50.000000	0.3809952	0.1	1.98	20.00	LINR
1,2,3-Trimethylbenzene	2.8220000	2.6434294	2.6434294	0.1	-6.33	20.00	AVRG
Methylcyclohexane	0.4390000	0.4258080	0.4258080	0.1	-3.00	20.00	AVRG
1,4-Dioxane	946.00014	1000.0000	4.36e-003	0.001	-5.40	20.00	LINR
n-Butanol	1.8e-002	1.63e-002	1.63e-002	0.001	-9.44	20.00	AVRG
Methyl Acrylate	0.8380000	0.8632048	0.8632048	0.1	3.01	20.00	AVRG
Ethyl Acrylate	1.5160000	1.4888059	1.4888059	0.1	-1.79	20.00	AVRG
n-Hexane	0.5980000	0.6376634	0.6376634	0.1	6.63	20.00	AVRG
Cyclohexane	0.8310000	0.8141325	0.8141325	0.1	-2.03	20.00	AVRG
Isopropyl alcohol	3.8e-002	3.32e-002	3.32e-002	0.005	-12.63	20.00	AVRG
Tert-butyl alcohol	6.e-002	5.41e-002	5.41e-002	0.005	-9.83	20.00	AVRG
Xylenes (total)	0.5980000	0.5569346	0.5569346	0.1	-6.87	20.00	AVRG
Propionitrile	0.1730000	0.1709056	0.1709056	0.01	-1.21	20.00	AVRG
2-Nitropropane	1.2450000	1.1774332	1.1774332	0.1	-5.43	20.00	AVRG
Ethyl Acetate	1.2320000	1.1606689	1.1606689	0.01	-5.79	20.00	AVRG
Diethyl ether	0.8880000	0.8986024	0.8986024	0.05	1.19	20.00	AVRG
Tetrahydrofuran	0.2000000	0.1894997	0.1894997	0.05	-5.25	20.00	AVRG
4-Methyl-2-pentanol	9.6e-002	9.02e-002	9.02e-002	0.005	-6.04	20.00	AVRG
Diisopropyl ether	2.1250000	2.1353575	2.1353575	0.05	0.49	20.00	AVRG
2-Methylnaphthalene	40.325703	50.000000	0.5751125	0.05	-19.35	20.00	2RDR
Dichlorofluoromethane	0.9190000	0.9111044	0.9111044	0.1	-0.86	20.00	AVRG
1-Methylnaphthalene	42.853584	50.000000	0.6357153	0.1	-14.29	20.00	2RDR
Isobutylene	0.4840000	0.4924255	0.4924255	0.1	1.74	20.00	AVRG
Dibromofluoromethane	50.447631	50.000000	0.4362692	0.1	0.90	20.00	2RDR
Toluene-d8	51.269128	50.000000	1.2405948	0.1	2.54	20.00	2RDR
1,2-Dichloroethane-d4	52.919309	50.000000	0.5753308	0.1	5.84	20.00	LINR
4-Bromofluorobenzene	57.209548	50.000000	0.4798512	0.1	14.42	20.00	LINR

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050286

Instrument ID: VOA2 Calibration Date: 05/07/18 Time: 2030

Lab File ID: D050729 Init. Calib. Date(s): 05/04/18 05/04/18

Init. Calib. Times: 1519 1834

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Iodomethane	68.310142	100.00000	0.2606846	0.1	-31.69	50.00	LINR
Dichlorodifluoromethane	62.301417	50.000000	0.5751380	0.1	24.60	50.00	LINR
1,2-Dichloroethylene (total)	0.4580000	0.4872224	0.4872224	0.1	6.38	50.00	AVRG
Chloromethane	50.866801	50.000000	0.8197284	0.1	1.73	50.00	LINR
tert-Amyl alcohol	4.1e-002	3.89e-002	3.89e-002	0.005	-5.12	50.00	AVRG
Vinyl Chloride	0.6230000	0.6767857	0.6767857	0.1	8.63	50.00	AVRG
Bromomethane	0.3690000	0.2864900	0.2864900	0.1	-22.36	50.00	AVRG
Chloroethane	58.396033	50.000000	0.3897635	0.1	16.79	50.00	LINR
tert-Butyl ethyl ether	0.8190000	0.7770912	0.7770912	0.1	-5.12	50.00	AVRG
Trichlorofluoromethane	0.5900000	0.6967404	0.6967404	0.1	18.09	50.00	AVRG
Acrolein	82.084927	100.00000	0.1015971	0.01	-17.92	50.00	LINR
Acetone	98.180506	100.00000	0.1619239	0.1	-1.82	50.00	LINR
1,1-Dichloroethene	0.3780000	0.4268060	0.4268060	0.1	12.91	50.00	AVRG
Isobutyl Alcohol	835.57230	1000.0000	2.11e-003	0.001	-16.44	50.00	LINR
Acetonitrile	6.4e-002	6.56e-002	6.56e-002	0.01	2.50	50.00	AVRG
Allyl Chloride	1.6270000	1.6322711	1.6322711	0.05	0.32	50.00	AVRG
Acrylonitrile	0.2220000	0.2297141	0.2297141	0.05	3.47	50.00	AVRG
Methylene Chloride	0.5280000	0.4765653	0.4765653	0.1	-9.74	50.00	AVRG
Methyl tert-butyl ether	1.4420000	1.3212009	1.3212009	0.1	-8.38	50.00	AVRG
Carbon Disulfide	0.8640000	0.9068181	0.9068181	0.1	4.96	50.00	AVRG
trans-1,2-Dichloroethene	55.686767	50.000000	0.4598362	0.1	11.37	50.00	LINR
Vinyl Acetate	0.6440000	0.5812013	0.5812013	0.1	-9.75	50.00	AVRG
1,1-Dichloroethane	1.0040000	0.9977378	0.9977378	0.2	-0.62	50.00	AVRG
2-Butanone	0.2600000	0.2569268	0.2569268	0.1	-1.18	50.00	AVRG
Methacrylonitrile	0.6190000	0.5776923	0.5776923	0.01	-6.67	50.00	AVRG
2,2-Dichloropropane	0.6790000	0.6725969	0.6725969	0.1	-0.94	50.00	AVRG
cis-1,2-Dichloroethene	0.5170000	0.5146087	0.5146087	0.1	-0.46	50.00	AVRG
Chloroform	0.8660000	0.8448178	0.8448178	0.2	-2.44	50.00	AVRG
Bromochloromethane	0.2490000	0.2581751	0.2581751	0.1	3.68	50.00	AVRG
tert-Amyl methyl ether	1.6510000	1.4516726	1.4516726	0.05	-12.07	50.00	AVRG
1,1,1-Trichloroethane	0.7270000	0.7754626	0.7754626	0.1	6.67	50.00	AVRG
1,1-Dichloropropene	0.4310000	0.4189616	0.4189616	0.1	-2.79	50.00	AVRG
1,2-Dichloroethane	0.4720000	0.4450796	0.4450796	0.1	-5.70	50.00	AVRG
Carbon Tetrachloride	0.4380000	0.4477515	0.4477515	0.1	2.23	50.00	AVRG
3,3-Dimethyl-1-butanol	3.3e-002	3.25e-002	3.25e-002	0.005	-1.52	50.00	AVRG
Benzene	1.2710000	1.2390496	1.2390496	0.5	-2.51	50.00	AVRG
Trichloroethene	0.3290000	0.3467698	0.3467698	0.2	5.40	50.00	AVRG
Bromodichloromethane	0.4620000	0.4585084	0.4585084	0.2	-0.76	50.00	AVRG
Methyl Methacrylate	0.5900000	0.5730494	0.5730494	0.05	-2.87	50.00	AVRG
2-Chloroethylvinyl ether	5.7e-002	5.57e-002	5.57e-002	0.05	-2.28	50.00	AVRG
1,2-Dichloropropane	0.3810000	0.3691728	0.3691728	0.1	-3.10	50.00	AVRG
tert-Butyl formate	0.8760000	0.7741145	0.7741145	0.1	-11.63	50.00	AVRG

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805028

Instrument ID: VOA2 Calibration Date: 05/07/18 Time: 2030

Lab File ID: D050729 Init. Calib. Date(s): 05/04/18 05/04/18

Init. Calib. Times: 1519 1834

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Dibromomethane	0.1900000	0.1957956	0.1957956	0.1	3.05	50.00	AVRG
4-Methyl-2-Pentanone	0.4590000	0.4208384	0.4208384	0.1	-8.31	50.00	AVRG
cis-1,3-Dichloropropene	0.5150000	0.5290944	0.5290944	0.2	2.74	50.00	AVRG
1,3,5-Trichlorobenzene	1.0880000	1.0323302	1.0323302	0.1	-5.12	50.00	AVRG
Ethyl Methacrylate	53.383354	50.000000	0.4476997	0.01	6.77	50.00	LINR
Toluene	1.5270000	1.4353523	1.4353523	0.4	-6.00	50.00	AVRG
trans-1,3-Dichloropropene	0.4270000	0.4538484	0.4538484	0.1	6.29	50.00	AVRG
2-Hexanone	0.2870000	0.2770726	0.2770726	0.1	-3.46	50.00	AVRG
1,1,2-Trichloroethane	0.2870000	0.2754105	0.2754105	0.1	-4.04	50.00	AVRG
1,3-Dichloropropane	0.5690000	0.5418755	0.5418755	0.1	-4.77	50.00	AVRG
Dibromochloromethane	0.4200000	0.4142220	0.4142220	0.1	-1.38	50.00	AVRG
Tetrachloroethene	0.3050000	0.3076182	0.3076182	0.2	0.86	50.00	AVRG
1,2-Dibromoethane	0.3580000	0.3522567	0.3522567	0.1	-1.60	50.00	AVRG
1-Chlorohexane	58.143307	50.000000	0.3583468	0.1	16.29	50.00	LINR
Chlorobenzene	0.9560000	0.9002925	0.9002925	0.5	-5.83	50.00	AVRG
1,1,1,2-Tetrachloroethane	0.3790000	0.3706505	0.3706505	0.1	-2.20	50.00	AVRG
Ethylbenzene	0.5180000	0.4949460	0.4949460	0.1	-4.45	50.00	AVRG
m,p-Xylenes	115.41807	100.00000	0.5970071	0.1	15.42	50.00	LINR
o-Xylene	0.6500000	0.6286219	0.6286219	0.3	-3.29	50.00	AVRG
Styrene	1.0420000	1.0235528	1.0235528	0.3	-1.77	50.00	AVRG
Bromoform	0.2980000	0.2997206	0.2997206	0.1	0.58	50.00	AVRG
Isopropylbenzene	1.5660000	1.5690303	1.5690303	0.1	0.19	50.00	AVRG
1,1,2,2-Tetrachloroethane	1.1080000	0.9515047	0.9515047	0.3	-14.12	50.00	AVRG
Ethanol	4.4e-002	4.19e-002	4.19e-002	0.001	-4.77	50.00	AVRG
1,2,3-Trichloropropane	52.877390	50.000000	0.4827261	0.1	5.75	50.00	LINR
trans-1,4-Dichloro-2-butene	45.558525	50.000000	0.1134683	0.05	-8.88	50.00	LINR
n-Propylbenzene	3.9220000	3.6320005	3.6320005	0.1	-7.39	50.00	AVRG
Bromobenzene	1.0040000	0.8923450	0.8923450	0.1	-11.12	50.00	AVRG
1,3,5-Trimethylbenzene	2.9640000	2.6673497	2.6673497	0.1	-10.01	50.00	AVRG
2-Chlorotoluene	52.016581	50.000000	2.2969368	0.1	4.03	50.00	LINR
4-Chlorotoluene	52.529625	50.000000	2.5171874	0.1	5.06	50.00	LINR
tert-Butylbenzene	2.4500000	2.3047644	2.3047644	0.1	-5.93	50.00	AVRG
1,2,4-Trimethylbenzene	52.963475	50.000000	2.6891749	0.1	5.93	50.00	LINR
sec-Butylbenzene	3.2670000	3.1529946	3.1529946	0.1	-3.49	50.00	AVRG
p-Isopropyltoluene	2.7870000	2.6394137	2.6394137	0.1	-5.30	50.00	AVRG
1,3-Dichlorobenzene	1.7100000	1.5433429	1.5433429	0.6	-9.75	50.00	AVRG
1,4-Dichlorobenzene	1.6530000	1.4589566	1.4589566	0.4	-11.74	50.00	AVRG
n-Butylbenzene	2.1130000	2.0901102	2.0901102	0.05	-1.08	50.00	AVRG
1,2-Dichlorobenzene	1.6050000	1.4484834	1.4484834	0.4	-9.75	50.00	AVRG
1,2-Dibromo-3-Chloropropane	0.1790000	0.1743918	0.1743918	0.05	-2.57	50.00	AVRG
1,2,4-Trichlorobenzene	46.629430	50.000000	0.8651877	0.2	-6.74	50.00	LINR
Hexachlorobutadiene	47.754968	50.000000	0.3875889	0.1	-4.49	50.00	LINR

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805028

Instrument ID: VOA2 Calibration Date: 05/07/18 Time: 2030

Lab File ID: D050729 Init. Calib. Date(s): 05/04/18 05/04/18

Init. Calib. Times: 1519 1834

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Naphthalene	46.300217	50.000000	2.0678888	0.2	-7.40	50.00	LINR
1,2,3-Trichlorobenzene	45.486577	50.000000	0.7305575	0.1	-9.03	50.00	LINR
Methyl acetate	0.5990000	0.5513388	0.5513388	0.1	-7.96	50.00	AVRG
Freon TF	59.375090	50.000000	0.4419238	0.1	18.75	50.00	LINR
1,2,3-Trimethylbenzene	2.8220000	2.5116320	2.5116320	0.1	-11.00	50.00	AVRG
Methylcyclohexane	0.4390000	0.4694208	0.4694208	0.1	6.93	50.00	AVRG
1,4-Dioxane	994.25329	1000.0000	4.57e-003	0.001	-0.57	50.00	LINR
n-Butanol	1.8e-002	1.69e-002	1.69e-002	0.001	-6.11	50.00	AVRG
Methyl Acrylate	0.8380000	0.8528309	0.8528309	0.1	1.77	50.00	AVRG
Ethyl Acrylate	1.5160000	1.5278086	1.5278086	0.1	0.78	50.00	AVRG
n-Hexane	0.5980000	0.6687611	0.6687611	0.1	11.83	50.00	AVRG
Cyclohexane	0.8310000	0.9283016	0.9283016	0.1	11.71	50.00	AVRG
Isopropyl alcohol	3.8e-002	3.31e-002	3.31e-002	0.005	-12.89	50.00	AVRG
Tert-butyl alcohol	6.e-002	5.75e-002	5.75e-002	0.005	-4.17	50.00	AVRG
Xylenes (total)	0.5980000	0.5501400	0.5501400	0.1	-8.00	50.00	AVRG
Propionitrile	0.1730000	0.1701126	0.1701126	0.01	-1.67	50.00	AVRG
2-Nitropropane	1.2450000	1.1477939	1.1477939	0.1	-7.81	50.00	AVRG
Ethyl Acetate	1.2320000	1.0970019	1.0970019	0.01	-10.96	50.00	AVRG
Diethyl ether	0.8880000	0.8657126	0.8657126	0.05	-2.51	50.00	AVRG
Tetrahydrofuran	0.2000000	0.1877987	0.1877987	0.05	-6.10	50.00	AVRG
4-Methyl-2-pentanol	9.6e-002	9.e-002	9.e-002	0.005	-6.25	50.00	AVRG
Diisopropyl ether	2.1250000	1.9900458	1.9900458	0.05	-6.35	50.00	AVRG
2-Methylnaphthalene	35.768874	50.000000	0.4981945	0.05	-28.46	50.00	2RDR
Dichlorofluoromethane	0.9190000	0.9233722	0.9233722	0.1	0.48	50.00	AVRG
1-Methylnaphthalene	39.245507	50.000000	0.5741522	0.1	-21.51	50.00	2RDR
Isobutylene	0.4840000	0.5510582	0.5510582	0.1	13.86	50.00	AVRG
Dibromofluoromethane	50.540602	50.000000	0.4370205	0.1	1.08	50.00	2RDR
Toluene-d8	50.960260	50.000000	1.2344334	0.1	1.92	50.00	2RDR
1,2-Dichloroethane-d4	51.902983	50.000000	0.5646949	0.1	3.80	50.00	LINR
4-Bromofluorobenzene	56.935828	50.000000	0.4776829	0.1	13.87	50.00	LINR

FORM VII VOA

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050286

Lab File ID (Standard): D050703 Date Analyzed: 05/07/18

Instrument ID: VOA2 Time Analyzed: 0954

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

		IS1 AREA #	IS1 RT #	IS2 (DFB) AREA #	IS2 (DFB) RT #	IS3 (CBZ) AREA #	IS3 (CBZ) RT #
	12 HOUR STD	354742	5.77	534903	6.57	480451	9.52
	UPPER LIMIT	709484	6.27	1069806	7.07	960902	10.02
	LOWER LIMIT	177371	5.27	267452	6.07	240226	9.02
	CLIENT SAMPLE NO.						
01	VLCSW-180507	347741	5.77	528863	6.57	475206	9.52
02	VBLKW-180507	375529	5.77	540197	6.57	483164	9.52
03	HS18050260-01	348033	5.77	527693	6.57	477667	9.52
04	HS18050260-01	350410	5.78	534697	6.57	478073	9.52
05	HS18050286-01	367630	5.77	532438	6.57	483598	9.52
06	HS18050286-02	358544	5.77	524904	6.57	471836	9.52
07	HS18050286-03	363231	5.77	524879	6.57	471749	9.52
08	HS18050286-04	362804	5.77	526601	6.57	473173	9.52
09	HS18050286-05	361034	5.77	531537	6.57	467642	9.52
10	HS18050286-06	361104	5.78	523234	6.57	471567	9.52
11	HS18050286-07	365849	5.77	527165	6.57	477370	9.52
12	HS18050286-08	360640	5.77	526361	6.57	470481	9.52
13	HS18050286-09	364813	5.77	534646	6.57	476543	9.52
14	HS18050286-10	365698	5.77	530356	6.57	475724	9.52
15	HS18050286-11	373909	5.77	540509	6.57	479440	9.52
16							
17							
18							
19							
20							

IS1 = Pentafluorobenzene
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050286

Lab File ID (Standard): D050703 Date Analyzed: 05/07/18

Instrument ID: VOA2 Time Analyzed: 0954

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

		IS4 (DCB) AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	221541	11.84				
	UPPER LIMIT	443082	12.34				
	LOWER LIMIT	110771	11.34				
	CLIENT SAMPLE NO.						
01	VLCSW-180507	217228	11.83				
02	VBLKW-180507	202074	11.83				
03	HS18050260-01	220780	11.83				
04	HS18050260-01	218628	11.83				
05	HS18050286-01	211960	11.84				
06	HS18050286-02	203689	11.83				
07	HS18050286-03	206905	11.83				
08	HS18050286-04	205604	11.83				
09	HS18050286-05	204005	11.83				
10	HS18050286-06	200711	11.83				
11	HS18050286-07	208666	11.83				
12	HS18050286-08	202105	11.83				
13	HS18050286-09	202108	11.83				
14	HS18050286-10	202689	11.83				
15	HS18050286-11	204050	11.83				
16							
17							
18							
19							
20							

IS4 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

MSVOA02 -Logbook

Batch: 31756
Date: 05-07-2018
Method: 8260
Comments:

Analyst: Anjana Poluri
Reviewer:
Laboratory: Houston

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
1	BFB	TUNE	05-07-2018 09:06 am	1.00	50 mL	50 mL	D050701.D	Liquid	Y	NA
	Auto find/purged									
2	CCV	CCV	05-07-2018 09:30 am	1.00	50 mL	50 mL	D050702.D	Liquid	Y	NA
	10 uL cal std/50 ml DI									
3	CCV	CCV	05-07-2018 09:54 am	1.00	50 mL	50 mL	D050703.D	Liquid	Y	NA
	10 uL cal std/50 ml DI									
4	CCB	SAMP	05-07-2018 10:19 am	1.00	50 mL	50 mL	D050704.D	Liquid	Y	NA
	CCB									
5	VLCSW-180507	LCS	05-07-2018 10:43 am	1.00	50 mL	50 mL	D050705.D	Liquid	Y	NA
	10 uL cal std/50 ml DI									
6	VBLKM-180507	SAMP	05-07-2018 11:07 am	50.00	1 mL	50 mL	D050706.D	Liquid	Y	NA
7	VBLKW-180507	MBLK	05-07-2018 11:32 am	1.00	50 mL	50 mL	D050707.D	Liquid	Y	NA
8	HS18050259-01	SAMP	05-07-2018 11:56 am	1.00	50 mL	50 mL	D050708.D	Liquid	Y	<2
9	HS18050261-01	SAMP	05-07-2018 12:21 pm	1.00	50 mL	50 mL	D050709.D	Liquid	Y	<2
10	HS18050260-02	SAMP	05-07-2018 12:45 pm	1.00	50 mL	50 mL	D050710.D	Liquid	Y	<2
11	HS18050238-01	SAMP	05-07-2018 01:10 pm	1.00	50 mL	50 mL	D050711.D	Liquid	Y	<2
12	HS18050153-18	SAMP	05-07-2018 01:34 pm	1.00	50 mL	50 mL	D050712.D	Liquid	Y	<2
13	HS18050227-03	SAMP	05-07-2018 01:58 pm	1.00	50 mL	50 mL	D050713.D	Liquid	Y	<2
14	HS18050260-01	SAMP	05-07-2018 02:23 pm	1.00	50 mL	50 mL	D050714.D	Liquid	Y	<2
15	HS18050260-01MS	MS	05-07-2018 02:47 pm	1.00	50 mL	50 mL	D050715.D	Liquid	Y	<2
	8 uL cal std/40 ml sample									
16	HS18050260-01MSD	MSD	05-07-2018 03:12 pm	1.00	50 mL	50 mL	D050716.D	Liquid	Y	<2
	8 uL cal std/40 ml sample									
17	HS18050254-16	SAMP	05-07-2018 03:36 pm	1.00	50 mL	50 mL	D050717.D	Liquid	Y	<2
18	HS18050286-01	SAMP	05-07-2018 04:01 pm	1.00	50 mL	50 mL	D050718.D	Liquid	Y	<2
19	HS18050286-02	SAMP	05-07-2018 04:25 pm	1.00	50 mL	50 mL	D050719.D	Liquid	Y	<2
20	HS18050286-03	SAMP	05-07-2018 04:50 pm	1.00	50 mL	50 mL	D050720.D	Liquid	Y	<2
21	HS18050286-04	SAMP	05-07-2018 05:14 pm	1.00	50 mL	50 mL	D050721.D	Liquid	Y	<2
22	HS18050286-05	SAMP	05-07-2018 05:39 pm	1.00	50 mL	50 mL	D050722.D	Liquid	Y	<2
23	HS18050286-06	SAMP	05-07-2018 06:03 pm	1.00	50 mL	50 mL	D050723.D	Liquid	Y	<2
24	HS18050286-07	SAMP	05-07-2018 06:28 pm	1.00	50 mL	50 mL	D050724.D	Liquid	Y	<2
25	HS18050286-08	SAMP	05-07-2018 06:52 pm	1.00	50 mL	50 mL	D050725.D	Liquid	Y	<2
26	HS18050286-09	SAMP	05-07-2018 07:16 pm	1.00	50 mL	50 mL	D050726.D	Liquid	Y	<2
27	HS18050286-10	SAMP	05-07-2018 07:41 pm	1.00	50 mL	50 mL	D050727.D	Liquid	Y	<2
28	HS18050286-11	SAMP	05-07-2018 08:05 pm	1.00	50 mL	50 mL	D050728.D	Liquid	Y	<2
29	CCV_END	CCV_END	05-07-2018 08:30 pm	1.00	50 mL	50 mL	D050729.D	Liquid	Y	NA
	10 uL cal std/50 ml DI									
30	BFB	TUNE	05-07-2018 08:54 pm	1.00	50 mL	50 mL	E050701.D	Liquid	Y	NA
	Auto find/purged									
31	CCV	CCV	05-07-2018 09:19 pm	1.00	50 mL	50 mL	E050702.D	Liquid	Y	NA
	10 uL cal std/50 ml DI									
32	CCV	CCV	05-07-2018 09:43 pm	1.00	50 mL	50 mL	E050703.D	Liquid	Y	NA
	10 uL cal std/50 ml DI									
33	CCB	SAMP	05-07-2018 10:07 pm	1.00	50 mL	50 mL	E050704.D	Liquid	Y	NA
	CCB									
34	VLCSW-180507	LCS	05-07-2018 10:32 pm	1.00	50 mL	50 mL	E050705.D	Liquid	Y	NA
35	VBLKM-180507	SAMP	05-07-2018 10:56 pm	1.00	50 mL	50 mL	E050706.D	Liquid	Y	NA

MSVOA02 -Logbook

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
36	VBLKW-180507	MBLK	05-07-2018 11:21 pm	1.00	50 mL	50 mL	E050707.D	Liquid	Y	NA
37	HS18050286-14	SAMP	05-07-2018 11:45 pm	1.00	50 mL	50 mL	E050708.D	Liquid	Y	<2
38	HS18050207-02	SAMP	05-08-2018 12:10 am	1.00	50 mL	50 mL	E050709.D	Liquid	Y	<2
39	HS18050302-08	SAMP	05-08-2018 12:34 am	1.00	50 mL	50 mL	E050710.D	Liquid	Y	<2
40	HS18050287-08	SAMP	05-08-2018 12:58 am	1.00	50 mL	50 mL	E050711.D	Liquid	Y	<2
41	HS18050286-12	SAMP	05-08-2018 01:23 am	1.00	50 mL	50 mL	E050712.D	Liquid	Y	<2
42	HS18050286-12MS	MS	05-08-2018 01:47 am	1.00	50 mL	50 mL	E050713.D	Liquid	Y	<2
	8 uL cal std/40 ml sample									
43	HS18050286-12MSD	MSD	05-08-2018 02:11 am	1.00	50 mL	50 mL	E050714.D	Liquid	Y	<2
	8 uL cal std/40 ml sample									
44	HS18050264-01	SAMP	05-08-2018 02:36 am	1.00	50 mL	50 mL	E050715.D	Liquid	Y	<2
45	HS18050286-13	SAMP	05-08-2018 03:00 am	1.00	50 mL	50 mL	E050716.D	Liquid	Y	<2
46	HS18050302-01	SAMP	05-08-2018 03:24 am	1.00	50 mL	50 mL	E050717.D	Liquid	Y	<2
47	HS18050302-02	SAMP	05-08-2018 03:49 am	1.00	50 mL	50 mL	E050718.D	Liquid	Y	<2
48	HS18050302-03	SAMP	05-08-2018 04:13 am	1.00	50 mL	50 mL	E050719.D	Liquid	Y	<2
49	HS18050302-04	SAMP	05-08-2018 04:37 am	1.00	50 mL	50 mL	E050720.D	Liquid	Y	<2
50	HS18050302-05	SAMP	05-08-2018 05:02 am	1.00	50 mL	50 mL	E050721.D	Liquid	Y	<2
51	HS18050302-06	SAMP	05-08-2018 05:26 am	1.00	50 mL	50 mL	E050722.D	Liquid	Y	<2
52	HS18050302-07	SAMP	05-08-2018 05:50 am	1.00	50 mL	50 mL	E050723.D	Liquid	Y	<2
53	HS18050257-06	SAMP	05-08-2018 06:15 am	1.00	50 mL	50 mL	E050724.D	Liquid	Y	<2
54	HS18050257-07	SAMP	05-08-2018 06:39 am	1.00	50 mL	50 mL	E050725.D	Liquid	Y	<2
55	HS18050227-02	SAMP	05-08-2018 07:06 am	10.00	5 mL	50 mL	E050726.D	Liquid	Y	<2
56	HS18050227-02	SAMP	05-08-2018 07:33 am	100.0(	500 µL	50 mL	E050727.D	Liquid	Y	<2
57	HS18050227-01	SAMP	05-08-2018 07:58 am	100.0(	500 µL	50 mL	E050728.D	Liquid	Y	<2
58	HS18050227-01	SAMP	05-08-2018 08:25 am	1000.0	50 µL	50 mL	E050729.D	Liquid	Y	<2
59	CCV_END	CCV_END	05-08-2018 08:49 am	1.00	50 mL	50 mL	E050730.D	Liquid	Y	NA
	10 uL cal std/50 ml DI									

Chemical	Value
SURR ID	30603-16-03
IS ID	30603-16-04
ICV STD ID	30603-16-02
LCS/MS ID	30603-16-01
CAL STD ID	30603-16-01
BFB ID	30603-16-03

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050701.D

Date : 07-MAY-2018 09:06

Client ID: BFB

Instrument: VOA2.i

Sample Info: BFB;BFB;3;;BFB

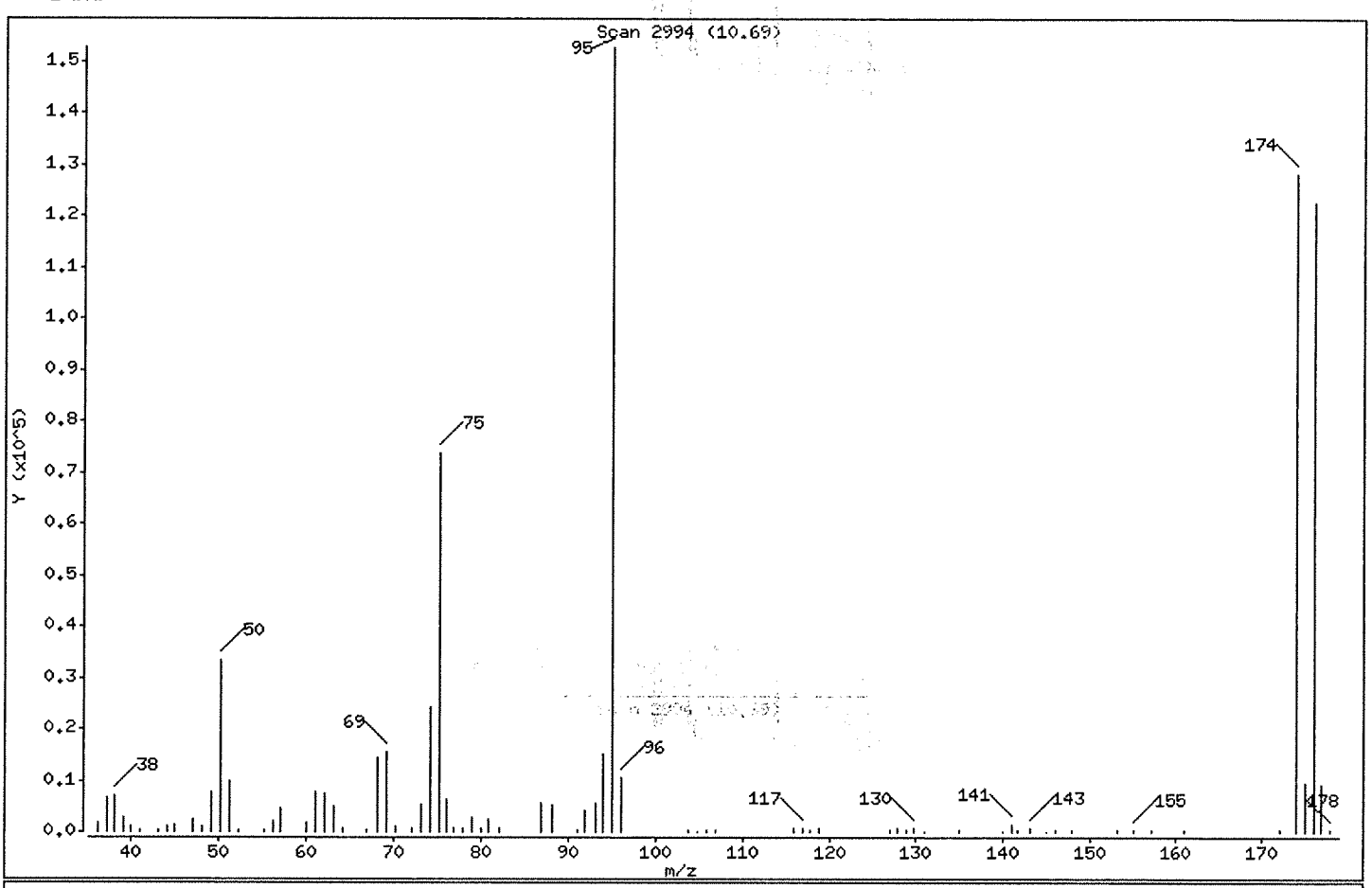
Volume Injected (uL): 2.0

Operator: AP

Column phase: DB624

Column diameter: 0.18

1 bfb



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	21.85
75	30.00 - 60.00% of mass 95	48.27
96	5.00 - 9.00% of mass 95	6.86
173	Less than 2.00% of mass 174	0.00 (0.00)
174	Greater than 50.00% of mass 95	83.84
175	5.00 - 9.00% of mass 174	6.30 (7.51)
176	95.00 - 101.00% of mass 174	80.25 (95.73)
177	5.00 - 9.00% of mass 176	5.99 (7.46)

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050701.D

Date : 07-MAY-2018 09:06

Client ID: BFB

Instrument: VOA2.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: AP

Column phase: DB624

Column diameter: 0.18

Data File: D050701.D
Spectrum: Scan 2994 (10.69)
Location of Maximum: 95.10
Number of points: 77

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.10	1889	62.10	7351	91.00	430	139.90	152
37.10	6808	63.10	4869	92.00	4091	141.00	1277
38.10	7139	64.10	628	93.10	5756	141.70	347
39.10	2675	66.80	262	94.10	15235	143.00	860
40.00	893	68.10	14240	95.10	152704	145.00	170
41.00	444	69.10	15412	96.10	10476	146.00	246
43.00	433	70.10	1054	103.90	411	147.80	495
44.10	1161	72.10	674	104.90	171	153.00	263
45.00	1434	73.10	5199	106.00	416	154.90	459
47.10	2439	74.10	24056	106.90	451	157.00	419
48.00	905	75.10	73704	116.00	583	161.00	276
49.10	7583	76.10	6244	117.00	684	172.20	408
50.10	33368	76.90	759	117.90	524	174.00	128024
51.10	9666	78.00	736	118.90	587	175.00	9614
52.20	476	79.00	2671	127.00	179	176.00	122552
55.20	337	80.00	660	127.90	626	177.00	9143
56.10	2109	80.90	2589	128.80	271	178.00	289
57.10	4490	82.00	684	129.80	669		
60.00	1793	87.00	5576	130.90	164		
61.10	7706	88.10	5223	134.90	181		

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050701.D

Date : 07-MAY-2018 09:06

Client ID: BFB

Instrument: VOA2.i

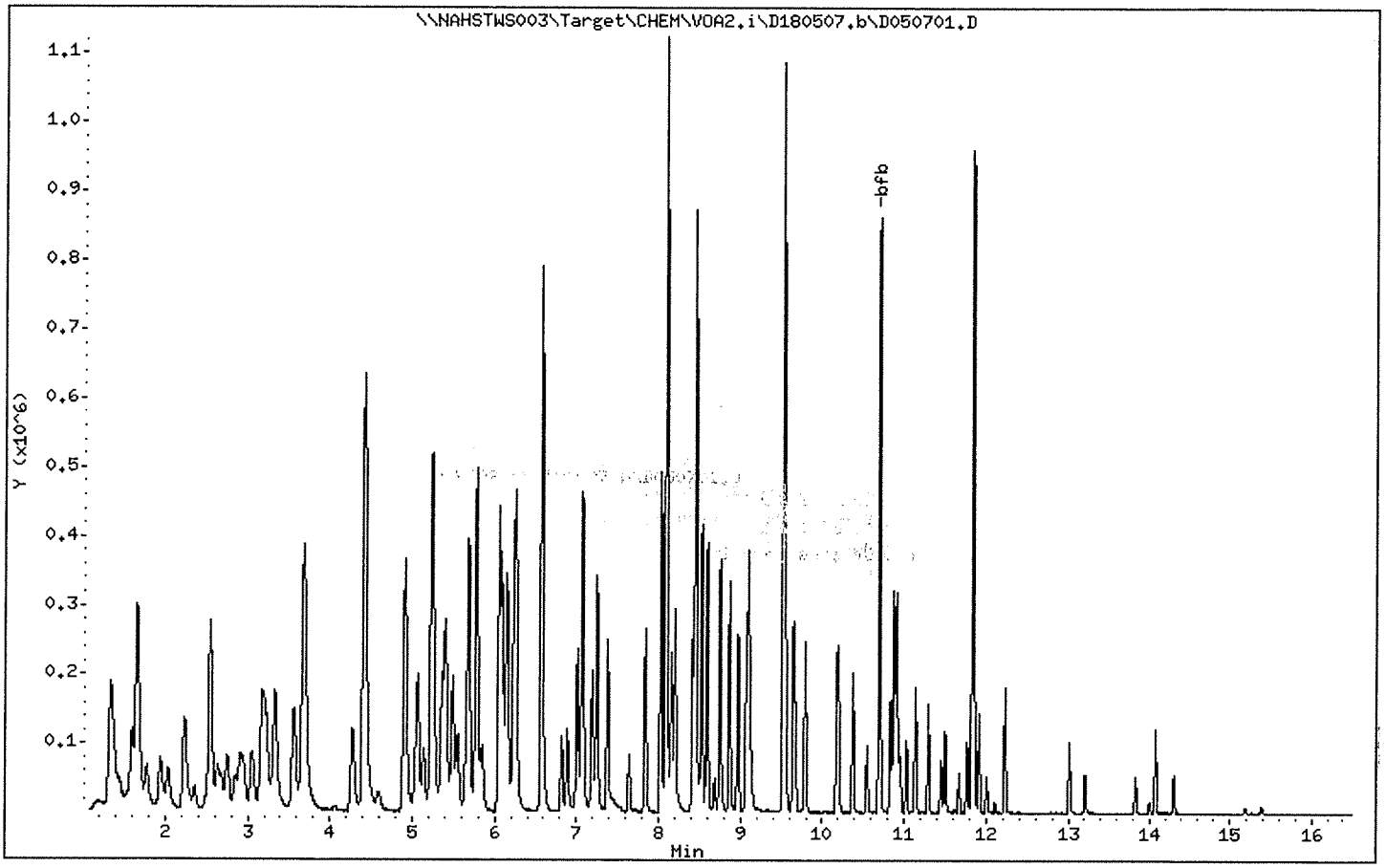
Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: AP

Column phase: DB624

Column diameter: 0.18



ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050703.D
Lab Smp Id: CCV Client Smp ID: CCV
Inj Date : 07-MAY-2018 09:54
Operator : AP Inst ID: VOA2.i
Smp Info : CCV;CCV;2;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\8260LL.m
Meth Date : 14-May-2018 16:40 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 3 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1	Pentafluorobenzene	168	5.773	5.773	(1.000)	354742	50.0000	
2	Dichlorodifluoromethane	85	1.441	1.441	(0.250)	184107	50.0000	56.12
186	Isobutylene	56	1.646	1.643	(0.285)	174684	50.0000	50.88(AM)
3	Chloromethane	50	1.585	1.585	(0.275)	323993	50.0000	56.87
4	Propionitrile	54	5.224	5.227	(0.905)	606274	500.000	493.12
5	Vinyl Chloride	62	1.669	1.672	(0.289)	228577	50.0000	51.66
6	Bromomethane	94	1.935	1.932	(0.335)	115003	50.0000	43.89
7	Chloroethane	64	2.028	2.031	(0.351)	132184	50.0000	55.75
159	Dichlorofluoromethane	67	2.221	2.220	(0.385)	323207	50.0000	49.55
8	Trichlorofluoromethane	101	2.243	2.240	(0.389)	224990	50.0000	53.73
9	Acrolein	56	2.673	2.679	(0.463)	78105	100.000	88.97
10	Acetone	43	2.840	2.846	(0.492)	114708	100.000	98.02
11	1,1-Dichloroethene	96	2.740	2.740	(0.475)	138557	50.0000	51.73
12	Isobutyl Alcohol	74	6.155	6.158	(1.066)	14417	1000.00	806.19(AM)
13	Acetonitrile	39	3.158	3.161	(0.547)	236369	500.000	521.94
14	Allyl Chloride	41	3.170	3.167	(0.549)	580355	50.0000	50.27
15	Iodomethane	142	2.898	2.891	(0.502)	270017	100.000	97.84
16	Acrylonitrile	53	3.684	3.680	(0.638)	154385	100.000	98.07
17	Methylene Chloride	84	3.321	3.324	(0.575)	176191	50.0000	47.00
18	Methyl tert-butyl ether	73	3.671	3.677	(0.636)	483094	50.0000	47.22
19	Carbon Disulfide	76	2.946	2.946	(0.510)	617395	100.000	100.65
20	trans-1,2-Dichloroethene	96	3.655	3.652	(0.633)	155378	50.0000	53.02

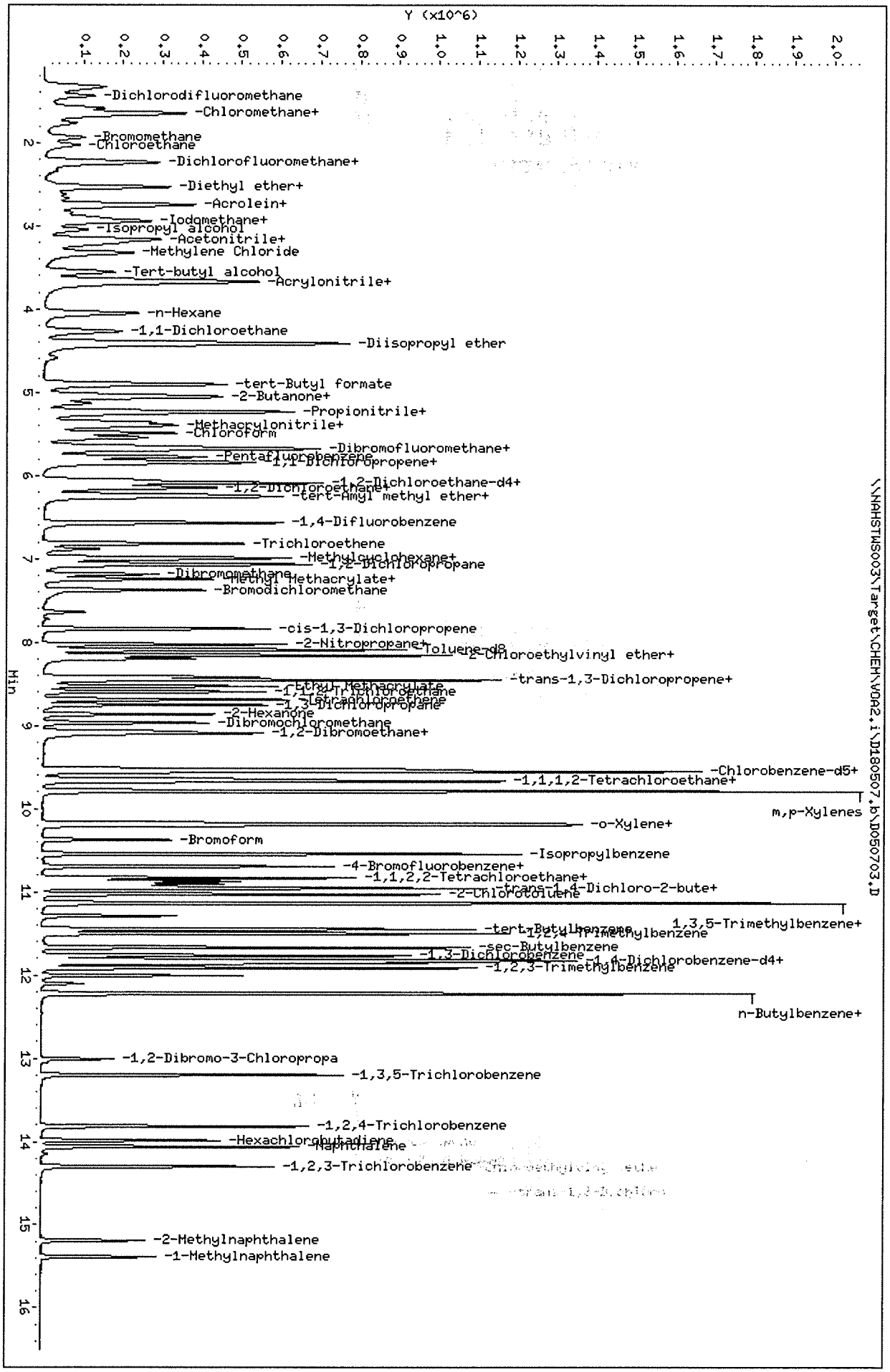
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050703.D Page 2
Report Date: 14-May-2018 16:44

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
	21 Vinyl Acetate	43	5.231	5.234	(0.906)	411738	100.000	90.16
	22 1,1-Dichloroethane	63	4.265	4.268	(0.739)	361128	50.0000	50.68
	24 2-Butanone	43	5.134	5.131	(0.889)	181993	100.000	98.68
	25 Methacrylonitrile	41	5.397	5.397	(0.935)	210118	50.0000	47.83
	26 2,2-Dichloropropane	77	5.035	5.035	(0.872)	261519	50.0000	54.28
	27 cis-1,2-Dichloroethene	96	5.061	5.060	(0.877)	188179	50.0000	51.33
	28 Chloroform	83	5.487	5.484	(0.951)	308197	50.0000	50.14
	29 Bromochloromethane	128	5.359	5.356	(0.928)	96590	50.0000	54.60
$	30 Dibromofluoromethane	113	5.677	5.676	(0.983)	154763	50.0000	50.44
	31 1,1,1-Trichloroethane	97	5.645	5.648	(0.978)	263519	50.0000	51.07
	32 1,1-Dichloropropene	75	5.847	5.850	(0.890)	203166	50.0000	44.06
	33 1,2-Dichloroethane	62	6.139	6.135	(0.935)	262738	50.0000	52.07
	34 Carbon Tetrachloride	117	5.827	5.827	(0.887)	220946	50.0000	47.12
$	35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	204094	50.0000	52.91
*	36 1,4-Difluorobenzene	114	6.569	6.565	(1.000)	534903	50.0000	
	37 Benzene	78	6.091	6.087	(0.927)	671251	50.0000	49.36
	38 Trichloroethene	130	6.816	6.812	(1.038)	183098	50.0000	52.02
	39 Bromodichloromethane	83	7.374	7.374	(1.123)	256687	50.0000	51.97
	40 Methyl Methacrylate	41	7.243	7.242	(1.255)	210729	50.0000	50.27
	41 2-Chloroethylvinyl ether	63	8.154	8.154	(1.241)	60312	100.000	98.81(T)
	42 1,2-Dichloropropane	63	7.063	7.063	(1.075)	203578	50.0000	49.89
	43 2-Nitropropane	43	8.026	8.022	(1.390)	417685	50.0000	47.29
	44 Dibromomethane	93	7.185	7.185	(1.094)	111666	50.0000	54.81
	45 4-Methyl-2-Pentanone	43	8.026	8.022	(0.843)	417685	100.000	94.73
	46 cis-1,3-Dichloropropene	75	7.836	7.833	(1.193)	303637	50.0000	55.10
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	480451	50.0000	
$	48 Toluene-d8	98	8.090	8.090	(0.849)	596045	50.0000	51.26
	49 Ethyl Methacrylate	69	8.526	8.526	(1.298)	245184	50.0000	54.70
	50 Toluene	91	8.154	8.154	(0.856)	703139	50.0000	47.91
	51 trans-1,3-Dichloropropene	75	8.414	8.414	(1.281)	263477	50.0000	57.61
	52 2-Hexanone	43	8.863	8.863	(0.931)	271643	100.000	98.32
	53 1,1,2-Trichloroethane	83	8.590	8.593	(0.902)	138517	50.0000	50.25
	54 1,3-Dichloropropane	76	8.751	8.751	(0.919)	273046	50.0000	49.89
	55 Dibromochloromethane	129	8.969	8.966	(0.942)	209948	50.0000	52.01
	56 Tetrachloroethene	164	8.687	8.686	(0.912)	144894	50.0000	49.40
	57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	176594	50.0000	51.31
	58 1-Chlorohexane	55	9.553	9.550	(1.454)	181491	50.0000	54.89
	59 Chlorobenzene	112	9.553	9.550	(1.003)	448609	50.0000	48.84
	60 1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.012)	186025	50.0000	51.01
	61 Ethylbenzene	106	9.672	9.668	(1.015)	238750	50.0000	47.97
	62 m,p-Xylenes	106	9.790	9.787	(1.028)	582648	100.000	117.33
	63 o-Xylene	106	10.176	10.175	(1.068)	311070	50.0000	49.77
	64 Styrene	104	10.198	10.195	(1.071)	511804	50.0000	51.11
	66 Bromoform	173	10.374	10.374	(1.089)	149995	50.0000	52.31
	67 Isopropylbenzene	105	10.545	10.544	(1.107)	746901	50.0000	49.63
	68 1,1,2,2-Tetrachloroethane	83	10.872	10.868	(0.919)	216674	50.0000	44.13
$	69 4-Bromofluorobenzene	95	10.692	10.692	(1.123)	230545	50.0000	57.20
*	70 1,4-Dichlorobenzene-d4	152	11.835	11.834	(1.000)	221541	50.0000	
	71 1,2,3-Trichloropropane	75	10.695	10.692	(0.904)	109117	50.0000	54.00
	72 trans-1,4-Dichloro-2-butene	53	10.930	10.926	(1.148)	60996	50.0000	50.88
	73 n-Propylbenzene	91	10.955	10.952	(0.926)	803514	50.0000	46.24
	74 Bromobenzene	156	10.833	10.830	(0.915)	210183	50.0000	47.26
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	595402	50.0000	45.32
	76 2-Chlorotoluene	91	11.029	11.026	(0.932)	530326	50.0000	54.31

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
77 4-Chlorotoluene	91	11.138	11.138	(0.941)	586682	50.0000	55.40
78 tert-Butylbenzene	119	11.449	11.446	(0.967)	502085	50.0000	46.25
79 1,2,4-Trimethylbenzene	105	11.501	11.497	(0.972)	620298	50.0000	55.25
81 sec-Butylbenzene	105	11.668	11.664	(0.986)	685276	50.0000	47.34
82 p-Isopropyltoluene	119	11.815	11.818	(0.998)	581908	50.0000	47.12
83 1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	361486	50.0000	47.69
84 1,4-Dichlorobenzene	146	11.860	11.857	(1.002)	343899	50.0000	46.95
87 n-Butylbenzene	91	12.223	12.219	(1.033)	463147	50.0000	49.46
88 1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	335758	50.0000	47.20
89 1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	40194	50.0000	50.71
90 1,2,4-Trichlorobenzene	180	13.818	13.814	(1.168)	207389	50.0000	50.41
91 Hexachlorobutadiene	225	13.988	13.984	(1.182)	90711	50.0000	50.45
92 Naphthalene	128	14.062	14.061	(1.188)	498360	50.0000	50.32
93 1,2,3-Trichlorobenzene	182	14.302	14.299	(1.209)	174937	50.0000	49.08
146 Methyl acetate	43	3.219	3.218	(0.558)	194911	50.0000	45.84
138 Freon TF	101	2.753	2.753	(0.477)	135155	50.0000	50.98
139 Diethyl ether	59	2.529	2.532	(0.438)	318772	50.0000	50.60
147 Methylcyclohexane	83	6.986	6.982	(1.064)	227766	50.0000	48.50
135 1,4-Dioxane	88	7.230	7.236	(1.252)	30907	1000.00	946.00
132 n-Butanol	56	6.989	6.989	(1.211)	115893	1000.00	896.22
131 Methyl Acrylate	55	5.259	5.256	(0.911)	306215	50.0000	51.45
133 Ethyl Acrylate	55	7.005	7.005	(1.213)	528142	50.0000	49.11
136 n-Hexane	57	4.050	4.053	(0.702)	226206	50.0000	53.35
141 Cyclohexane	56	5.680	5.683	(0.984)	288807	50.0000	48.97
142 Tetrahydrofuran	42	5.407	5.407	(0.937)	134447	100.000	94.56
148 Tert-butyl alcohol	59	3.556	3.552	(0.616)	384133	1000.00	905.99
149 Isopropyl alcohol	45	3.045	3.045	(0.528)	235849	1000.00	874.67
151 4-Methyl-2-pentanol	45	8.452	8.452	(0.887)	866810	1000.00	938.27
166 1,2,3-Trimethylbenzene	105	11.912	11.911	(1.007)	585628	50.0000	46.82
167 Ethanol	45	2.532	2.535	(0.439)	309314	1000.00	995.37
170 1,3,5-Trichlorobenzene	180	13.202	13.198	(1.116)	239632	50.0000	49.70
172 tert-Butyl formate	59	4.900	4.900	(0.849)	631570	100.000	101.68
173 3,3-Dimethyl-1-butanol	57	9.094	9.091	(0.955)	313728	1000.00	981.26
174 tert-Amyl methyl ether	73	6.254	6.251	(1.083)	582626	50.0000	49.73
175 tert-Butyl ethyl ether	59	6.229	6.228	(1.079)	275759	50.0000	47.46
176 tert-Amyl alcohol	59	6.229	6.228	(1.079)	275759	1000.00	949.20
157 2-Methylnaphthalene	142	15.191	15.188	(1.284)	127411	50.0000	40.32
156 Diisopropyl ether	45	4.416	4.412	(0.765)	757501	50.0000	50.23(T)
171 1-Methylnaphthalene	142	15.387	15.383	(1.300)	140837	50.0000	42.85
130 Ethyl Acetate	43	5.231	5.234	(0.906)	411738	50.0000	47.09

QC Flag Legend

T - Target compound detected outside RT window.
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2,i\D180507,b\D050703,D
Date : 07-MAY-2018 09:54
Client ID: CCV
Sample Info: CCV;CCV;2;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2,i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050705.D Page 1
Report Date: 14-May-2018 16:44

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050705.D
Lab Smp Id: VLCSW-180507 Client Smp ID: VLCSW-180507
Inj Date : 07-MAY-2018 10:43
Operator : AP Inst ID: VOA2.i
Smp Info : VLCSW-180507;VLCSW-180507;3;;LCS
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\8260LL.m
Meth Date : 14-May-2018 16:40 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 5 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

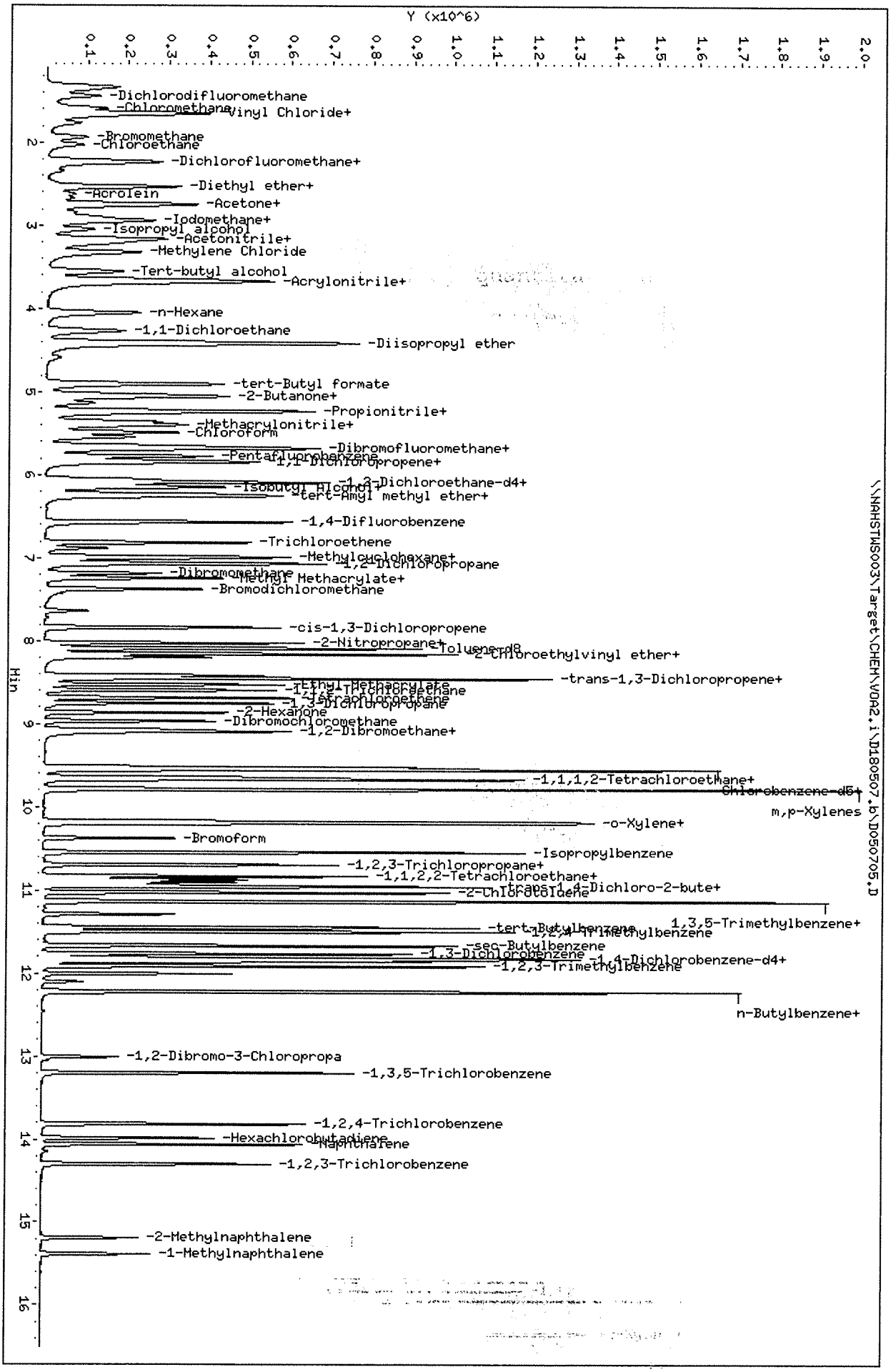
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1	Pentafluorobenzene	168	5.773	5.773	(1.000)	347741	50.0000	
2	Dichlorodifluoromethane	85	1.438	1.441	(0.249)	173683	53.9773	53.97
186	Isobutylene	56	1.643	1.643	(0.285)	196942	58.5255	58.52(AM)
3	Chloromethane	50	1.585	1.585	(0.275)	315633	56.5129	56.51
4	Propionitrile	54	5.227	5.227	(0.906)	621674	515.827	515.82
5	Vinyl Chloride	62	1.675	1.672	(0.290)	220457	50.8321	50.83
6	Bromomethane	94	1.932	1.932	(0.335)	113101	44.0359	44.03
7	Chloroethane	64	2.028	2.031	(0.351)	129175	55.5794	55.57
159	Dichlorofluoromethane	67	2.221	2.220	(0.385)	317247	49.6171	49.61
8	Trichlorofluoromethane	101	2.243	2.240	(0.389)	219133	53.3875	53.38
9	Acrolein	56	2.673	2.679	(0.463)	78560	91.3074	91.30
10	Acetone	43	2.840	2.846	(0.492)	118837	103.810	103.80
11	1,1-Dichloroethene	96	2.737	2.740	(0.474)	138930	52.9148	52.91
12	Isobutyl Alcohol	74	6.151	6.158	(1.066)	16009	911.755	911.75(A)
13	Acetonitrile	39	3.161	3.161	(0.548)	225269	507.444	507.44
14	Allyl Chloride	41	3.164	3.167	(0.548)	591716	52.2915	52.29
15	Iodomethane	142	2.898	2.891	(0.502)	255126	94.4583	94.45
16	Acrylonitrile	53	3.677	3.680	(0.637)	164420	106.554	106.55
17	Methylene Chloride	84	3.328	3.324	(0.576)	172563	46.9602	46.96
18	Methyl tert-butyl ether	73	3.674	3.677	(0.636)	496097	49.4736	49.47
19	Carbon Disulfide	76	2.943	2.946	(0.510)	604326	100.512	100.51
20	trans-1,2-Dichloroethene	96	3.652	3.652	(0.633)	156941	54.6488	54.64

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
	21 Vinyl Acetate	43	5.234	5.234	(0.907)	428767	95.7828	95.78
	22 1,1-Dichloroethane	63	4.271	4.268	(0.740)	351648	50.3516	50.35
	24 2-Butanone	43	5.134	5.131	(0.889)	189688	104.923	104.92
	25 Methacrylonitrile	41	5.397	5.397	(0.935)	213885	49.6716	49.67
	26 2,2-Dichloropropane	77	5.032	5.035	(0.872)	249936	52.9262	52.92
	27 cis-1,2-Dichloroethene	96	5.060	5.060	(0.877)	186481	51.9006	51.90
	28 Chloroform	83	5.484	5.484	(0.950)	301117	49.9794	49.97
	29 Bromochloromethane	128	5.362	5.356	(0.929)	94143	54.2922	54.29
$	30 Dibromofluoromethane	113	5.677	5.676	(0.983)	151042	50.2105	50.21
	31 1,1,1-Trichloroethane	97	5.648	5.648	(0.978)	257530	50.9158	50.91
	32 1,1-Dichloropropene	75	5.850	5.850	(0.891)	201938	44.3014	44.30
	33 1,2-Dichloroethane	62	6.139	6.135	(0.935)	251521	50.4222	50.42
	34 Carbon Tetrachloride	117	5.827	5.827	(0.887)	215093	46.4023	46.40
$	35 1,2-Dichloroethane-d4	65	6.049	6.052	(1.048)	196904	52.0504	52.05
*	36 1,4-Difluorobenzene	114	6.569	6.565	(1.000)	528863	50.0000	
	37 Benzene	78	6.091	6.087	(0.927)	658615	48.9916	48.99
	38 Trichloroethene	130	6.813	6.812	(1.037)	179149	51.4838	51.48
	39 Bromodichloromethane	83	7.371	7.374	(1.122)	252162	51.6443	51.64
	40 Methyl Methacrylate	41	7.243	7.242	(1.255)	212450	51.7053	51.70
	41 2-Chloroethylvinyl ether	63	8.157	8.154	(1.242)	58859	97.5310	97.53
	42 1,2-Dichloropropane	63	7.063	7.063	(1.075)	198902	49.3024	49.30
	43 2-Nitropropane	43	8.025	8.022	(1.390)	422259	48.7759	48.77
	44 Dibromomethane	93	7.185	7.185	(1.094)	108607	53.9203	53.92
	45 4-Methyl-2-Pentanone	43	8.025	8.022	(0.843)	422259	96.8339	96.83
	46 cis-1,3-Dichloropropene	75	7.836	7.833	(1.193)	297941	54.6863	54.68
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	475206	50.0000	
$	48 Toluene-d8	98	8.090	8.090	(0.849)	592490	51.5811	51.58
	49 Ethyl Methacrylate	69	8.529	8.526	(1.298)	250138	56.5251	56.52
	50 Toluene	91	8.154	8.154	(0.856)	688804	47.4538	47.45
	51 trans-1,3-Dichloropropene	75	8.414	8.414	(1.281)	257307	56.9086	56.90
	52 2-Hexanone	43	8.863	8.863	(0.931)	275631	100.870	100.87
	53 1,1,2-Trichloroethane	83	8.590	8.593	(0.902)	137823	50.5520	50.55
	54 1,3-Dichloropropane	76	8.751	8.751	(0.919)	273751	50.5778	50.57
	55 Dibromochloromethane	129	8.969	8.966	(0.942)	210477	52.7227	52.72
	56 Tetrachloroethene	164	8.683	8.686	(0.912)	139313	48.0225	48.02
	57 1,2-Dibromoethane	107	9.062	9.065	(0.951)	179401	52.7095	52.70
	58 1-Chlorohexane	55	9.550	9.550	(1.454)	173376	52.9409	52.94
	59 Chlorobenzene	112	9.553	9.550	(1.003)	443029	48.7742	48.77
	60 1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.012)	187067	51.8711	51.87
	61 Ethylbenzene	106	9.668	9.668	(1.015)	233292	47.3947	47.39
	62 m,p-Xylenes	106	9.787	9.787	(1.028)	568029	115.553	115.55
	63 o-Xylene	106	10.175	10.175	(1.068)	302521	48.9399	48.93
	64 Styrene	104	10.195	10.195	(1.070)	501504	50.6436	50.64
	66 Bromoform	173	10.374	10.374	(1.089)	152012	53.5985	53.59
	67 Isopropylbenzene	105	10.544	10.544	(1.107)	724762	48.6999	48.69
	68 1,1,2,2-Tetrachloroethane	83	10.869	10.868	(0.918)	223504	46.4347	46.43
$	69 4-Bromofluorobenzene	95	10.692	10.692	(1.123)	227101	56.9633	56.96(M)
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	217228	50.0000	
	71 1,2,3-Trichloropropane	75	10.692	10.692	(0.903)	106723	53.8622	53.86
	72 trans-1,4-Dichloro-2-butene	53	10.926	10.926	(1.147)	57661	48.6651	48.66
	73 n-Propylbenzene	91	10.952	10.952	(0.925)	778446	45.6870	45.68
	74 Bromobenzene	156	10.830	10.830	(0.915)	207709	47.6373	47.63
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	582635	45.2348	45.23
	76 2-Chlorotoluene	91	11.029	11.026	(0.932)	519318	54.2356	54.23

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
77	4-Chlorotoluene	91	11.138	11.138	(0.941)	565435	54.4102	54.41
78	tert-Butylbenzene	119	11.449	11.446	(0.967)	480291	45.1236	45.12
79	1,2,4-Trimethylbenzene	105	11.498	11.497	(0.972)	597549	54.2410	54.24
81	sec-Butylbenzene	105	11.664	11.664	(0.986)	663029	46.7138	46.71
82	p-Isopropyltoluene	119	11.818	11.818	(0.999)	560274	46.2763	46.27
83	1,3-Dichlorobenzene	146	11.764	11.767	(0.994)	350011	47.0947	47.09
84	1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	334804	46.6177	46.61
87	n-Butylbenzene	91	12.220	12.219	(1.033)	445147	48.4846	48.48
88	1,2-Dichlorobenzene	146	12.220	12.223	(1.033)	334228	47.9277	47.92
89	1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	40834	52.5500	52.55
90	1,2,4-Trichlorobenzene	180	13.818	13.814	(1.168)	198561	49.2393	49.23
91	Hexachlorobutadiene	225	13.988	13.984	(1.182)	82425	46.7504	46.75
92	Naphthalene	128	14.061	14.061	(1.188)	477780	49.2130	49.21
93	1,2,3-Trichlorobenzene	182	14.299	14.299	(1.208)	167778	48.0307	48.03
146	Methyl acetate	43	3.219	3.218	(0.558)	202349	48.5551	48.55
138	Freon TF	101	2.756	2.753	(0.478)	131034	50.4136	50.41
139	Diethyl ether	59	2.532	2.532	(0.439)	320281	51.8655	51.86
147	Methylcyclohexane	83	6.986	6.982	(1.064)	218685	47.1004	47.10
135	1,4-Dioxane	88	7.239	7.236	(1.254)	32489	1015.90	1015.90
132	n-Butanol	56	6.989	6.989	(1.211)	113458	895.060	895.06
131	Methyl Acrylate	55	5.259	5.256	(0.911)	317267	54.3890	54.38
133	Ethyl Acrylate	55	7.005	7.005	(1.213)	525097	49.8161	49.81
136	n-Hexane	57	4.056	4.053	(0.703)	204064	49.1026	49.10
141	Cyclohexane	56	5.683	5.683	(0.984)	282054	48.7976	48.79
142	Tetrahydrofuran	42	5.407	5.407	(0.937)	136770	98.1382	98.13
148	Tert-butyl alcohol	59	3.559	3.552	(0.616)	423011	1017.77	1017.77
149	Isopropyl alcohol	45	3.045	3.045	(0.528)	244966	926.781	926.78
151	4-Methyl-2-pentanol	45	8.452	8.452	(0.887)	922629	1009.71	1009.71
166	1,2,3-Trimethylbenzene	105	11.915	11.911	(1.007)	565726	46.1349	46.13
167	Ethanol	45	2.529	2.535	(0.438)	313942	1030.60	1030.60
170	1,3,5-Trichlorobenzene	180	13.201	13.198	(1.116)	232494	49.1796	49.17
172	tert-Butyl formate	59	4.903	4.900	(0.849)	597860	98.1967	98.19
173	3,3-Dimethyl-1-butanol	57	9.091	9.091	(0.955)	332950	1052.88	1052.88
174	tert-Amyl methyl ether	73	6.257	6.251	(1.084)	558387	48.6218	48.62
175	tert-Butyl ethyl ether	59	6.228	6.228	(1.079)	286054	50.2231	50.22
176	tert-Amyl alcohol	59	6.228	6.228	(1.079)	286054	1004.46	1004.46
157	2-Methylnaphthalene	142	15.188	15.188	(1.283)	116172	37.9419	37.94
156	Diisopropyl ether	45	4.415	4.412	(0.765)	736133	49.8005	49.80
171	1-Methylnaphthalene	142	15.387	15.383	(1.300)	133054	41.4953	41.49
130	Ethyl Acetate	43	5.234	5.234	(0.907)	428767	50.0290	50.02
M 94	1,2-Dichloroethylene (total)	96				343422	106.549	106.54
M 95	Xylenes (total)	106				870550	164.493	164.49

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050705.D
Date : 07-MAY-2018 10:43
Client ID: VLCSW-180507
Sample Info: VLCSW-180507;VLCSW-180507;3;;LCS
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050707.D Page 1
Report Date: 14-May-2018 16:44

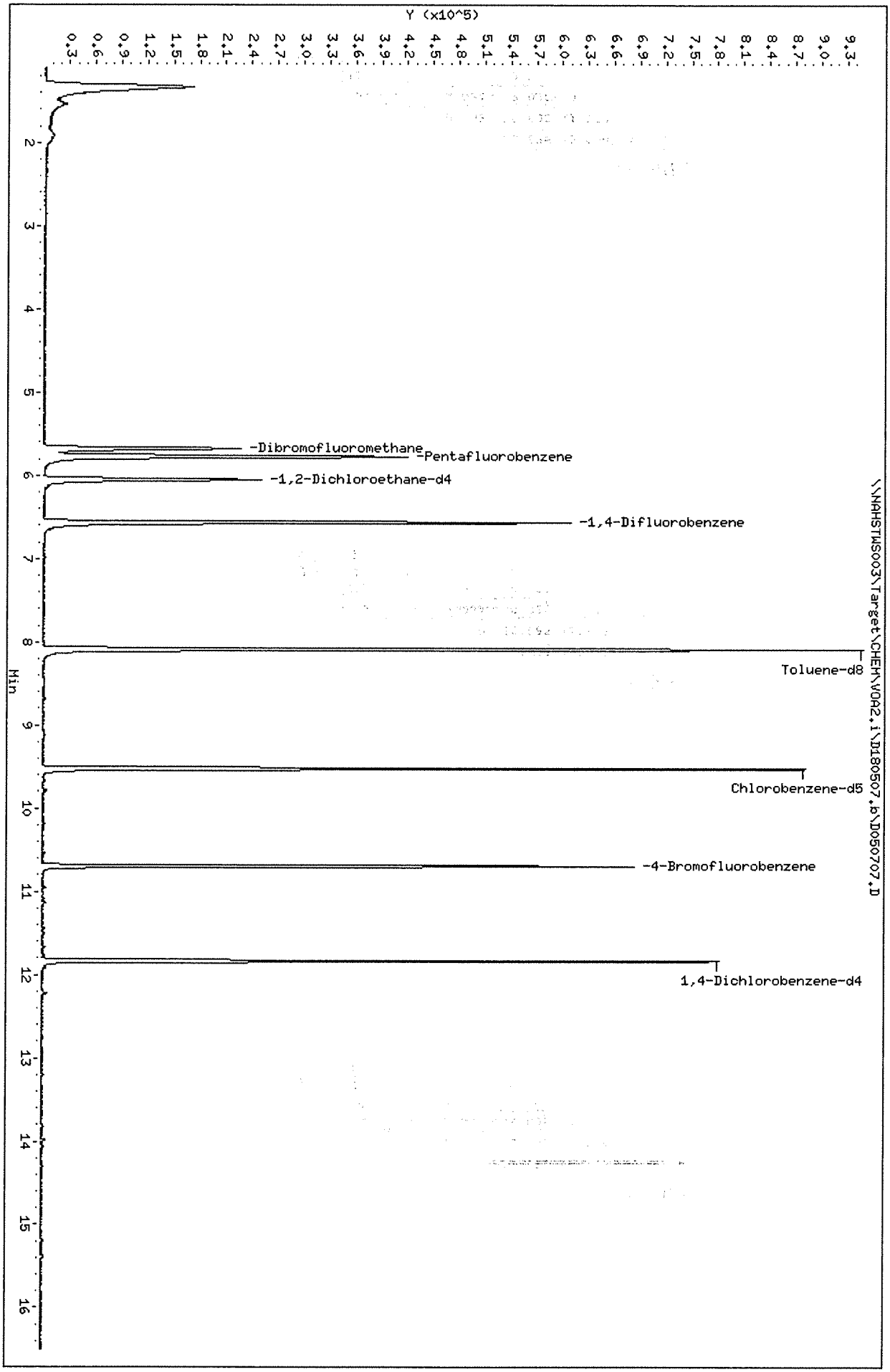
ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050707.D
Lab Smp Id: VBLKW-180507 Client Smp ID: VBLKW-180507
Inj Date : 07-MAY-2018 11:32
Operator : AP Inst ID: VOA2.i
Smp Info : VBLKW-180507;VBLKW-180507;3;;BLANK
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\8260LL.m
Meth Date : 14-May-2018 16:40 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 7 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	5.770	5.773	(1.000)	375529	50.0000	
$ 30 Dibromofluoromethane	113	5.680	5.676	(0.984)	172818	53.4167	53.41
$ 35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.049)	203180	49.6436	49.64
* 36 1,4-Difluorobenzene	114	6.565	6.565	(1.000)	540197	50.0000	
* 47 Chlorobenzene-d5	117	9.521	9.524	(1.000)	483164	50.0000	
$ 48 Toluene-d8	98	8.087	8.090	(0.849)	624915	53.9377	53.93
$ 69 4-Bromofluorobenzene	95	10.695	10.692	(1.123)	221381	54.4752	54.47
* 70 1,4-Dichlorobenzene-d4	152	11.831	11.834	(1.000)	202074	50.0000	


Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050707.D
Date : 07-MAY-2018 11:32
Client ID: VBLKW-180507
Sample Info: VBLKW-180507;VBLKW-180507;3;;BLANK
Purge Volume: 5.0
Column phase: DB624
Instrument: VOA2.i
Operator: AP
Column diameter: 0.18
Page 2
Y (x10^5)
Min
-Dibromofluoromethane
-Pentafluorobenzene
-1,2-Dichloroethane-d4
-1,4-Difluorobenzene
Toluene-d8
Chlorobenzene-d5
-4-Bromofluorobenzene
1,4-Dichlorobenzene-d4
\\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050707.D

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050715.D Page 1
Report Date: 14-May-2018 16:44

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050715.D
Lab Smp Id: HS18050260-01MS Client Smp ID: HS18050260-01MS
Inj Date : 07-MAY-2018 14:47
Operator : AP Inst ID: VOA2.i
Smp Info : HS18050260-01MS;HS18050260-01MS;3;;MS
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\8260LL.m
Meth Date : 14-May-2018 16:40 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 15 QC Sample: MS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	5.773	5.773	(1.000)	348033	50.0000	
2 Dichlorodifluoromethane	85	1.441	1.441	(0.250)	173182	53.7728	53.77
186 Isobutylene	56	1.643	1.643	(0.285)	101639	30.1788	30.17(AM)
3 Chloromethane	50	1.588	1.585	(0.275)	271014	48.2327	48.23
4 Propionitrile	54	5.224	5.227	(0.905)	548558	454.778	454.77
5 Vinyl Chloride	62	1.675	1.672	(0.290)	231692	53.3778	53.37
6 Bromomethane	94	1.932	1.932	(0.335)	71553	27.8358	27.83
7 Chloroethane	64	2.028	2.031	(0.351)	116651	49.9911	49.99(M)
159 Dichlorofluoromethane	67	2.217	2.220	(0.384)	315482	49.2997	49.29
8 Trichlorofluoromethane	101	2.243	2.240	(0.389)	232908	56.6959	56.69
9 Acrolein	56	2.670	2.679	(0.463)	22470	25.8147	25.81
10 Acetone	43	2.837	2.846	(0.491)	112514	98.0036	98.00
11 1,1-Dichloroethene	96	2.744	2.740	(0.475)	149771	56.9960	56.99
12 Isobutyl Alcohol	74	6.151	6.158	(1.066)	13520	771.106	771.10(A)
13 Acetonitrile	39	3.161	3.161	(0.548)	217847	490.314	490.31
14 Allyl Chloride	41	3.170	3.167	(0.549)	533041	47.0667	47.06
15 Iodomethane	142	2.904	2.891	(0.503)	282786	104.171	104.17
16 Acrylonitrile	53	3.684	3.680	(0.638)	146140	94.6277	94.62
17 Methylene Chloride	84	3.331	3.324	(0.577)	169008	45.9542	45.95
18 Methyl tert-butyl ether	73	3.674	3.677	(0.636)	469642	46.7961	46.79
19 Carbon Disulfide	76	2.939	2.946	(0.509)	640253	106.398	106.39
20 trans-1,2-Dichloroethene	96	3.652	3.652	(0.633)	160373	55.8040	55.80

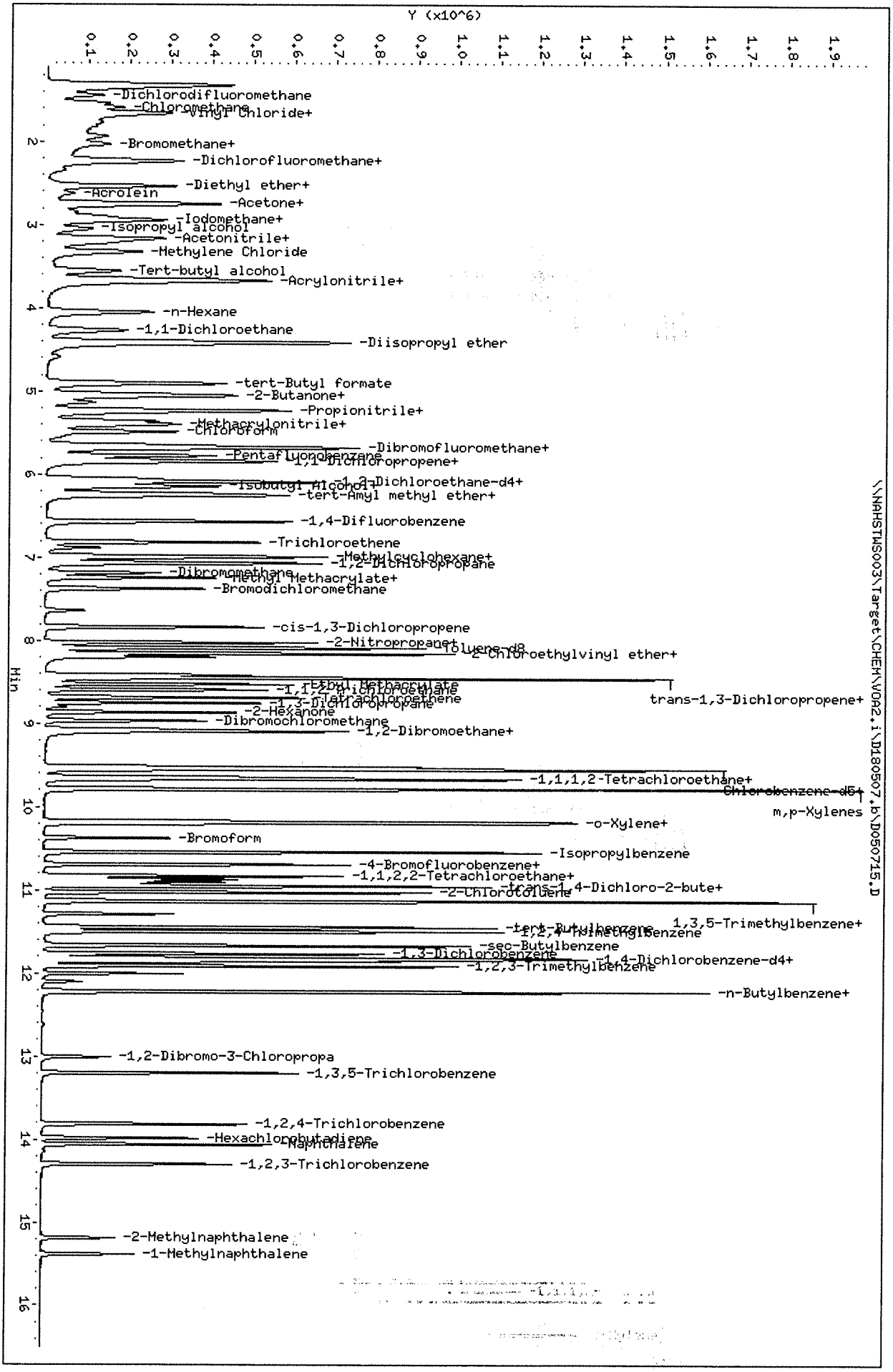
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050715.D Page 2
Report Date: 14-May-2018 16:44

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
	21 Vinyl Acetate	43	5.234	5.234	(0.907)	388873	86.7980	86.79(M)
	22 1,1-Dichloroethane	63	4.268	4.268	(0.739)	343986	49.2131	49.21
	24 2-Butanone	43	5.131	5.131	(0.889)	172488	95.3294	95.32
	25 Methacrylonitrile	41	5.397	5.397	(0.935)	202850	47.0693	47.06
	26 2,2-Dichloropropane	77	5.035	5.035	(0.872)	255933	54.1507	54.15
	27 cis-1,2-Dichloroethene	96	5.057	5.060	(0.876)	194264	54.0214	54.02
	28 Chloroform	83	5.487	5.484	(0.951)	293594	48.6898	48.68
	29 Bromochloromethane	128	5.359	5.356	(0.928)	91101	52.4938	52.49
$	30 Dibromofluoromethane	113	5.677	5.676	(0.983)	152727	50.7645	50.76
	31 1,1,1-Trichloroethane	97	5.648	5.648	(0.978)	272986	53.9263	53.92
	32 1,1-Dichloropropene	75	5.850	5.850	(0.891)	214473	47.1556	47.15
	33 1,2-Dichloroethane	62	6.139	6.135	(0.935)	250060	50.2404	50.24
	34 Carbon Tetrachloride	117	5.831	5.827	(0.888)	232006	50.1619	50.16
$	35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	199295	52.6615	52.66
*	36 1,4-Difluorobenzene	114	6.565	6.565	(1.000)	527693	50.0000	
	37 Benzene	78	6.090	6.087	(0.928)	647561	48.2762	48.27
	38 Trichloroethene	130	6.816	6.812	(1.038)	189700	54.6368	54.63
	39 Bromodichloromethane	83	7.374	7.374	(1.123)	240402	49.3450	49.34
	40 Methyl Methacrylate	41	7.242	7.242	(1.255)	201778	49.0668	49.06
	41 2-Chloroethylvinyl ether	63	8.154	8.154	(1.242)	57552	95.5767	95.57
	42 1,2-Dichloropropane	63	7.060	7.063	(1.075)	194654	48.3564	48.35
	43 2-Nitropropane	43	8.022	8.022	(1.390)	446589	51.5430	51.54
	44 Dibromomethane	93	7.185	7.185	(1.094)	103027	51.2634	51.26
	45 4-Methyl-2-Pentanone	43	8.022	8.022	(0.842)	446589	101.886	101.88
	46 cis-1,3-Dichloropropene	75	7.836	7.833	(1.194)	282612	51.9877	51.98
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	477667	50.0000	
$	48 Toluene-d8	98	8.090	8.090	(0.849)	594174	51.4355	51.43
	49 Ethyl Methacrylate	69	8.529	8.526	(1.299)	250436	56.7257	56.72
	50 Toluene	91	8.157	8.154	(0.856)	684264	46.8982	46.89
	51 trans-1,3-Dichloropropene	75	8.414	8.414	(1.282)	235604	52.2241	52.22
	52 2-Hexanone	43	8.866	8.863	(0.931)	286347	104.252	104.25
	53 1,1,2-Trichloroethane	83	8.593	8.593	(0.902)	129054	47.0918	47.09
	54 1,3-Dichloropropane	76	8.751	8.751	(0.919)	260790	47.9349	47.93
	55 Dibromochloromethane	129	8.969	8.966	(0.942)	196738	49.0273	49.02
	56 Tetrachloroethene	164	8.687	8.686	(0.912)	145055	49.7443	49.74
	57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	167953	49.0918	49.09
	58 1-Chlorohexane	55	9.550	9.550	(1.455)	184852	56.7720	56.77
	59 Chlorobenzene	112	9.550	9.550	(1.003)	421724	46.1894	46.18
	60 1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.012)	174268	48.0732	48.07
	61 Ethylbenzene	106	9.668	9.668	(1.015)	233836	47.2605	47.26
	62 m,p-Xylenes	106	9.787	9.787	(1.028)	563015	113.849	113.84
	63 o-Xylene	106	10.175	10.175	(1.068)	295618	47.5768	47.57
	64 Styrene	104	10.195	10.195	(1.070)	463387	46.5533	46.55
	66 Bromoform	173	10.374	10.374	(1.089)	137813	48.3417	48.34
	67 Isopropylbenzene	105	10.544	10.544	(1.107)	740751	49.5178	49.51
	68 1,1,2,2-Tetrachloroethane	83	10.872	10.868	(0.919)	210326	42.9939	42.99
$	69 4-Bromofluorobenzene	95	10.695	10.692	(1.123)	227001	56.6260	56.62
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	220780	50.0000	
	71 1,2,3-Trichloropropane	75	10.692	10.692	(0.903)	105686	52.4139	52.41
	72 trans-1,4-Dichloro-2-butene	53	10.930	10.926	(1.148)	51203	43.0820	43.08
	73 n-Propylbenzene	91	10.952	10.952	(0.925)	775224	44.7659	44.76
	74 Bromobenzene	156	10.830	10.830	(0.915)	194174	43.8167	43.81
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	570505	43.5804	43.58
	76 2-Chlorotoluene	91	11.026	11.026	(0.932)	493631	50.5703	50.57

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
77	4-Chlorotoluene	91	11.138	11.138	(0.941)	534091	50.3791	50.37
78	tert-Butylbenzene	119	11.446	11.446	(0.967)	502199	46.4228	46.42
79	1,2,4-Trimethylbenzene	105	11.498	11.497	(0.972)	578616	51.5454	51.54
81	sec-Butylbenzene	105	11.664	11.664	(0.986)	672408	46.6125	46.61
82	p-Isopropyltoluene	119	11.815	11.818	(0.998)	564563	45.8803	45.88
83	1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	318190	42.1243	42.12
84	1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	296055	40.5591	40.55
87	n-Butylbenzene	91	12.223	12.219	(1.033)	429487	46.0263	46.02
88	1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	306406	43.2312	43.23
89	1,2-Dibromo-3-Chloropropane	75	13.006	13.009	(1.099)	36885	46.7043	46.70
90	1,2,4-Trichlorobenzene	180	13.814	13.814	(1.167)	158153	38.6819	38.68
91	Hexachlorobutadiene	225	13.988	13.984	(1.182)	74964	41.8316	41.83
92	Naphthalene	128	14.061	14.061	(1.188)	418771	42.5115	42.51
93	1,2,3-Trichlorobenzene	182	14.299	14.299	(1.208)	138366	39.1664	39.16
146	Methyl acetate	43	3.215	3.218	(0.557)	176161	42.2356	42.23
138	Freon TF	101	2.753	2.753	(0.477)	155101	59.8880	59.88
139	Diethyl ether	59	2.529	2.532	(0.438)	305208	49.3832	49.38
147	Methylcyclohexane	83	6.986	6.982	(1.064)	247422	53.4079	53.40
135	1,4-Dioxane	88	7.239	7.236	(1.254)	30745	959.463	959.46
132	n-Butanol	56	6.986	6.989	(1.210)	121401	956.918	956.91
131	Methyl Acrylate	55	5.259	5.256	(0.911)	286103	49.0054	49.00
133	Ethyl Acrylate	55	7.002	7.005	(1.213)	536337	50.8398	50.83
136	n-Hexane	57	4.050	4.053	(0.702)	237075	56.9980	56.99
141	Cyclohexane	56	5.683	5.683	(0.984)	326928	56.5137	56.51
142	Tetrahydrofuran	42	5.410	5.407	(0.937)	131384	94.1944	94.19
148	Tert-butyl alcohol	59	3.552	3.552	(0.615)	391108	940.225	940.22
149	Isopropyl alcohol	45	3.052	3.045	(0.529)	232659	879.481	879.48
151	4-Methyl-2-pentanol	45	8.452	8.452	(0.887)	1131319	1231.72	1231.72
166	1,2,3-Trimethylbenzene	105	11.911	11.911	(1.007)	533994	42.8465	42.84
167	Ethanol	45	2.529	2.535	(0.438)	297616	976.190	976.19
170	1,3,5-Trichlorobenzene	180	13.201	13.198	(1.116)	190634	39.6762	39.67
172	tert-Butyl formate	59	4.906	4.900	(0.850)	580893	95.3299	95.32
173	3,3-Dimethyl-1-butanol	57	9.091	9.091	(0.955)	390520	1228.57	1228.56
174	tert-Amyl methyl ether	73	6.254	6.251	(1.083)	547026	47.5926	47.59
175	tert-Butyl ethyl ether	59	6.228	6.228	(1.079)	277279	48.6416	48.64
176	tert-Amyl alcohol	59	6.228	6.228	(1.079)	277279	972.833	972.83
157	2-Methylnaphthalene	142	15.191	15.188	(1.284)	88039	29.8209	29.82
156	Diisopropyl ether	45	4.415	4.412	(0.765)	710744	48.0426	48.04
171	1-Methylnaphthalene	142	15.387	15.383	(1.300)	108947	34.4927	34.49
130	Ethyl Acetate	43	5.234	5.234	(0.907)	389346	45.3912	45.39
M 94	1,2-Dichloroethylene (total)	96				354637	109.825	109.82
M 95	Xylenes (total)	106				858633	161.426	161.42

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.


Y (x10^6)
0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9
Min
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
-Dichlorodifluoromethane
-Chloromethane
-Vinyl Chloride+
-Bromomethane+
-Dichlorofluoromethane+
-Diethyl ether+
-Acrolein
-Acetone+
-Iodomethane+
-Isopropyl alcohol
-Acetonitrile+
-Methylene Chloride
-Tert-butyl alcohol
-Acrylonitrile+
-n-Hexane
-1,1-Dichloroethane
-Diisopropyl ether
-tert-Butyl formate
-2-Butanone+
-Propionitrile+
-Methacrylonitrile+
-Chloroform
-Dibromofluoromethane+
-Pentafluorobenzene
-1,1-Dichloropropene+
-Isobutyl Alcohol
-1,2-Dichloroethane-d4+
-tert-Amyl methyl ether+
-1,4-Difluorobenzene
-Trichloroethene
-Methylcyclohexane+
-1,2-Dichloropropane
-Dibromomethane
-Methyl Methacrylate+
-Bromodichloromethane
-cis-1,3-Dichloropropene
-2-Nitropropane+
-Toluene-d8
-2-Chloroethylvinyl ether+
-Ethyl Methacrylate
-1,1,2-Trichloroethane
-Tetrachloroethene
-1,3-Dichloropropane
-2-Hexanone
-Dibromochloromethane
-1,2-Dibromoethane+
trans-1,3-Dichloropropene+
-1,1,1,2-Tetrachloroethane+
Chlorobenzene-d5+
m,p-Xylenes
-o-Xylene+
-Bromoform
-Isopropylbenzene
-4-Bromofluorobenzene+
-1,1,2,2-Tetrachloroethane+
-trans-1,4-Dichloro-2-bute+
-2-Chlorotoluene
-tert-Butylbenzene
1,3,5-Trimethylbenzene+
1,2,4-Trimethylbenzene
-sec-Butylbenzene
-1,3-Dichlorobenzene
-1,4-Dichlorobenzene-d4+
-1,2,3-Trimethylbenzene
-n-Butylbenzene+
-1,2-Dibromo-3-Chloropropa
-1,3,5-Trichlorobenzene
-1,2,4-Trichlorobenzene
-Hexachlorobutadiene
-Naphthalene
-1,2,3-Trichlorobenzene
-2-Methylnaphthalene
-1-Methylnaphthalene
\\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050715.D
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050715.D
Date : 07-MAY-2018 14:47
Client ID: HS18050260-01HS
Sample Info: HS18050260-01HS;HS18050260-01HS;3;;HS
Purge Volume: 5.0
Column phase: DB624
Instrument: VOA2.i
Operator: AP
Column diameter: 0.18
Page 4

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050716.D Page 1
Report Date: 14-May-2018 16:44

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050716.D
Lab Smp Id: HS18050260-01MSD Client Smp ID: HS18050260-01MSD
Inj Date : 07-MAY-2018 15:12
Operator : AP Inst ID: VOA2.i
Smp Info : HS18050260-01MSD;HS18050260-01MSD;3;;MSD
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\8260LL.m
Meth Date : 14-May-2018 16:40 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 15 QC Sample: MSD
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	5.776	5.773	(1.000)	350410	50.0000	
2 Dichlorodifluoromethane	85	1.444	1.441	(0.250)	171823	52.9749	52.97
186 Isobutylene	56	1.643	1.643	(0.285)	97374	28.7163	28.71(AM)
3 Chloromethane	50	1.592	1.585	(0.276)	262711	46.3722	46.37
4 Propionitrile	54	5.227	5.227	(0.905)	580418	477.927	477.92
5 Vinyl Chloride	62	1.672	1.672	(0.290)	228934	52.3846	52.38
6 Bromomethane	94	1.935	1.932	(0.335)	72435	27.9878	27.98
7 Chloroethane	64	2.028	2.031	(0.351)	115867	49.2965	49.29(M)
159 Dichlorofluoromethane	67	2.221	2.220	(0.385)	315003	48.8909	48.89
8 Trichlorofluoromethane	101	2.240	2.240	(0.388)	235426	56.9200	56.92
9 Acrolein	56	2.679	2.679	(0.464)	22225	25.3531	25.35
10 Acetone	43	2.840	2.846	(0.492)	115632	100.113	100.11
11 1,1-Dichloroethene	96	2.747	2.740	(0.476)	148659	56.1891	56.18
12 Isobutyl Alcohol	74	6.158	6.158	(1.066)	16163	913.493	913.49(A)
13 Acetonitrile	39	3.161	3.161	(0.547)	221799	495.822	495.82
14 Allyl Chloride	41	3.167	3.167	(0.548)	560364	49.1436	49.14
15 Iodomethane	142	2.901	2.891	(0.502)	259929	95.4583	95.45
16 Acrylonitrile	53	3.681	3.680	(0.637)	159830	102.790	102.79
17 Methylene Chloride	84	3.321	3.324	(0.575)	171905	46.4248	46.42
18 Methyl tert-butyl ether	73	3.677	3.677	(0.637)	477630	47.2692	47.26
19 Carbon Disulfide	76	2.946	2.946	(0.510)	638944	105.460	105.46
20 trans-1,2-Dichloroethene	96	3.652	3.652	(0.632)	156193	53.9700	53.97

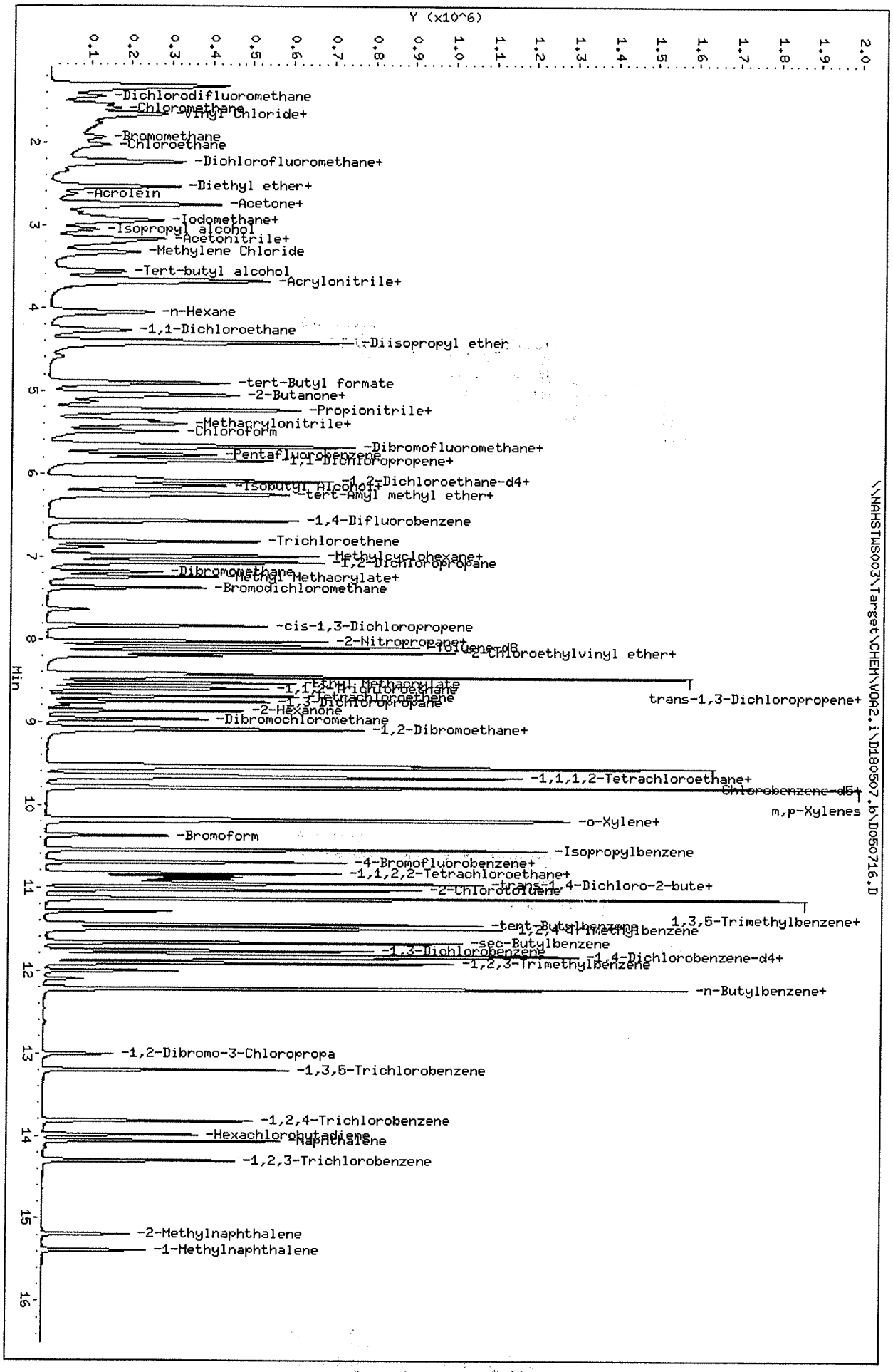
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050716.D Page 2
Report Date: 14-May-2018 16:44

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
	21 Vinyl Acetate	43	5.237	5.234	(0.907)	396161	87.8249	87.82
	22 1,1-Dichloroethane	63	4.265	4.268	(0.738)	347932	49.4400	49.44
	24 2-Butanone	43	5.131	5.131	(0.888)	177852	97.6271	97.62
	25 Methacrylonitrile	41	5.397	5.397	(0.934)	202752	46.7275	46.72
	26 2,2-Dichloropropane	77	5.032	5.035	(0.871)	252905	53.1470	53.14
	27 cis-1,2-Dichloroethene	96	5.057	5.060	(0.876)	196769	54.3468	54.34
	28 Chloroform	83	5.490	5.484	(0.951)	295632	48.6952	48.69
	29 Bromochloromethane	128	5.362	5.356	(0.928)	90502	51.7949	51.79
$	30 Dibromofluoromethane	113	5.680	5.676	(0.983)	153129	50.5380	50.53
	31 1,1,1-Trichloroethane	97	5.651	5.648	(0.978)	274718	53.9003	53.90
	32 1,1-Dichloropropene	75	5.850	5.850	(0.891)	216526	46.9834	46.98
	33 1,2-Dichloroethane	62	6.139	6.135	(0.935)	247945	49.1630	49.16
	34 Carbon Tetrachloride	117	5.831	5.827	(0.888)	233830	49.8941	49.89
$	35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	203185	53.3511	53.35
*	36 1,4-Difluorobenzene	114	6.565	6.565	(1.000)	534697	50.0000	
	37 Benzene	78	6.091	6.087	(0.928)	654652	48.1655	48.16
	38 Trichloroethene	130	6.813	6.812	(1.038)	191880	54.5408	54.54
	39 Bromodichloromethane	83	7.374	7.374	(1.123)	240696	48.7582	48.75
	40 Methyl Methacrylate	41	7.246	7.242	(1.254)	205385	49.6051	49.60
	41 2-Chloroethylvinyl ether	63	8.151	8.154	(1.241)	60822	99.6841	99.68
	42 1,2-Dichloropropane	63	7.063	7.063	(1.076)	194492	47.6833	47.68
	43 2-Nitropropane	43	8.026	8.022	(1.389)	465871	53.4037	53.40
	44 Dibromomethane	93	7.188	7.185	(1.095)	105570	51.8407	51.84
	45 4-Methyl-2-Pentanone	43	8.026	8.022	(0.843)	465871	106.194	106.19
	46 cis-1,3-Dichloropropene	75	7.836	7.833	(1.194)	280502	50.9237	50.92
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	478073	50.0000	
$	48 Toluene-d8	98	8.087	8.090	(0.849)	594047	51.3691	51.36
	49 Ethyl Methacrylate	69	8.529	8.526	(1.299)	257328	57.5552	57.55
	50 Toluene	91	8.154	8.154	(0.856)	684726	46.8900	46.89
	51 trans-1,3-Dichloropropene	75	8.414	8.414	(1.282)	240506	52.6123	52.61
	52 2-Hexanone	43	8.866	8.863	(0.931)	299115	108.808	108.80
	53 1,1,2-Trichloroethane	83	8.594	8.593	(0.902)	131672	48.0063	48.00
	54 1,3-Dichloropropane	76	8.751	8.751	(0.919)	265423	48.7451	48.74
	55 Dibromochloromethane	129	8.969	8.966	(0.942)	198374	49.3930	49.39
	56 Tetrachloroethene	164	8.687	8.686	(0.912)	146367	50.1516	50.15
	57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	172263	50.3088	50.30
	58 1-Chlorohexane	55	9.550	9.550	(1.455)	183324	55.5026	55.50
	59 Chlorobenzene	112	9.550	9.550	(1.003)	424518	46.4560	46.45
	60 1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.012)	175552	48.3862	48.38
	61 Ethylbenzene	106	9.668	9.668	(1.015)	230733	46.5938	46.59
	62 m,p-Xylenes	106	9.787	9.787	(1.028)	559524	113.000	112.99
	63 o-Xylene	106	10.176	10.175	(1.068)	296368	47.6570	47.65
	64 Styrene	104	10.195	10.195	(1.070)	461649	46.3393	46.33
	66 Bromoform	173	10.374	10.374	(1.089)	139649	48.9441	48.94
	67 Isopropylbenzene	105	10.545	10.544	(1.107)	735089	49.0976	49.09
	68 1,1,2,2-Tetrachloroethane	83	10.869	10.868	(0.919)	213393	44.0502	44.05
$	69 4-Bromofluorobenzene	95	10.695	10.692	(1.123)	228451	56.9579	56.95
*	70 1,4-Dichlorobenzene-d4	152	11.831	11.834	(1.000)	218628	50.0000	
	71 1,2,3-Trichloropropane	75	10.692	10.692	(0.904)	104924	52.5549	52.55
	72 trans-1,4-Dichloro-2-butene	53	10.926	10.926	(1.147)	50919	42.8116	42.81
	73 n-Propylbenzene	91	10.952	10.952	(0.926)	767503	44.7563	44.75
	74 Bromobenzene	156	10.830	10.830	(0.915)	191415	43.6193	43.61
	75 1,3,5-Trimethylbenzene	105	11.129	11.132	(0.941)	569777	43.9532	43.95
	76 2-Chlorotoluene	91	11.026	11.026	(0.932)	487873	50.4678	50.46

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
77	4-Chlorotoluene	91	11.135	11.138	(0.941)	522295	49.7182	49.71
78	tert-Butylbenzene	119	11.449	11.446	(0.968)	497478	46.4390	46.43
79	1,2,4-Trimethylbenzene	105	11.498	11.497	(0.972)	579155	52.1314	52.13
81	sec-Butylbenzene	105	11.664	11.664	(0.986)	662797	46.3985	46.39
82	p-Isopropyltoluene	119	11.815	11.818	(0.999)	558057	45.7980	45.79
83	1,3-Dichlorobenzene	146	11.764	11.767	(0.994)	312862	41.8266	41.82
84	1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	294255	40.7093	40.70
87	n-Butylbenzene	91	12.220	12.219	(1.033)	424993	45.9930	45.99
88	1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	304502	43.3854	43.38
89	1,2-Dibromo-3-Chloropropane	75	13.006	13.009	(1.099)	38147	48.7777	48.77
90	1,2,4-Trichlorobenzene	180	13.818	13.814	(1.168)	156186	38.5780	38.57
91	Hexachlorobutadiene	225	13.988	13.984	(1.182)	76386	43.0455	43.04
92	Naphthalene	128	14.058	14.061	(1.188)	432097	44.2745	44.27
93	1,2,3-Trichlorobenzene	182	14.299	14.299	(1.209)	140478	40.1298	40.12
146	Methyl acetate	43	3.219	3.218	(0.557)	183453	43.6855	43.68
138	Freon TF	101	2.753	2.753	(0.477)	152865	58.5936	58.59
139	Diethyl ether	59	2.535	2.532	(0.439)	304497	48.9339	48.93
147	Methylcyclohexane	83	6.986	6.982	(1.064)	245607	52.3217	52.32
135	1,4-Dioxane	88	7.236	7.236	(1.253)	35210	1094.12	1094.12
132	n-Butanol	56	6.995	6.989	(1.211)	122255	957.113	957.11
131	Methyl Acrylate	55	5.256	5.256	(0.910)	291818	49.6453	49.64
133	Ethyl Acrylate	55	7.005	7.005	(1.213)	539843	50.8250	50.82
136	n-Hexane	57	4.056	4.053	(0.702)	237224	56.6469	56.64
141	Cyclohexane	56	5.683	5.683	(0.984)	322093	55.3002	55.30
142	Tetrahydrofuran	42	5.407	5.407	(0.936)	139997	99.6886	99.68
148	Tert-butyl alcohol	59	3.556	3.552	(0.616)	419354	1001.29	1001.28
149	Isopropyl alcohol	45	3.049	3.045	(0.528)	246102	923.987	923.98
151	4-Methyl-2-pentanol	45	8.452	8.452	(0.887)	1193692	1298.53	1298.52
166	1,2,3-Trimethylbenzene	105	11.912	11.911	(1.007)	525166	42.5529	42.55
167	Ethanol	45	2.535	2.535	(0.439)	301023	980.668	980.66
170	1,3,5-Trichlorobenzene	180	13.198	13.198	(1.116)	186603	39.2195	39.21
172	tert-Butyl formate	59	4.906	4.900	(0.849)	586797	95.6455	95.64
173	3,3-Dimethyl-1-butanol	57	9.094	9.091	(0.955)	410918	1291.64	1291.64
174	tert-Amyl methyl ether	73	6.254	6.251	(1.083)	563938	48.7312	48.73
175	tert-Butyl ethyl ether	59	6.232	6.228	(1.079)	298562	52.0199	52.01
176	tert-Amyl alcohol	59	6.232	6.228	(1.079)	298562	1040.40	1040.39
157	2-Methylnaphthalene	142	15.188	15.188	(1.284)	98405	32.9001	32.90
156	Diisopropyl ether	45	4.416	4.412	(0.764)	714675	47.9806	47.98
171	1-Methylnaphthalene	142	15.384	15.383	(1.300)	124070	38.8543	38.85
130	Ethyl Acetate	43	5.237	5.234	(0.907)	396161	45.8724	45.87
M 94	1,2-Dichloroethylene (total)	96				352962	108.317	108.31
M 95	Xylenes (total)	106				855892	160.657	160.65

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.



\\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050716.D

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050716.D
Date : 07-MAY-2018 15:12
Client ID: HS18050260-01MSD
Sample Info: HS18050260-01MSD;HS18050260-01MSD;3;;MSD
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050718.D Page 1
Report Date: 14-May-2018 16:44

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050718.D
Lab Smp Id: HS18050286-01 Client Smp ID: HS18050286-01
Inj Date : 07-MAY-2018 16:01
Operator : AP Inst ID: VOA2.i
Smp Info : HS18050286-01;HS18050286-01;;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\8260LL.m
Meth Date : 14-May-2018 16:40 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 17
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14

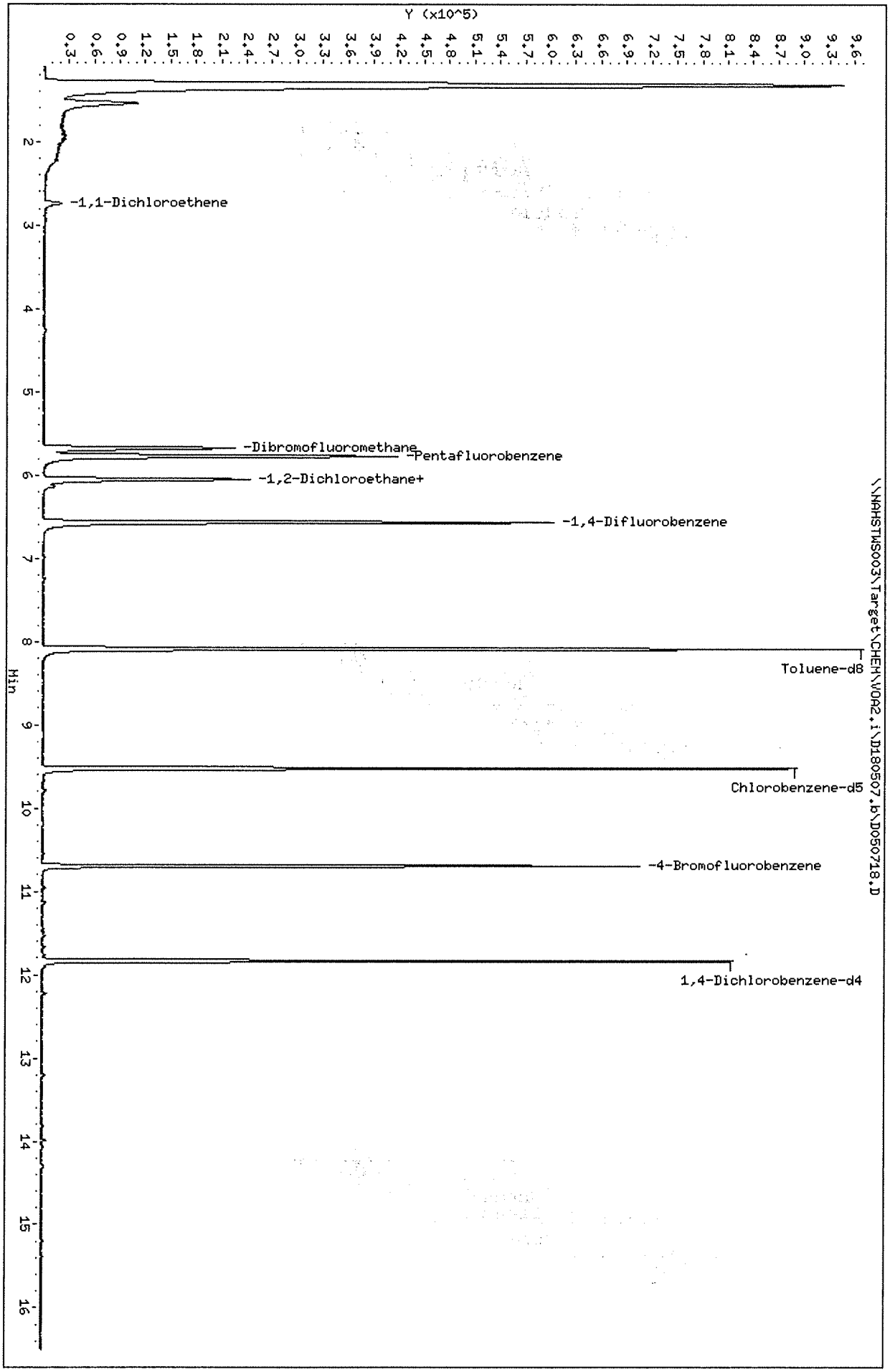
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
*	1 Pentafluorobenzene	168	5.773	5.773	(1.000)	367630	50.0000	
	11 1,1-Dichloroethene	96	2.741	2.740	(0.475)	11658	4.20001	4.20
$	30 Dibromofluoromethane	113	5.677	5.676	(0.983)	169525	53.5325	53.53
	33 1,2-Dichloroethane	62	6.136	6.135	(0.935)	9330	1.85782	1.85(M)
$	35 1,2-Dichloroethane-d4	65	6.049	6.052	(1.048)	203641	50.8743	50.87
*	36 1,4-Difluorobenzene	114	6.566	6.565	(1.000)	532438	50.0000	
*	47 Chlorobenzene-d5	117	9.521	9.524	(1.000)	483598	50.0000	
$	48 Toluene-d8	98	8.087	8.090	(0.849)	618308	53.1843	53.18
$	69 4-Bromofluorobenzene	95	10.692	10.692	(1.123)	223464	54.9670	54.96
*	70 1,4-Dichlorobenzene-d4	152	11.835	11.834	(1.000)	211960	50.0000	

QC Flag Legend

M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050718.D
Date : 07-MAY-2018 16:01
Client ID: HS18050286-01
Sample Info: HS18050286-01;HS18050286-01;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050719.D Page 1
Report Date: 14-May-2018 16:44

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050719.D
Lab Smp Id: HS18050286-02 Client Smp ID: HS18050286-02
Inj Date : 07-MAY-2018 16:25
Operator : AP Inst ID: VOA2.i
Smp Info : HS18050286-02;HS18050286-02;;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\8260LL.m
Meth Date : 14-May-2018 16:40 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 18
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

		Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
*	1	Pentafluorobenzene	168	5.773	5.773	(1.000)	358544	50.0000	
	11	1,1-Dichloroethene	96	2.740	2.740	(0.475)	970718	358.582	358.58(A)
	22	1,1-Dichloroethane	63	4.261	4.268	(0.738)	72605	10.0829	10.08
	27	cis-1,2-Dichloroethene	96	5.067	5.060	(0.878)	4948	1.33561	1.33
$	30	Dibromofluoromethane	113	5.677	5.676	(0.983)	167038	54.1239	54.12
	33	1,2-Dichloroethane	62	6.135	6.135	(0.935)	126534	25.5575	25.55
$	35	1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	198217	50.7700	50.77
*	36	1,4-Difluorobenzene	114	6.565	6.565	(1.000)	524904	50.0000	
	38	Trichloroethene	130	6.809	6.812	(1.037)	4036	1.16861	1.16(M)
*	47	Chlorobenzene-d5	117	9.521	9.524	(1.000)	471836	50.0000	
$	48	Toluene-d8	98	8.086	8.090	(0.849)	603930	53.2553	53.25
	53	1,1,2-Trichloroethane	83	8.594	8.593	(0.903)	15138	5.59212	5.59
$	69	4-Bromofluorobenzene	95	10.692	10.692	(1.123)	220673	55.6744	55.67
*	70	1,4-Dichlorobenzene-d4	152	11.831	11.834	(1.000)	203689	50.0000	
M	94	1,2-Dichloroethylene (total)	96				4948	1.33561	1.33(a)

QC Flag Legend

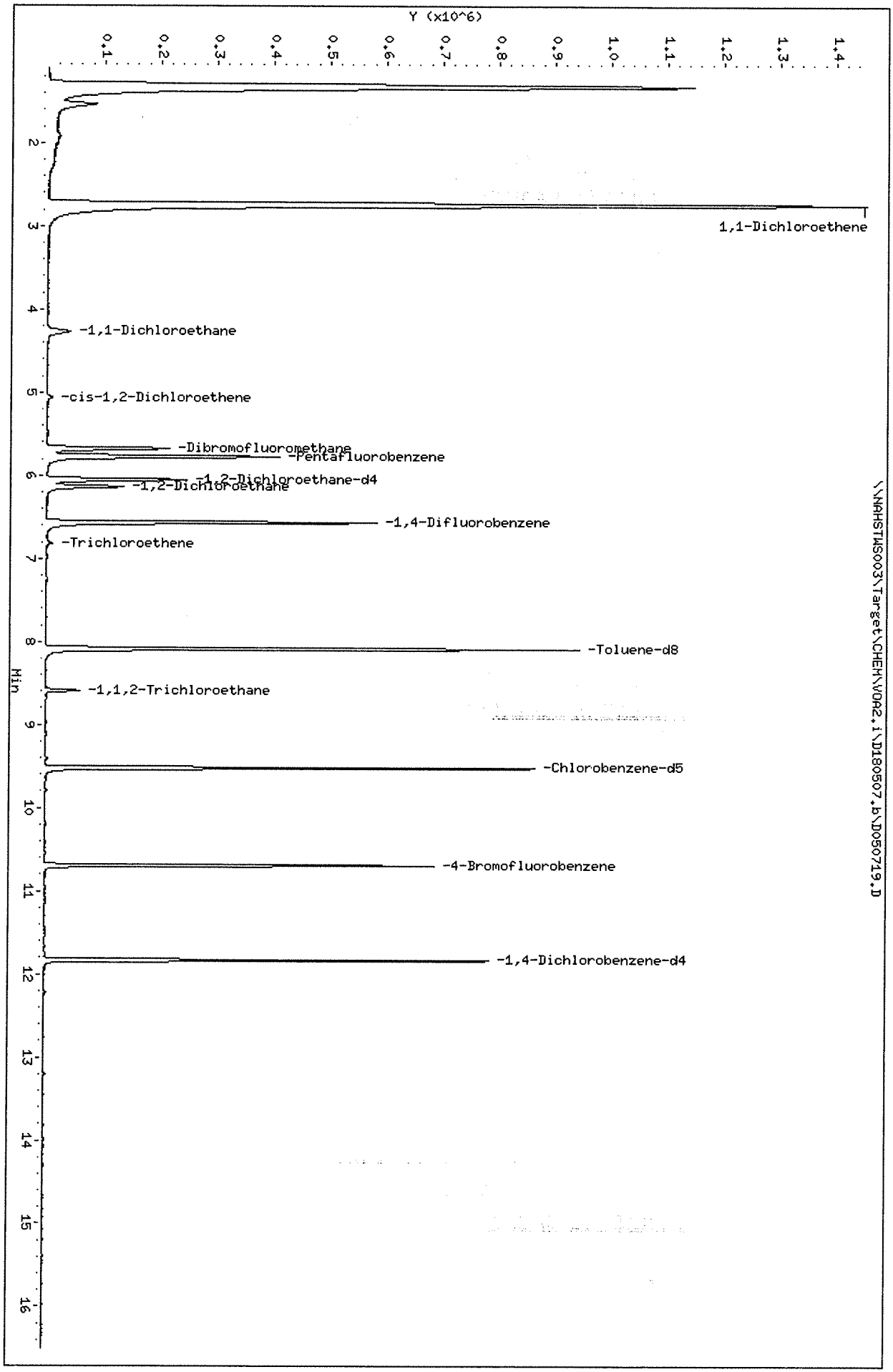
a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
A - Target compound detected but, quantitated amount
exceeded maximum amount.

QC Flag Legend

M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050719.D
Date : 07-MAY-2018 16:25
Client ID: HS18050286-02
Sample Info: HS18050286-02;HS18050286-02;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18



ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050720.D
Lab Smp Id: HS18050286-03 Client Smp ID: HS18050286-03
Inj Date : 07-MAY-2018 16:50
Operator : AP Inst ID: VOA2.i
Smp Info : HS18050286-03;HS18050286-03;;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\8260LL.m
Meth Date : 14-May-2018 16:40 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 19
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14

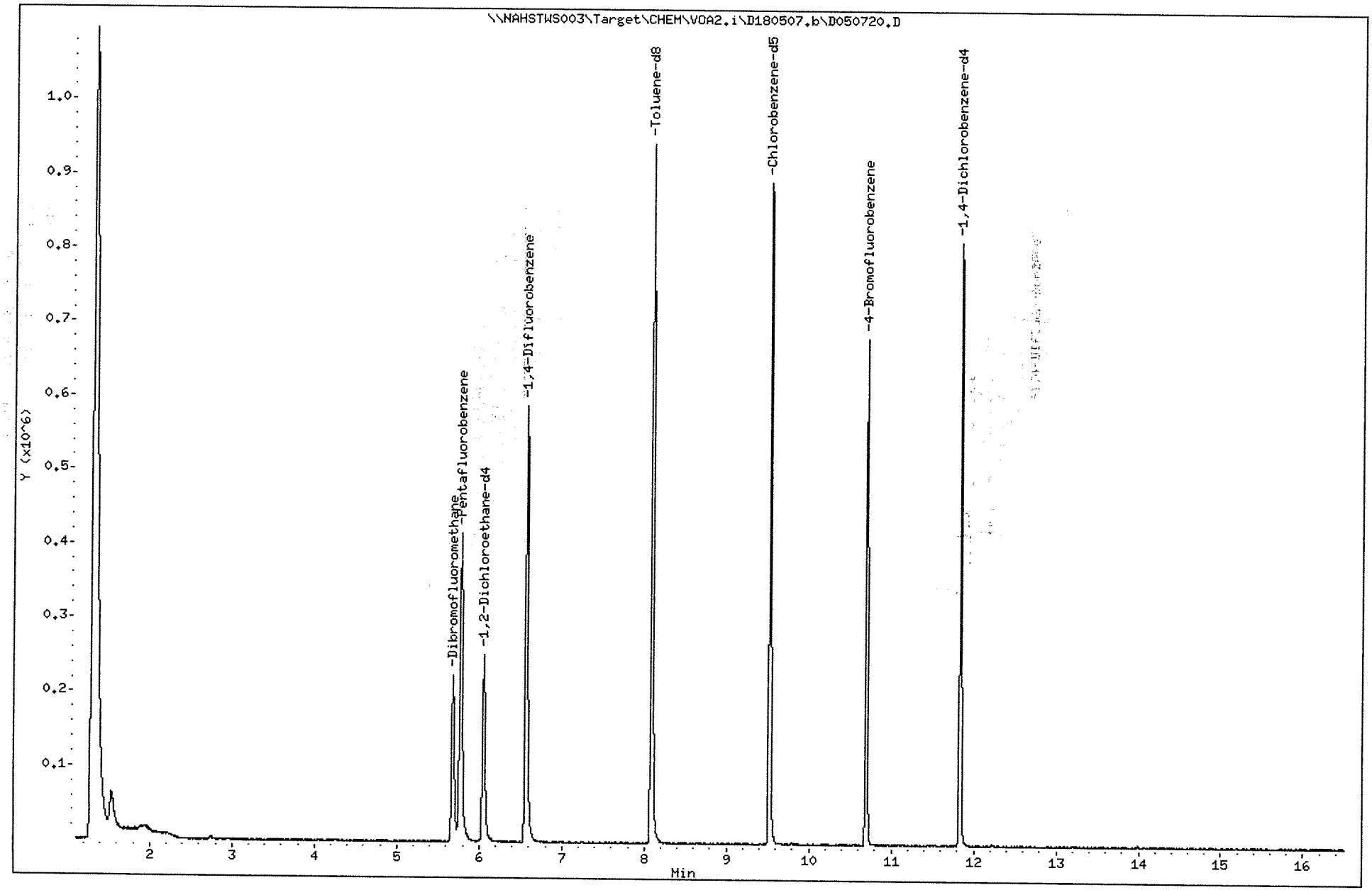
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	5.773	5.773	(1.000)	363231	50.0000	
$ 30 Dibromofluoromethane	113	5.677	5.676	(0.983)	169640	54.2674	54.26
$ 35 1,2-Dichloroethane-d4	65	6.049	6.052	(1.048)	202799	51.2938	51.29
* 36 1,4-Difluorobenzene	114	6.565	6.565	(1.000)	524879	50.0000	
* 47 Chlorobenzene-d5	117	9.521	9.524	(1.000)	471749	50.0000	
$ 48 Toluene-d8	98	8.086	8.090	(0.849)	606537	53.5479	53.54
$ 69 4-Bromofluorobenzene	95	10.692	10.692	(1.123)	218290	55.0476	55.04
* 70 1,4-Dichlorobenzene-d4	152	11.831	11.834	(1.000)	206905	50.0000	

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050720.D
Date : 07-MAY-2018 16:50
Client ID: HS18050286-03
Sample Info: HS18050286-03;HS18050286-03;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050721.D Page 1
Report Date: 14-May-2018 16:44

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050721.D
Lab Smp Id: HS18050286-04 Client Smp ID: HS18050286-04
Inj Date : 07-MAY-2018 17:14
Operator : AP Inst ID: VOA2.i
Smp Info : HS18050286-04;HS18050286-04;;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\8260LL.m
Meth Date : 14-May-2018 16:40 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 20
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14

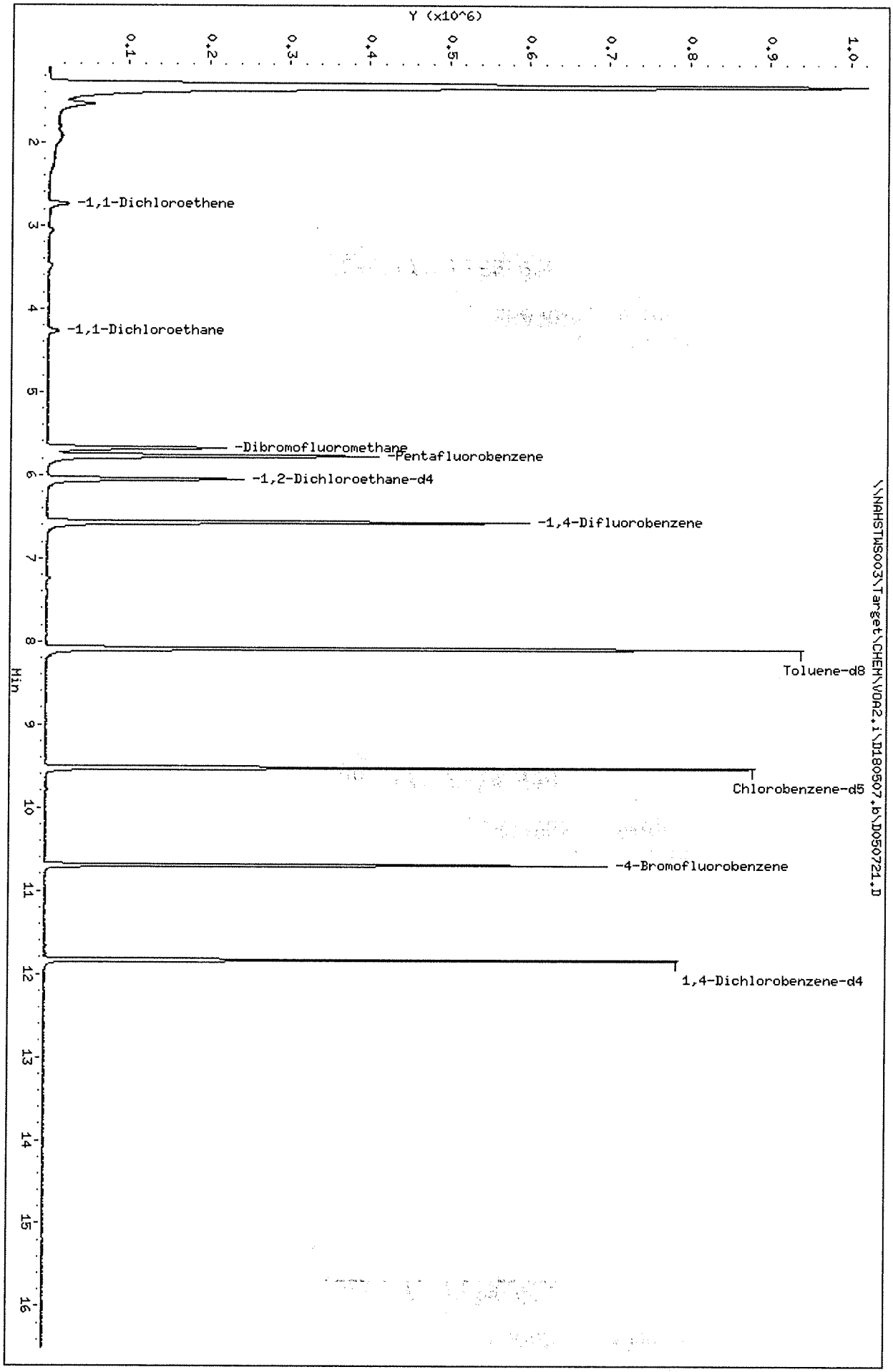
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
*	1 Pentafluorobenzene	168	5.773	5.773	(1.000)	362804	50.0000	
	11 1,1-Dichloroethene	96	2.740	2.740	(0.475)	14948	5.45693	5.45
	22 1,1-Dichloroethane	63	4.262	4.268	(0.738)	24089	3.30604	3.30(M)
$	30 Dibromofluoromethane	113	5.677	5.676	(0.983)	168427	53.9194	53.91
$	35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	199553	50.5016	50.50
*	36 1,4-Difluorobenzene	114	6.566	6.565	(1.000)	526601	50.0000	
*	47 Chlorobenzene-d5	117	9.521	9.524	(1.000)	473173	50.0000	
$	48 Toluene-d8	98	8.087	8.090	(0.849)	604844	53.1698	53.16
$	69 4-Bromofluorobenzene	95	10.692	10.692	(1.123)	220604	55.4892	55.48
*	70 1,4-Dichlorobenzene-d4	152	11.831	11.834	(1.000)	205604	50.0000	

QC Flag Legend

M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050721.D
Date : 07-MAY-2018 17:14
Client ID: HS18050286-04
Sample Info: HS18050286-04;HS18050286-04;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050722.D Page 1
Report Date: 14-May-2018 16:44

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050722.D
Lab Smp Id: HS18050286-05 Client Smp ID: HS18050286-05
Inj Date : 07-MAY-2018 17:39
Operator : AP Inst ID: VOA2.i
Smp Info : HS18050286-05;HS18050286-05;;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\8260LL.m
Meth Date : 14-May-2018 16:40 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 21
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14

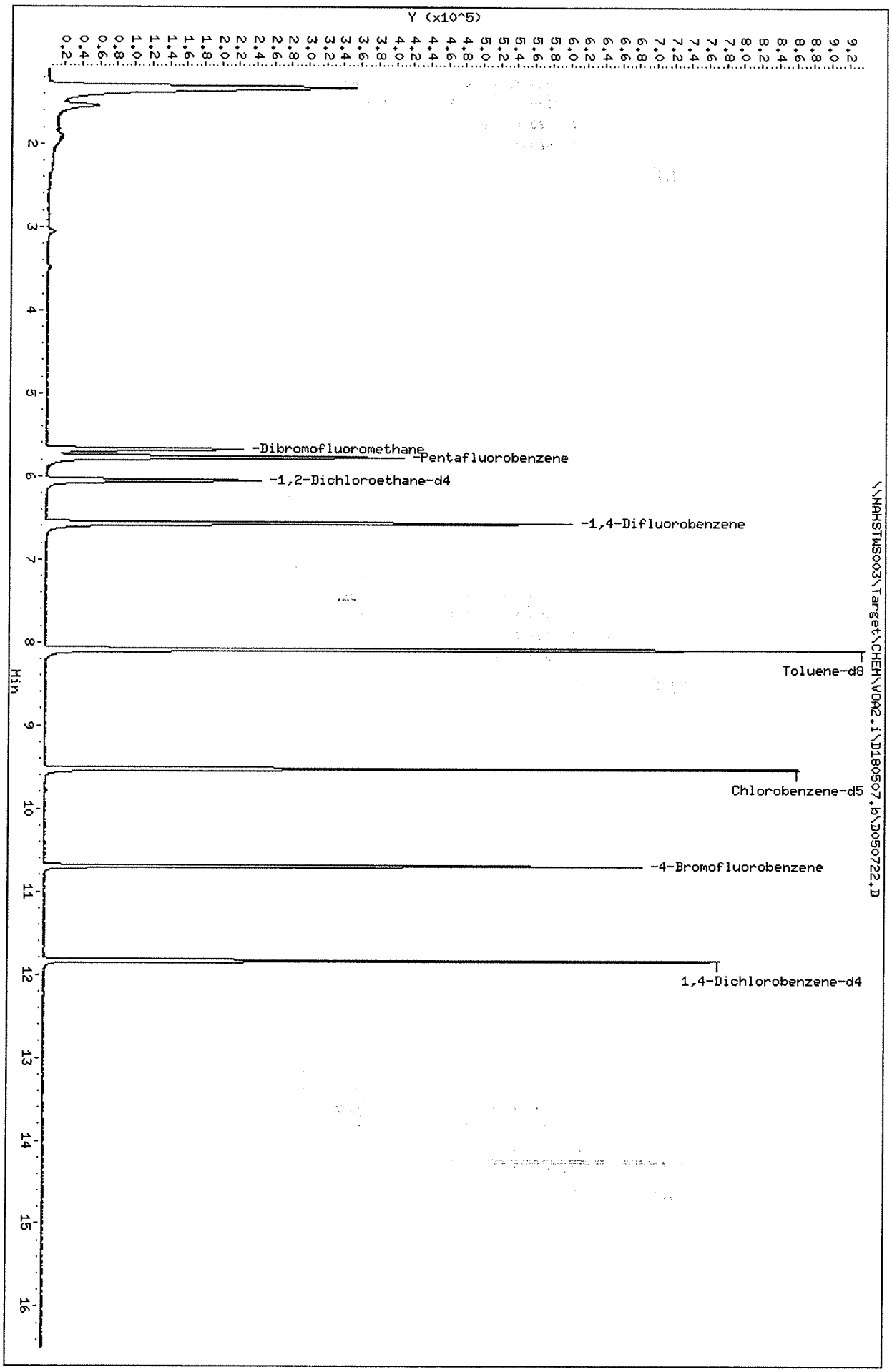
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
* 1 Pentafluorobenzene	168	5.773	5.773	(1.000)	361034	50.0000	
$ 30 Dibromofluoromethane	113	5.677	5.676	(0.983)	168124	54.0983	54.09
$ 35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	199259	50.6815	50.68
* 36 1,4-Difluorobenzene	114	6.565	6.565	(1.000)	531537	50.0000	
* 47 Chlorobenzene-d5	117	9.521	9.524	(1.000)	467642	50.0000	
$ 48 Toluene-d8	98	8.086	8.090	(0.849)	599483	53.3553	53.35
$ 69 4-Bromofluorobenzene	95	10.695	10.692	(1.123)	214681	54.5864	54.58
* 70 1,4-Dichlorobenzene-d4	152	11.831	11.834	(1.000)	204005	50.0000	

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050722.D
Date : 07-MAY-2018 17:39
Client ID: HS18050286-05
Sample Info: HS18050286-05;HS18050286-05;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050723.D Page 1
Report Date: 14-May-2018 16:44

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050723.D
Lab Smp Id: HS18050286-06 Client Smp ID: HS18050286-06
Inj Date : 07-MAY-2018 18:03
Operator : AP Inst ID: VOA2.i
Smp Info : HS18050286-06;HS18050286-06;;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\8260LL.m
Meth Date : 14-May-2018 16:40 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 22
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14

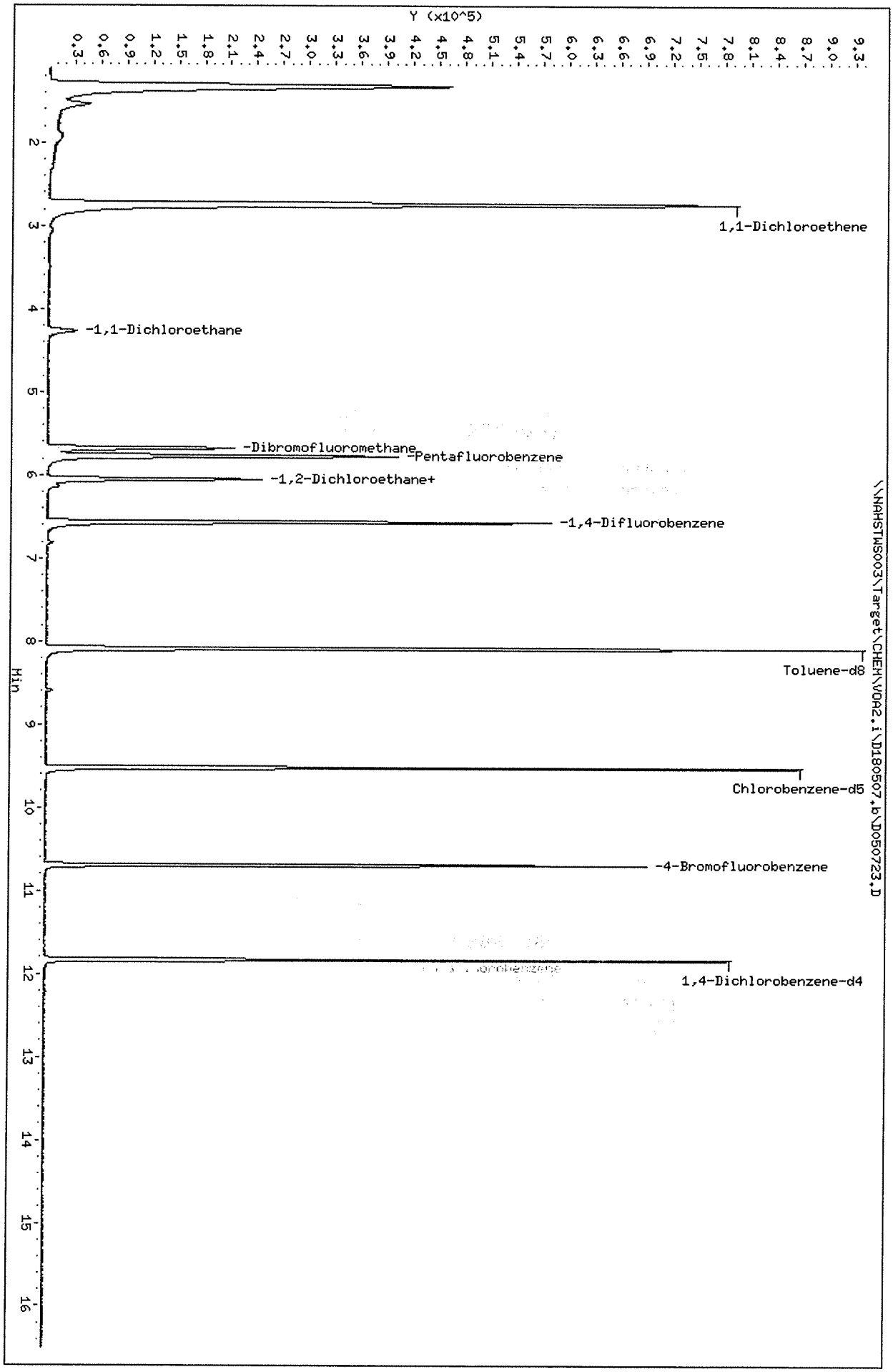
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
*	1 Pentafluorobenzene	168	5.776	5.773	(1.000)	361104	50.0000	
	11 1,1-Dichloroethene	96	2.740	2.740	(0.474)	525605	192.781	192.78
	22 1,1-Dichloroethane	63	4.265	4.268	(0.738)	56600	7.80450	7.80
$	30 Dibromofluoromethane	113	5.677	5.676	(0.983)	165724	53.2597	53.25
	33 1,2-Dichloroethane	62	6.139	6.135	(0.935)	9732	1.97195	1.97(M)
$	35 1,2-Dichloroethane-d4	65	6.049	6.052	(1.047)	199480	50.7298	50.72
*	36 1,4-Difluorobenzene	114	6.565	6.565	(1.000)	523234	50.0000	
*	47 Chlorobenzene-d5	117	9.521	9.524	(1.000)	471567	50.0000	
$	48 Toluene-d8	98	8.086	8.090	(0.849)	602173	53.1033	53.10
$	69 4-Bromofluorobenzene	95	10.692	10.692	(1.123)	219913	55.5046	55.50
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	200711	50.0000	

QC Flag Legend

M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2,i\D180507,b\D050723,D
Date : 07-MAY-2018 18:03
Client ID: HS18050286-06
Sample Info: HS18050286-06;HS18050286-06;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2,i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050724.D Page 1
Report Date: 14-May-2018 16:44

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050724.D
Lab Smp Id: HS18050286-07 Client Smp ID: HS18050286-07
Inj Date : 07-MAY-2018 18:28
Operator : AP Inst ID: VOA2.i
Smp Info : HS18050286-07;HS18050286-07;;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\8260LL.m
Meth Date : 14-May-2018 16:40 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 23
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

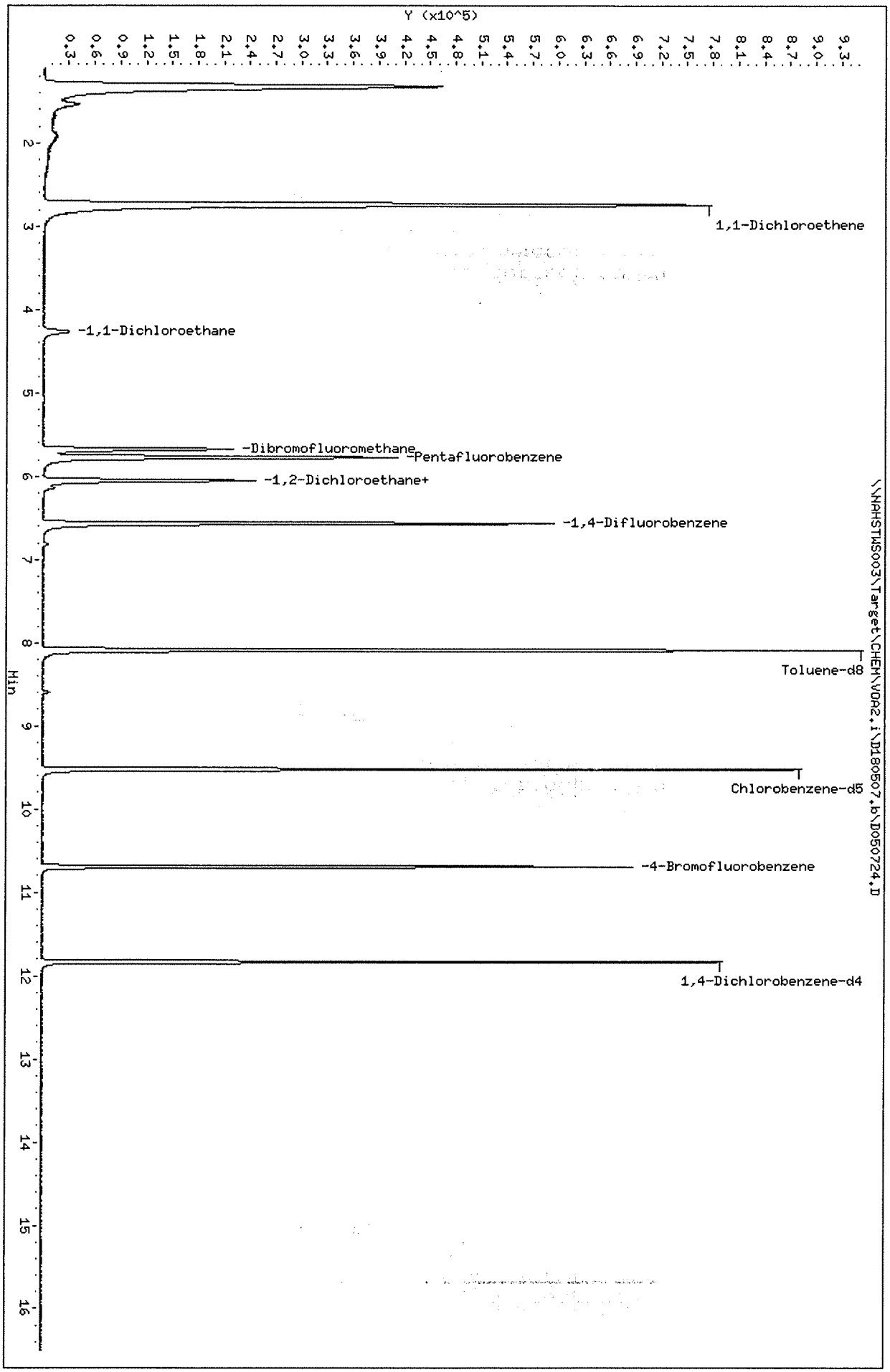
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
*	1 Pentafluorobenzene	168	5.773	5.773	(1.000)	365849	50.0000	
	11 1,1-Dichloroethene	96	2.737	2.740	(0.474)	519812	188.184	188.18
	22 1,1-Dichloroethane	63	4.268	4.268	(0.739)	56399	7.67592	7.67
$	30 Dibromofluoromethane	113	5.673	5.676	(0.983)	164378	52.0631	52.06
	33 1,2-Dichloroethane	62	6.135	6.135	(0.935)	9416	1.89370	1.89(M)
$	35 1,2-Dichloroethane-d4	65	6.049	6.052	(1.048)	201402	50.5471	50.54
*	36 1,4-Difluorobenzene	114	6.565	6.565	(1.000)	527165	50.0000	
*	47 Chlorobenzene-d5	117	9.521	9.524	(1.000)	477370	50.0000	
$	48 Toluene-d8	98	8.086	8.090	(0.849)	609842	53.1308	53.13
$	69 4-Bromofluorobenzene	95	10.695	10.692	(1.123)	220473	54.9371	54.93
*	70 1,4-Dichlorobenzene-d4	152	11.831	11.834	(1.000)	208666	50.0000	

QC Flag Legend

M - Compound response manually integrated.

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050724.D
Date : 07-MAY-2018 18:28
Client ID: HS18050286-07
Sample Info: HS18050286-07;HS18050286-07;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18



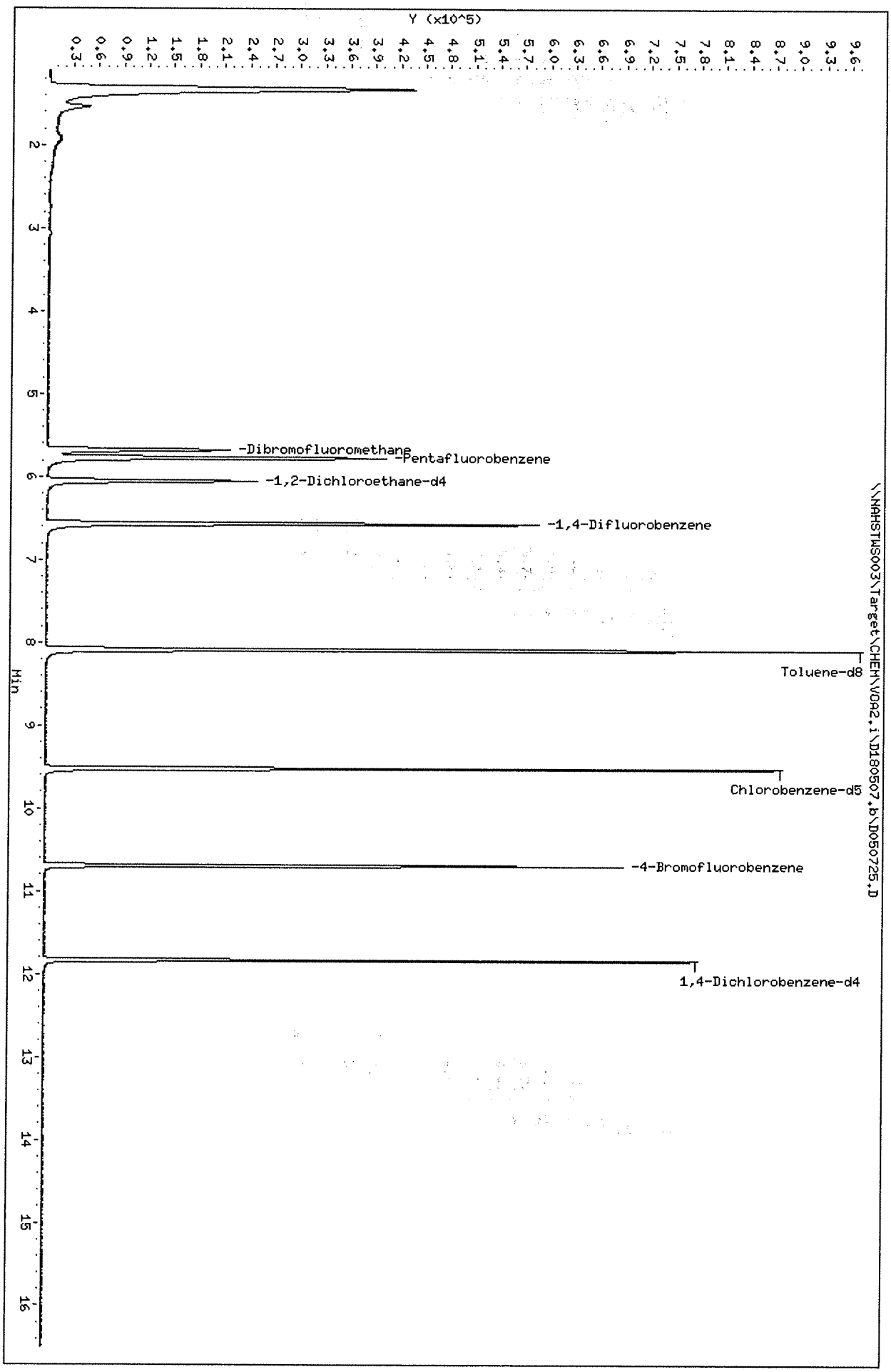
ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050725.D
Lab Smp Id: HS18050286-08 Client Smp ID: HS18050286-08
Inj Date : 07-MAY-2018 18:52
Operator : AP Inst ID: VOA2.i
Smp Info : HS18050286-08;HS18050286-08;;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\8260LL.m
Meth Date : 14-May-2018 16:40 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 24
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	5.770	5.773	(1.000)	360640	50.0000	
$ 30 Dibromofluoromethane	113	5.676	5.676	(0.984)	167920	54.0912	54.09
$ 35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.049)	202877	51.6977	51.69
* 36 1,4-Difluorobenzene	114	6.565	6.565	(1.000)	526361	50.0000	
* 47 Chlorobenzene-d5	117	9.521	9.524	(1.000)	470481	50.0000	
$ 48 Toluene-d8	98	8.086	8.090	(0.849)	608122	53.8956	53.89
$ 69 4-Bromofluorobenzene	95	10.692	10.692	(1.123)	219418	55.5077	55.50
* 70 1,4-Dichlorobenzene-d4	152	11.831	11.834	(1.000)	202105	50.0000	



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050725.D
Date : 07-MAY-2018 18:52
Client ID: HS18050286-08
Sample Info: HS18050286-08;HS18050286-08;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050726.D
Lab Smp Id: HS18050286-09 Client Smp ID: HS18050286-09
Inj Date : 07-MAY-2018 19:16
Operator : AP Inst ID: VOA2.i
Smp Info : HS18050286-09;HS18050286-09;;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\8260LL.m
Meth Date : 14-May-2018 16:40 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 25
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

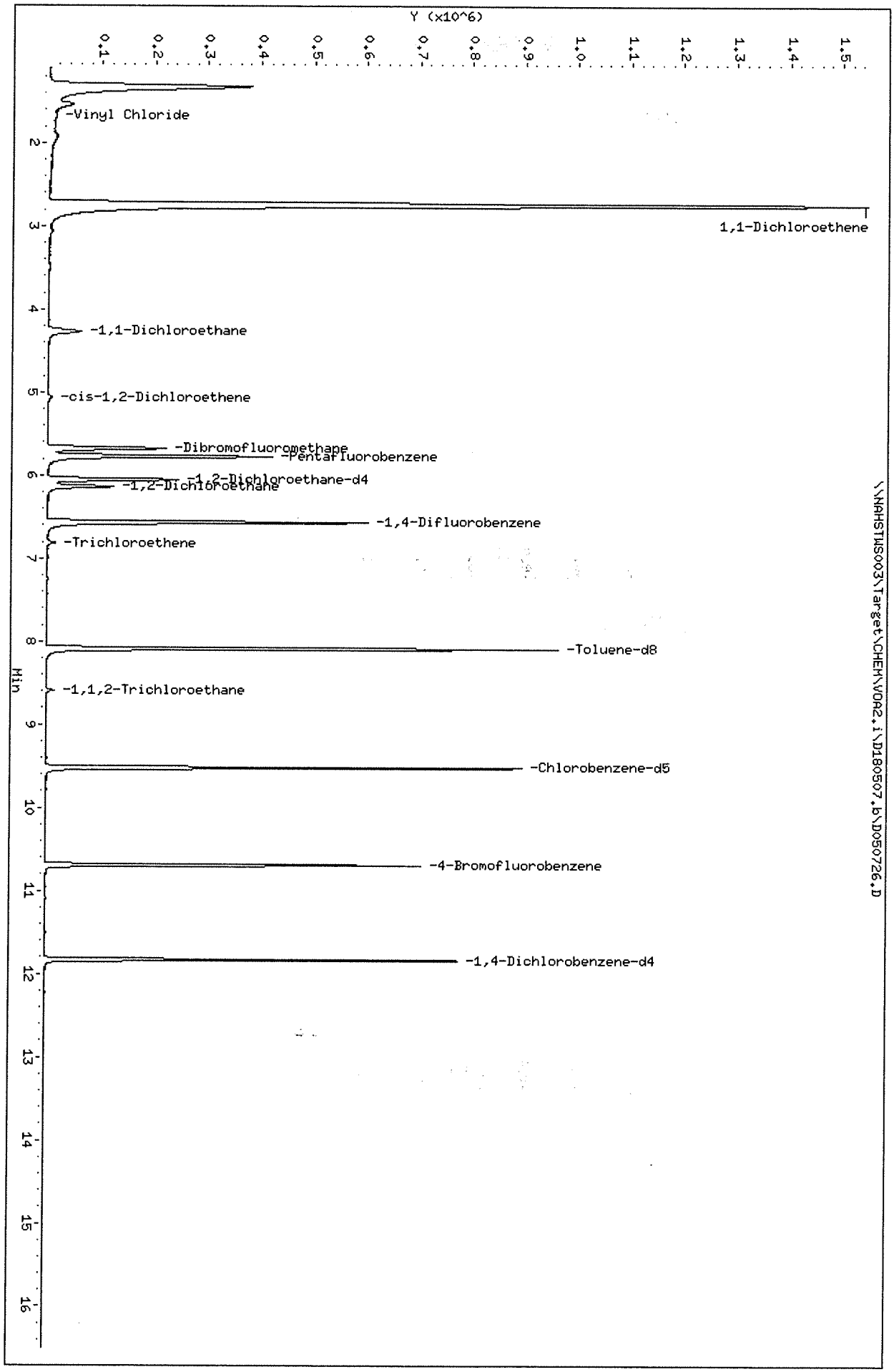
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
*	1 Pentafluorobenzene	168	5.773	5.773	(1.000)	364813	50.0000	
	5 Vinyl Chloride	62	1.681	1.672	(0.291)	6428	1.41278	1.41(M)
	11 1,1-Dichloroethene	96	2.743	2.740	(0.475)	1050504	381.386	381.38(A)
	22 1,1-Dichloroethane	63	4.268	4.268	(0.739)	107841	14.7189	14.71(M)
	27 cis-1,2-Dichloroethene	96	5.060	5.060	(0.877)	3564	0.94550	0.94(a)
$	30 Dibromofluoromethane	113	5.680	5.676	(0.984)	168393	53.5895	53.58
	33 1,2-Dichloroethane	62	6.135	6.135	(0.935)	110774	21.9666	21.96
$	35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	202759	51.0520	51.05
*	36 1,4-Difluorobenzene	114	6.565	6.565	(1.000)	534646	50.0000	
	38 Trichloroethene	130	6.816	6.812	(1.038)	6051	1.72013	1.72
*	47 Chlorobenzene-d5	117	9.521	9.524	(1.000)	476543	50.0000	
$	48 Toluene-d8	98	8.086	8.090	(0.849)	618999	54.2209	54.22
	53 1,1,2-Trichloroethane	83	8.593	8.593	(0.903)	3239	1.18470	1.18
$	69 4-Bromofluorobenzene	95	10.692	10.692	(1.123)	221278	55.2515	55.25
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	202108	50.0000	
M	94 1,2-Dichloroethylene (total)	96				3564	0.94550	0.94(a)

QC Flag Legend

a - Target compound detected but, quantitated amount Below Limit Of Quantitation(BLOQ).
A - Target compound detected but, quantitated amount exceeded maximum amount.

QC Flag Legend

M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D0507026.D
Date : 07-MAY-2018 19:16
Client ID: HS18050286-09
Sample Info: HS18050286-09;HS18050286-09;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050727.D
Lab Smp Id: HS18050286-10 Client Smp ID: HS18050286-10
Inj Date : 07-MAY-2018 19:41
Operator : AP Inst ID: VOA2.i
Smp Info : HS18050286-10;HS18050286-10;;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\8260LL.m
Meth Date : 14-May-2018 16:40 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 26
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14

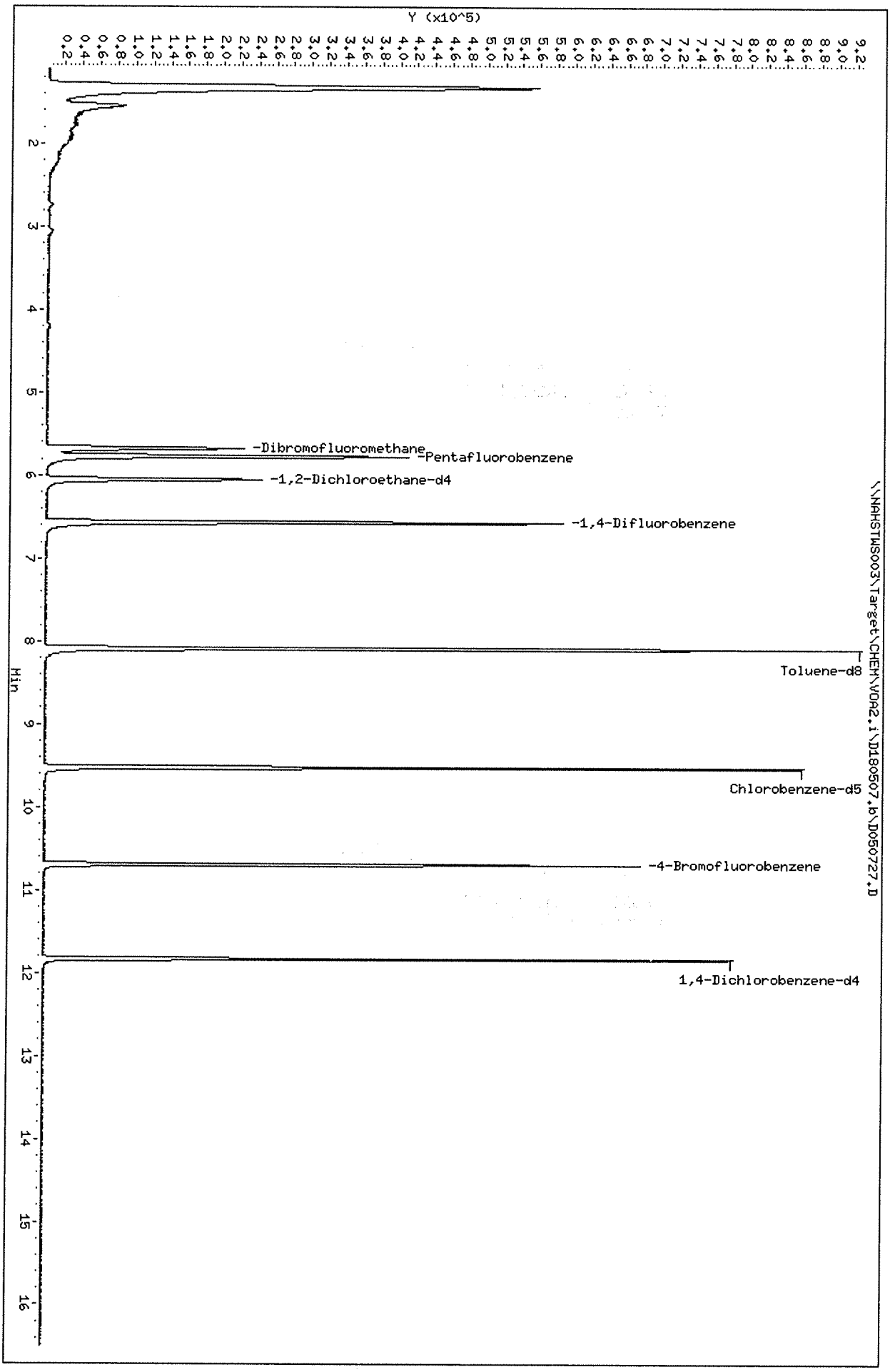
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
* 1 Pentafluorobenzene	168	5.772	5.773	(1.000)	365698	50.0000	
$ 30 Dibromofluoromethane	113	5.676	5.676	(0.983)	168735	53.5668	53.56
$ 35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	201439	50.5785	50.57
* 36 1,4-Difluorobenzene	114	6.565	6.565	(1.000)	530356	50.0000	
* 47 Chlorobenzene-d5	117	9.520	9.524	(1.000)	475724	50.0000	
$ 48 Toluene-d8	98	8.086	8.090	(0.849)	607672	53.1237	53.12
$ 69 4-Bromofluorobenzene	95	10.692	10.692	(1.123)	217112	54.2470	54.24
* 70 1,4-Dichlorobenzene-d4	152	11.831	11.834	(1.000)	202689	50.0000	

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050727.D
Date : 07-MAY-2018 19:41
Client ID: HS18050286-10
Sample Info: HS18050286-10;HS18050286-10;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18



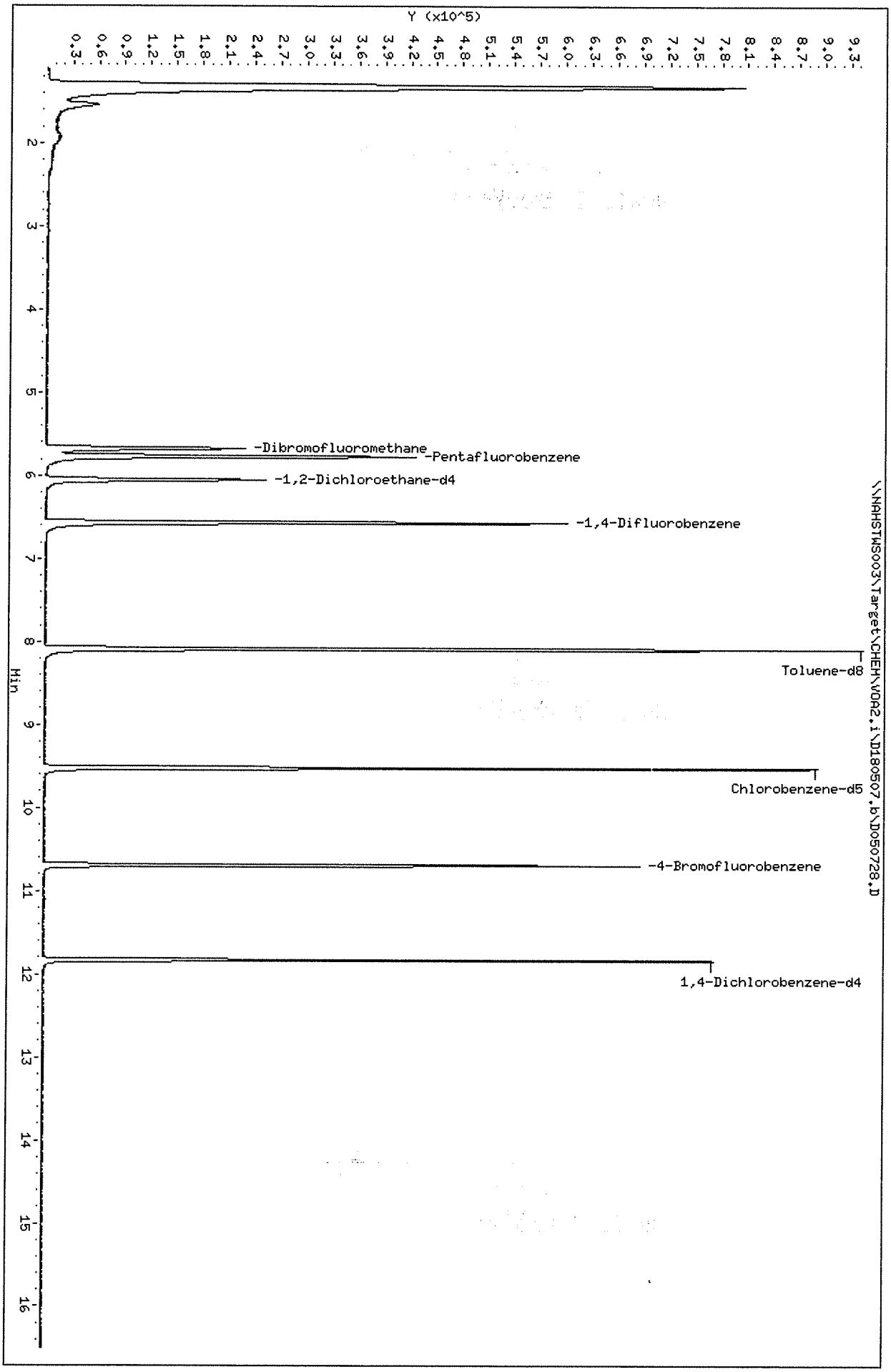
ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050728.D
Lab Smp Id: HS18050286-11 Client Smp ID: HS18050286-11
Inj Date : 07-MAY-2018 20:05
Operator : AP Inst ID: VOA2.i
Smp Info : HS18050286-11;HS18050286-11;;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\8260LL.m
Meth Date : 14-May-2018 16:40 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 27
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
* 1 Pentafluorobenzene	168	5.773	5.773	(1.000)	373909	50.0000	
$ 30 Dibromofluoromethane	113	5.680	5.676	(0.984)	172378	53.5184	53.51
$ 35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	204640	50.2407	50.24
* 36 1,4-Difluorobenzene	114	6.565	6.565	(1.000)	540509	50.0000	
* 47 Chlorobenzene-d5	117	9.521	9.524	(1.000)	479440	50.0000	
$ 48 Toluene-d8	98	8.086	8.090	(0.849)	618672	53.7862	53.78
$ 69 4-Bromofluorobenzene	95	10.692	10.692	(1.123)	219686	54.4782	54.47
* 70 1,4-Dichlorobenzene-d4	152	11.831	11.834	(1.000)	204050	50.0000	



Data File: \\NAHSTWS003\Target\CHEM\VOA2,i\D180507,b\D050728,D
Date : 07-MAY-2018 20:05
Client ID: HS18050286-11
Sample Info: HS18050286-11;HS18050286-11;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2,i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050729.D Page 1
Report Date: 14-May-2018 16:44

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050729.D
Lab Smp Id: CCV_END Client Smp ID: CCV_END
Inj Date : 07-MAY-2018 20:30
Operator : AP Inst ID: VOA2.i
Smp Info : CCV_END;CCV_END;2;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\8260LL.m
Meth Date : 14-May-2018 16:40 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 28 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1 Pentafluorobenzene	168	5.773	5.773	(1.000)	345684	50.0000	
2 Dichlorodifluoromethane	85	1.441	1.441	(0.250)	198816	50.0000	62.30
186 Isobutylene	56	1.643	1.643	(0.285)	190492	50.0000	56.94(AM)
3 Chloromethane	50	1.585	1.585	(0.275)	283367	50.0000	50.86
4 Propionitrile	54	5.227	5.227	(0.906)	588052	500.000	490.83
5 Vinyl Chloride	62	1.672	1.672	(0.290)	233954	50.0000	54.26
6 Bromomethane	94	1.932	1.932	(0.335)	99035	50.0000	38.78
7 Chloroethane	64	2.031	2.031	(0.352)	134735	50.0000	58.39
159 Dichlorofluoromethane	67	2.220	2.220	(0.385)	319195	50.0000	50.21
8 Trichlorofluoromethane	101	2.240	2.240	(0.388)	240852	50.0000	59.02
9 Acrolein	56	2.679	2.679	(0.464)	70241	100.000	82.08
10 Acetone	43	2.846	2.846	(0.493)	111949	100.000	98.18
11 1,1-Dichloroethene	96	2.740	2.740	(0.475)	147540	50.0000	56.52
12 Isobutyl Alcohol	74	6.158	6.158	(1.067)	14568	1000.00	835.57(A)
13 Acetonitrile	39	3.161	3.161	(0.548)	226608	500.000	513.49
14 Allyl Chloride	41	3.167	3.167	(0.549)	564250	50.0000	50.16
15 Iodomethane	142	2.891	2.891	(0.501)	180229	100.000	68.31
16 Acrylonitrile	53	3.680	3.680	(0.638)	158817	100.000	103.53
17 Methylene Chloride	84	3.324	3.324	(0.576)	164741	50.0000	45.09
18 Methyl tert-butyl ether	73	3.677	3.677	(0.637)	456718	50.0000	45.81
19 Carbon Disulfide	76	2.946	2.946	(0.510)	626945	100.000	104.89
20 trans-1,2-Dichloroethene	96	3.652	3.652	(0.633)	158958	50.0000	55.68

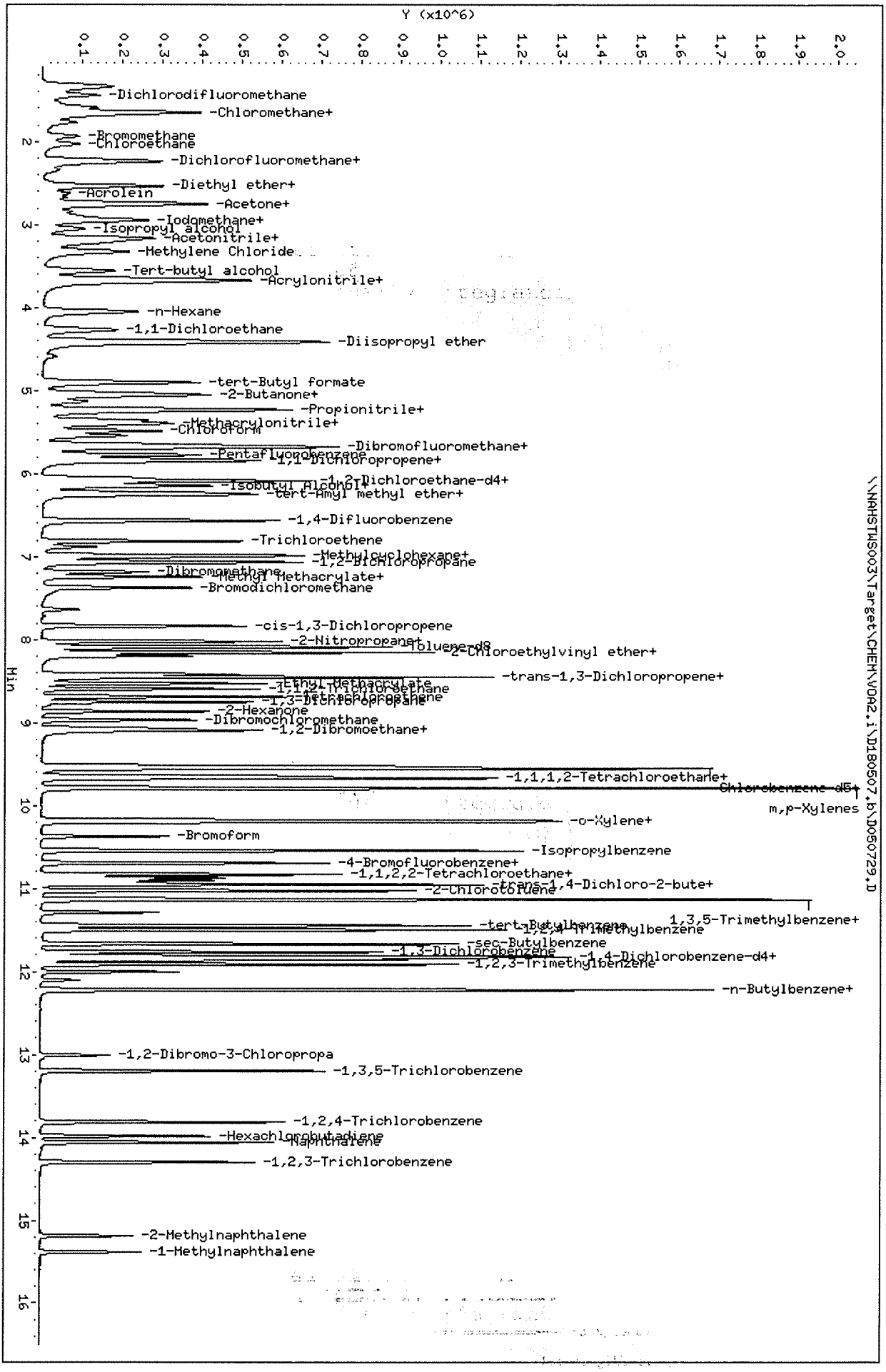
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050729.D Page 2
Report Date: 14-May-2018 16:44

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
	21 Vinyl Acetate	43	5.234	5.234	(0.907)	401824	100.000	90.29(M)
	22 1,1-Dichloroethane	63	4.268	4.268	(0.739)	344902	50.0000	49.67
	24 2-Butanone	43	5.131	5.131	(0.889)	177631	100.000	98.83
	25 Methacrylonitrile	41	5.397	5.397	(0.935)	199699	50.0000	46.65
	26 2,2-Dichloropropane	77	5.035	5.035	(0.872)	232506	50.0000	49.52
	27 cis-1,2-Dichloroethene	96	5.060	5.060	(0.877)	177892	50.0000	49.80
	28 Chloroform	83	5.484	5.484	(0.950)	292040	50.0000	48.76
	29 Bromochloromethane	128	5.356	5.356	(0.928)	89247	50.0000	51.77
$	30 Dibromofluoromethane	113	5.676	5.676	(0.983)	151071	50.0000	50.54
	31 1,1,1-Trichloroethane	97	5.648	5.648	(0.978)	268065	50.0000	53.31
	32 1,1-Dichloropropene	75	5.850	5.850	(0.891)	218111	50.0000	48.60
	33 1,2-Dichloroethane	62	6.135	6.135	(0.935)	231708	50.0000	47.18
	34 Carbon Tetrachloride	117	5.827	5.827	(0.888)	233099	50.0000	51.08
$	35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	195206	50.0000	51.90
*	36 1,4-Difluorobenzene	114	6.565	6.565	(1.000)	520599	50.0000	
	37 Benzene	78	6.087	6.087	(0.927)	645048	50.0000	48.74
	38 Trichloroethene	130	6.812	6.812	(1.038)	180528	50.0000	52.70
	39 Bromodichloromethane	83	7.374	7.374	(1.123)	238699	50.0000	49.66
	40 Methyl Methacrylate	41	7.242	7.242	(1.255)	198094	50.0000	48.49
	41 2-Chloroethylvinyl ether	63	8.154	8.154	(1.242)	58006	100.000	97.64(T)
	42 1,2-Dichloropropane	63	7.063	7.063	(1.076)	192191	50.0000	48.39
	43 2-Nitropropane	43	8.022	8.022	(1.390)	396774	50.0000	46.10
	44 Dibromomethane	93	7.185	7.185	(1.094)	101931	50.0000	51.40
	45 4-Methyl-2-Pentanone	43	8.022	8.022	(0.842)	396774	100.000	91.72
	46 cis-1,3-Dichloropropene	75	7.833	7.833	(1.193)	275446	50.0000	51.35
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	471409	50.0000	
$	48 Toluene-d8	98	8.090	8.090	(0.849)	581923	50.0000	50.96
	49 Ethyl Methacrylate	69	8.526	8.526	(1.299)	233072	50.0000	53.38
	50 Toluene	91	8.154	8.154	(0.856)	676638	50.0000	46.99
	51 trans-1,3-Dichloropropene	75	8.414	8.414	(1.282)	236273	50.0000	53.08
	52 2-Hexanone	43	8.863	8.863	(0.931)	261229	100.000	96.36
	53 1,1,2-Trichloroethane	83	8.593	8.593	(0.902)	129831	50.0000	48.00
	54 1,3-Dichloropropane	76	8.751	8.751	(0.919)	255445	50.0000	47.57
	55 Dibromochloromethane	129	8.966	8.966	(0.941)	195268	50.0000	49.30
	56 Tetrachloroethene	164	8.686	8.686	(0.912)	145014	50.0000	50.39
	57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	166057	50.0000	49.18
	58 1-Chlorohexane	55	9.550	9.550	(1.455)	186555	50.0000	58.14
	59 Chlorobenzene	112	9.550	9.550	(1.003)	424406	50.0000	47.10
	60 1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.012)	174728	50.0000	48.83
	61 Ethylbenzene	106	9.668	9.668	(1.015)	233322	50.0000	47.78
	62 m,p-Xylenes	106	9.787	9.787	(1.028)	562869	100.000	115.41
	63 o-Xylene	106	10.175	10.175	(1.068)	296338	50.0000	48.32
	64 Styrene	104	10.195	10.195	(1.070)	482512	50.0000	49.11
	66 Bromoform	173	10.374	10.374	(1.089)	141291	50.0000	50.21
	67 Isopropylbenzene	105	10.544	10.544	(1.107)	739655	50.0000	50.10
	68 1,1,2,2-Tetrachloroethane	83	10.868	10.868	(0.918)	208959	50.0000	42.94
$	69 4-Bromofluorobenzene	95	10.692	10.692	(1.123)	225184	50.0000	56.93
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	219609	50.0000	
	71 1,2,3-Trichloropropane	75	10.692	10.692	(0.903)	106011	50.0000	52.87
	72 trans-1,4-Dichloro-2-butene	53	10.926	10.926	(1.147)	53490	50.0000	45.55
	73 n-Propylbenzene	91	10.952	10.952	(0.925)	797620	50.0000	46.30
	74 Bromobenzene	156	10.830	10.830	(0.915)	195967	50.0000	44.45
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	585774	50.0000	44.98
	76 2-Chlorotoluene	91	11.026	11.026	(0.932)	504428	50.0000	52.01

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
77 4-Chlorotoluene	91	11.138	11.138	(0.941)	552797	50.0000	52.52
78 tert-Butylbenzene	119	11.446	11.446	(0.967)	506147	50.0000	47.03
79 1,2,4-Trimethylbenzene	105	11.497	11.497	(0.972)	590567	50.0000	52.96
81 sec-Butylbenzene	105	11.664	11.664	(0.986)	692426	50.0000	48.25
82 p-Isopropyltoluene	119	11.818	11.818	(0.999)	579639	50.0000	47.35
83 1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	338932	50.0000	45.10
84 1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	320400	50.0000	44.12
87 n-Butylbenzene	91	12.219	12.219	(1.033)	459007	50.0000	49.45
88 1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	318100	50.0000	45.12
89 1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	38298	50.0000	48.75
90 1,2,4-Trichlorobenzene	180	13.814	13.814	(1.167)	190003	50.0000	46.62
91 Hexachlorobutadiene	225	13.984	13.984	(1.182)	85118	50.0000	47.75
92 Naphthalene	128	14.061	14.061	(1.188)	454127	50.0000	46.30
93 1,2,3-Trichlorobenzene	182	14.299	14.299	(1.208)	160437	50.0000	45.48
146 Methyl acetate	43	3.218	3.218	(0.558)	190589	50.0000	46.00
138 Freon TF	101	2.753	2.753	(0.477)	152766	50.0000	59.37
139 Diethyl ether	59	2.532	2.532	(0.439)	299263	50.0000	48.75
147 Methylcyclohexane	83	6.982	6.982	(1.064)	244380	50.0000	53.47
135 1,4-Dioxane	88	7.236	7.236	(1.253)	31622	1000.00	994.25
132 n-Butanol	56	6.989	6.989	(1.211)	117162	1000.00	929.78
131 Methyl Acrylate	55	5.256	5.256	(0.911)	294810	50.0000	50.83
133 Ethyl Acrylate	55	7.005	7.005	(1.213)	528139	50.0000	50.40
136 n-Hexane	57	4.053	4.053	(0.702)	231180	50.0000	55.95
141 Cyclohexane	56	5.683	5.683	(0.984)	320899	50.0000	55.84
142 Tetrahydrofuran	42	5.407	5.407	(0.937)	129838	100.000	93.71
148 Tert-butyl alcohol	59	3.552	3.552	(0.615)	397709	1000.00	962.59
149 Isopropyl alcohol	45	3.045	3.045	(0.528)	228507	1000.00	869.65
151 4-Methyl-2-pentanol	45	8.452	8.452	(0.887)	848557	1000.00	936.13
166 1,2,3-Trimethylbenzene	105	11.911	11.911	(1.007)	551577	50.0000	44.49
167 Ethanol	45	2.535	2.535	(0.439)	289977	1000.00	957.59
170 1,3,5-Trichlorobenzene	180	13.198	13.198	(1.115)	226709	50.0000	47.43
172 tert-Butyl formate	59	4.900	4.900	(0.849)	535198	100.000	88.42
173 3,3-Dimethyl-1-butanol	57	9.091	9.091	(0.955)	306001	1000.00	975.45
174 tert-Amyl methyl ether	73	6.251	6.251	(1.083)	501820	50.0000	43.95
175 tert-Butyl ethyl ether	59	6.228	6.228	(1.079)	268628	50.0000	47.44
176 tert-Amyl alcohol	59	6.228	6.228	(1.079)	268628	1000.00	948.88
157 2-Methylnaphthalene	142	15.188	15.188	(1.283)	109408	50.0000	35.76
156 Diisopropyl ether	45	4.412	4.412	(0.764)	687927	50.0000	46.81(T)
171 1-Methylnaphthalene	142	15.383	15.383	(1.300)	126089	50.0000	39.24
130 Ethyl Acetate	43	5.234	5.234	(0.907)	379216	50.0000	44.51

QC Flag Legend

T - Target compound detected outside RT window.
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050729.D
Date : 07-MAY-2018 20:30
Client ID: CCV_END
Sample Info: CCV_END;CCV_END;2;;
Purge Volume: 5.0
Column phase: DB624

\\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\D050729.D

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050286

Lab File ID: E050701 BFB Injection Date: 05/07/18

Instrument ID: VOA2 BFB Injection Time: 2054

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	21.1
75	30.0 - 60.0% of mass 95	45.4
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.9
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	79.6
175	5.0 - 9.0% of mass 174	6.6 (8.3)1
176	95.0 - 101.0% of mass 174	79.6 (100.1)1
177	5.0 - 9.0% of mass 176	5.2 (6.5)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CCV_END	CCV_END	E050730	05/08/18	0849
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
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17					
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20					
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FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050286

Instrument ID: VOA2 Calibration Date: 05/07/18 Time: 2143

Lab File ID: E050703 Init. Calib. Date(s): 05/04/18 05/04/18

Init. Calib. Times: 1519 1834

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Iodomethane	83.239053	100.00000	0.3212886	0.1	-16.76	20.00	LINR
Dichlorodifluoromethane	55.759100	50.000000	0.5156600	0.1	11.52	20.00	LINR
1,2-Dichloroethylene (total)	0.4580000	0.4992481	0.4992481	0.1	9.01	20.00	AVRG
Chloromethane	55.357119	50.000000	0.8896661	0.1	10.71	20.00	LINR
tert-Amyl alcohol	4.1e-002	3.98e-002	3.98e-002	0.005	-2.93	20.00	AVRG
Vinyl Chloride	0.6230000	0.6545587	0.6545587	0.1	5.06	20.00	AVRG
Bromomethane	0.3690000	0.3103889	0.3103889	0.1	-15.88	20.00	AVRG
Chloroethane	56.147435	50.000000	0.3751586	0.1	12.29	20.00	LINR
tert-Butyl ethyl ether	0.8190000	0.7952669	0.7952669	0.1	-2.90	20.00	AVRG
Trichlorofluoromethane	0.5900000	0.6332859	0.6332859	0.1	7.34	20.00	AVRG
Acrolein	96.605099	100.00000	0.1194836	0.01	-3.39	20.00	LINR
Acetone	104.92641	100.00000	0.1726442	0.1	4.93	20.00	LINR
1,1-Dichloroethene	0.3780000	0.4078323	0.4078323	0.1	7.89	20.00	AVRG
Isobutyl Alcohol	872.03766	1000.0000	2.2e-003	0.001	-12.80	20.00	LINR
Acetonitrile	6.4e-002	6.61e-002	6.61e-002	0.01	3.28	20.00	AVRG
Allyl Chloride	1.6270000	1.6898773	1.6898773	0.05	3.86	20.00	AVRG
Acrylonitrile	0.2220000	0.2373544	0.2373544	0.05	6.92	20.00	AVRG
Methylene Chloride	0.5280000	0.5081925	0.5081925	0.1	-3.75	20.00	AVRG
Methyl tert-butyl ether	1.4420000	1.3984731	1.3984731	0.1	-3.02	20.00	AVRG
Carbon Disulfide	0.8640000	0.8877815	0.8877815	0.1	2.75	20.00	AVRG
trans-1,2-Dichloroethene	55.247610	50.000000	0.4562312	0.1	10.50	20.00	LINR
Vinyl Acetate	0.6440000	0.5980339	0.5980339	0.1	-7.14	20.00	AVRG
1,1-Dichloroethane	1.0040000	1.0294964	1.0294964	0.2	2.54	20.00	AVRG
2-Butanone	0.2600000	0.2639864	0.2639864	0.1	1.53	20.00	AVRG
Methacrylonitrile	0.6190000	0.6005131	0.6005131	0.01	-2.99	20.00	AVRG
2,2-Dichloropropane	0.6790000	0.6740474	0.6740474	0.1	-0.73	20.00	AVRG
cis-1,2-Dichloroethene	0.5170000	0.5422651	0.5422651	0.1	4.89	20.00	AVRG
Chloroform	0.8660000	0.8824959	0.8824959	0.2	1.90	20.00	AVRG
Bromochloromethane	0.2490000	0.2731531	0.2731531	0.1	9.70	20.00	AVRG
tert-Amyl methyl ether	1.6510000	1.5855525	1.5855525	0.05	-3.96	20.00	AVRG
1,1,1-Trichloroethane	0.7270000	0.7501331	0.7501331	0.1	3.18	20.00	AVRG
1,1-Dichloropropene	0.4310000	0.3956748	0.3956748	0.1	-8.20	20.00	AVRG
1,2-Dichloroethane	0.4720000	0.4859970	0.4859970	0.1	2.96	20.00	AVRG
Carbon Tetrachloride	0.4380000	0.4161877	0.4161877	0.1	-4.98	20.00	AVRG
3,3-Dimethyl-1-butanol	3.3e-002	3.35e-002	3.35e-002	0.005	1.52	20.00	AVRG
Benzene	1.2710000	1.2766314	1.2766314	0.5	0.44	20.00	AVRG
Trichloroethene	0.3290000	0.3468482	0.3468482	0.2	5.42	20.00	AVRG
Bromodichloromethane	0.4620000	0.4852196	0.4852196	0.2	5.02	20.00	AVRG
Methyl Methacrylate	0.5900000	0.6005188	0.6005188	0.05	1.78	20.00	AVRG
2-Chloroethylvinyl ether	5.7e-002	5.59e-002	5.59e-002	0.05	-1.93	20.00	AVRG
1,2-Dichloropropane	0.3810000	0.3921782	0.3921782	0.1	2.93	20.00	AVRG
tert-Butyl formate	0.8760000	0.8499567	0.8499567	0.1	-2.97	20.00	AVRG

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805028

Instrument ID: VOA2 Calibration Date: 05/07/18 Time: 2143

Lab File ID: E050703 Init. Calib. Date(s): 05/04/18 05/04/18

Init. Calib. Times: 1519 1834

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Dibromomethane	0.1900000	0.2113130	0.2113130	0.1	11.22	20.00	AVRG
4-Methyl-2-Pentanone	0.4590000	0.4432137	0.4432137	0.1	-3.44	20.00	AVRG
cis-1,3-Dichloropropene	0.5150000	0.5692225	0.5692225	0.2	10.53	20.00	AVRG
1,3,5-Trichlorobenzene	1.0880000	1.0725627	1.0725627	0.1	-1.42	20.00	AVRG
Ethyl Methacrylate	57.286044	50.000000	0.4790946	0.01	14.57	20.00	LINR
Toluene	1.5270000	1.4789412	1.4789412	0.4	-3.15	20.00	AVRG
trans-1,3-Dichloropropene	0.4270000	0.4874650	0.4874650	0.1	14.16	20.00	AVRG
2-Hexanone	0.2870000	0.2879373	0.2879373	0.1	0.33	20.00	AVRG
1,1,2-Trichloroethane	0.2870000	0.2894322	0.2894322	0.1	0.85	20.00	AVRG
1,3-Dichloropropane	0.5690000	0.5877035	0.5877035	0.1	3.29	20.00	AVRG
Dibromochloromethane	0.4200000	0.4502846	0.4502846	0.1	7.21	20.00	AVRG
Tetrachloroethene	0.3050000	0.3004796	0.3004796	0.2	-1.48	20.00	AVRG
1,2-Dibromoethane	0.3580000	0.3813018	0.3813018	0.1	6.51	20.00	AVRG
1-Chlorohexane	54.577491	50.000000	0.3374286	0.1	9.15	20.00	LINR
Chlorobenzene	0.9560000	0.9548613	0.9548613	0.5	-0.12	20.00	AVRG
1,1,1,2-Tetrachloroethane	0.3790000	0.3943521	0.3943521	0.1	4.05	20.00	AVRG
Ethylbenzene	0.5180000	0.5004201	0.5004201	0.1	-3.39	20.00	AVRG
m,p-Xylenes	117.28666	100.00000	0.6061403	0.1	17.29	20.00	LINR
o-Xylene	0.6500000	0.6575998	0.6575998	0.3	1.17	20.00	AVRG
Styrene	1.0420000	1.0913039	1.0913039	0.3	4.73	20.00	AVRG
Bromoform	0.2980000	0.3210806	0.3210806	0.1	7.74	20.00	AVRG
Isopropylbenzene	1.5660000	1.5469373	1.5469373	0.1	-1.22	20.00	AVRG
1,1,2,2-Tetrachloroethane	1.1080000	1.0287829	1.0287829	0.3	-7.15	20.00	AVRG
Ethanol	4.4e-002	4.41e-002	4.41e-002	0.001	0.23	20.00	AVRG
1,2,3-Trichloropropane	53.138576	50.000000	0.4849986	0.1	6.28	20.00	LINR
trans-1,4-Dichloro-2-butene	49.734417	50.000000	0.1240480	0.05	-0.53	20.00	LINR
n-Propylbenzene	3.9220000	3.6425387	3.6425387	0.1	-7.12	20.00	AVRG
Bromobenzene	1.0040000	0.9795869	0.9795869	0.1	-2.43	20.00	AVRG
1,3,5-Trimethylbenzene	2.9640000	2.7299285	2.7299285	0.1	-7.90	20.00	AVRG
2-Chlorotoluene	55.313980	50.000000	2.4362061	0.1	10.63	20.00	LINR
4-Chlorotoluene	55.428565	50.000000	2.6493997	0.1	10.86	20.00	LINR
tert-Butylbenzene	2.4500000	2.2761894	2.2761894	0.1	-7.09	20.00	AVRG
1,2,4-Trimethylbenzene	55.564087	50.000000	2.8146033	0.1	11.13	20.00	LINR
sec-Butylbenzene	3.2670000	3.0972272	3.0972272	0.1	-5.20	20.00	AVRG
p-Isopropyltoluene	2.7870000	2.6354164	2.6354164	0.1	-5.44	20.00	AVRG
1,3-Dichlorobenzene	1.7100000	1.6497253	1.6497253	0.6	-3.52	20.00	AVRG
1,4-Dichlorobenzene	1.6530000	1.5749429	1.5749429	0.4	-4.72	20.00	AVRG
n-Butylbenzene	2.1130000	2.0552177	2.0552177	0.05	-2.73	20.00	AVRG
1,2-Dichlorobenzene	1.6050000	1.5655641	1.5655641	0.4	-2.46	20.00	AVRG
1,2-Dibromo-3-Chloropropane	0.1790000	0.1902855	0.1902855	0.05	6.30	20.00	AVRG
1,2,4-Trichlorobenzene	50.997988	50.000000	0.9470066	0.2	2.00	20.00	LINR
Hexachlorobutadiene	46.966693	50.000000	0.3811948	0.1	-6.07	20.00	LINR

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805028

Instrument ID: VOA2 Calibration Date: 05/07/18 Time: 2143

Lab File ID: E050703 Init. Calib. Date(s): 05/04/18 05/04/18

Init. Calib. Times: 1519 1834

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Naphthalene	51.793415	50.000000	2.3159792	0.2	3.59	20.00	LINR
1,2,3-Trichlorobenzene	49.275679	50.000000	0.7928144	0.1	-1.45	20.00	LINR
Methyl acetate	0.5990000	0.5688447	0.5688447	0.1	-5.03	20.00	AVRG
Freon TF	52.022580	50.000000	0.3885050	0.1	4.04	20.00	LINR
1,2,3-Trimethylbenzene	2.8220000	2.6646946	2.6646946	0.1	-5.57	20.00	AVRG
Methylcyclohexane	0.4390000	0.4127384	0.4127384	0.1	-5.98	20.00	AVRG
1,4-Dioxane	998.77685	1000.0000	4.59e-003	0.001	-0.12	20.00	LINR
n-Butanol	1.8e-002	1.67e-002	1.67e-002	0.001	-7.22	20.00	AVRG
Methyl Acrylate	0.8380000	0.8839033	0.8839033	0.1	5.48	20.00	AVRG
Ethyl Acrylate	1.5160000	1.4882592	1.4882592	0.1	-1.83	20.00	AVRG
n-Hexane	0.5980000	0.5654777	0.5654777	0.1	-5.44	20.00	AVRG
Cyclohexane	0.8310000	0.8107598	0.8107598	0.1	-2.44	20.00	AVRG
Isopropyl alcohol	3.8e-002	3.39e-002	3.39e-002	0.005	-10.79	20.00	AVRG
Tert-butyl alcohol	6.e-002	5.89e-002	5.89e-002	0.005	-1.83	20.00	AVRG
Xylenes (total)	0.5980000	0.5613696	0.5613696	0.1	-6.12	20.00	AVRG
Propionitrile	0.1730000	0.1757071	0.1757071	0.01	1.56	20.00	AVRG
2-Nitropropane	1.2450000	1.1981434	1.1981434	0.1	-3.76	20.00	AVRG
Ethyl Acetate	1.2320000	1.1960677	1.1960677	0.01	-2.92	20.00	AVRG
Diethyl ether	0.8880000	0.9152743	0.9152743	0.05	3.07	20.00	AVRG
Tetrahydrofuran	0.2000000	0.1910610	0.1910610	0.05	-4.47	20.00	AVRG
4-Methyl-2-pentanol	9.6e-002	9.31e-002	9.31e-002	0.005	-3.02	20.00	AVRG
Diisopropyl ether	2.1250000	2.1523470	2.1523470	0.05	1.29	20.00	AVRG
2-Methylnaphthalene	41.849647	50.000000	0.6009833	0.05	-16.30	20.00	2RDR
Dichlorofluoromethane	0.9190000	0.9318208	0.9318208	0.1	1.40	20.00	AVRG
1-Methylnaphthalene	45.618867	50.000000	0.6830806	0.1	-8.76	20.00	2RDR
Isobutylene	0.4840000	0.5397448	0.5397448	0.1	11.52	20.00	AVRG
Dibromofluoromethane	49.175220	50.000000	0.4259730	0.1	-1.65	20.00	2RDR
Toluene-d8	51.453122	50.000000	1.2442600	0.1	2.91	20.00	2RDR
1,2-Dichloroethane-d4	51.493947	50.000000	0.5604144	0.1	2.99	20.00	LINR
4-Bromofluorobenzene	57.302550	50.000000	0.4805880	0.1	14.60	20.00	LINR

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050286

Instrument ID: VOA2 Calibration Date: 05/08/18 Time: 0849

Lab File ID: E050730 Init. Calib. Date(s): 05/04/18 05/04/18

Init. Calib. Times: 1519 1834

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Iodomethane	86.824372	100.00000	0.3358432	0.1	-13.18	50.00	LINR
Dichlorodifluoromethane	56.958366	50.000000	0.5265629	0.1	13.92	50.00	LINR
1,2-Dichloroethylene (total)	0.4580000	0.4878346	0.4878346	0.1	6.51	50.00	AVRG
Chloromethane	54.823953	50.000000	0.8813619	0.1	9.65	50.00	LINR
tert-Amyl alcohol	4.1e-002	3.32e-002	3.32e-002	0.005	-19.02	50.00	AVRG
Vinyl Chloride	0.6230000	0.6732974	0.6732974	0.1	8.07	50.00	AVRG
Bromomethane	0.3690000	0.3163354	0.3163354	0.1	-14.27	50.00	AVRG
Chloroethane	60.578179	50.000000	0.4039368	0.1	21.16	50.00	LINR
tert-Butyl ethyl ether	0.8190000	0.6642934	0.6642934	0.1	-18.89	50.00	AVRG
Trichlorofluoromethane	0.5900000	0.6899959	0.6899959	0.1	16.95	50.00	AVRG
Acrolein	88.824206	100.00000	0.1098988	0.01	-11.18	50.00	LINR
Acetone	96.509825	100.00000	0.1592689	0.1	-3.49	50.00	LINR
1,1-Dichloroethene	0.3780000	0.4302138	0.4302138	0.1	13.81	50.00	AVRG
Isobutyl Alcohol	767.79497	1000.0000	1.93e-003	0.001	-23.22	50.00	LINR
Acetonitrile	6.4e-002	6.3e-002	6.3e-002	0.01	-1.56	50.00	AVRG
Allyl Chloride	1.6270000	1.5823192	1.5823192	0.05	-2.75	50.00	AVRG
Acrylonitrile	0.2220000	0.2107105	0.2107105	0.05	-5.08	50.00	AVRG
Methylene Chloride	0.5280000	0.4959204	0.4959204	0.1	-6.08	50.00	AVRG
Methyl tert-butyl ether	1.4420000	1.2984062	1.2984062	0.1	-9.96	50.00	AVRG
Carbon Disulfide	0.8640000	0.9022455	0.9022455	0.1	4.43	50.00	AVRG
trans-1,2-Dichloroethene	54.592714	50.000000	0.4508552	0.1	9.18	50.00	LINR
Vinyl Acetate	0.6440000	0.5455694	0.5455694	0.1	-15.28	50.00	AVRG
1,1-Dichloroethane	1.0040000	1.0103869	1.0103869	0.2	0.64	50.00	AVRG
2-Butanone	0.2600000	0.2363862	0.2363862	0.1	-9.08	50.00	AVRG
Methacrylonitrile	0.6190000	0.5556197	0.5556197	0.01	-10.24	50.00	AVRG
2,2-Dichloropropane	0.6790000	0.5872676	0.5872676	0.1	-13.51	50.00	AVRG
cis-1,2-Dichloroethene	0.5170000	0.5248139	0.5248139	0.1	1.51	50.00	AVRG
Chloroform	0.8660000	0.8490888	0.8490888	0.2	-1.95	50.00	AVRG
Bromochloromethane	0.2490000	0.2534790	0.2534790	0.1	1.80	50.00	AVRG
tert-Amyl methyl ether	1.6510000	1.3815379	1.3815379	0.05	-16.32	50.00	AVRG
1,1,1-Trichloroethane	0.7270000	0.7788956	0.7788956	0.1	7.14	50.00	AVRG
1,1-Dichloropropene	0.4310000	0.4101934	0.4101934	0.1	-4.83	50.00	AVRG
1,2-Dichloroethane	0.4720000	0.4570936	0.4570936	0.1	-3.16	50.00	AVRG
Carbon Tetrachloride	0.4380000	0.4430980	0.4430980	0.1	1.16	50.00	AVRG
3,3-Dimethyl-1-butanol	3.3e-002	2.83e-002	2.83e-002	0.005	-14.24	50.00	AVRG
Benzene	1.2710000	1.2490541	1.2490541	0.5	-1.73	50.00	AVRG
Trichloroethene	0.3290000	0.3505274	0.3505274	0.2	6.54	50.00	AVRG
Bromodichloromethane	0.4620000	0.4543138	0.4543138	0.2	-1.66	50.00	AVRG
Methyl Methacrylate	0.5900000	0.5490265	0.5490265	0.05	-6.94	50.00	AVRG
2-Chloroethylvinyl ether	5.7e-002	5.79e-002	5.79e-002	0.05	1.58	50.00	AVRG
1,2-Dichloropropane	0.3810000	0.3740330	0.3740330	0.1	-1.83	50.00	AVRG
tert-Butyl formate	0.8760000	0.7525031	0.7525031	0.1	-14.10	50.00	AVRG

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805028

Instrument ID: VOA2 Calibration Date: 05/08/18 Time: 0849

Lab File ID: E050730 Init. Calib. Date(s): 05/04/18 05/04/18

Init. Calib. Times: 1519 1834

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Dibromomethane	0.1900000	0.1935939	0.1935939	0.1	1.89	50.00	AVRG
4-Methyl-2-Pentanone	0.4590000	0.4022819	0.4022819	0.1	-12.36	50.00	AVRG
cis-1,3-Dichloropropene	0.5150000	0.5153726	0.5153726	0.2	0.07	50.00	AVRG
1,3,5-Trichlorobenzene	1.0880000	1.0566275	1.0566275	0.1	-2.88	50.00	AVRG
Ethyl Methacrylate	51.359545	50.000000	0.4314193	0.01	2.72	50.00	LINR
Toluene	1.5270000	1.4616828	1.4616828	0.4	-4.28	50.00	AVRG
trans-1,3-Dichloropropene	0.4270000	0.4323731	0.4323731	0.1	1.26	50.00	AVRG
2-Hexanone	0.2870000	0.2574906	0.2574906	0.1	-10.28	50.00	AVRG
1,1,2-Trichloroethane	0.2870000	0.2750766	0.2750766	0.1	-4.15	50.00	AVRG
1,3-Dichloropropane	0.5690000	0.5491389	0.5491389	0.1	-3.49	50.00	AVRG
Dibromochloromethane	0.4200000	0.4144334	0.4144334	0.1	-1.32	50.00	AVRG
Tetrachloroethene	0.3050000	0.3170956	0.3170956	0.2	3.96	50.00	AVRG
1,2-Dibromoethane	0.3580000	0.3505957	0.3505957	0.1	-2.07	50.00	AVRG
1-Chlorohexane	58.402447	50.000000	0.3598670	0.1	16.80	50.00	LINR
Chlorobenzene	0.9560000	0.9168259	0.9168259	0.5	-4.10	50.00	AVRG
1,1,1,2-Tetrachloroethane	0.3790000	0.3792509	0.3792509	0.1	0.07	50.00	AVRG
Ethylbenzene	0.5180000	0.5123051	0.5123051	0.1	-1.10	50.00	AVRG
m,p-Xylenes	119.59240	100.00000	0.6174102	0.1	19.59	50.00	LINR
o-Xylene	0.6500000	0.6519092	0.6519092	0.3	0.29	50.00	AVRG
Styrene	1.0420000	1.0405717	1.0405717	0.3	-0.14	50.00	AVRG
Bromoform	0.2980000	0.2965098	0.2965098	0.1	-0.50	50.00	AVRG
Isopropylbenzene	1.5660000	1.6046247	1.6046247	0.1	2.47	50.00	AVRG
1,1,2,2-Tetrachloroethane	1.1080000	0.9496309	0.9496309	0.3	-14.29	50.00	AVRG
Ethanol	4.4e-002	4.12e-002	4.12e-002	0.001	-6.36	50.00	AVRG
1,2,3-Trichloropropane	53.149884	50.000000	0.4850970	0.1	6.30	50.00	LINR
trans-1,4-Dichloro-2-butene	41.715932	50.000000	0.1037331	0.05	-16.57	50.00	LINR
n-Propylbenzene	3.9220000	3.7762084	3.7762084	0.1	-3.72	50.00	AVRG
Bromobenzene	1.0040000	0.9319306	0.9319306	0.1	-7.18	50.00	AVRG
1,3,5-Trimethylbenzene	2.9640000	2.7901519	2.7901519	0.1	-5.86	50.00	AVRG
2-Chlorotoluene	54.597226	50.000000	2.4059332	0.1	9.19	50.00	LINR
4-Chlorotoluene	54.690247	50.000000	2.6157271	0.1	9.38	50.00	LINR
tert-Butylbenzene	2.4500000	2.3993769	2.3993769	0.1	-2.07	50.00	AVRG
1,2,4-Trimethylbenzene	55.649083	50.000000	2.8187027	0.1	11.30	50.00	LINR
sec-Butylbenzene	3.2670000	3.2953695	3.2953695	0.1	0.87	50.00	AVRG
p-Isopropyltoluene	2.7870000	2.7554286	2.7554286	0.1	-1.13	50.00	AVRG
1,3-Dichlorobenzene	1.7100000	1.6104712	1.6104712	0.6	-5.82	50.00	AVRG
1,4-Dichlorobenzene	1.6530000	1.5123157	1.5123157	0.4	-8.51	50.00	AVRG
n-Butylbenzene	2.1130000	2.1418418	2.1418418	0.05	1.36	50.00	AVRG
1,2-Dichlorobenzene	1.6050000	1.5161719	1.5161719	0.4	-5.53	50.00	AVRG
1,2-Dibromo-3-Chloropropane	0.1790000	0.1687445	0.1687445	0.05	-5.73	50.00	AVRG
1,2,4-Trichlorobenzene	47.187122	50.000000	0.8756327	0.2	-5.62	50.00	LINR
Hexachlorobutadiene	48.035883	50.000000	0.3898675	0.1	-3.93	50.00	LINR

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805028

Instrument ID: VOA2 Calibration Date: 05/08/18 Time: 0849

Lab File ID: E050730 Init. Calib. Date(s): 05/04/18 05/04/18

Init. Calib. Times: 1519 1834

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Naphthalene	46.093060	50.000000	2.0585330	0.2	-7.81	50.00	LINR
1,2,3-Trichlorobenzene	45.199967	50.000000	0.7258483	0.1	-9.60	50.00	LINR
Methyl acetate	0.5990000	0.5366541	0.5366541	0.1	-10.41	50.00	AVRG
Freon TF	58.439775	50.000000	0.4351284	0.1	16.88	50.00	LINR
1,2,3-Trimethylbenzene	2.8220000	2.6345833	2.6345833	0.1	-6.64	50.00	AVRG
Methylcyclohexane	0.4390000	0.4756156	0.4756156	0.1	8.34	50.00	AVRG
1,4-Dioxane	848.99464	1000.0000	3.92e-003	0.001	-15.10	50.00	LINR
n-Butanol	1.8e-002	1.74e-002	1.74e-002	0.001	-3.33	50.00	AVRG
Methyl Acrylate	0.8380000	0.8152215	0.8152215	0.1	-2.72	50.00	AVRG
Ethyl Acrylate	1.5160000	1.5000803	1.5000803	0.1	-1.05	50.00	AVRG
n-Hexane	0.5980000	0.5951507	0.5951507	0.1	-0.48	50.00	AVRG
Cyclohexane	0.8310000	0.9447422	0.9447422	0.1	13.69	50.00	AVRG
Isopropyl alcohol	3.8e-002	2.9e-002	2.9e-002	0.005	-23.68	50.00	AVRG
Tert-butyl alcohol	6.e-002	5.09e-002	5.09e-002	0.005	-15.17	50.00	AVRG
Xylenes (total)	0.5980000	0.5649514	0.5649514	0.1	-5.53	50.00	AVRG
Propionitrile	0.1730000	0.1591743	0.1591743	0.01	-7.99	50.00	AVRG
2-Nitropropane	1.2450000	1.0990951	1.0990951	0.1	-11.72	50.00	AVRG
Ethyl Acetate	1.2320000	1.0911388	1.0911388	0.01	-11.43	50.00	AVRG
Diethyl ether	0.8880000	0.8407269	0.8407269	0.05	-5.32	50.00	AVRG
Tetrahydrofuran	0.2000000	0.1765264	0.1765264	0.05	-11.74	50.00	AVRG
4-Methyl-2-pentanol	9.6e-002	8.13e-002	8.13e-002	0.005	-15.31	50.00	AVRG
Diisopropyl ether	2.1250000	2.0320281	2.0320281	0.05	-4.38	50.00	AVRG
2-Methylnaphthalene	33.043477	50.000000	0.4525004	0.05	-33.91	50.00	2RDR
Dichlorofluoromethane	0.9190000	0.9407457	0.9407457	0.1	2.37	50.00	AVRG
1-Methylnaphthalene	37.491762	50.000000	0.5443253	0.1	-25.02	50.00	2RDR
Isobutylene	0.4840000	0.5731462	0.5731462	0.1	18.42	50.00	AVRG
Dibromofluoromethane	49.697189	50.000000	0.4301997	0.1	-0.60	50.00	2RDR
Toluene-d8	51.253218	50.000000	1.2402777	0.1	2.51	50.00	2RDR
1,2-Dichloroethane-d4	51.499222	50.000000	0.5604696	0.1	3.00	50.00	LINR
4-Bromofluorobenzene	57.435062	50.000000	0.4816377	0.1	14.87	50.00	LINR

FORM VII VOA

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\E050701.D

Date : 07-MAY-2018 20:54

Client ID: BFB

Instrument: VOA2.i

Sample Info: BFB;BFB;3;;BFB

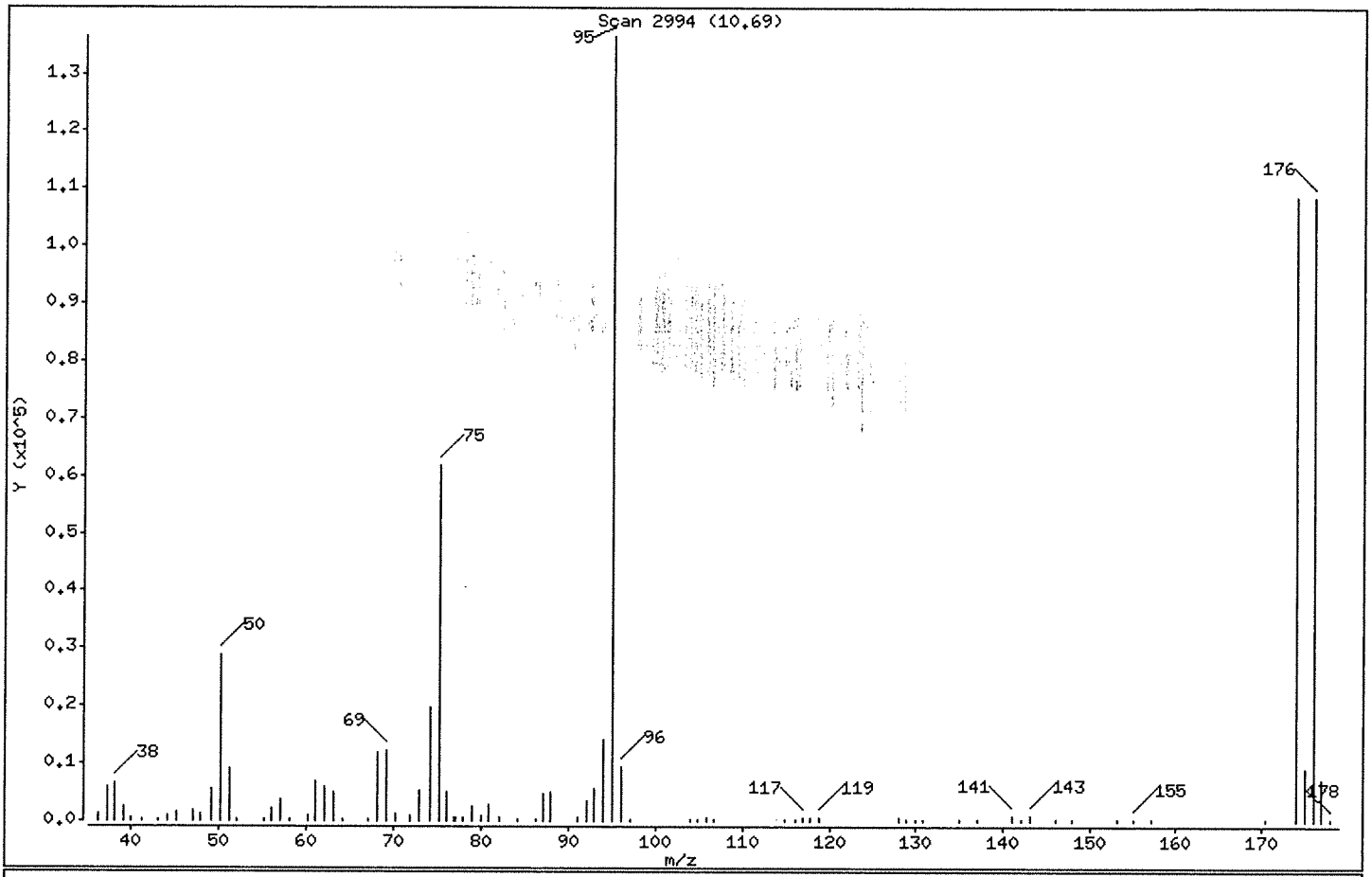
Volume Injected (uL): 2.0

Operator: AP

Column phase: DB624

Column diameter: 0.18

1 bfb



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	21.14
75	30.00 - 60.00% of mass 95	45.39
96	5.00 - 9.00% of mass 95	6.93
173	Less than 2.00% of mass 174	0.00 (0.00)
174	Greater than 50.00% of mass 95	79.57
175	5.00 - 9.00% of mass 174	6.58 (8.27)
176	95.00 - 101.00% of mass 174	79.61 (100.05)
177	5.00 - 9.00% of mass 176	5.21 (6.55)

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\E050701.D

Date : 07-MAY-2018 20:54

Client ID: BFB

Instrument: VOA2.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: AP

Column phase: DB624

Column diameter: 0.18

Data File: E050701.D
Spectrum: Scan 2994 (10.69)
Location of Maximum: 95.10
Number of points: 80

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.10	1099	62.10	6005	87.10	4576	130.70	226
37.10	5965	63.10	4863	88.00	4869	135.00	190
38.10	6713	64.10	233	91.10	656	137.00	189
39.10	2507	67.00	367	92.10	3489	141.00	1077
40.00	776	68.10	12041	93.00	5492	142.10	175
41.20	333	69.10	12084	94.10	14064	143.00	1050
43.00	312	70.10	1174	95.10	136448	145.90	211
44.00	813	71.90	922	96.10	9455	147.90	162
45.10	1676	73.00	5357	97.10	349	153.00	162
47.10	1810	74.10	19656	104.00	393	154.90	455
47.90	1259	75.10	61936	104.90	209	157.10	226
49.10	5648	76.10	4966	105.80	542	170.50	166
50.10	28848	76.80	713	106.80	327	174.00	108576
51.10	9158	77.10	663	114.80	254	175.10	8979
52.00	353	78.00	478	116.10	351	176.00	108632
55.10	389	79.00	2664	116.90	747	177.00	7114
56.00	2221	80.00	1015	117.90	475	178.00	192
57.10	3907	80.90	2901	118.80	632		
58.10	212	82.00	511	128.00	618		
60.10	951	84.10	165	128.90	161		
61.10	6902	86.20	223	130.00	314		

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\E050701.D

Date : 07-MAY-2018 20:54

Client ID: BFB

Instrument: VOA2.i

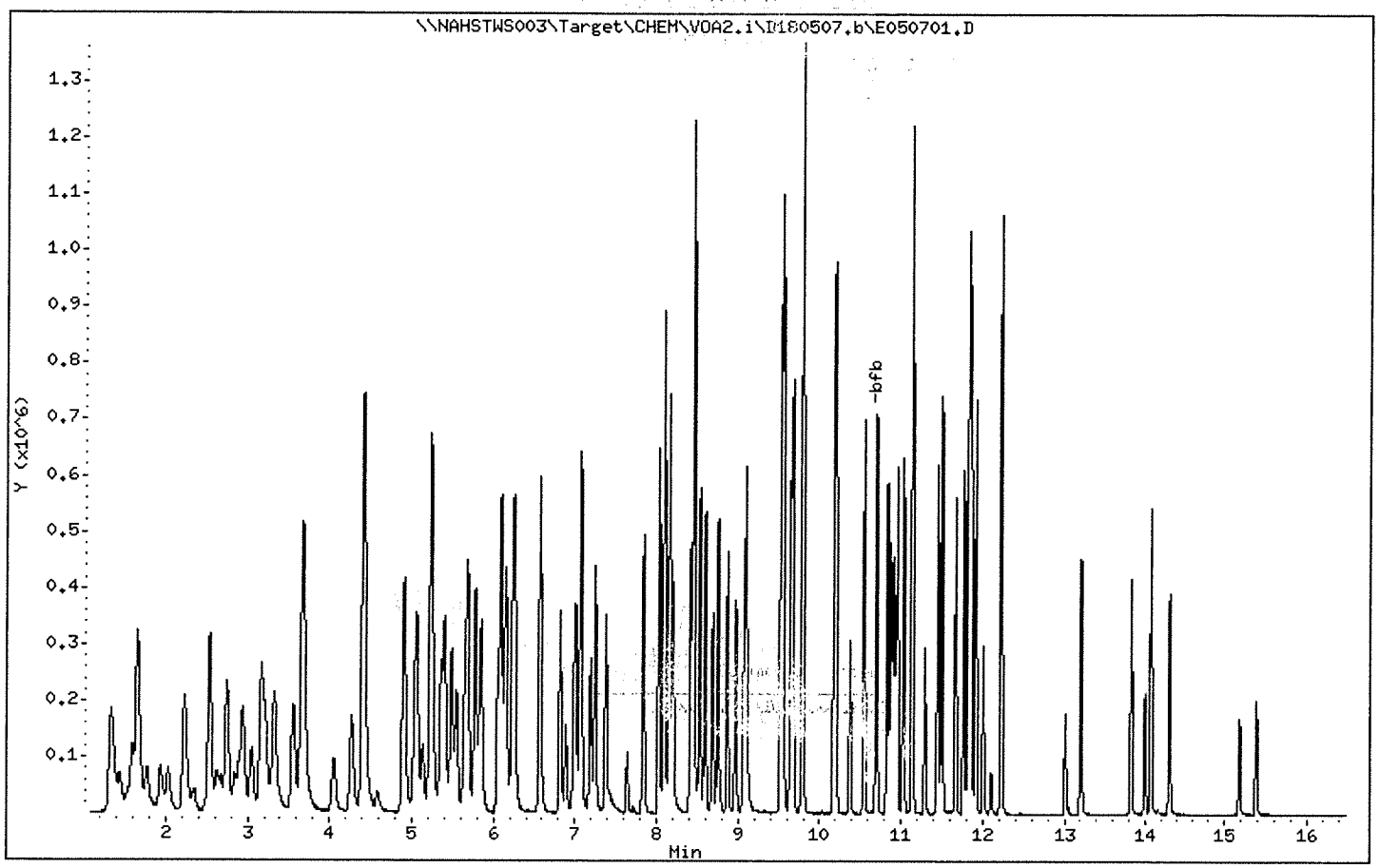
Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: AP

Column phase: DB624

Column diameter: 0.18



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\E050703.D Page 1
Report Date: 14-May-2018 17:15

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\E050703.D
Lab Smp Id: CCV Client Smp ID: CCV
Inj Date : 07-MAY-2018 21:43
Operator : AP Inst ID: VOA2.i
Smp Info : CCV;CCV;2;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\8260LL.m
Meth Date : 14-May-2018 17:15 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 31 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

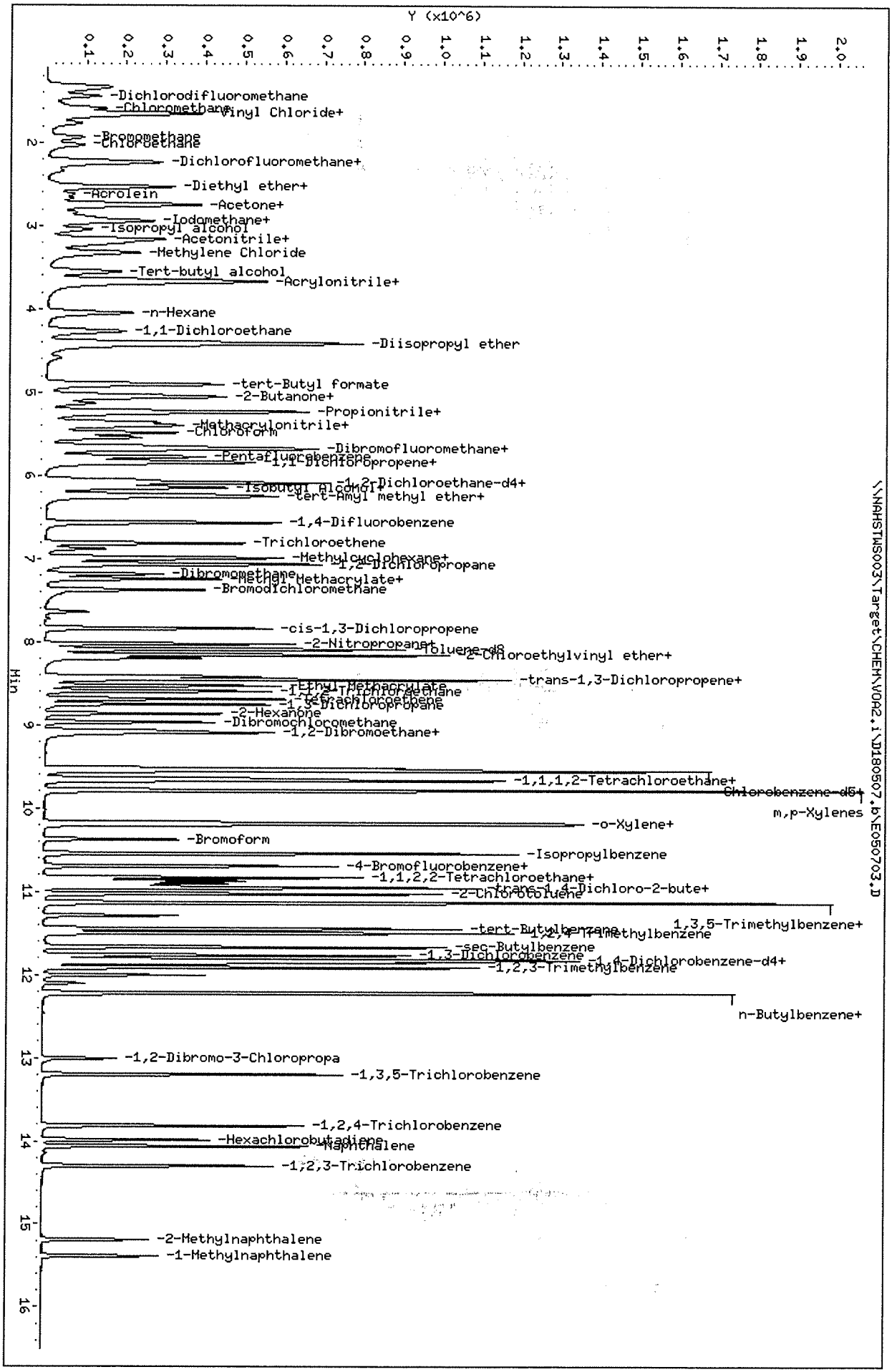
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1	Pentafluorobenzene	168	5.773	5.773	(1.000)	353128	50.0000	
2	Dichlorodifluoromethane	85	1.438	1.438	(0.249)	182094	50.0000	55.75
186	Isobutylene	56	1.643	1.643	(0.285)	190599	50.0000	55.77(AM)
3	Chloromethane	50	1.588	1.588	(0.275)	314166	50.0000	55.35
4	Propionitrile	54	5.227	5.227	(0.906)	620471	500.000	506.97
5	Vinyl Chloride	62	1.675	1.675	(0.290)	231143	50.0000	52.48
6	Bromomethane	94	1.932	1.932	(0.335)	109607	50.0000	42.02
7	Chloroethane	64	2.028	2.028	(0.351)	132479	50.0000	56.14
159	Dichlorofluoromethane	67	2.221	2.221	(0.385)	329052	50.0000	50.67
8	Trichlorofluoromethane	101	2.243	2.243	(0.389)	223631	50.0000	53.65
9	Acrolein	56	2.670	2.670	(0.463)	84386	100.000	96.60
10	Acetone	43	2.840	2.840	(0.492)	121931	100.000	104.92
11	1,1-Dichloroethene	96	2.740	2.740	(0.475)	144017	50.0000	54.01
12	Isobutyl Alcohol	74	6.155	6.155	(1.066)	15540	1000.00	872.03(A)
13	Acetonitrile	39	3.161	3.161	(0.548)	233333	500.000	517.59
14	Allyl Chloride	41	3.167	3.167	(0.549)	596743	50.0000	51.93
15	Iodomethane	142	2.904	2.904	(0.503)	226912	100.000	83.23
16	Acrylonitrile	53	3.681	3.681	(0.638)	167633	100.000	106.97
17	Methylene Chloride	84	3.328	3.328	(0.576)	179457	50.0000	48.09
18	Methyl tert-butyl ether	73	3.674	3.674	(0.636)	493840	50.0000	48.49
19	Carbon Disulfide	76	2.943	2.943	(0.510)	627001	100.000	102.69

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.649	3.649	(0.632)	161108	50.0000	55.24
	21 Vinyl Acetate	43	5.237	5.237	(0.907)	422365	100.000	92.91
	22 1,1-Dichloroethane	63	4.265	4.265	(0.739)	363544	50.0000	51.26
	24 2-Butanone	43	5.131	5.131	(0.889)	186442	100.000	101.55
	25 Methacrylonitrile	41	5.401	5.401	(0.936)	212058	50.0000	48.49
	26 2,2-Dichloropropane	77	5.035	5.035	(0.872)	238025	50.0000	49.63
	27 cis-1,2-Dichloroethene	96	5.054	5.054	(0.875)	191489	50.0000	52.48
	28 Chloroform	83	5.484	5.484	(0.950)	311634	50.0000	50.93
	29 Bromochloromethane	128	5.359	5.359	(0.928)	96458	50.0000	54.77
$	30 Dibromofluoromethane	113	5.677	5.677	(0.983)	150423	50.0000	49.17
	31 1,1,1-Trichloroethane	97	5.648	5.648	(0.978)	264893	50.0000	51.57
	32 1,1-Dichloropropene	75	5.847	5.847	(0.891)	209691	50.0000	45.90
	33 1,2-Dichloroethane	62	6.135	6.135	(0.935)	257558	50.0000	51.52
	34 Carbon Tetrachloride	117	5.827	5.827	(0.888)	220562	50.0000	47.48
$	35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	197898	50.0000	51.49
*	36 1,4-Difluorobenzene	114	6.565	6.565	(1.000)	529958	50.0000	
	37 Benzene	78	6.087	6.087	(0.927)	676561	50.0000	50.22
	38 Trichloroethene	130	6.816	6.816	(1.038)	183815	50.0000	52.71
	39 Bromodichloromethane	83	7.371	7.371	(1.123)	257146	50.0000	52.55
	40 Methyl Methacrylate	41	7.243	7.243	(1.255)	212060	50.0000	50.82
	41 2-Chloroethylvinyl ether	63	8.157	8.157	(1.242)	59287	100.000	98.03(T)
	42 1,2-Dichloropropane	63	7.063	7.063	(1.076)	207838	50.0000	51.41
	43 2-Nitropropane	43	8.022	8.022	(1.390)	423098	50.0000	48.12
	44 Dibromomethane	93	7.188	7.188	(1.095)	111987	50.0000	55.48
	45 4-Methyl-2-Pentanone	43	8.022	8.022	(0.842)	423098	100.000	96.59
	46 cis-1,3-Dichloropropene	75	7.836	7.836	(1.194)	301664	50.0000	55.25
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	477307	50.0000	
$	48 Toluene-d8	98	8.090	8.090	(0.849)	593894	50.0000	51.45
	49 Ethyl Methacrylate	69	8.529	8.529	(1.299)	253900	50.0000	57.28
	50 Toluene	91	8.154	8.154	(0.856)	705909	50.0000	48.41
	51 trans-1,3-Dichloropropene	75	8.414	8.414	(1.282)	258336	50.0000	57.01
	52 2-Hexanone	43	8.863	8.863	(0.931)	274869	100.000	100.14
	53 1,1,2-Trichloroethane	83	8.590	8.590	(0.902)	138148	50.0000	50.44
	54 1,3-Dichloropropane	76	8.751	8.751	(0.919)	280515	50.0000	51.59
	55 Dibromochloromethane	129	8.969	8.969	(0.942)	214924	50.0000	53.59
	56 Tetrachloroethene	164	8.687	8.687	(0.912)	143421	50.0000	49.22
	57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	181998	50.0000	53.23
	58 1-Chlorohexane	55	9.550	9.550	(1.455)	178823	50.0000	54.57
	59 Chlorobenzene	112	9.550	9.550	(1.003)	455762	50.0000	49.95
	60 1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.012)	188227	50.0000	51.96
	61 Ethylbenzene	106	9.668	9.668	(1.015)	238854	50.0000	48.31
	62 m,p-Xylenes	106	9.790	9.790	(1.028)	578630	100.000	117.28
	63 o-Xylene	106	10.175	10.175	(1.068)	313877	50.0000	50.55
	64 Styrene	104	10.198	10.198	(1.071)	520887	50.0000	52.36
	66 Bromoform	173	10.374	10.374	(1.089)	153254	50.0000	53.79
	67 Isopropylbenzene	105	10.545	10.545	(1.107)	738364	50.0000	49.39
	68 1,1,2,2-Tetrachloroethane	83	10.869	10.869	(0.918)	224322	50.0000	46.42
$	69 4-Bromofluorobenzene	95	10.692	10.692	(1.123)	229388	50.0000	57.30
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	218046	50.0000	
	71 1,2,3-Trichloropropane	75	10.692	10.692	(0.903)	105752	50.0000	53.13
	72 trans-1,4-Dichloro-2-butene	53	10.926	10.926	(1.147)	59209	50.0000	49.73
	73 n-Propylbenzene	91	10.952	10.952	(0.925)	794241	50.0000	46.43
	74 Bromobenzene	156	10.830	10.830	(0.915)	213595	50.0000	48.80
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	595250	50.0000	46.04

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
76 2-Chlorotoluene	91	11.026	11.026	(0.932)	531205	50.0000	55.31
77 4-Chlorotoluene	91	11.138	11.138	(0.941)	577691	50.0000	55.42
78 tert-Butylbenzene	119	11.446	11.446	(0.967)	496314	50.0000	46.45
79 1,2,4-Trimethylbenzene	105	11.498	11.498	(0.972)	613713	50.0000	55.56
81 sec-Butylbenzene	105	11.664	11.664	(0.986)	675338	50.0000	47.40
82 p-Isopropyltoluene	119	11.815	11.815	(0.998)	574642	50.0000	47.28
83 1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	359716	50.0000	48.21
84 1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	343410	50.0000	47.63
87 n-Butylbenzene	91	12.223	12.223	(1.033)	448132	50.0000	48.62
88 1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	341365	50.0000	48.76
89 1,2-Dibromo-3-Chloropropane	75	13.006	13.006	(1.099)	41491	50.0000	53.19
90 1,2,4-Trichlorobenzene	180	13.814	13.814	(1.167)	206491	50.0000	50.99
91 Hexachlorobutadiene	225	13.984	13.984	(1.182)	83118	50.0000	46.96
92 Naphthalene	128	14.061	14.061	(1.188)	504990	50.0000	51.79
93 1,2,3-Trichlorobenzene	182	14.299	14.299	(1.208)	172870	50.0000	49.27
146 Methyl acetate	43	3.215	3.215	(0.557)	200875	50.0000	47.46
138 Freon TF	101	2.753	2.753	(0.477)	137192	50.0000	52.02
139 Diethyl ether	59	2.529	2.529	(0.438)	323209	50.0000	51.54
147 Methylcyclohexane	83	6.986	6.986	(1.064)	218734	50.0000	47.01
135 1,4-Dioxane	88	7.233	7.233	(1.253)	32447	1000.00	998.77
132 n-Butanol	56	6.986	6.986	(1.210)	118140	1000.00	917.77
131 Methyl Acrylate	55	5.256	5.256	(0.911)	312131	50.0000	52.69
133 Ethyl Acrylate	55	7.002	7.002	(1.213)	525546	50.0000	49.09
136 n-Hexane	57	4.050	4.050	(0.702)	199686	50.0000	47.31
141 Cyclohexane	56	5.683	5.683	(0.984)	286302	50.0000	48.77
142 Tetrahydrofuran	42	5.407	5.407	(0.937)	134938	100.000	95.34
148 Tert-butyl alcohol	59	3.552	3.552	(0.615)	415877	1000.00	985.34
149 Isopropyl alcohol	45	3.039	3.039	(0.526)	239109	1000.00	890.82(T)
151 4-Methyl-2-pentanol	45	8.449	8.449	(0.887)	888768	1000.00	968.37
166 1,2,3-Trimethylbenzene	105	11.912	11.912	(1.007)	581026	50.0000	47.20
167 Ethanol	45	2.529	2.529	(0.438)	311221	1000.00	1006.08
170 1,3,5-Trichlorobenzene	180	13.201	13.201	(1.116)	233868	50.0000	49.28
172 tert-Butyl formate	59	4.900	4.900	(0.849)	600287	100.000	97.09
173 3,3-Dimethyl-1-butanol	57	9.094	9.094	(0.955)	320005	1000.00	1007.49
174 tert-Amyl methyl ether	73	6.254	6.254	(1.083)	559903	50.0000	48.01
175 tert-Butyl ethyl ether	59	6.225	6.225	(1.078)	280831	50.0000	48.55
176 tert-Amyl alcohol	59	6.225	6.225	(1.078)	280831	1000.00	971.07
157 2-Methylnaphthalene	142	15.188	15.188	(1.283)	131042	50.0000	41.84
156 Diisopropyl ether	45	4.412	4.412	(0.764)	760054	50.0000	50.63(T)
171 1-Methylnaphthalene	142	15.384	15.384	(1.300)	148943	50.0000	45.61
130 Ethyl Acetate	43	5.237	5.237	(0.907)	422365	50.0000	48.53

QC Flag Legend

T - Target compound detected outside RT window.
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\E050703.D
Date : 07-MAY-2018 21:43
Client ID: CCV
Sample Info: CCV;CCV;2;;
Purge Volume: 5.0
Column phase: DB624

\\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\E050703.D

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\E050705.D
Lab Smp Id: VLCSW-180507 Client Smp ID: VLCSW-180507
Inj Date : 07-MAY-2018 22:32
Operator : AP Inst ID: VOA2.i
Smp Info : VLCSW-180507;VLCSW-180507;3;;LCS
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\8260LL.m
Meth Date : 14-May-2018 17:15 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 33 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

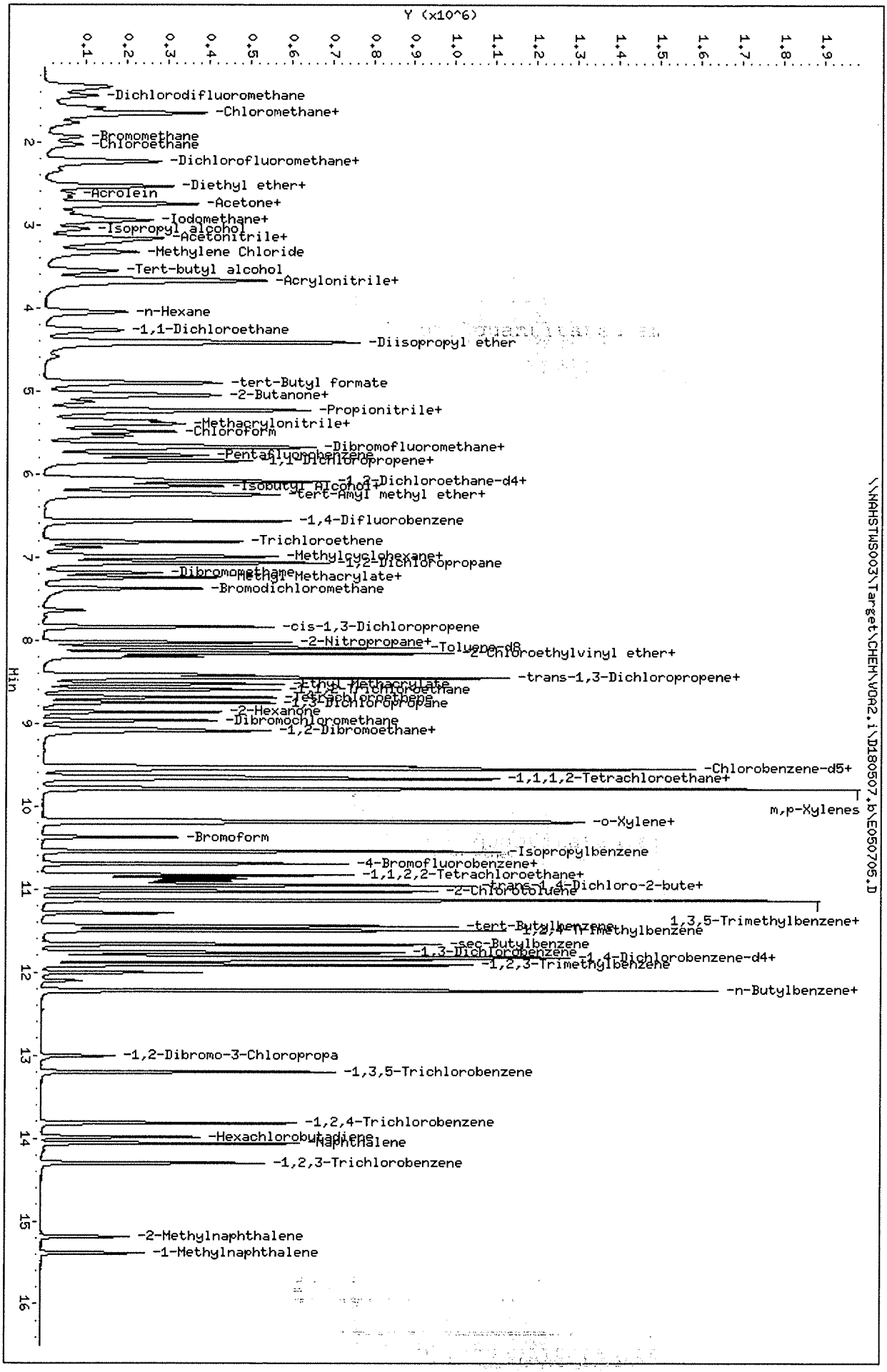
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1	Pentafluorobenzene	168	5.776	5.773	(1.000)	348865	50.0000	
2	Dichlorodifluoromethane	85	1.441	1.438	(0.250)	170396	52.7639	52.76
186	Isobutylene	56	1.646	1.643	(0.285)	191712	56.7877	56.78(AM)
3	Chloromethane	50	1.588	1.588	(0.275)	301340	53.6946	53.69
4	Propionitrile	54	5.227	5.227	(0.905)	592741	490.236	490.23
5	Vinyl Chloride	62	1.675	1.675	(0.290)	220565	50.6931	50.69
6	Bromomethane	94	1.932	1.932	(0.334)	105649	41.0020	41.00
7	Chloroethane	64	2.028	2.028	(0.351)	129895	55.7129	55.71
159	Dichlorofluoromethane	67	2.224	2.221	(0.385)	316000	49.2629	49.26
8	Trichlorofluoromethane	101	2.243	2.243	(0.388)	217308	52.7722	52.77
9	Acrolein	56	2.676	2.670	(0.463)	77444	89.7135	89.71
10	Acetone	43	2.843	2.840	(0.492)	119989	104.502	104.50
11	1,1-Dichloroethene	96	2.740	2.740	(0.474)	137348	52.1438	52.14
12	Isobutyl Alcohol	74	6.158	6.155	(1.066)	15257	866.689	866.68(A)
13	Acetonitrile	39	3.158	3.161	(0.547)	227345	510.471	510.47
14	Allyl Chloride	41	3.170	3.167	(0.549)	575802	50.7212	50.72
15	Iodomethane	142	2.901	2.904	(0.502)	215318	80.1129	80.11
16	Acrylonitrile	53	3.681	3.681	(0.637)	163985	105.929	105.92
17	Methylene Chloride	84	3.318	3.328	(0.574)	173960	47.1879	47.18
18	Methyl tert-butyl ether	73	3.674	3.674	(0.636)	488555	48.5645	48.56
19	Carbon Disulfide	76	2.943	2.943	(0.509)	593718	98.4297	98.42

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.652	3.649	(0.632)	153949	53.4269	53.42
	21 Vinyl Acetate	43	5.234	5.237	(0.906)	419441	93.3976	93.39
	22 1,1-Dichloroethane	63	4.265	4.265	(0.738)	352621	50.3282	50.32
	24 2-Butanone	43	5.137	5.131	(0.889)	183193	101.004	101.00
	25 Methacrylonitrile	41	5.394	5.401	(0.934)	209467	48.4888	48.48
	26 2,2-Dichloropropane	77	5.035	5.035	(0.872)	224952	47.4821	47.48
	27 cis-1,2-Dichloroethene	96	5.060	5.054	(0.876)	187037	51.8876	51.88
	28 Chloroform	83	5.487	5.484	(0.950)	303180	50.1597	50.15
	29 Bromochloromethane	128	5.359	5.359	(0.928)	94014	54.0431	54.04
$	30 Dibromofluoromethane	113	5.673	5.677	(0.982)	153255	50.8223	50.82
	31 1,1,1-Trichloroethane	97	5.648	5.648	(0.978)	254767	50.2073	50.20
	32 1,1-Dichloropropene	75	5.850	5.847	(0.891)	199436	43.7942	43.79
	33 1,2-Dichloroethane	62	6.135	6.135	(0.934)	259020	51.9750	51.97
	34 Carbon Tetrachloride	117	5.827	5.827	(0.887)	212402	45.8655	45.86
$	35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	198093	52.2017	52.20
*	36 1,4-Difluorobenzene	114	6.569	6.565	(1.000)	528359	50.0000	
	37 Benzene	78	6.090	6.087	(0.927)	658008	48.9932	48.99
	38 Trichloroethene	130	6.812	6.816	(1.037)	178210	51.2628	51.26
	39 Bromodichloromethane	83	7.374	7.371	(1.123)	252294	51.7206	51.72
	40 Methyl Methacrylate	41	7.239	7.243	(1.253)	208773	50.6467	50.64
	41 2-Chloroethylvinyl ether	63	8.154	8.157	(1.241)	59692	99.0056	99.00
	42 1,2-Dichloropropane	63	7.063	7.063	(1.075)	201918	50.0977	50.09
	43 2-Nitropropane	43	8.022	8.022	(1.389)	413978	47.6653	47.66
	44 Dibromomethane	93	7.188	7.188	(1.094)	110306	54.8160	54.81
	45 4-Methyl-2-Pentanone	43	8.022	8.022	(0.842)	413978	94.7902	94.79
	46 cis-1,3-Dichloropropene	75	7.836	7.836	(1.193)	290330	53.3401	53.34
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	475931	50.0000	
$	48 Toluene-d8	98	8.090	8.090	(0.849)	597585	52.0243	52.02
	49 Ethyl Methacrylate	69	8.526	8.529	(1.298)	246952	55.8316	55.83
	50 Toluene	91	8.154	8.154	(0.856)	670674	46.1344	46.13
	51 trans-1,3-Dichloropropene	75	8.414	8.414	(1.281)	254843	56.4174	56.41
	52 2-Hexanone	43	8.863	8.863	(0.931)	264162	96.5260	96.52
	53 1,1,2-Trichloroethane	83	8.593	8.590	(0.902)	137725	50.4391	50.43
	54 1,3-Dichloropropane	76	8.751	8.751	(0.919)	270233	49.8518	49.85
	55 Dibromochloromethane	129	8.969	8.969	(0.942)	208305	52.0991	52.09
	56 Tetrachloroethene	164	8.686	8.687	(0.912)	132463	45.5917	45.59
	57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	176549	51.7926	51.79
	58 1-Chlorohexane	55	9.550	9.550	(1.454)	165451	50.4373	50.43
	59 Chlorobenzene	112	9.550	9.550	(1.003)	431782	47.4635	47.46
	60 1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.012)	182043	50.4011	50.40
	61 Ethylbenzene	106	9.668	9.668	(1.015)	226849	46.0156	46.01
	62 m,p-Xylenes	106	9.790	9.790	(1.028)	550164	111.527	111.52
	63 o-Xylene	106	10.175	10.175	(1.068)	296314	47.8628	47.86
	64 Styrene	104	10.195	10.198	(1.070)	494958	49.9064	49.90
	66 Bromoform	173	10.374	10.374	(1.089)	149573	52.6582	52.65
	67 Isopropylbenzene	105	10.544	10.545	(1.107)	693109	46.5020	46.50
	68 1,1,2,2-Tetrachloroethane	83	10.869	10.869	(0.918)	219200	45.2533	45.25
$	69 4-Bromofluorobenzene	95	10.695	10.692	(1.123)	227659	57.0194	57.01
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	218607	50.0000	
	71 1,2,3-Trichloropropane	75	10.695	10.692	(0.904)	104722	52.4540	52.45
	72 trans-1,4-Dichloro-2-butene	53	10.926	10.926	(1.147)	58911	49.6288	49.62
	73 n-Propylbenzene	91	10.952	10.952	(0.925)	753297	43.9321	43.93
	74 Bromobenzene	156	10.830	10.830	(0.915)	205733	46.8865	46.88
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	563654	43.4851	43.48

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
76	2-Chlorotoluene	91	11.026	11.026	(0.932)	505424	52.3737	52.37
77	4-Chlorotoluene	91	11.138	11.138	(0.941)	556829	53.1870	53.18
78	tert-Butylbenzene	119	11.449	11.446	(0.967)	471565	44.0243	44.02
79	1,2,4-Trimethylbenzene	105	11.497	11.498	(0.972)	582157	52.4214	52.42
81	sec-Butylbenzene	105	11.664	11.664	(0.986)	628246	43.9840	43.98
82	p-Isopropyltoluene	119	11.815	11.815	(0.998)	538749	44.2177	44.21
83	1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	344041	45.9994	45.99
84	1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	329506	45.5905	45.59
87	n-Butylbenzene	91	12.219	12.223	(1.033)	414440	44.8553	44.85
88	1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	331318	47.2107	47.21
89	1,2-Dibromo-3-Chloropropane	75	13.006	13.006	(1.099)	40050	51.2159	51.21
90	1,2,4-Trichlorobenzene	180	13.818	13.814	(1.168)	190583	46.9828	46.98
91	Hexachlorobutadiene	225	13.984	13.984	(1.182)	77500	43.6778	43.67
92	Naphthalene	128	14.061	14.061	(1.188)	471296	48.2491	48.24
93	1,2,3-Trichlorobenzene	182	14.299	14.299	(1.208)	164950	46.9468	46.94
146	Methyl acetate	43	3.218	3.215	(0.557)	200889	48.0494	48.04
138	Freon TF	101	2.750	2.753	(0.476)	128897	49.4033	49.40
139	Diethyl ether	59	2.532	2.529	(0.438)	310241	50.0778	50.07
147	Methylcyclohexane	83	6.986	6.986	(1.064)	203824	43.9415	43.94
135	1,4-Dioxane	88	7.236	7.233	(1.253)	29628	921.621	921.62
132	n-Butanol	56	6.995	6.986	(1.211)	109315	859.598	859.59
131	Methyl Acrylate	55	5.256	5.256	(0.910)	310500	53.0574	53.05
133	Ethyl Acrylate	55	7.002	7.002	(1.212)	499146	47.2016	47.20
136	n-Hexane	57	4.050	4.050	(0.701)	187043	44.8619	44.86
141	Cyclohexane	56	5.683	5.683	(0.984)	270341	46.6205	46.62
142	Tetrahydrofuran	42	5.407	5.407	(0.936)	133570	95.5333	95.53
148	Tert-butyl alcohol	59	3.549	3.552	(0.614)	397732	953.869	953.86
149	Isopropyl alcohol	45	3.045	3.039	(0.527)	232186	875.600	875.59
151	4-Methyl-2-pentanol	45	8.452	8.449	(0.887)	860713	940.520	940.51
166	1,2,3-Trimethylbenzene	105	11.915	11.912	(1.007)	555065	44.9799	44.97
167	Ethanol	45	2.529	2.529	(0.438)	311034	1017.77	1017.76
170	1,3,5-Trichlorobenzene	180	13.201	13.201	(1.116)	222005	46.6646	46.66
172	tert-Butyl formate	59	4.900	4.900	(0.848)	587315	96.1539	96.15
173	3,3-Dimethyl-1-butanol	57	9.091	9.094	(0.955)	306327	967.215	967.21
174	tert-Amyl methyl ether	73	6.251	6.254	(1.082)	546562	47.4388	47.43
175	tert-Butyl ethyl ether	59	6.228	6.225	(1.078)	265561	46.4749	46.47
176	tert-Amyl alcohol	59	6.228	6.225	(1.078)	265561	929.498	929.49
157	2-Methylnaphthalene	142	15.188	15.188	(1.283)	108331	35.6116	35.61
156	Diisopropyl ether	45	4.415	4.412	(0.764)	743205	50.1170	50.11
171	1-Methylnaphthalene	142	15.387	15.384	(1.300)	121999	38.3006	38.30
130	Ethyl Acetate	43	5.234	5.237	(0.906)	419441	48.7831	48.78
M 94	1,2-Dichloroethylene (total)	96				340986	105.315	105.31
M 95	Xylenes (total)	106				846478	159.390	159.38

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\E050705.D
Date : 07-MAY-2018 22:32
Client ID: VLCSW-180507
Sample Info: VLCSW-180507;VLCSW-180507;3;;LCS
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\E050707.D Page 1
Report Date: 14-May-2018 17:15

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\E050707.D
Lab Smp Id: VBLKW-180507 Client Smp ID: VBLKW-180507
Inj Date : 07-MAY-2018 23:21
Operator : AP Inst ID: VOA2.i
Smp Info : VBLKW-180507;VBLKW-180507;3;;BLANK
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\8260LL.m
Meth Date : 14-May-2018 17:15 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 35 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

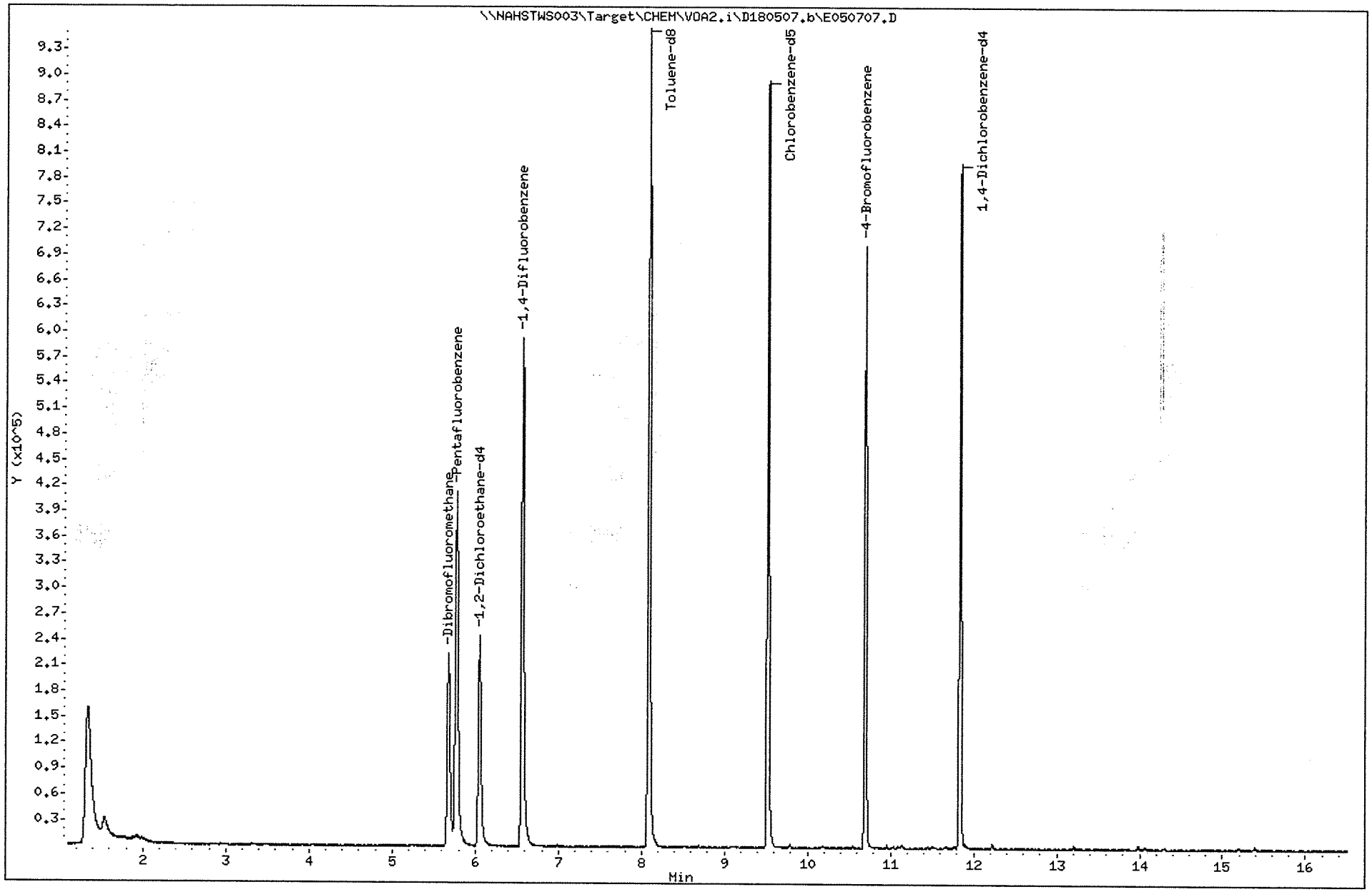
Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
* 1 Pentafluorobenzene	168	5.773	5.773	(1.000)	375356	50.0000	
$ 30 Dibromofluoromethane	113	5.680	5.677	(0.984)	172459	53.3241	53.32
$ 35 1,2-Dichloroethane-d4	65	6.049	6.052	(1.048)	198429	48.4579	48.45
* 36 1,4-Difluorobenzene	114	6.565	6.565	(1.000)	539842	50.0000	
* 47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	491518	50.0000	
$ 48 Toluene-d8	98	8.090	8.090	(0.849)	625620	52.8941	52.89
$ 69 4-Bromofluorobenzene	95	10.692	10.692	(1.123)	225183	54.4686	54.46
* 70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	206278	50.0000	

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\E050707.D
Date : 07-MAY-2018 23:21
Client ID: VBLKW-180507
Sample Info: VBLKW-180507;VBLKW-180507;3;;BLANK
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i

Operator: AP
Column diameter: 0.18



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\E050708.D Page 1
Report Date: 14-May-2018 17:15

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\E050708.D
Lab Smp Id: HS18050286-14 Client Smp ID: HS18050286-14
Inj Date : 07-MAY-2018 23:45
Operator : AP Inst ID: VOA2.i
Smp Info : HS18050286-14;HS18050286-14;;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\8260LL.m
Meth Date : 14-May-2018 17:15 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 36
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

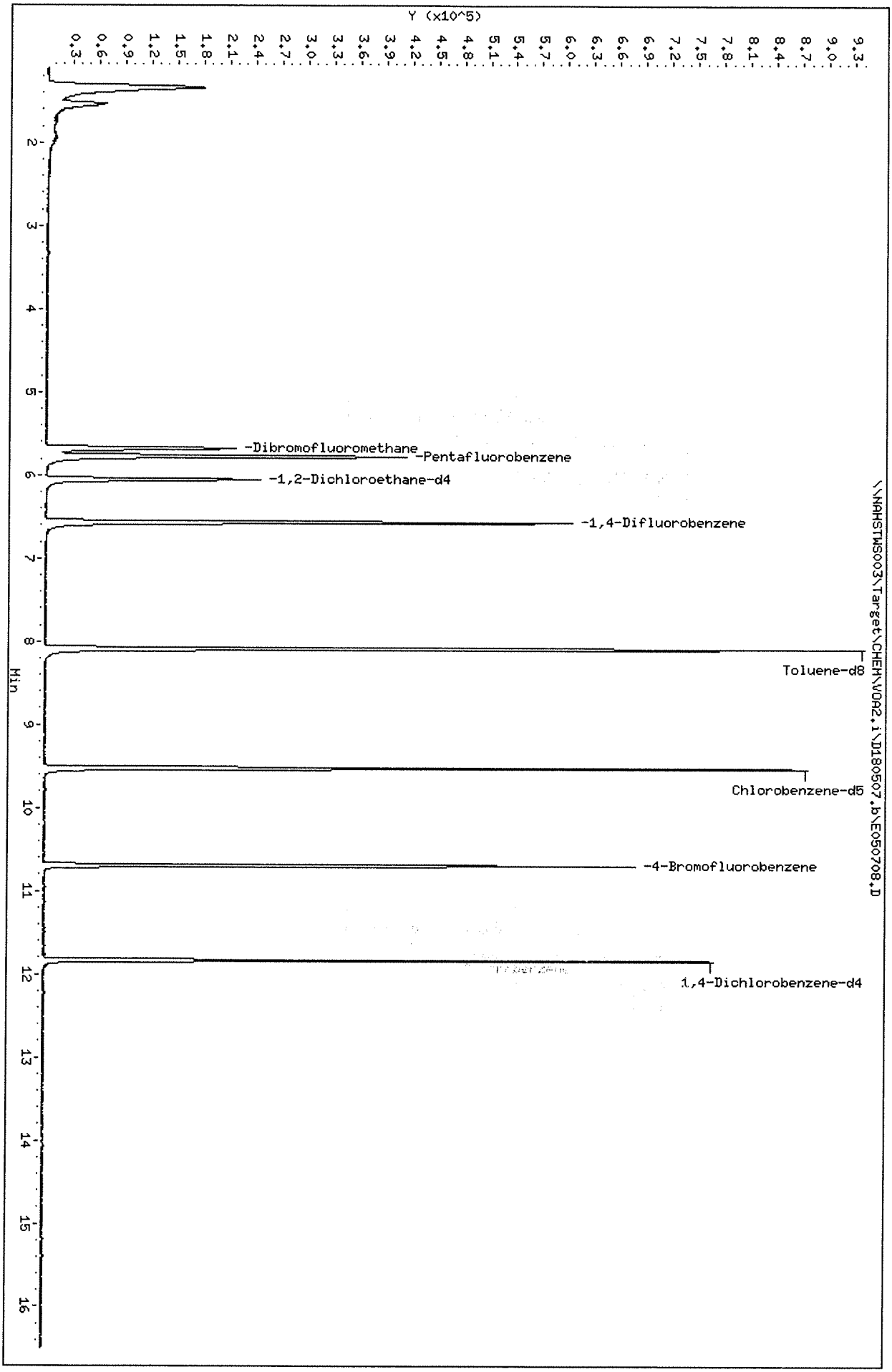
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
*	1 Pentafluorobenzene	168	5.772	5.773	(1.000)	368276	50.0000	
$	30 Dibromofluoromethane	113	5.679	5.677	(0.984)	171503	54.1006	54.10
$	35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	200489	49.9636	49.96
*	36 1,4-Difluorobenzene	114	6.565	6.565	(1.000)	539083	50.0000	
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	484052	50.0000	
$	48 Toluene-d8	98	8.089	8.090	(0.849)	612734	52.5405	52.54
$	69 4-Bromofluorobenzene	95	10.695	10.692	(1.123)	219274	53.8196	53.81
*	70 1,4-Dichlorobenzene-d4	152	11.837	11.834	(1.000)	200849	50.0000	

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\E050708.D
Date : 07-MAY-2018 23:45
Client ID: HS18050286-14
Sample Info: HS18050286-14;HS18050286-14;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18



ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\E050712.D
Lab Smp Id: HS18050286-12 Client Smp ID: HS18050286-12
Inj Date : 08-MAY-2018 01:23
Operator : AP Inst ID: VOA2.i
Smp Info : HS18050286-12;HS18050286-12;;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\8260LL.m
Meth Date : 14-May-2018 17:15 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 40
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	5.773	5.773	(1.000)	377507	50.0000	
$ 30 Dibromofluoromethane	113	5.680	5.677	(0.984)	172933	53.1547	53.15
$ 35 1,2-Dichloroethane-d4	65	6.049	6.052	(1.048)	205718	50.0151	50.01
* 36 1,4-Difluorobenzene	114	6.569	6.565	(1.000)	539706	50.0000	
* 47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	490318	50.0000	
$ 48 Toluene-d8	98	8.087	8.090	(0.849)	625423	53.0316	53.03
$ 69 4-Bromofluorobenzene	95	10.695	10.692	(1.123)	228357	55.4273	55.42
* 70 1,4-Dichlorobenzene-d4	152	11.835	11.834	(1.000)	209365	50.0000	
141 Cyclohexane	56	5.779	5.683	(1.001)	6739	1.07397	1.07(a)

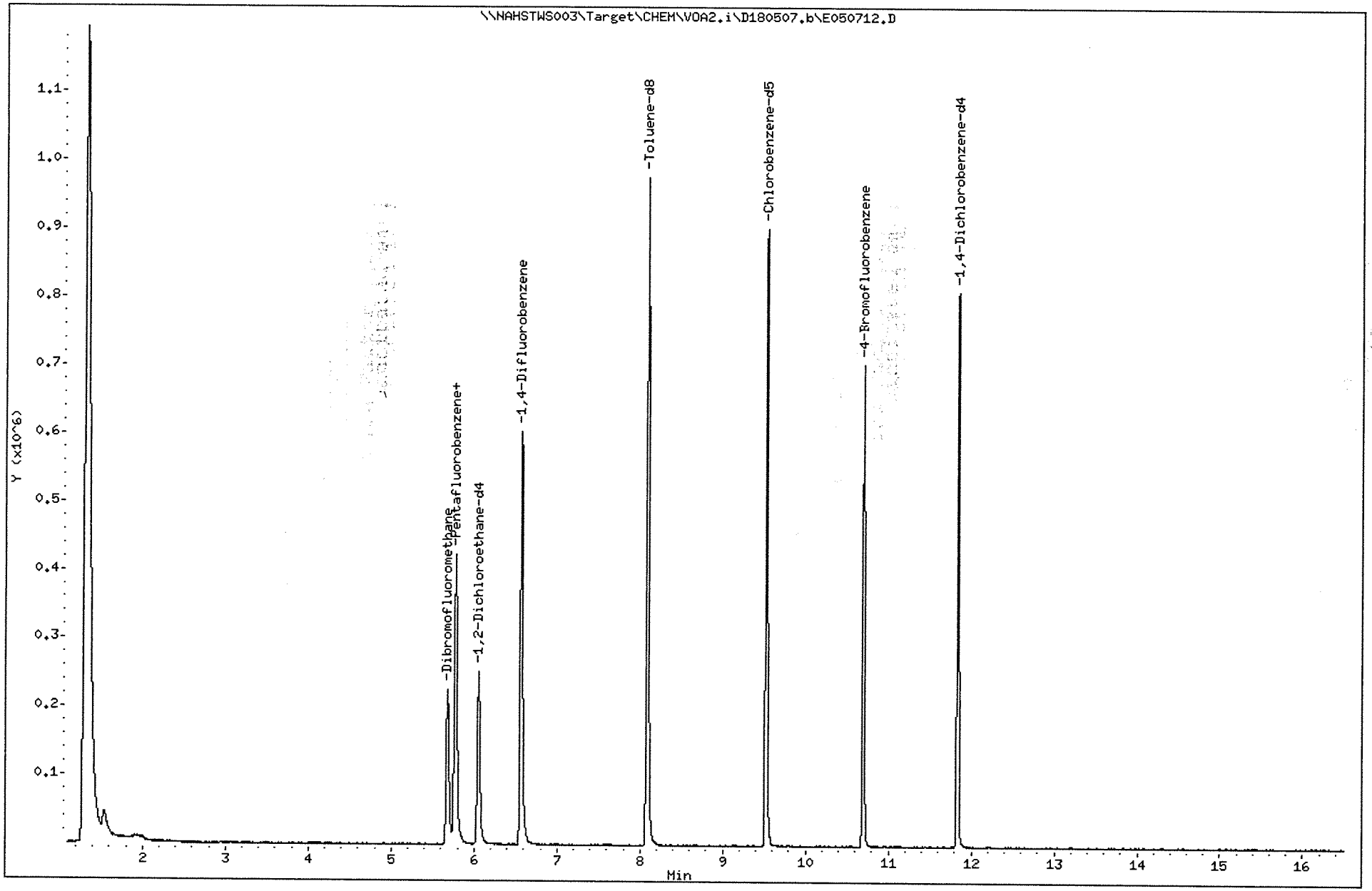
QC Flag Legend

a - Target compound detected but, quantitated amount Below Limit Of Quantitation(BLOQ).

00912629

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\E050712.D
Date : 08-MAY-2018 01:23
Client ID: HS18050286-12
Sample Info: HS18050286-12;HS18050286-12;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18



ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\E050713.D
Lab Smp Id: HS18050286-12MS Client Smp ID: HS18050286-12MS
Inj Date : 08-MAY-2018 01:47
Operator : AP Inst ID: VOA2.i
Smp Info : HS18050286-12MS;HS18050286-12MS;3;;MS
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\8260LL.m
Meth Date : 14-May-2018 17:15 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 41 QC Sample: MS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

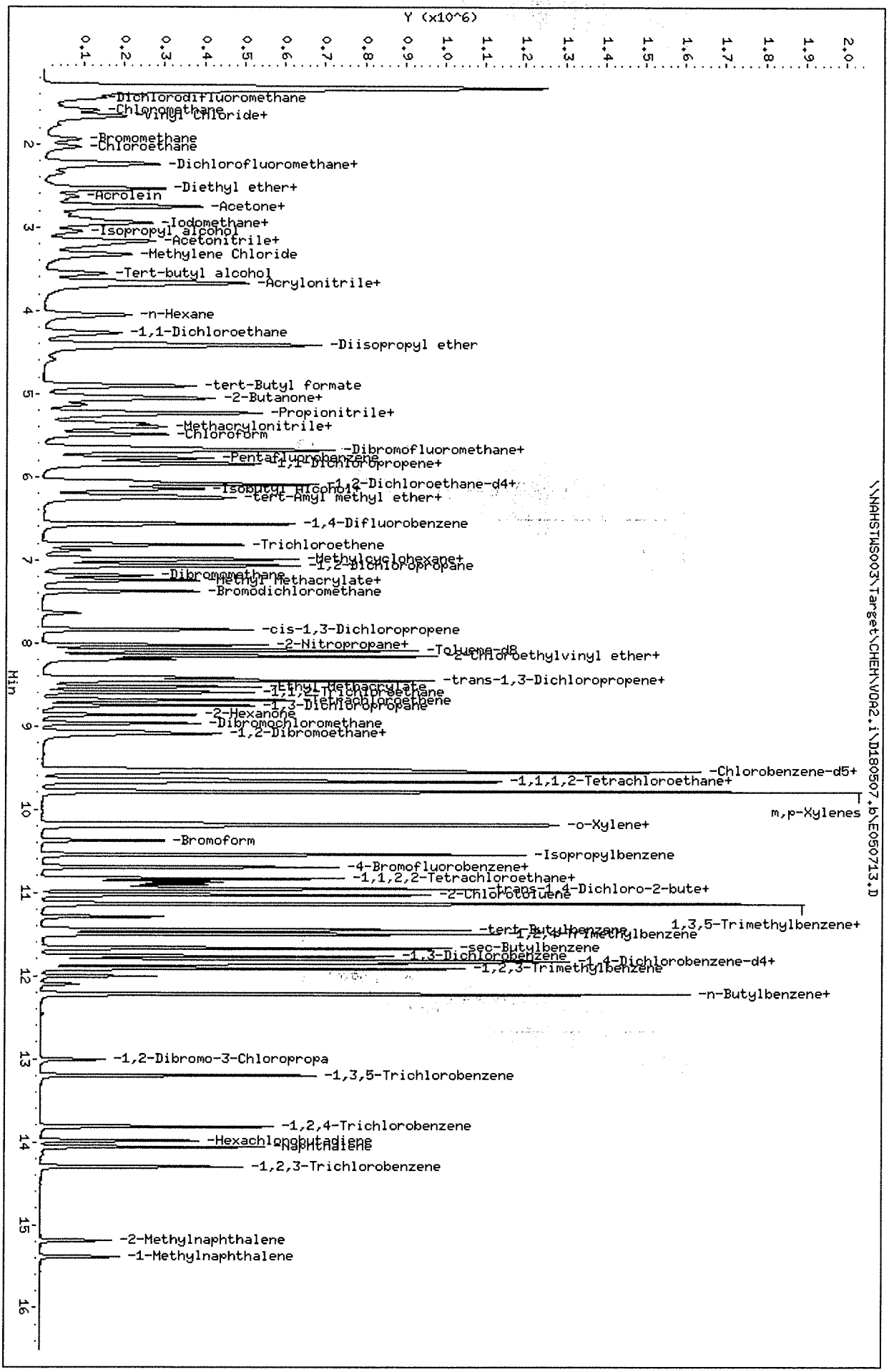
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1	Pentafluorobenzene	168	5.773	5.773	(1.000)	360645	50.0000	
2	Dichlorodifluoromethane	85	1.447	1.438	(0.251)	148279	44.2634	44.26
186	Isobutylene	56	1.649	1.643	(0.286)	75744	21.7036	21.70(AM)
3	Chloromethane	50	1.592	1.588	(0.276)	264970	45.4083	45.40
4	Propionitrile	54	5.230	5.227	(0.906)	547366	437.920	437.92
5	Vinyl Chloride	62	1.672	1.675	(0.290)	222667	49.5046	49.50
6	Bromomethane	94	1.938	1.932	(0.336)	103458	38.8401	38.84
7	Chloroethane	64	2.031	2.028	(0.352)	124115	51.3729	51.37
159	Dichlorofluoromethane	67	2.224	2.221	(0.385)	316502	47.7295	47.72
8	Trichlorofluoromethane	101	2.246	2.243	(0.389)	225507	52.9746	52.97
9	Acrolein	56	2.676	2.670	(0.464)	58121	65.0227	65.02
10	Acetone	43	2.843	2.840	(0.493)	103873	86.9080	86.90
11	1,1-Dichloroethene	96	2.740	2.740	(0.475)	143280	52.6190	52.61
12	Isobutyl Alcohol	74	6.151	6.155	(1.066)	12428	685.302	685.30(A)
13	Acetonitrile	39	3.161	3.161	(0.548)	221010	480.037	480.03
14	Allyl Chloride	41	3.170	3.167	(0.549)	538146	45.8558	45.85
15	Iodomethane	142	2.901	2.904	(0.503)	225163	80.9921	80.99
16	Acrylonitrile	53	3.677	3.681	(0.637)	137620	85.9946	85.99
17	Methylene Chloride	84	3.331	3.328	(0.577)	165872	43.5243	43.52
18	Methyl tert-butyl ether	73	3.681	3.674	(0.638)	443770	42.6718	42.67
19	Carbon Disulfide	76	2.946	2.943	(0.510)	624420	100.138	100.13

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.652	3.649	(0.633)	158627	53.2512	53.25
	21 Vinyl Acetate	43	5.234	5.237	(0.907)	329039	70.8744	70.87
	22 1,1-Dichloroethane	63	4.271	4.265	(0.740)	347997	48.0459	48.04
	24 2-Butanone	43	5.134	5.131	(0.889)	162323	86.5742	86.57
	25 Methacrylonitrile	41	5.397	5.401	(0.935)	189173	42.3607	42.36
	26 2,2-Dichloropropane	77	5.035	5.035	(0.872)	217152	44.3386	44.33
	27 cis-1,2-Dichloroethene	96	5.060	5.054	(0.877)	183294	49.1883	49.18
	28 Chloroform	83	5.487	5.484	(0.951)	292019	46.7350	46.73
	29 Bromochloromethane	128	5.359	5.359	(0.928)	89248	49.6276	49.62
$	30 Dibromofluoromethane	113	5.676	5.677	(0.983)	157168	50.3892	50.38
	31 1,1,1-Trichloroethane	97	5.651	5.648	(0.979)	267415	50.9785	50.97
	32 1,1-Dichloropropene	75	5.847	5.847	(0.890)	209931	44.4934	44.49
	33 1,2-Dichloroethane	62	6.139	6.135	(0.935)	239150	46.3167	46.31
	34 Carbon Tetrachloride	117	5.831	5.827	(0.888)	229488	47.8292	47.82
$	35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	205173	52.3054	52.30
*	36 1,4-Difluorobenzene	114	6.569	6.565	(1.000)	547423	50.0000	
	37 Benzene	78	6.090	6.087	(0.927)	652622	46.8999	46.89
	38 Trichloroethene	130	6.816	6.816	(1.038)	181194	50.3061	50.30
	39 Bromodichloromethane	83	7.374	7.371	(1.123)	242127	47.9078	47.90
	40 Methyl Methacrylate	41	7.242	7.243	(1.255)	186352	43.7309	43.73
	41 2-Chloroethylvinyl ether	63	8.157	8.157	(1.242)	59621	95.4441	95.44
	42 1,2-Dichloropropane	63	7.063	7.063	(1.075)	193069	46.2340	46.23
	43 2-Nitropropane	43	8.022	8.022	(1.390)	375369	41.8081	41.80
	44 Dibromomethane	93	7.188	7.188	(1.094)	102173	49.0062	49.00
	45 4-Methyl-2-Pentanone	43	8.022	8.022	(0.842)	375369	82.8162	82.81
	46 cis-1,3-Dichloropropene	75	7.836	7.836	(1.193)	277684	49.2401	49.24
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	493939	50.0000	
$	48 Toluene-d8	98	8.090	8.090	(0.849)	611845	51.1744	51.17
	49 Ethyl Methacrylate	69	8.526	8.529	(1.298)	225535	48.9448	48.94
	50 Toluene	91	8.157	8.154	(0.856)	681483	45.1689	45.16
	51 trans-1,3-Dichloropropene	75	8.414	8.414	(1.281)	230583	49.2690	49.26
	52 2-Hexanone	43	8.863	8.863	(0.931)	238963	84.1347	84.13
	53 1,1,2-Trichloroethane	83	8.593	8.590	(0.902)	130381	46.0087	46.00
	54 1,3-Dichloropropane	76	8.751	8.751	(0.919)	256530	45.5986	45.59
	55 Dibromochloromethane	129	8.969	8.969	(0.942)	196963	47.4664	47.46
	56 Tetrachloroethene	164	8.686	8.687	(0.912)	143929	47.7321	47.73
	57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	164703	46.5559	46.55
	58 1-Chlorohexane	55	9.553	9.550	(1.454)	180847	53.3726	53.37
	59 Chlorobenzene	112	9.550	9.550	(1.003)	425893	45.1094	45.10
	60 1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.012)	176899	47.1913	47.19
	61 Ethylbenzene	106	9.668	9.668	(1.015)	233312	45.6012	45.60
	62 m,p-Xylenes	106	9.790	9.790	(1.028)	571767	111.690	111.68
	63 o-Xylene	106	10.175	10.175	(1.068)	297844	46.3559	46.35
	64 Styrene	104	10.198	10.198	(1.071)	481835	46.8120	46.81
	66 Bromoform	173	10.374	10.374	(1.089)	137160	46.5277	46.52
	67 Isopropylbenzene	105	10.544	10.545	(1.107)	735536	47.5494	47.54
	68 1,1,2,2-Tetrachloroethane	83	10.872	10.869	(0.919)	199898	40.2820	40.28
$	69 4-Bromofluorobenzene	95	10.695	10.692	(1.123)	233632	56.3444	56.34
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	223960	50.0000	
	71 1,2,3-Trichloropropane	75	10.695	10.692	(0.904)	107599	52.6145	52.61
	72 trans-1,4-Dichloro-2-butene	53	10.926	10.926	(1.147)	48379	39.4314	39.43
	73 n-Propylbenzene	91	10.952	10.952	(0.925)	781506	44.4879	44.48
	74 Bromobenzene	156	10.830	10.830	(0.915)	198577	44.1740	44.17
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	578234	43.5437	43.54

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
76	2-Chlorotoluene	91	11.026	11.026	(0.932)	510570	51.6094	51.60
77	4-Chlorotoluene	91	11.138	11.138	(0.941)	548083	50.9958	50.99
78	tert-Butylbenzene	119	11.449	11.446	(0.967)	496042	45.2026	45.20
79	1,2,4-Trimethylbenzene	105	11.497	11.498	(0.972)	588095	51.6514	51.65
81	sec-Butylbenzene	105	11.668	11.664	(0.986)	667111	45.5886	45.58
82	p-Isopropyltoluene	119	11.815	11.815	(0.998)	560140	44.8745	44.87
83	1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	336290	43.8884	43.88
84	1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	319286	43.1206	43.12
87	n-Butylbenzene	91	12.219	12.223	(1.033)	433153	45.7601	45.76
88	1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	317095	44.1040	44.10
89	1,2-Dibromo-3-Chloropropane	75	13.009	13.006	(1.099)	34349	42.8756	42.87
90	1,2,4-Trichlorobenzene	180	13.818	13.814	(1.168)	180462	43.4574	43.45
91	Hexachlorobutadiene	225	13.984	13.984	(1.182)	79042	43.4820	43.48
92	Naphthalene	128	14.061	14.061	(1.188)	422436	42.2775	42.27
93	1,2,3-Trichlorobenzene	182	14.299	14.299	(1.208)	151380	42.1615	42.16
146	Methyl acetate	43	3.218	3.215	(0.558)	155879	36.0659	36.06
138	Freon TF	101	2.760	2.753	(0.478)	137459	51.0099	51.00
139	Diethyl ether	59	2.535	2.529	(0.439)	297429	46.4416	46.44
147	Methylcyclohexane	83	6.989	6.986	(1.064)	229475	47.7487	47.74
135	1,4-Dioxane	88	7.236	7.233	(1.253)	26372	790.741	790.74
132	n-Butanol	56	6.989	6.986	(1.211)	112842	858.349	858.34
131	Methyl Acrylate	55	5.259	5.256	(0.911)	278106	45.9698	45.96
133	Ethyl Acrylate	55	7.002	7.002	(1.213)	497730	45.5303	45.53
136	n-Hexane	57	4.056	4.050	(0.703)	204600	47.4701	47.47
141	Cyclohexane	56	5.683	5.683	(0.984)	307160	51.2397	51.23
142	Tetrahydrofuran	42	5.407	5.407	(0.937)	122218	84.5587	84.55
148	Tert-butyl alcohol	59	3.555	3.552	(0.616)	342458	794.480	794.47
149	Isopropyl alcohol	45	3.052	3.039	(0.529)	203520	742.428	742.42
151	4-Methyl-2-pentanol	45	8.452	8.449	(0.887)	738537	777.593	777.59
166	1,2,3-Trimethylbenzene	105	11.915	11.912	(1.007)	547711	43.3231	43.32
167	Ethanol	45	2.538	2.529	(0.440)	296099	937.250	937.25
170	1,3,5-Trichlorobenzene	180	13.201	13.201	(1.116)	219173	44.9682	44.96
172	tert-Butyl formate	59	4.906	4.900	(0.850)	506508	80.2158	80.21
173	3,3-Dimethyl-1-butanol	57	9.091	9.094	(0.955)	259938	790.821	790.82
174	tert-Amyl methyl ether	73	6.254	6.254	(1.083)	461620	38.7576	38.75
175	tert-Butyl ethyl ether	59	6.228	6.225	(1.079)	223858	37.8970	37.89
176	tert-Amyl alcohol	59	6.228	6.225	(1.079)	223858	757.939	757.93
157	2-Methylnaphthalene	142	15.191	15.188	(1.284)	81970	27.8469	27.84
156	Diisopropyl ether	45	4.415	4.412	(0.765)	716308	46.7255	46.72
171	1-Methylnaphthalene	142	15.387	15.384	(1.300)	100392	31.8182	31.81
130	Ethyl Acetate	43	5.234	5.237	(0.907)	329039	37.0189	37.01
M 94	1,2-Dichloroethylene (total)	96				341921	102.439	102.43
M 95	Xylenes (total)	106				869611	158.046	158.04

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.


Y (x10^6)
0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0
Min
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
-Dichlorodifluoromethane
-Chloromethane
-Vinyl Chloride+
-Bromomethane
-Chloroethane
-Dichlorofluoromethane+
-Diethyl ether+
-Acrolein
-Acetone+
-Iodomethane+
-Isopropyl alcohol
-Acetonitrile+
-Methylene Chloride
-Tert-butyl alcohol
-Acrylonitrile+
-n-Hexane
-1,1-Dichloroethane
-Diisopropyl ether
-tert-Butyl formate
-2-Butanone+
-Propionitrile+
-Methacrylonitrile+
-Chloroform
-Dibromofluoromethane+
-Pentafluorobenzene
-1,1-Dichloropropene+
-Isobutyl Alcohol
-1,2-Dichloroethane-d4+
-tert-Amyl methyl ether+
-1,4-Difluorobenzene
-Trichloroethene
-Methylcyclohexane+
-1,2-Dichloropropane
-Dibromomethane
-Methyl Methacrylate+
-Bromodichloromethane
-cis-1,3-Dichloropropene
-2-Nitropropane+
-Toluene-d8
-2-Chloroethylvinyl ether+
-trans-1,3-Dichloropropene+
-Ethyl Methacrylate
-1,1,2-Trichloroethane
-Tetrachloroethene
-1,3-Dichloropropane
-2-Hexanone
-Dibromochloromethane
-1,2-Dibromoethane+
-Chlorobenzene-d5+
-1,1,1,2-Tetrachloroethane+
m,p-Xylenes
-o-Xylene+
-Bromoform
-Isopropylbenzene
-4-Bromofluorobenzene+
-1,1,2,2-Tetrachloroethane+
-trans-1,4-Dichloro-2-bute+
-2-Chlorotoluene
-tert-Butylbenzene
1,3,5-Trimethylbenzene+
1,2,4-Trimethylbenzene
-sec-Butylbenzene
-1,3-Dichlorobenzene
-1,4-Dichlorobenzene-d4+
-1,2,3-Trimethylbenzene
-n-Butylbenzene+
-1,2-Dibromo-3-Chloropropa
-1,3,5-Trichlorobenzene
-1,2,4-Trichlorobenzene
-Hexachlorobutadiene
-Naphthalene
-1,2,3-Trichlorobenzene
-2-Methylnaphthalene
-1-Methylnaphthalene
\\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\E050713.D
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\E050713.D
Date : 08-MAY-2018 01:47
Client ID: HS18050286-12MS
Sample Info: HS18050286-12MS;HS18050286-12MS;3;;MS
Purge Volume: 5.0
Column phase: DB624
Instrument: VOA2.i
Operator: AP
Column diameter: 0.18
Page 4

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\E050714.D Page 1
Report Date: 14-May-2018 17:15

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\E050714.D
Lab Smp Id: HS18050286-12MSD Client Smp ID: HS18050286-12MSD
Inj Date : 08-MAY-2018 02:11
Operator : AP Inst ID: VOA2.i
Smp Info : HS18050286-12MSD;HS18050286-12MSD;3;;MSD
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\8260LL.m
Meth Date : 14-May-2018 17:15 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 41 QC Sample: MSD
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
* 1	Pentafluorobenzene	168	5.773	5.773	(1.000)	357859	50.0000	
2	Dichlorodifluoromethane	85	1.441	1.438	(0.250)	142967	42.9827	42.98
186	Isobutylene	56	1.646	1.643	(0.285)	81135	23.4293	23.42(AM)
3	Chloromethane	50	1.589	1.588	(0.275)	270354	46.7415	46.74
4	Propionitrile	54	5.227	5.227	(0.906)	535265	431.573	431.57
5	Vinyl Chloride	62	1.675	1.675	(0.290)	216127	48.4247	48.42
6	Bromomethane	94	1.935	1.932	(0.335)	102652	38.8376	38.83
7	Chloroethane	64	2.035	2.028	(0.352)	127105	53.0718	53.07
159	Dichlorofluoromethane	67	2.217	2.221	(0.384)	307771	46.7741	46.77
8	Trichlorofluoromethane	101	2.243	2.243	(0.389)	219779	52.0309	52.03
9	Acrolein	56	2.670	2.670	(0.463)	54122	60.9961	60.99
10	Acetone	43	2.840	2.840	(0.492)	104888	88.5059	88.50
11	1,1-Dichloroethene	96	2.737	2.740	(0.474)	142270	52.6549	52.65
12	Isobutyl Alcohol	74	6.148	6.155	(1.065)	13281	737.177	737.17(A)
13	Acetonitrile	39	3.161	3.161	(0.548)	214679	469.916	469.91
14	Allyl Chloride	41	3.167	3.167	(0.549)	540456	46.4111	46.41
15	Iodomethane	142	2.901	2.904	(0.503)	232408	84.0843	84.08
16	Acrylonitrile	53	3.684	3.681	(0.638)	142063	89.4620	89.46
17	Methylene Chloride	84	3.325	3.328	(0.576)	164433	43.4826	43.48
18	Methyl tert-butyl ether	73	3.678	3.674	(0.637)	443757	43.0028	43.00
19	Carbon Disulfide	76	2.943	2.943	(0.510)	613399	99.1367	99.13

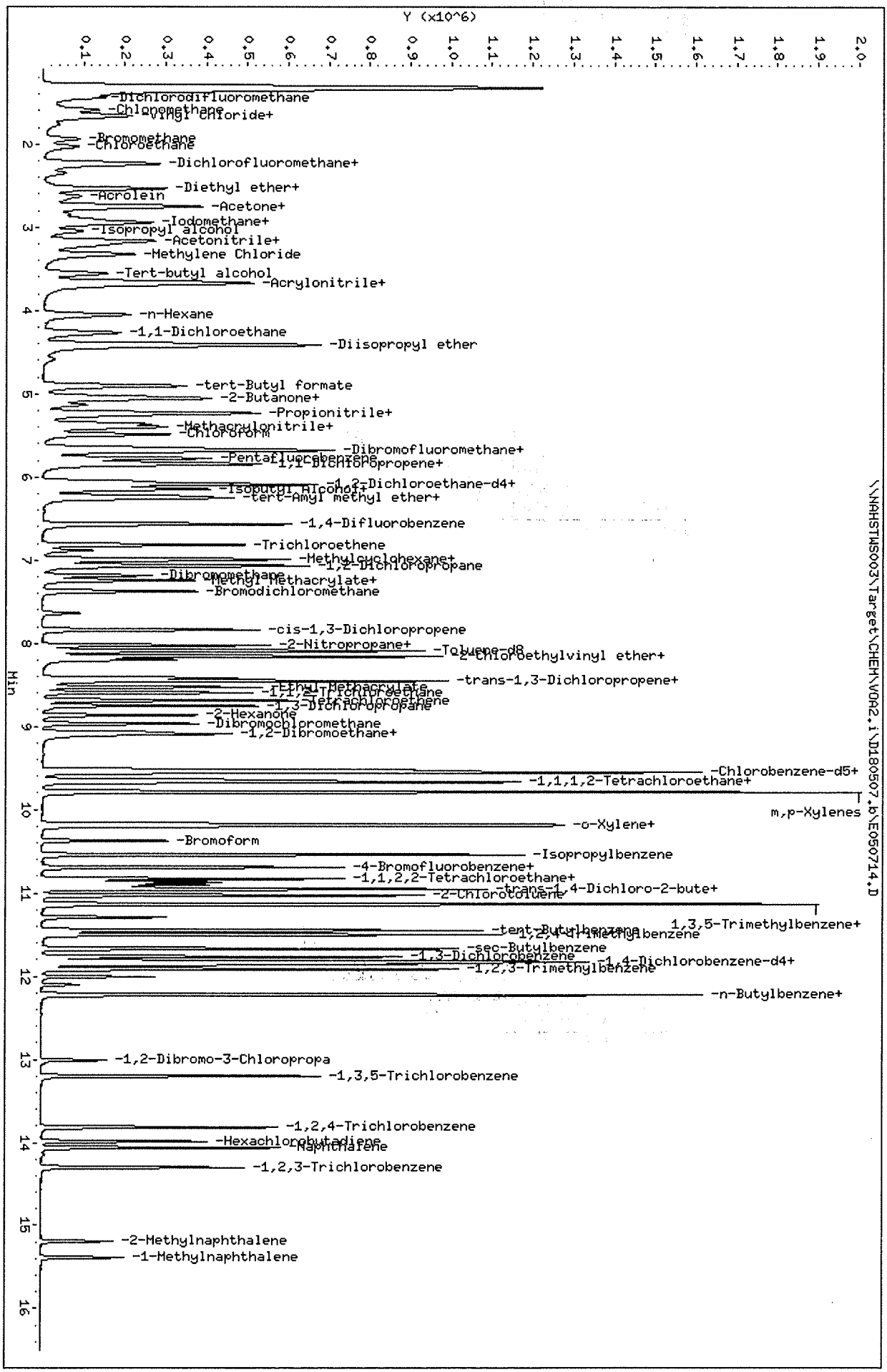
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\E050714.D Page 2
Report Date: 14-May-2018 17:15

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.652	3.649	(0.633)	158345	53.5723	53.57
	21 Vinyl Acetate	43	5.234	5.237	(0.907)	318927	69.2312	69.23(M)
	22 1,1-Dichloroethane	63	4.265	4.265	(0.739)	345353	48.0521	48.05
	24 2-Butanone	43	5.131	5.131	(0.889)	158716	85.3094	85.30
	25 Methacrylonitrile	41	5.401	5.401	(0.936)	184923	41.7313	41.73
	26 2,2-Dichloropropane	77	5.035	5.035	(0.872)	214470	44.1319	44.13
	27 cis-1,2-Dichloroethene	96	5.061	5.054	(0.877)	177526	48.0113	48.01
	28 Chloroform	83	5.484	5.484	(0.950)	293047	47.2647	47.26
	29 Bromochloromethane	128	5.356	5.359	(0.928)	88817	49.7725	49.77
$	30 Dibromofluoromethane	113	5.677	5.677	(0.983)	155911	50.3744	50.37
	31 1,1,1-Trichloroethane	97	5.645	5.648	(0.978)	264374	50.7911	50.79
	32 1,1-Dichloropropene	75	5.853	5.847	(0.892)	210899	45.1212	45.12
	33 1,2-Dichloroethane	62	6.139	6.135	(0.935)	244495	47.7996	47.79
	34 Carbon Tetrachloride	117	5.834	5.827	(0.889)	227917	47.9509	47.95
$	35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	201143	51.6525	51.65
*	36 1,4-Difluorobenzene	114	6.566	6.565	(1.000)	542296	50.0000	
	37 Benzene	78	6.087	6.087	(0.927)	644572	46.7594	46.75
	38 Trichloroethene	130	6.816	6.816	(1.038)	179169	50.2141	50.21
	39 Bromodichloromethane	83	7.374	7.371	(1.123)	241021	48.1398	48.13
	40 Methyl Methacrylate	41	7.239	7.243	(1.254)	184871	43.7211	43.72
	41 2-Chloroethylvinyl ether	63	8.151	8.157	(1.241)	58507	94.5463	94.54
	42 1,2-Dichloropropane	63	7.066	7.063	(1.076)	194088	46.9174	46.91
	43 2-Nitropropane	43	8.022	8.022	(1.390)	368340	41.3446	41.34
	44 Dibromomethane	93	7.185	7.188	(1.094)	99691	48.2678	48.26
	45 4-Methyl-2-Pentanone	43	8.022	8.022	(0.842)	368340	83.9812	83.98
	46 cis-1,3-Dichloropropene	75	7.836	7.836	(1.194)	271984	48.6853	48.68
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	477966	50.0000	
$	48 Toluene-d8	98	8.090	8.090	(0.849)	599342	51.9401	51.94
	49 Ethyl Methacrylate	69	8.526	8.529	(1.299)	221428	48.4876	48.48
	50 Toluene	91	8.154	8.154	(0.856)	676801	46.3577	46.35
	51 trans-1,3-Dichloropropene	75	8.414	8.414	(1.281)	226016	48.7497	48.74
	52 2-Hexanone	43	8.863	8.863	(0.931)	239208	87.0355	87.03
	53 1,1,2-Trichloroethane	83	8.594	8.590	(0.902)	125816	45.8815	45.88
	54 1,3-Dichloropropane	76	8.751	8.751	(0.919)	252076	46.3042	46.30
	55 Dibromochloromethane	129	8.966	8.969	(0.941)	194557	48.4534	48.45
	56 Tetrachloroethene	164	8.687	8.687	(0.912)	144600	49.5572	49.55
	57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	159346	46.5469	46.54
	58 1-Chlorohexane	55	9.550	9.550	(1.455)	178626	53.2069	53.20
	59 Chlorobenzene	112	9.550	9.550	(1.003)	428637	46.9172	46.91
	60 1,1,1,2-Tetrachloroethane	131	9.646	9.643	(1.013)	178004	49.0731	49.07
	61 Ethylbenzene	106	9.669	9.668	(1.015)	233110	47.0843	47.08
	62 m,p-Xylenes	106	9.787	9.790	(1.028)	562966	113.763	113.76
	63 o-Xylene	106	10.176	10.175	(1.068)	297198	47.8012	47.80
	64 Styrene	104	10.198	10.198	(1.071)	479410	48.1329	48.13
	66 Bromoform	173	10.375	10.374	(1.089)	137003	48.0275	48.02
	67 Isopropylbenzene	105	10.545	10.545	(1.107)	727262	48.5857	48.58
	68 1,1,2,2-Tetrachloroethane	83	10.869	10.869	(0.918)	196730	40.4241	40.42
$	69 4-Bromofluorobenzene	95	10.695	10.692	(1.123)	230390	57.4835	57.48
*	70 1,4-Dichlorobenzene-d4	152	11.835	11.834	(1.000)	219636	50.0000	
	71 1,2,3-Trichloropropane	75	10.692	10.692	(0.903)	108524	54.1856	54.18
	72 trans-1,4-Dichloro-2-butene	53	10.926	10.926	(1.147)	46457	39.1362	39.13
	73 n-Propylbenzene	91	10.952	10.952	(0.925)	776035	45.0462	45.04
	74 Bromobenzene	156	10.830	10.830	(0.915)	193892	43.9809	43.98
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	574673	44.1275	44.12

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
76	2-Chlorotoluene	91	11.026	11.026	(0.932)	501553	51.7000	51.69
77	4-Chlorotoluene	91	11.138	11.138	(0.941)	549330	52.1767	52.17
78	tert-Butylbenzene	119	11.450	11.446	(0.967)	485452	45.1084	45.10
79	1,2,4-Trimethylbenzene	105	11.498	11.498	(0.972)	580486	52.0050	52.00
81	sec-Butylbenzene	105	11.668	11.664	(0.986)	664582	46.3099	46.30
82	p-Isopropyltoluene	119	11.819	11.815	(0.999)	555689	45.3944	45.39
83	1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	333346	44.3606	44.36
84	1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	318105	43.8069	43.80
87	n-Butylbenzene	91	12.220	12.223	(1.033)	428706	46.1819	46.18
88	1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	315731	44.7789	44.77
89	1,2-Dibromo-3-Chloropropane	75	13.009	13.006	(1.099)	34816	44.3141	44.31
90	1,2,4-Trichlorobenzene	180	13.818	13.814	(1.168)	182532	44.8076	44.80
91	Hexachlorobutadiene	225	13.988	13.984	(1.182)	78157	43.8419	43.84
92	Naphthalene	128	14.062	14.061	(1.188)	432697	44.1342	44.13
93	1,2,3-Trichlorobenzene	182	14.302	14.299	(1.209)	148206	42.0918	42.09
146	Methyl acetate	43	3.222	3.215	(0.558)	151924	35.4245	35.42
138	Freon TF	101	2.757	2.753	(0.478)	135102	50.5118	50.51
139	Diethyl ether	59	2.532	2.529	(0.439)	296434	46.6465	46.64
147	Methylcyclohexane	83	6.986	6.986	(1.064)	221732	46.5737	46.57
135	1,4-Dioxane	88	7.233	7.233	(1.253)	27199	822.681	822.68
132	n-Butanol	56	6.986	6.986	(1.210)	109596	840.148	840.14
131	Methyl Acrylate	55	5.253	5.256	(0.910)	277569	46.2382	46.23
133	Ethyl Acrylate	55	7.005	7.002	(1.213)	483799	44.6005	44.60
136	n-Hexane	57	4.053	4.050	(0.702)	196721	45.9974	45.99
141	Cyclohexane	56	5.680	5.683	(0.984)	306917	51.5978	51.59
142	Tetrahydrofuran	42	5.410	5.407	(0.937)	121709	84.8621	84.86
148	Tert-butyl alcohol	59	3.552	3.552	(0.615)	346298	809.643	809.64
149	Isopropyl alcohol	45	3.052	3.039	(0.529)	208927	768.086	768.08
151	4-Methyl-2-pentanol	45	8.449	8.449	(0.887)	747883	813.748	813.74
166	1,2,3-Trimethylbenzene	105	11.915	11.912	(1.007)	535322	43.1768	43.17
167	Ethanol	45	2.529	2.529	(0.438)	295809	943.622	943.62
170	1,3,5-Trichlorobenzene	180	13.198	13.201	(1.115)	217891	45.5853	45.58
172	tert-Butyl formate	59	4.900	4.900	(0.849)	478183	76.3195	76.31
173	3,3-Dimethyl-1-butanol	57	9.091	9.094	(0.955)	265792	835.654	835.65
174	tert-Amyl methyl ether	73	6.251	6.254	(1.083)	432142	36.5651	36.56
175	tert-Butyl ethyl ether	59	6.225	6.225	(1.078)	221846	37.8487	37.84
176	tert-Amyl alcohol	59	6.225	6.225	(1.078)	221846	756.974	756.97
157	2-Methylnaphthalene	142	15.188	15.188	(1.283)	86967	29.6522	29.65
156	Diisopropyl ether	45	4.416	4.412	(0.765)	709638	46.6507	46.65
171	1-Methylnaphthalene	142	15.387	15.384	(1.300)	100795	32.4497	32.44
130	Ethyl Acetate	43	5.234	5.237	(0.907)	318524	36.1149	36.11
M 94	1,2-Dichloroethylene (total)	96				335871	101.584	101.58
M 95	Xylenes (total)	106				860164	161.564	161.56

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\E050714.D
Date : 08-MAY-2018 02:11
Client ID: HS18050286-12HSD
Sample Info: HS18050286-12HSD;HS18050286-12HSD;3;;HSD
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\E050716.D Page 1
Report Date: 14-May-2018 17:15

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\E050716.D
Lab Smp Id: HS18050286-13 Client Smp ID: HS18050286-13
Inj Date : 08-MAY-2018 03:00
Operator : AP Inst ID: VOA2.i
Smp Info : HS18050286-13;HS18050286-13;;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\8260LL.m
Meth Date : 14-May-2018 17:15 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 43
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

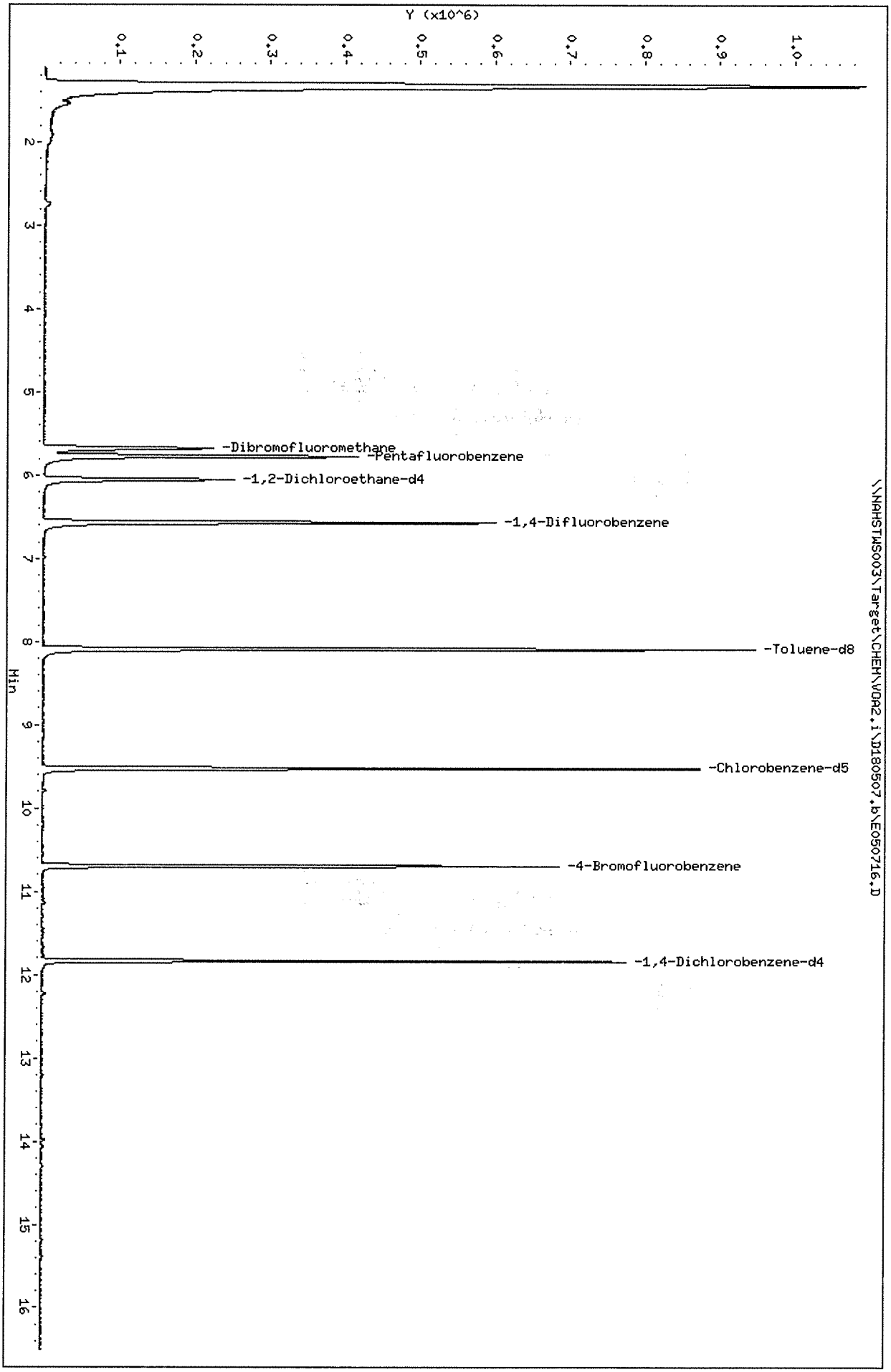
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
* 1 Pentafluorobenzene	168	5.776	5.773	(1.000)	375329	50.0000	
$ 30 Dibromofluoromethane	113	5.676	5.677	(0.983)	174036	53.8512	53.85
$ 35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	204250	49.9435	49.94
* 36 1,4-Difluorobenzene	114	6.569	6.565	(1.000)	538999	50.0000	
* 47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	477196	50.0000	
$ 48 Toluene-d8	98	8.086	8.090	(0.849)	617939	54.0170	54.01
$ 69 4-Bromofluorobenzene	95	10.692	10.692	(1.123)	219083	54.5907	54.59
* 70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	204917	50.0000	

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\E050716.D
Date : 08-MAY-2018 03:00
Client ID: HS18050286-13
Sample Info: HS18050286-13;HS18050286-13;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18



ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\E050730.D
Lab Smp Id: CCV_END Client Smp ID: CCV_END
Inj Date : 08-MAY-2018 08:49
Operator : AP Inst ID: VOA2.i
Smp Info : CCV_END;CCV_END;2;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\8260LL.m
Meth Date : 14-May-2018 17:15 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 55 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1	Pentafluorobenzene	168	5.776	5.776	(1.000)	355063	50.0000	
2	Dichlorodifluoromethane	85	1.441	1.441	(0.249)	186963	50.0000	56.95
186	Isobutylene	56	1.646	1.646	(0.285)	203503	50.0000	59.22(AM)
3	Chloromethane	50	1.585	1.585	(0.274)	312939	50.0000	54.82
4	Propionitrile	54	5.230	5.230	(0.906)	565169	500.000	459.27
5	Vinyl Chloride	62	1.672	1.672	(0.289)	239063	50.0000	53.98
6	Bromomethane	94	1.935	1.935	(0.335)	112319	50.0000	42.82
7	Chloroethane	64	2.031	2.031	(0.352)	143423	50.0000	60.57
159	Dichlorofluoromethane	67	2.220	2.220	(0.384)	334024	50.0000	51.16
8	Trichlorofluoromethane	101	2.240	2.240	(0.388)	244992	50.0000	58.45
9	Acrolein	56	2.679	2.679	(0.464)	78042	100.000	88.82
10	Acetone	43	2.840	2.840	(0.492)	113101	100.000	96.50
11	1,1-Dichloroethene	96	2.737	2.737	(0.474)	152753	50.0000	56.97
12	Isobutyl Alcohol	74	6.155	6.155	(1.066)	13733	1000.00	767.79(A)
13	Acetonitrile	39	3.161	3.161	(0.547)	223698	500.000	493.51
14	Allyl Chloride	41	3.167	3.167	(0.548)	561823	50.0000	48.62
15	Iodomethane	142	2.901	2.901	(0.502)	238491	100.000	86.82
16	Acrylonitrile	53	3.684	3.684	(0.638)	149631	100.000	94.96
17	Methylene Chloride	84	3.328	3.328	(0.576)	176083	50.0000	46.92
18	Methyl tert-butyl ether	73	3.674	3.674	(0.636)	461016	50.0000	45.02
19	Carbon Disulfide	76	2.946	2.946	(0.510)	640708	100.000	104.36

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\E050730.D Page 2
Report Date: 14-May-2018 17:15

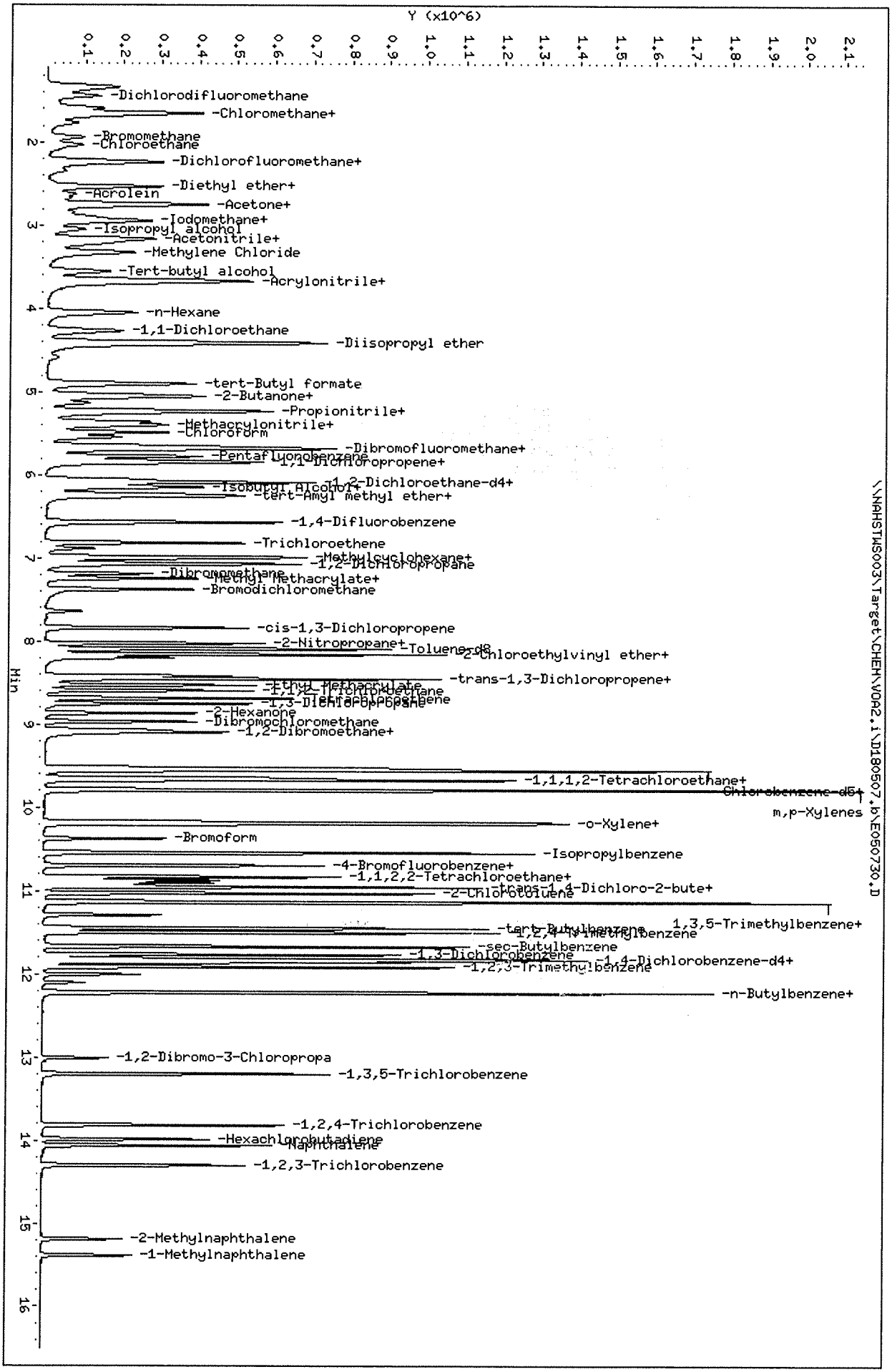
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.658	3.658	(0.633)	160082	50.0000	54.59
	21 Vinyl Acetate	43	5.234	5.234	(0.906)	387423	100.000	84.76
	22 1,1-Dichloroethane	63	4.268	4.268	(0.739)	358751	50.0000	50.30
	24 2-Butanone	43	5.131	5.131	(0.888)	167864	100.000	90.93
	25 Methacrylonitrile	41	5.401	5.401	(0.935)	197280	50.0000	44.87
	26 2,2-Dichloropropane	77	5.038	5.038	(0.872)	208517	50.0000	43.24
	27 cis-1,2-Dichloroethene	96	5.060	5.060	(0.876)	186342	50.0000	50.79
	28 Chloroform	83	5.487	5.487	(0.950)	301480	50.0000	49.00
	29 Bromochloromethane	128	5.356	5.356	(0.927)	90001	50.0000	50.83
$	30 Dibromofluoromethane	113	5.683	5.683	(0.984)	152748	50.0000	49.69
	31 1,1,1-Trichloroethane	97	5.648	5.648	(0.978)	276557	50.0000	53.55
	32 1,1-Dichloropropene	75	5.853	5.853	(0.891)	221486	50.0000	47.59
	33 1,2-Dichloroethane	62	6.139	6.139	(0.935)	246810	50.0000	48.46
	34 Carbon Tetrachloride	117	5.830	5.830	(0.888)	239253	50.0000	50.55
$	35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	199002	50.0000	51.49
*	36 1,4-Difluorobenzene	114	6.569	6.569	(1.000)	539955	50.0000	
	37 Benzene	78	6.087	6.087	(0.927)	674433	50.0000	49.13
	38 Trichloroethene	130	6.816	6.816	(1.038)	189269	50.0000	53.27
	39 Bromodichloromethane	83	7.374	7.374	(1.123)	245309	50.0000	49.20
	40 Methyl Methacrylate	41	7.242	7.242	(1.254)	194939	50.0000	46.46
	41 2-Chloroethylvinyl ether	63	8.154	8.154	(1.241)	62487	100.000	101.41(TA)
	42 1,2-Dichloropropane	63	7.066	7.066	(1.076)	201961	50.0000	49.03
	43 2-Nitropropane	43	8.025	8.025	(1.389)	390248	50.0000	44.14
	44 Dibromomethane	93	7.188	7.188	(1.094)	104532	50.0000	50.83
	45 4-Methyl-2-Pentanone	43	8.025	8.025	(0.843)	390248	100.000	87.67
	46 cis-1,3-Dichloropropene	75	7.836	7.836	(1.193)	278278	50.0000	50.02
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	485043	50.0000	
$	48 Toluene-d8	98	8.090	8.090	(0.849)	601588	50.0000	51.25
	49 Ethyl Methacrylate	69	8.529	8.529	(1.298)	232947	50.0000	51.35
	50 Toluene	91	8.154	8.154	(0.856)	708979	50.0000	47.85
	51 trans-1,3-Dichloropropene	75	8.414	8.414	(1.281)	233462	50.0000	50.57
	52 2-Hexanone	43	8.863	8.863	(0.931)	249788	100.000	89.55
	53 1,1,2-Trichloroethane	83	8.593	8.593	(0.902)	133424	50.0000	47.94
	54 1,3-Dichloropropane	76	8.751	8.751	(0.919)	266356	50.0000	48.21
	55 Dibromochloromethane	129	8.969	8.969	(0.942)	201018	50.0000	49.33
	56 Tetrachloroethene	164	8.686	8.686	(0.912)	153805	50.0000	51.94
	57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	170054	50.0000	48.95
	58 1-Chlorohexane	55	9.550	9.550	(1.454)	194312	50.0000	58.40
	59 Chlorobenzene	112	9.553	9.553	(1.003)	444700	50.0000	47.96
	60 1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.012)	183953	50.0000	49.97
	61 Ethylbenzene	106	9.668	9.668	(1.015)	248490	50.0000	49.45
	62 m,p-Xylenes	106	9.790	9.790	(1.028)	598941	100.000	119.59
	63 o-Xylene	106	10.175	10.175	(1.068)	316204	50.0000	50.11
	64 Styrene	104	10.198	10.198	(1.071)	504722	50.0000	49.93
	66 Bromoform	173	10.374	10.374	(1.089)	143820	50.0000	49.68
	67 Isopropylbenzene	105	10.544	10.544	(1.107)	778312	50.0000	51.23
	68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.919)	210310	50.0000	42.85
$	69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	233615	50.0000	57.43
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.834	(1.000)	221465	50.0000	
	71 1,2,3-Trichloropropane	75	10.695	10.695	(0.904)	107432	50.0000	53.14
	72 trans-1,4-Dichloro-2-butene	53	10.926	10.926	(1.147)	50315	50.0000	41.71
	73 n-Propylbenzene	91	10.952	10.952	(0.925)	836298	50.0000	48.14
	74 Bromobenzene	156	10.830	10.830	(0.915)	206390	50.0000	46.42
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	617921	50.0000	47.05

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\E050730.D Page 3
Report Date: 14-May-2018 17:15

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
76	2-Chlorotoluene	91	11.029	11.029	(0.932)	532830	50.0000	54.59
77	4-Chlorotoluene	91	11.138	11.138	(0.941)	579292	50.0000	54.69
78	tert-Butylbenzene	119	11.449	11.449	(0.967)	531378	50.0000	48.96
79	1,2,4-Trimethylbenzene	105	11.497	11.497	(0.972)	624244	50.0000	55.64
81	sec-Butylbenzene	105	11.668	11.668	(0.986)	729809	50.0000	50.43
82	p-Isopropyltoluene	119	11.818	11.818	(0.999)	610231	50.0000	49.43
83	1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	356663	50.0000	47.07
84	1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	334925	50.0000	45.74
87	n-Butylbenzene	91	12.223	12.223	(1.033)	474343	50.0000	50.67
88	1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	335779	50.0000	47.22
89	1,2-Dibromo-3-Chloropropane	75	13.009	13.009	(1.099)	37371	50.0000	47.17
90	1,2,4-Trichlorobenzene	180	13.817	13.817	(1.168)	193922	50.0000	47.18
91	Hexachlorobutadiene	225	13.988	13.988	(1.182)	86342	50.0000	48.03
92	Naphthalene	128	14.061	14.061	(1.188)	455893	50.0000	46.09
93	1,2,3-Trichlorobenzene	182	14.302	14.302	(1.209)	160750	50.0000	45.19
146	Methyl acetate	43	3.215	3.215	(0.557)	190546	50.0000	44.77
138	Freon TF	101	2.756	2.756	(0.477)	154498	50.0000	58.43
139	Diethyl ether	59	2.532	2.532	(0.438)	298511	50.0000	47.34
147	Methylcyclohexane	83	6.986	6.986	(1.064)	256811	50.0000	54.17
135	1,4-Dioxane	88	7.233	7.233	(1.252)	27829	1000.00	848.99
132	n-Butanol	56	6.989	6.989	(1.210)	123494	1000.00	954.14
131	Methyl Acrylate	55	5.256	5.256	(0.910)	289455	50.0000	48.59
133	Ethyl Acrylate	55	7.005	7.005	(1.213)	532623	50.0000	49.48
136	n-Hexane	57	4.053	4.053	(0.702)	211316	50.0000	49.79
141	Cyclohexane	56	5.680	5.680	(0.983)	335443	50.0000	56.83
142	Tetrahydrofuran	42	5.410	5.410	(0.937)	125356	100.000	88.09
148	Tert-butyl alcohol	59	3.552	3.552	(0.615)	361795	1000.00	852.53
149	Isopropyl alcohol	45	3.045	3.045	(0.527)	205773	1000.00	762.44
151	4-Methyl-2-pentanol	45	8.452	8.452	(0.887)	788717	1000.00	845.65
166	1,2,3-Trimethylbenzene	105	11.915	11.915	(1.007)	583468	50.0000	46.67
167	Ethanol	45	2.532	2.532	(0.438)	292395	1000.00	940.07
170	1,3,5-Trichlorobenzene	180	13.201	13.201	(1.116)	234006	50.0000	48.55
172	tert-Butyl formate	59	4.900	4.900	(0.848)	534372	100.000	85.95
173	3,3-Dimethyl-1-butanol	57	9.094	9.094	(0.955)	274288	1000.00	849.78
174	tert-Amyl methyl ether	73	6.254	6.254	(1.083)	490533	50.0000	41.83
175	tert-Butyl ethyl ether	59	6.228	6.228	(1.078)	235866	50.0000	40.55
176	tert-Amyl alcohol	59	6.228	6.228	(1.078)	235866	1000.00	811.15
157	2-Methylnaphthalene	142	15.191	15.191	(1.284)	100213	50.0000	33.04
156	Diisopropyl ether	45	4.412	4.412	(0.764)	721498	50.0000	47.80(T)
171	1-Methylnaphthalene	142	15.390	15.390	(1.300)	120549	50.0000	37.49
130	Ethyl Acetate	43	5.234	5.234	(0.906)	387423	50.0000	44.27

QC Flag Legend

T - Target compound detected outside RT window.
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180507.b\E050730.D
Date : 08-MAY-2018 08:49
Client ID: CCV_END
Sample Info: CCV_END;CCV_END;2;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050286

Lab File ID: D050901 BFB Injection Date: 05/09/18

Instrument ID: VOA2 BFB Injection Time: 0840

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of mass 95	23.5
75	30.0 - 60.0% of mass 95	50.6
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.3
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	Greater than 50.0% of mass 95	83.6
175	5.0 - 9.0% of mass 174	6.0 (7.2)1
176	95.0 - 101.0% of mass 174	83.0 (99.3)1
177	5.0 - 9.0% of mass 176	5.2 (6.2)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CCV	CCV	D050902	05/09/18	0905
02	VLCSW-180509	VLCSW-180509	D050905	05/09/18	1018
03	VBLKW-180509	VBLKW-180509	D050907	05/09/18	1111
04	HS18050395-1	HS18050395-10M	D050919	05/09/18	1604
05	HS18050395-1	HS18050395-10M	D050920	05/09/18	1629
06	HS18050286-0	HS18050286-02	D050921	05/09/18	1656
07	HS18050286-0	HS18050286-09	D050922	05/09/18	1723
08	CCV_END	CCV_END	D050929	05/09/18	2014
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050286

Instrument ID: VOA2 Calibration Date: 05/09/18 Time: 0905

Lab File ID: D050902 Init. Calib. Date(s): 05/04/18 05/04/18

Init. Calib. Times: 1519 1834

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Iodomethane	95.377038	100.00000	0.3705628	0.1	-4.62	20.00	LINR
Dichlorodifluoromethane	54.807865	50.000000	0.5070121	0.1	9.62	20.00	LINR
1,2-Dichloroethylene (total)	0.4580000	0.4795650	0.4795650	0.1	4.71	20.00	AVRG
Chloromethane	54.068862	50.000000	0.8696012	0.1	8.14	20.00	LINR
tert-Amyl alcohol	4.1e-002	3.52e-002	3.52e-002	0.005	-14.15	20.00	AVRG
Vinyl Chloride	0.6230000	0.6486928	0.6486928	0.1	4.12	20.00	AVRG
Bromomethane	0.3690000	0.3165247	0.3165247	0.1	-14.22	20.00	AVRG
Chloroethane	56.458298	50.000000	0.3771777	0.1	12.92	20.00	LINR
tert-Butyl ethyl ether	0.8190000	0.7038884	0.7038884	0.1	-14.06	20.00	AVRG
Trichlorofluoromethane	0.5900000	0.6402218	0.6402218	0.1	8.51	20.00	AVRG
Acrolein	90.208059	100.00000	0.1116035	0.01	-9.79	20.00	LINR
Acetone	94.999797	100.00000	0.1568692	0.1	-5.00	20.00	LINR
1,1-Dichloroethene	0.3780000	0.3934238	0.3934238	0.1	4.08	20.00	AVRG
Isobutyl Alcohol	832.75939	1000.0000	2.1e-003	0.001	-16.72	20.00	LINR
Acetonitrile	6.4e-002	6.36e-002	6.36e-002	0.01	-0.62	20.00	AVRG
Allyl Chloride	1.6270000	1.5998669	1.5998669	0.05	-1.67	20.00	AVRG
Acrylonitrile	0.2220000	0.2150675	0.2150675	0.05	-3.12	20.00	AVRG
Methylene Chloride	0.5280000	0.4750405	0.4750405	0.1	-10.03	20.00	AVRG
Methyl tert-butyl ether	1.4420000	1.3170863	1.3170863	0.1	-8.66	20.00	AVRG
Carbon Disulfide	0.8640000	0.8483635	0.8483635	0.1	-1.81	20.00	AVRG
trans-1,2-Dichloroethene	53.357167	50.000000	0.4407127	0.1	6.71	20.00	LINR
Vinyl Acetate	0.6440000	0.5576024	0.5576024	0.1	-13.42	20.00	AVRG
1,1-Dichloroethane	1.0040000	0.9850470	0.9850470	0.2	-1.89	20.00	AVRG
2-Butanone	0.2600000	0.2412900	0.2412900	0.1	-7.20	20.00	AVRG
Methacrylonitrile	0.6190000	0.5572353	0.5572353	0.01	-9.98	20.00	AVRG
2,2-Dichloropropane	0.6790000	0.7121566	0.7121566	0.1	4.88	20.00	AVRG
cis-1,2-Dichloroethene	0.5170000	0.5184173	0.5184173	0.1	0.27	20.00	AVRG
Chloroform	0.8660000	0.8472704	0.8472704	0.2	-2.16	20.00	AVRG
Bromochloromethane	0.2490000	0.2618222	0.2618222	0.1	5.15	20.00	AVRG
tert-Amyl methyl ether	1.6510000	1.5190885	1.5190885	0.05	-7.99	20.00	AVRG
1,1,1-Trichloroethane	0.7270000	0.7286630	0.7286630	0.1	0.23	20.00	AVRG
1,1-Dichloropropene	0.4310000	0.3654152	0.3654152	0.1	-15.22	20.00	AVRG
1,2-Dichloroethane	0.4720000	0.4726490	0.4726490	0.1	0.14	20.00	AVRG
Carbon Tetrachloride	0.4380000	0.4061571	0.4061571	0.1	-7.27	20.00	AVRG
3,3-Dimethyl-1-butanol	3.3e-002	3.07e-002	3.07e-002	0.005	-6.97	20.00	AVRG
Benzene	1.2710000	1.2328773	1.2328773	0.5	-3.00	20.00	AVRG
Trichloroethene	0.3290000	0.3440373	0.3440373	0.2	4.57	20.00	AVRG
Bromodichloromethane	0.4620000	0.4676394	0.4676394	0.2	1.22	20.00	AVRG
Methyl Methacrylate	0.5900000	0.5674952	0.5674952	0.05	-3.81	20.00	AVRG
2-Chloroethylvinyl ether	5.7e-002	5.67e-002	5.67e-002	0.05	-0.53	20.00	AVRG
1,2-Dichloropropane	0.3810000	0.3765804	0.3765804	0.1	-1.16	20.00	AVRG
tert-Butyl formate	0.8760000	0.8335995	0.8335995	0.1	-4.84	20.00	AVRG

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805028

Instrument ID: VOA2 Calibration Date: 05/09/18 Time: 0905

Lab File ID: D050902 Init. Calib. Date(s): 05/04/18 05/04/18

Init. Calib. Times: 1519 1834

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Dibromomethane	0.1900000	0.1990371	0.1990371	0.1	4.76	20.00	AVRG
4-Methyl-2-Pentanone	0.4590000	0.4198887	0.4198887	0.1	-8.52	20.00	AVRG
cis-1,3-Dichloropropene	0.5150000	0.5499873	0.5499873	0.2	6.79	20.00	AVRG
1,3,5-Trichlorobenzene	1.0880000	0.9958954	0.9958954	0.1	-8.46	20.00	AVRG
Ethyl Methacrylate	53.930841	50.000000	0.4521039	0.01	7.86	20.00	LINR
Toluene	1.5270000	1.4221065	1.4221065	0.4	-6.87	20.00	AVRG
trans-1,3-Dichloropropene	0.4270000	0.4776346	0.4776346	0.1	11.86	20.00	AVRG
2-Hexanone	0.2870000	0.2684420	0.2684420	0.1	-6.47	20.00	AVRG
1,1,2-Trichloroethane	0.2870000	0.2832142	0.2832142	0.1	-1.32	20.00	AVRG
1,3-Dichloropropane	0.5690000	0.5546082	0.5546082	0.1	-2.53	20.00	AVRG
Dibromochloromethane	0.4200000	0.4303208	0.4303208	0.1	2.46	20.00	AVRG
Tetrachloroethene	0.3050000	0.2942767	0.2942767	0.2	-3.52	20.00	AVRG
1,2-Dibromoethane	0.3580000	0.3629046	0.3629046	0.1	1.37	20.00	AVRG
1-Chlorohexane	52.887132	50.000000	0.3275124	0.1	5.77	20.00	LINR
Chlorobenzene	0.9560000	0.9184902	0.9184902	0.5	-3.92	20.00	AVRG
1,1,1,2-Tetrachloroethane	0.3790000	0.3838282	0.3838282	0.1	1.27	20.00	AVRG
Ethylbenzene	0.5180000	0.4787580	0.4787580	0.1	-7.58	20.00	AVRG
m,p-Xylenes	113.42217	100.00000	0.5872515	0.1	13.42	20.00	LINR
o-Xylene	0.6500000	0.6244579	0.6244579	0.3	-3.93	20.00	AVRG
Styrene	1.0420000	1.0399088	1.0399088	0.3	-0.20	20.00	AVRG
Bromoform	0.2980000	0.3045815	0.3045815	0.1	2.21	20.00	AVRG
Isopropylbenzene	1.5660000	1.4765196	1.4765196	0.1	-5.71	20.00	AVRG
1,1,2,2-Tetrachloroethane	1.1080000	0.9442720	0.9442720	0.3	-14.78	20.00	AVRG
Ethanol	4.4e-002	4.06e-002	4.06e-002	0.001	-7.73	20.00	AVRG
1,2,3-Trichloropropane	53.221965	50.000000	0.4857241	0.1	6.44	20.00	LINR
trans-1,4-Dichloro-2-butene	48.955120	50.000000	0.1220737	0.05	-2.09	20.00	LINR
n-Propylbenzene	3.9220000	3.4179732	3.4179732	0.1	-12.85	20.00	AVRG
Bromobenzene	1.0040000	0.9219544	0.9219544	0.1	-8.17	20.00	AVRG
1,3,5-Trimethylbenzene	2.9640000	2.5450894	2.5450894	0.1	-14.13	20.00	AVRG
2-Chlorotoluene	51.368342	50.000000	2.2695577	0.1	2.74	20.00	LINR
4-Chlorotoluene	51.785420	50.000000	2.4832463	0.1	3.57	20.00	LINR
tert-Butylbenzene	2.4500000	2.1092912	2.1092912	0.1	-13.91	20.00	AVRG
1,2,4-Trimethylbenzene	51.367514	50.000000	2.6122011	0.1	2.74	20.00	LINR
sec-Butylbenzene	3.2670000	2.8822570	2.8822570	0.1	-11.78	20.00	AVRG
p-Isopropyltoluene	2.7870000	2.4744683	2.4744683	0.1	-11.21	20.00	AVRG
1,3-Dichlorobenzene	1.7100000	1.5334853	1.5334853	0.6	-10.32	20.00	AVRG
1,4-Dichlorobenzene	1.6530000	1.4670261	1.4670261	0.4	-11.25	20.00	AVRG
n-Butylbenzene	2.1130000	1.9507222	1.9507222	0.05	-7.68	20.00	AVRG
1,2-Dichlorobenzene	1.6050000	1.4494524	1.4494524	0.4	-9.69	20.00	AVRG
1,2-Dibromo-3-Chloropropane	0.1790000	0.1723159	0.1723159	0.05	-3.73	20.00	AVRG
1,2,4-Trichlorobenzene	46.113332	50.000000	0.8555217	0.2	-7.77	20.00	LINR
Hexachlorobutadiene	46.536714	50.000000	0.3777070	0.1	-6.93	20.00	LINR

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805028

Instrument ID: VOA2 Calibration Date: 05/09/18 Time: 0905

Lab File ID: D050902 Init. Calib. Date(s): 05/04/18 05/04/18

Init. Calib. Times: 1519 1834

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE	
Naphthalene	46.149757	50.000000	2.0610936	0.2	-7.70	20.00	LINR	
1,2,3-Trichlorobenzene	43.421715	50.000000	0.6966307	0.1	-13.16	20.00	LINR	
Methyl acetate	0.5990000	0.5161543	0.5161543	0.1	-13.83	20.00	AVRG	
Freon TF	51.359065	50.000000	0.3836843	0.1	2.72	20.00	LINR	
1,2,3-Trimethylbenzene	2.8220000	2.4724314	2.4724314	0.1	-12.39	20.00	AVRG	
Methylcyclohexane	0.4390000	0.4150063	0.4150063	0.1	-5.46	20.00	AVRG	
1,4-Dioxane	884.12392	1000.0000	4.08e-003	0.001	-11.59	20.00	LINR	
n-Butanol	1.8e-002	1.68e-002	1.68e-002	0.001	-6.67	20.00	AVRG	
Methyl Acrylate	0.8380000	0.8279394	0.8279394	0.1	-1.20	20.00	AVRG	
Ethyl Acrylate	1.5160000	1.4198367	1.4198367	0.1	-6.34	20.00	AVRG	
n-Hexane	0.5980000	0.6255154	0.6255154	0.1	4.60	20.00	AVRG	
Cyclohexane	0.8310000	0.8335749	0.8335749	0.1	0.31	20.00	AVRG	
Isopropyl alcohol	3.8e-002	3.06e-002	3.06e-002	0.005	-19.47	20.00	AVRG	
Tert-butyl alcohol	6.e-002	5.17e-002	5.17e-002	0.005	-13.83	20.00	AVRG	
Xylenes (total)	0.5980000	0.5380065	0.5380065	0.1	-10.03	20.00	AVRG	
Propionitrile	0.1730000	0.1606593	0.1606593	0.01	-7.13	20.00	AVRG	
2-Nitropropane	1.2450000	1.1203443	1.1203443	0.1	-10.01	20.00	AVRG	
Ethyl Acetate	1.2320000	1.1152047	1.1152047	0.01	-9.48	20.00	AVRG	
Diethyl ether	0.8880000	0.8526921	0.8526921	0.05	-3.98	20.00	AVRG	
Tetrahydrofuran	0.2000000	0.1738550	0.1738550	0.05	-13.07	20.00	AVRG	
4-Methyl-2-pentanol	9.6e-002	8.5e-002	8.5e-002	0.005	-11.46	20.00	AVRG	
Diisopropyl ether	2.1250000	2.0548833	2.0548833	0.05	-3.30	20.00	AVRG	
2-Methylnaphthalene	35.317132	50.000000	0.4906047	0.05	-29.36	20.00	2RDR	<-
Dichlorofluoromethane	0.9190000	0.8844035	0.8844035	0.1	-3.76	20.00	AVRG	
1-Methylnaphthalene	38.738338	50.000000	0.5655201	0.1	-22.52	20.00	2RDR	<-
Isobutylene	0.4840000	0.4884565	0.4884565	0.1	0.92	20.00	AVRG	
Dibromofluoromethane	49.561596	50.000000	0.4291021	0.1	-0.88	20.00	2RDR	
Toluene-d8	51.938171	50.000000	1.2539038	0.1	3.88	20.00	2RDR	
1,2-Dichloroethane-d4	51.454311	50.000000	0.5599996	0.1	2.91	20.00	LINR	
4-Bromofluorobenzene	58.178708	50.000000	0.4875287	0.1	16.36	20.00	LINR	

FORM VII VOA

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050286

Instrument ID: VOA2 Calibration Date: 05/09/18 Time: 2014

Lab File ID: D050929 Init. Calib. Date(s): 05/04/18 05/04/18

Init. Calib. Times: 1519 1834

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Iodomethane	86.858914	100.00000	0.3359834	0.1	-13.14	50.00	LINR
Dichlorodifluoromethane	56.299728	50.000000	0.5205750	0.1	12.60	50.00	LINR
1,2-Dichloroethylene (total)	0.4580000	0.4781667	0.4781667	0.1	4.40	50.00	AVRG
Chloromethane	54.677832	50.000000	0.8790860	0.1	9.36	50.00	LINR
tert-Amyl alcohol	4.1e-002	3.5e-002	3.5e-002	0.005	-14.63	50.00	AVRG
Vinyl Chloride	0.6230000	0.6787142	0.6787142	0.1	8.94	50.00	AVRG
Bromomethane	0.3690000	0.3139490	0.3139490	0.1	-14.92	50.00	AVRG
Chloroethane	58.275025	50.000000	0.3889775	0.1	16.55	50.00	LINR
tert-Butyl ethyl ether	0.8190000	0.6994069	0.6994069	0.1	-14.60	50.00	AVRG
Trichlorofluoromethane	0.5900000	0.6926964	0.6926964	0.1	17.41	50.00	AVRG
Acrolein	75.404307	100.00000	9.34e-002	0.01	-24.60	50.00	LINR
Acetone	92.998368	100.00000	0.1536887	0.1	-7.00	50.00	LINR
1,1-Dichloroethene	0.3780000	0.4219463	0.4219463	0.1	11.63	50.00	AVRG
Isobutyl Alcohol	785.11625	1000.0000	1.98e-003	0.001	-21.49	50.00	LINR
Acetonitrile	6.4e-002	6.46e-002	6.46e-002	0.01	0.94	50.00	AVRG
Allyl Chloride	1.6270000	1.5946089	1.5946089	0.05	-1.99	50.00	AVRG
Acrylonitrile	0.2220000	0.2141570	0.2141570	0.05	-3.53	50.00	AVRG
Methylene Chloride	0.5280000	0.4831203	0.4831203	0.1	-8.50	50.00	AVRG
Methyl tert-butyl ether	1.4420000	1.2808866	1.2808866	0.1	-11.17	50.00	AVRG
Carbon Disulfide	0.8640000	0.8930299	0.8930299	0.1	3.36	50.00	AVRG
trans-1,2-Dichloroethene	53.833471	50.000000	0.4446227	0.1	7.67	50.00	LINR
Vinyl Acetate	0.6440000	0.5579816	0.5579816	0.1	-13.36	50.00	AVRG
1,1-Dichloroethane	1.0040000	0.9817104	0.9817104	0.2	-2.22	50.00	AVRG
2-Butanone	0.2600000	0.2403968	0.2403968	0.1	-7.54	50.00	AVRG
Methacrylonitrile	0.6190000	0.5614162	0.5614162	0.01	-9.30	50.00	AVRG
2,2-Dichloropropane	0.6790000	0.6609263	0.6609263	0.1	-2.66	50.00	AVRG
cis-1,2-Dichloroethene	0.5170000	0.5117108	0.5117108	0.1	-1.02	50.00	AVRG
Chloroform	0.8660000	0.8321266	0.8321266	0.2	-3.91	50.00	AVRG
Bromochloromethane	0.2490000	0.2534722	0.2534722	0.1	1.80	50.00	AVRG
tert-Amyl methyl ether	1.6510000	1.4054648	1.4054648	0.05	-14.87	50.00	AVRG
1,1,1-Trichloroethane	0.7270000	0.7686176	0.7686176	0.1	5.72	50.00	AVRG
1,1-Dichloropropene	0.4310000	0.4135199	0.4135199	0.1	-4.06	50.00	AVRG
1,2-Dichloroethane	0.4720000	0.4443337	0.4443337	0.1	-5.86	50.00	AVRG
Carbon Tetrachloride	0.4380000	0.4319183	0.4319183	0.1	-1.39	50.00	AVRG
3,3-Dimethyl-1-butanol	3.3e-002	3.06e-002	3.06e-002	0.005	-7.27	50.00	AVRG
Benzene	1.2710000	1.2272806	1.2272806	0.5	-3.44	50.00	AVRG
Trichloroethene	0.3290000	0.3500565	0.3500565	0.2	6.40	50.00	AVRG
Bromodichloromethane	0.4620000	0.4474301	0.4474301	0.2	-3.15	50.00	AVRG
Methyl Methacrylate	0.5900000	0.5566724	0.5566724	0.05	-5.65	50.00	AVRG
2-Chloroethylvinyl ether	5.7e-002	5.57e-002	5.57e-002	0.05	-2.28	50.00	AVRG
1,2-Dichloropropane	0.3810000	0.3630414	0.3630414	0.1	-4.71	50.00	AVRG
tert-Butyl formate	0.8760000	0.7581041	0.7581041	0.1	-13.46	50.00	AVRG

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805028

Instrument ID: VOA2 Calibration Date: 05/09/18 Time: 2014

Lab File ID: D050929 Init. Calib. Date(s): 05/04/18 05/04/18

Init. Calib. Times: 1519 1834

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Dibromomethane	0.1900000	0.1907555	0.1907555	0.1	0.40	50.00	AVRG
4-Methyl-2-Pentanone	0.4590000	0.3977755	0.3977755	0.1	-13.34	50.00	AVRG
cis-1,3-Dichloropropene	0.5150000	0.5202557	0.5202557	0.2	1.02	50.00	AVRG
1,3,5-Trichlorobenzene	1.0880000	1.0305678	1.0305678	0.1	-5.28	50.00	AVRG
Ethyl Methacrylate	51.366620	50.000000	0.4314762	0.01	2.73	50.00	LINR
Toluene	1.5270000	1.4266632	1.4266632	0.4	-6.57	50.00	AVRG
trans-1,3-Dichloropropene	0.4270000	0.4398137	0.4398137	0.1	3.00	50.00	AVRG
2-Hexanone	0.2870000	0.2586106	0.2586106	0.1	-9.89	50.00	AVRG
1,1,2-Trichloroethane	0.2870000	0.2655050	0.2655050	0.1	-7.49	50.00	AVRG
1,3-Dichloropropane	0.5690000	0.5369125	0.5369125	0.1	-5.64	50.00	AVRG
Dibromochloromethane	0.4200000	0.4051386	0.4051386	0.1	-3.54	50.00	AVRG
Tetrachloroethene	0.3050000	0.3056826	0.3056826	0.2	0.22	50.00	AVRG
1,2-Dibromoethane	0.3580000	0.3436697	0.3436697	0.1	-4.00	50.00	AVRG
1-Chlorohexane	57.877381	50.000000	0.3567868	0.1	15.75	50.00	LINR
Chlorobenzene	0.9560000	0.8875272	0.8875272	0.5	-7.16	50.00	AVRG
1,1,1,2-Tetrachloroethane	0.3790000	0.3666994	0.3666994	0.1	-3.24	50.00	AVRG
Ethylbenzene	0.5180000	0.4991608	0.4991608	0.1	-3.64	50.00	AVRG
m,p-Xylenes	116.45490	100.00000	0.6020748	0.1	16.45	50.00	LINR
o-Xylene	0.6500000	0.6305466	0.6305466	0.3	-2.99	50.00	AVRG
Styrene	1.0420000	1.0194519	1.0194519	0.3	-2.16	50.00	AVRG
Bromoform	0.2980000	0.2880578	0.2880578	0.1	-3.34	50.00	AVRG
Isopropylbenzene	1.5660000	1.5698952	1.5698952	0.1	0.25	50.00	AVRG
1,1,2,2-Tetrachloroethane	1.1080000	0.9138379	0.9138379	0.3	-17.52	50.00	AVRG
Ethanol	4.4e-002	4.11e-002	4.11e-002	0.001	-6.59	50.00	AVRG
1,2,3-Trichloropropane	52.635729	50.000000	0.4806235	0.1	5.27	50.00	LINR
trans-1,4-Dichloro-2-butene	43.046058	50.000000	0.1071030	0.05	-13.91	50.00	LINR
n-Propylbenzene	3.9220000	3.6333601	3.6333601	0.1	-7.36	50.00	AVRG
Bromobenzene	1.0040000	0.9040575	0.9040575	0.1	-9.95	50.00	AVRG
1,3,5-Trimethylbenzene	2.9640000	2.6716198	2.6716198	0.1	-9.86	50.00	AVRG
2-Chlorotoluene	52.496971	50.000000	2.3172266	0.1	4.99	50.00	LINR
4-Chlorotoluene	52.977197	50.000000	2.5375998	0.1	5.95	50.00	LINR
tert-Butylbenzene	2.4500000	2.2906893	2.2906893	0.1	-6.50	50.00	AVRG
1,2,4-Trimethylbenzene	53.034547	50.000000	2.6926027	0.1	6.07	50.00	LINR
sec-Butylbenzene	3.2670000	3.1941735	3.1941735	0.1	-2.23	50.00	AVRG
p-Isopropyltoluene	2.7870000	2.6637724	2.6637724	0.1	-4.42	50.00	AVRG
1,3-Dichlorobenzene	1.7100000	1.5348314	1.5348314	0.6	-10.24	50.00	AVRG
1,4-Dichlorobenzene	1.6530000	1.4516999	1.4516999	0.4	-12.18	50.00	AVRG
n-Butylbenzene	2.1130000	2.1087891	2.1087891	0.05	-0.20	50.00	AVRG
1,2-Dichlorobenzene	1.6050000	1.4585564	1.4585564	0.4	-9.12	50.00	AVRG
1,2-Dibromo-3-Chloropropane	0.1790000	0.1598553	0.1598553	0.05	-10.70	50.00	AVRG
1,2,4-Trichlorobenzene	46.773280	50.000000	0.8678819	0.2	-6.45	50.00	LINR
Hexachlorobutadiene	48.531024	50.000000	0.3938838	0.1	-2.94	50.00	LINR

FORM 7B
VOLATILE CALIBRATION VERIFICATION SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS1805028

Instrument ID: VOA2 Calibration Date: 05/09/18 Time: 2014

Lab File ID: D050929 Init. Calib. Date(s): 05/04/18 05/04/18

Init. Calib. Times: 1519 1834

GC Column: DB624 ID: 0.18 (mm)

COMPOUND	RRF or AMOUNT	RRF50.000 or AMOUNT	CCAL RRF50.000	MIN RRF	%D or %DRIFT	MAX %D or %DRIFT	CURV TYPE
Naphthalene	44.671481	50.000000	1.9943299	0.2	-10.66	50.00	LINR
1,2,3-Trichlorobenzene	43.504072	50.000000	0.6979839	0.1	-12.99	50.00	LINR
Methyl acetate	0.5990000	0.5264609	0.5264609	0.1	-12.11	50.00	AVRG
Freon TF	57.020133	50.000000	0.4248142	0.1	14.04	50.00	LINR
1,2,3-Trimethylbenzene	2.8220000	2.5180078	2.5180078	0.1	-10.77	50.00	AVRG
Methylcyclohexane	0.4390000	0.4681250	0.4681250	0.1	6.63	50.00	AVRG
1,4-Dioxane	964.23668	1000.0000	4.44e-003	0.001	-3.58	50.00	LINR
n-Butanol	1.8e-002	1.71e-002	1.71e-002	0.001	-5.00	50.00	AVRG
Methyl Acrylate	0.8380000	0.8188813	0.8188813	0.1	-2.28	50.00	AVRG
Ethyl Acrylate	1.5160000	1.4948693	1.4948693	0.1	-1.39	50.00	AVRG
n-Hexane	0.5980000	0.6531531	0.6531531	0.1	9.22	50.00	AVRG
Cyclohexane	0.8310000	0.9582350	0.9582350	0.1	15.31	50.00	AVRG
Isopropyl alcohol	3.8e-002	3.14e-002	3.14e-002	0.005	-17.37	50.00	AVRG
Tert-butyl alcohol	6.e-002	5.41e-002	5.41e-002	0.005	-9.83	50.00	AVRG
Xylenes (total)	0.5980000	0.5548870	0.5548870	0.1	-7.21	50.00	AVRG
Propionitrile	0.1730000	0.1622222	0.1622222	0.01	-6.23	50.00	AVRG
2-Nitropropane	1.2450000	1.0920032	1.0920032	0.1	-12.29	50.00	AVRG
Ethyl Acetate	1.2320000	1.1159633	1.1159633	0.01	-9.42	50.00	AVRG
Diethyl ether	0.8880000	0.8497360	0.8497360	0.05	-4.31	50.00	AVRG
Tetrahydrofuran	0.2000000	0.1750019	0.1750019	0.05	-12.50	50.00	AVRG
4-Methyl-2-pentanol	9.6e-002	8.45e-002	8.45e-002	0.005	-11.98	50.00	AVRG
Diisopropyl ether	2.1250000	1.9913426	1.9913426	0.05	-6.29	50.00	AVRG
2-Methylnaphthalene	34.572537	50.000000	0.4781084	0.05	-30.85	50.00	2RDR
Dichlorofluoromethane	0.9190000	0.8965623	0.8965623	0.1	-2.44	50.00	AVRG
1-Methylnaphthalene	37.862946	50.000000	0.5506330	0.1	-24.27	50.00	2RDR
Isobutylene	0.4840000	0.5573015	0.5573015	0.1	15.14	50.00	AVRG
Dibromofluoromethane	50.097387	50.000000	0.4334375	0.1	0.19	50.00	2RDR
Toluene-d8	51.118053	50.000000	1.2375825	0.1	2.24	50.00	2RDR
1,2-Dichloroethane-d4	50.999089	50.000000	0.5552356	0.1	2.00	50.00	LINR
4-Bromofluorobenzene	56.861389	50.000000	0.4770932	0.1	13.72	50.00	LINR

FORM VII VOA

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050286

Lab File ID (Standard): D050902 Date Analyzed: 05/09/18

Instrument ID: VOA2 Time Analyzed: 0905

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

		IS1 AREA #	RT #	IS2 (DFB) AREA #	RT #	IS3 (CBZ) AREA #	RT #
	12 HOUR STD	365011	5.77	542758	6.57	486960	9.52
	UPPER LIMIT	730022	6.27	1085516	7.07	973920	10.02
	LOWER LIMIT	182506	5.27	271379	6.07	243480	9.02
	CLIENT SAMPLE NO.						
01	VLCSW-180509	352874	5.77	532902	6.57	476279	9.52
02	VBLKW-180509	368685	5.77	527273	6.56	480615	9.52
03	HS18050395-10	349967	5.77	531297	6.57	471193	9.52
04	HS18050395-10	349768	5.77	524487	6.57	467771	9.52
05	HS18050286-02	366877	5.77	522272	6.56	459397	9.52
06	HS18050286-09	363879	5.76	521295	6.56	456730	9.52
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

IS1 = Pentafluorobenzene
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene-d5

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM VIII VOA

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: HS18050286

Lab File ID (Standard): D050902 Date Analyzed: 05/09/18

Instrument ID: VOA2 Time Analyzed: 0905

GC Column: DB624 ID: 0.18 (mm) Heated Purge: (Y/N) N

		IS4 (DCB) AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	226816	11.84				
	UPPER LIMIT	453632	12.34				
	LOWER LIMIT	113408	11.34				
	CLIENT SAMPLE NO.						
01	VLCSW-180509	217151	11.84				
02	VBLKW-180509	203735	11.83				
03	HS18050395-10	215325	11.83				
04	HS18050395-10	216877	11.83				
05	HS18050286-02	196401	11.83				
06	HS18050286-09	191895	11.83				
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

IS4 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM VIII VOA

MSVOA02 -Logbook

Batch: 31758
Date: 05-09-2018
Method: 8260
Comments:

Analyst: Anjana Poluri
Reviewer:
Laboratory: Houston

#	Samp ID	Type	Analyzed	DF	Init Wt/Vol	Final Vol	File ID	Matrix	Status	pH
1	BFB	TUNE	05-09-2018 08:40 am	1.00	50 mL	50 mL	D050901.D	Liquid	Y	NA
	Auto find/purged									
2	CCV	CCV	05-09-2018 09:05 am	1.00	50 mL	50 mL	D050902.D	Liquid	Y	NA
	10 uL cal std/50 ml DI									
3	CCV	CCV	05-09-2018 09:29 am	1.00	50 mL	50 mL	D050903.D	Liquid	Y	NA
	10 uL cal std/50 ml DI									
4	CCB	SAMP	05-09-2018 09:53 am	1.00	50 mL	50 mL	D050904.D	Liquid	Y	NA
	CCB									
5	VLCSW-180509	LCS	05-09-2018 10:18 am	1.00	50 mL	50 mL	D050905.D	Liquid	Y	NA
	10 uL cal std/50 ml DI									
6	VBLKM-180509	SAMP	05-09-2018 10:42 am	50.00	1 mL	50 mL	D050906.D	Liquid	Y	NA
7	VBLKW-180509	MBLK	05-09-2018 11:11 am	1.00	50 mL	50 mL	D050907.D	Liquid	Y	NA
8	HS18010697-05	SAMP	05-09-2018 11:35 am	1.00	50 mL	50 mL	D050908.D	Liquid	Y	<2
9	HS18010697-06	SAMP	05-09-2018 11:59 am	1.00	50 mL	50 mL	D050909.D	Liquid	Y	<2
10	VBLKW-180509	SAMP	05-09-2018 12:24 pm	1.00	50 mL	50 mL	D050910.D	Liquid	Y	<2
11	HS18050395-06	SAMP	05-09-2018 12:48 pm	1.00	50 mL	50 mL	D050911.D	Liquid	Y	<2
12	HS18050395-07	SAMP	05-09-2018 01:13 pm	1.00	50 mL	50 mL	D050912.D	Liquid	Y	<2
13	HS18050395-08	SAMP	05-09-2018 01:37 pm	1.00	50 mL	50 mL	D050913.D	Liquid	Y	<2
14	HS18050395-09	SAMP	05-09-2018 02:02 pm	1.00	50 mL	50 mL	D050914.D	Liquid	Y	<2
15	HS18050395-10	SAMP	05-09-2018 02:26 pm	1.00	50 mL	50 mL	D050915.D	Liquid	Y	<2
16	HS18050412-08	SAMP	05-09-2018 02:51 pm	1.00	50 mL	50 mL	D050916.D	Liquid	Y	<2
17	HS18050412-09	SAMP	05-09-2018 03:15 pm	1.00	50 mL	50 mL	D050917.D	Liquid	Y	<2
18	HS18050412-10	SAMP	05-09-2018 03:40 pm	1.00	50 mL	50 mL	D050918.D	Liquid	Y	<2
19	HS18050395-10MS	MS	05-09-2018 04:04 pm	1.00	50 mL	50 mL	D050919.D	Liquid	Y	<2
	8 uL cal std/40 ml sample									
20	HS18050395-10MSD	MSD	05-09-2018 04:29 pm	1.00	50 mL	50 mL	D050920.D	Liquid	Y	<2
	8 uL cal std/40 ml sample									
21	HS18050286-02	SAMP	05-09-2018 04:56 pm	5.00	10 mL	50 mL	D050921.D	Liquid	Y	<2
22	HS18050286-09	SAMP	05-09-2018 05:23 pm	5.00	10 mL	50 mL	D050922.D	Liquid	Y	<2
23	HS18050379-01	SAMP	05-09-2018 05:47 pm	1.00	50 mL	50 mL	D050923.D	Liquid	Y	<2
24	HS18050379-02	SAMP	05-09-2018 06:12 pm	1.00	50 mL	50 mL	D050924.D	Liquid	Y	<2
25	HS18050379-03	SAMP	05-09-2018 06:36 pm	1.00	50 mL	50 mL	D050925.D	Liquid	Y	<2
26	HS18050382-01	SAMP	05-09-2018 07:01 pm	1.00	50 mL	50 mL	D050926.D	Liquid	Y	<2
27	HS18050414-05	SAMP	05-09-2018 07:25 pm	1.00	50 mL	50 mL	D050927.D	Liquid	Y	<2
28	HS18050414-01	SAMP	05-09-2018 07:49 pm	1.00	50 mL	50 mL	D050928.D	Liquid	Y	<2
29	CCV_END	CCV_END	05-09-2018 08:14 pm	1.00	50 mL	50 mL	D050929.D	Liquid	Y	NA
	10 uL cal std/50 ml DI									

Chemical	Value
SURR ID	30603-16-03
IS ID	30603-16-04
LCS/MS ID	30603-16-01
CAL STD ID	30603-16-01
BFB ID	30603-16-03

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180509.b\D050901.D

Date : 09-MAY-2018 08:40

Client ID: BFB

Instrument: VOA2.i

Sample Info: BFB;BFB;3;;BFB

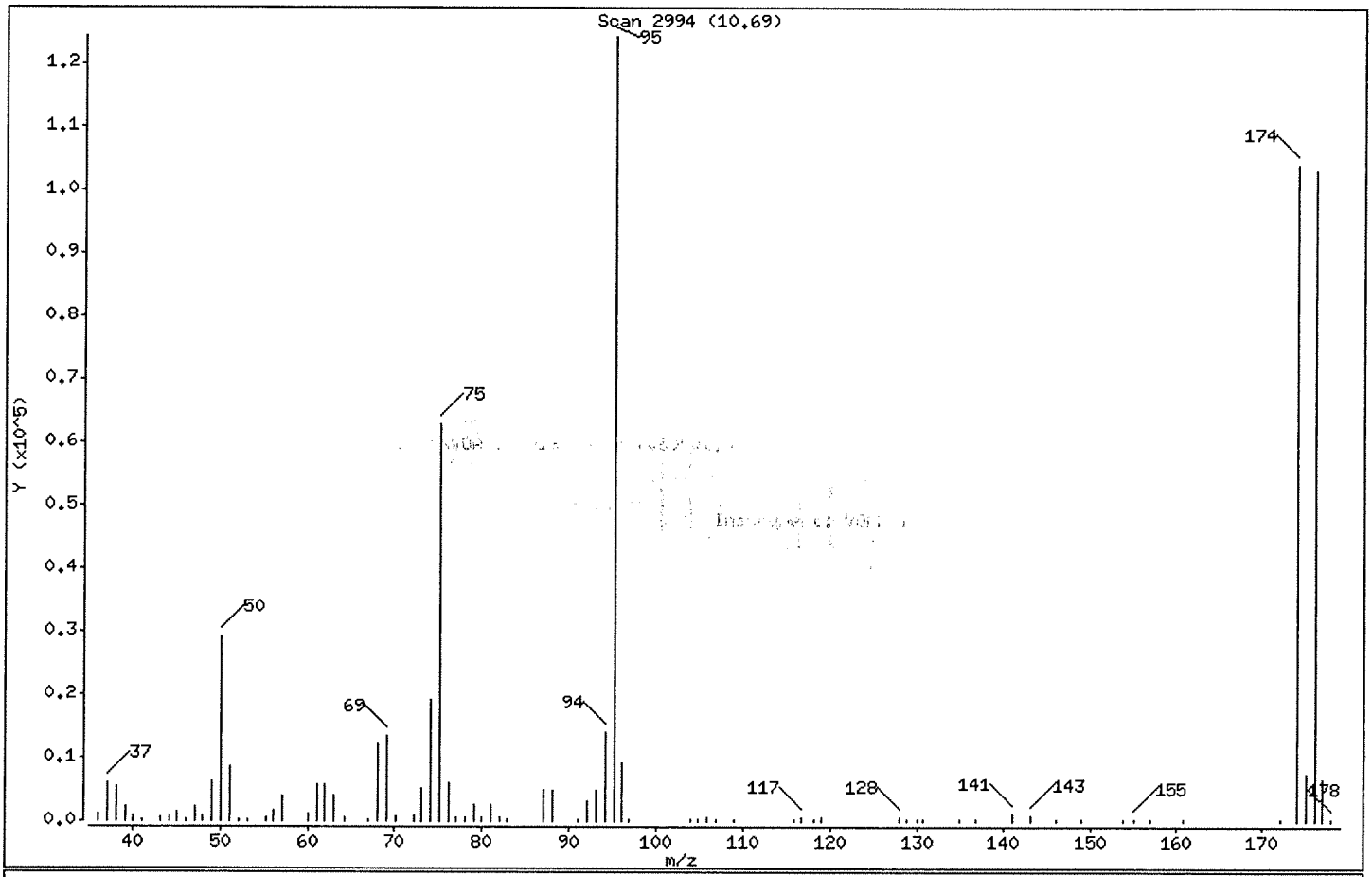
Volume Injected (uL): 2.0

Operator: AP

Column phase: DB624

Column diameter: 0.18

1 bfb



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	23.54
75	30.00 - 60.00% of mass 95	50.60
96	5.00 - 9.00% of mass 95	7.29
173	Less than 2.00% of mass 174	0.00 (0.00)
174	Greater than 50.00% of mass 95	83.63
175	5.00 - 9.00% of mass 174	6.05 (7.23)
176	95.00 - 101.00% of mass 174	83.02 (99.27)
177	5.00 - 9.00% of mass 176	5.18 (6.23)

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180509.b\D050901.D

Date : 09-MAY-2018 08:40

Client ID: BFB

Instrument: VOA2.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: AP

Column phase: DB624

Column diameter: 0.18

Data File: D050901.D
Spectrum: Scan 2994 (10.69)
Location of Maximum: 95.10
Number of points: 79

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	1120	60.10	1046	82.90	150	128.80	203
37.10	6107	61.10	5631	87.00	4799	130.00	315
38.10	5507	62.00	5802	88.00	4935	130.80	225
39.10	2372	63.10	3898	91.10	279	134.80	219
40.10	787	64.20	495	92.00	3251	136.80	287
41.00	415	67.00	373	93.00	4816	140.90	1180
43.10	555	68.10	12383	94.10	13886	143.00	889
44.10	909	69.10	13358	95.10	124336	146.00	242
45.00	1368	70.10	984	96.10	9064	148.80	191
46.10	172	72.10	982	96.90	195	153.80	160
47.10	2388	73.10	5198	103.90	388	155.00	389
48.00	849	74.10	19264	104.90	274	156.90	315
49.10	6272	75.10	62920	105.90	588	160.90	228
50.10	29264	76.10	5926	106.80	168	172.00	233
51.10	8658	77.10	453	108.90	324	174.00	103984
52.10	269	78.00	476	115.90	189	175.00	7522
53.20	152	79.00	2699	116.80	454	176.00	103224
55.20	494	80.00	560	118.10	405	177.00	6435
56.10	1710	80.90	2663	119.00	437	178.00	192
57.10	3864	82.00	508	127.90	505		

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180509.b\D050901.D

Date : 09-MAY-2018 08:40

Client ID: BFB

Instrument: VOA2.i

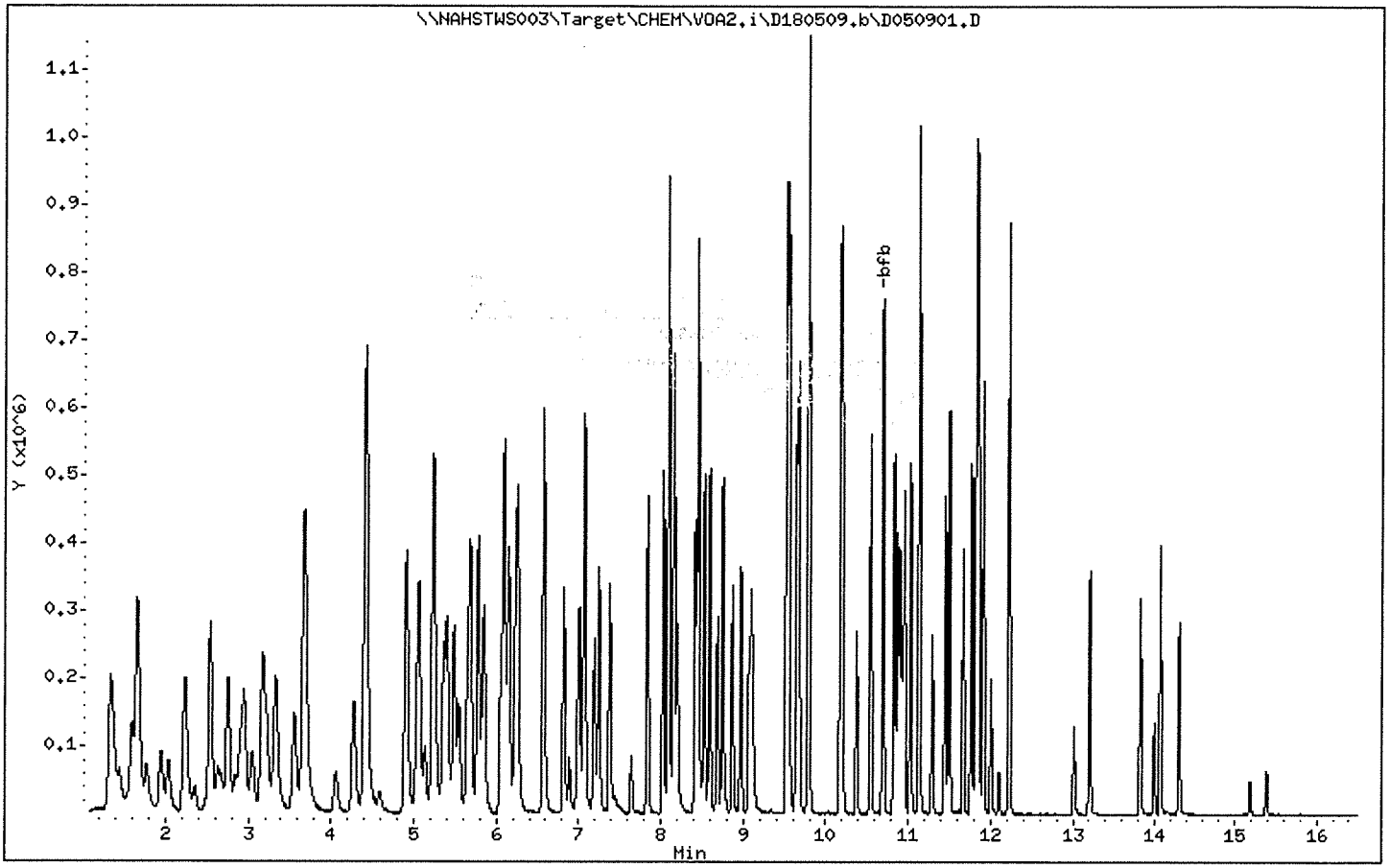
Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: AP

Column phase: DB624

Column diameter: 0.18



ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180509.b\D050902.D
Lab Smp Id: CCV Client Smp ID: CCV
Inj Date : 09-MAY-2018 09:05
Operator : AP Inst ID: VOA2.i
Smp Info : CCV;CCV;2;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180509.b\8260LL.m
Meth Date : 14-May-2018 17:19 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 2 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

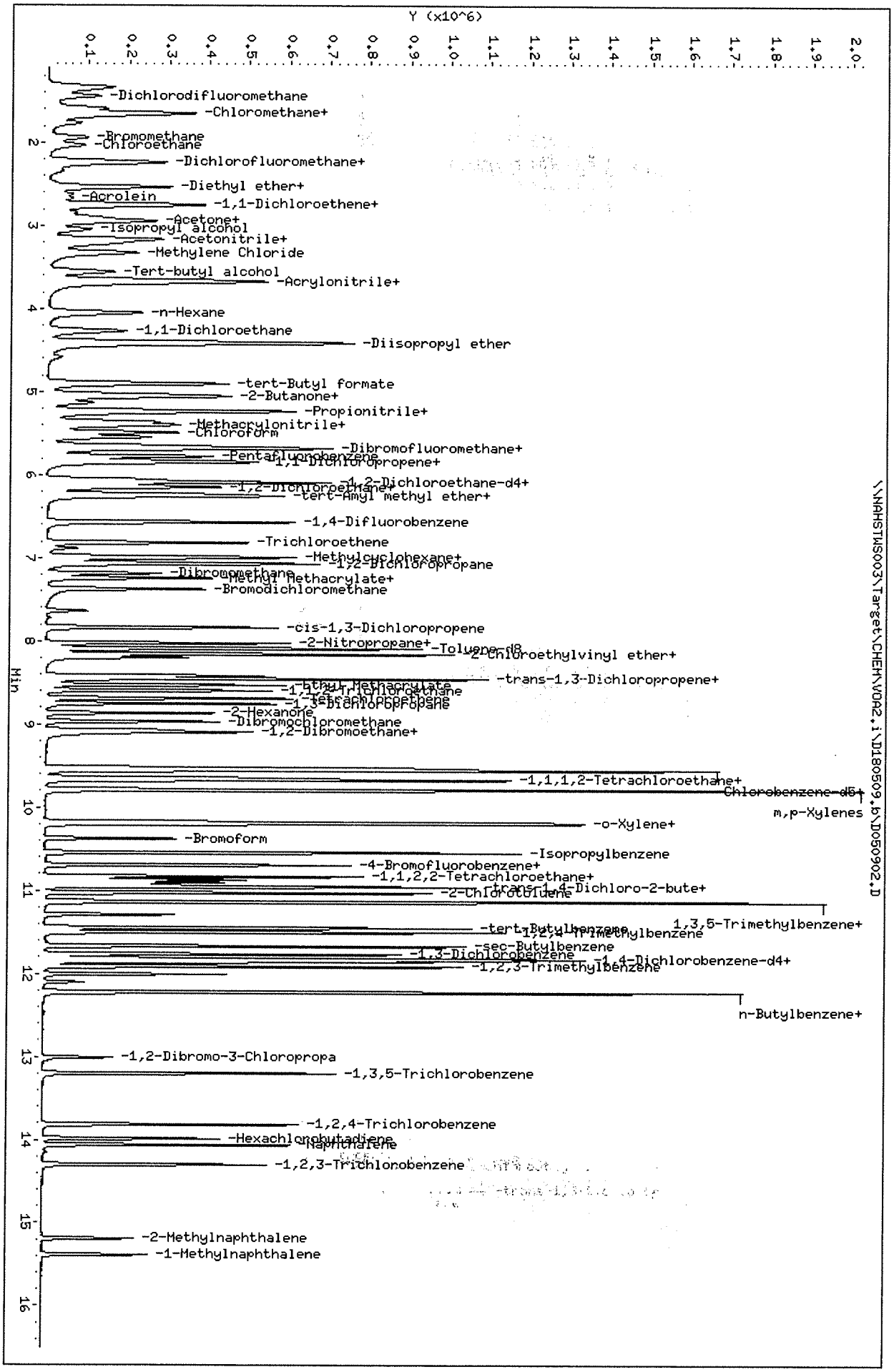
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
* 1	Pentafluorobenzene	168	5.773	5.773	(1.000)	365011	50.0000	
2	Dichlorodifluoromethane	85	1.441	1.441	(0.250)	185065	50.0000	54.80
186	Isobutylene	56	1.649	1.649	(0.286)	178292	50.0000	50.47(AM)
3	Chloromethane	50	1.588	1.588	(0.275)	317414	50.0000	54.06
4	Propionitrile	54	5.224	5.224	(0.905)	586424	500.000	463.55
5	Vinyl Chloride	62	1.672	1.672	(0.290)	236780	50.0000	52.01
6	Bromomethane	94	1.941	1.941	(0.336)	115535	50.0000	42.85
7	Chloroethane	64	2.034	2.034	(0.352)	137674	50.0000	56.45
159	Dichlorofluoromethane	67	2.224	2.224	(0.385)	322817	50.0000	48.09
8	Trichlorofluoromethane	101	2.246	2.246	(0.389)	233688	50.0000	54.23
9	Acrolein	56	2.673	2.673	(0.463)	81473	100.000	90.20
10	Acetone	43	2.850	2.850	(0.494)	114518	100.000	94.99
11	1,1-Dichloroethene	96	2.740	2.740	(0.475)	143604	50.0000	52.10
12	Isobutyl Alcohol	74	6.148	6.148	(1.065)	15330	1000.00	832.75(AM)
13	Acetonitrile	39	3.158	3.158	(0.547)	232286	500.000	498.49
14	Allyl Chloride	41	3.167	3.167	(0.549)	583969	50.0000	49.16
15	Iodomethane	142	2.904	2.904	(0.503)	270519	100.000	95.37
16	Acrylonitrile	53	3.674	3.674	(0.636)	157004	100.000	96.93
17	Methylene Chloride	84	3.324	3.324	(0.576)	173395	50.0000	44.95
18	Methyl tert-butyl ether	73	3.674	3.674	(0.636)	480751	50.0000	45.67
19	Carbon Disulfide	76	2.943	2.943	(0.510)	619324	100.000	98.13

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.655	3.655	(0.633)	160865	50.0000	53.35
	21 Vinyl Acetate	43	5.234	5.234	(0.907)	407062	100.000	86.63
	22 1,1-Dichloroethane	63	4.268	4.268	(0.739)	359553	50.0000	49.04
	24 2-Butanone	43	5.134	5.134	(0.889)	176147	100.000	92.82
	25 Methacrylonitrile	41	5.397	5.397	(0.935)	203397	50.0000	45.00
	26 2,2-Dichloropropane	77	5.035	5.035	(0.872)	259945	50.0000	52.44
	27 cis-1,2-Dichloroethene	96	5.064	5.064	(0.877)	189228	50.0000	50.17
	28 Chloroform	83	5.487	5.487	(0.951)	309263	50.0000	48.90
	29 Bromochloromethane	128	5.359	5.359	(0.928)	95568	50.0000	52.50
$	30 Dibromofluoromethane	113	5.680	5.680	(0.984)	156627	50.0000	49.56
	31 1,1,1-Trichloroethane	97	5.648	5.648	(0.978)	265970	50.0000	50.09
	32 1,1-Dichloropropene	75	5.847	5.847	(0.890)	198332	50.0000	42.39
	33 1,2-Dichloroethane	62	6.139	6.139	(0.935)	256534	50.0000	50.11
	34 Carbon Tetrachloride	117	5.827	5.827	(0.887)	220445	50.0000	46.33
$	35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	204406	50.0000	51.45
*	36 1,4-Difluorobenzene	114	6.569	6.569	(1.000)	542758	50.0000	
	37 Benzene	78	6.087	6.087	(0.927)	669154	50.0000	48.50
	38 Trichloroethene	130	6.813	6.813	(1.037)	186729	50.0000	52.28
	39 Bromodichloromethane	83	7.374	7.374	(1.123)	253815	50.0000	50.65
	40 Methyl Methacrylate	41	7.239	7.239	(1.254)	207142	50.0000	48.02
	41 2-Chloroethylvinyl ether	63	8.157	8.157	(1.242)	61534	100.000	99.35(T)
	42 1,2-Dichloropropane	63	7.063	7.063	(1.075)	204392	50.0000	49.36
	43 2-Nitropropane	43	8.022	8.022	(1.390)	408938	50.0000	45.00
	44 Dibromomethane	93	7.185	7.185	(1.094)	108029	50.0000	52.26
	45 4-Methyl-2-Pentanone	43	8.022	8.022	(0.842)	408938	100.000	91.51
	46 cis-1,3-Dichloropropene	75	7.836	7.836	(1.193)	298510	50.0000	53.38
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	486960	50.0000	
$	48 Toluene-d8	98	8.090	8.090	(0.849)	610601	50.0000	51.93
	49 Ethyl Methacrylate	69	8.529	8.529	(1.298)	245383	50.0000	53.93
	50 Toluene	91	8.157	8.157	(0.856)	692509	50.0000	46.55
	51 trans-1,3-Dichloropropene	75	8.417	8.417	(1.281)	259240	50.0000	55.86
	52 2-Hexanone	43	8.863	8.863	(0.931)	261441	100.000	93.36
	53 1,1,2-Trichloroethane	83	8.590	8.590	(0.902)	137914	50.0000	49.36
	54 1,3-Dichloropropane	76	8.751	8.751	(0.919)	270072	50.0000	48.69
	55 Dibromochloromethane	129	8.969	8.969	(0.942)	209549	50.0000	51.22
	56 Tetrachloroethene	164	8.690	8.690	(0.912)	143301	50.0000	48.20
	57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	176720	50.0000	50.66
	58 1-Chlorohexane	55	9.550	9.550	(1.454)	177760	50.0000	52.88
	59 Chlorobenzene	112	9.553	9.553	(1.003)	447268	50.0000	48.05
	60 1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.012)	186909	50.0000	50.57
	61 Ethylbenzene	106	9.668	9.668	(1.015)	233136	50.0000	46.21
	62 m,p-Xylenes	106	9.787	9.787	(1.028)	571936	100.000	113.42
	63 o-Xylene	106	10.176	10.176	(1.068)	304086	50.0000	48.00
	64 Styrene	104	10.195	10.195	(1.070)	506394	50.0000	49.90
	66 Bromoform	173	10.374	10.374	(1.089)	148319	50.0000	51.03
	67 Isopropylbenzene	105	10.545	10.545	(1.107)	719006	50.0000	47.14
	68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.919)	214176	50.0000	42.61
$	69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	237407	50.0000	58.17
*	70 1,4-Dichlorobenzene-d4	152	11.835	11.835	(1.000)	226816	50.0000	
	71 1,2,3-Trichloropropane	75	10.692	10.692	(0.903)	110170	50.0000	53.22
	72 trans-1,4-Dichloro-2-butene	53	10.926	10.926	(1.147)	59445	50.0000	48.95
	73 n-Propylbenzene	91	10.952	10.952	(0.925)	775251	50.0000	43.57
	74 Bromobenzene	156	10.830	10.830	(0.915)	209114	50.0000	45.93
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	577267	50.0000	42.92

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
76 2-Chlorotoluene	91	11.026	11.026	(0.932)	514772	50.0000	51.36
77 4-Chlorotoluene	91	11.138	11.138	(0.941)	563240	50.0000	51.78
78 tert-Butylbenzene	119	11.449	11.449	(0.967)	478421	50.0000	43.04
79 1,2,4-Trimethylbenzene	105	11.501	11.501	(0.972)	592489	50.0000	51.36
81 sec-Butylbenzene	105	11.668	11.668	(0.986)	653742	50.0000	44.11
82 p-Isopropyltoluene	119	11.818	11.818	(0.999)	561249	50.0000	44.39
83 1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	347819	50.0000	44.82
84 1,4-Dichlorobenzene	146	11.860	11.860	(1.002)	332745	50.0000	44.37
87 n-Butylbenzene	91	12.223	12.223	(1.033)	442455	50.0000	46.15
88 1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	328759	50.0000	45.15
89 1,2-Dibromo-3-Chloropropane	75	13.012	13.012	(1.100)	39084	50.0000	48.17
90 1,2,4-Trichlorobenzene	180	13.818	13.818	(1.168)	194046	50.0000	46.11
91 Hexachlorobutadiene	225	13.988	13.988	(1.182)	85670	50.0000	46.53
92 Naphthalene	128	14.065	14.065	(1.188)	467489	50.0000	46.14
93 1,2,3-Trichlorobenzene	182	14.302	14.302	(1.209)	158007	50.0000	43.42
146 Methyl acetate	43	3.215	3.215	(0.557)	188402	50.0000	43.06
138 Freon TF	101	2.753	2.753	(0.477)	140049	50.0000	51.35
139 Diethyl ether	59	2.532	2.532	(0.439)	311242	50.0000	48.01
147 Methylcyclohexane	83	6.986	6.986	(1.064)	225248	50.0000	47.27
135 1,4-Dioxane	88	7.236	7.236	(1.253)	29765	1000.00	884.12
132 n-Butanol	56	6.995	6.995	(1.212)	122333	1000.00	919.41
131 Methyl Acrylate	55	5.259	5.259	(0.911)	302207	50.0000	49.35
133 Ethyl Acrylate	55	7.005	7.005	(1.213)	518256	50.0000	46.84
136 n-Hexane	57	4.046	4.046	(0.701)	228320	50.0000	52.33
141 Cyclohexane	56	5.683	5.683	(0.984)	304264	50.0000	50.14
142 Tetrahydrofuran	42	5.407	5.407	(0.937)	126918	100.000	86.76
148 Tert-butyl alcohol	59	3.552	3.552	(0.615)	377178	1000.00	864.56
149 Isopropyl alcohol	45	3.042	3.042	(0.527)	223684	1000.00	806.22
151 4-Methyl-2-pentanol	45	8.449	8.449	(0.887)	827881	1000.00	884.15
166 1,2,3-Trimethylbenzene	105	11.915	11.915	(1.007)	560787	50.0000	43.79
167 Ethanol	45	2.529	2.529	(0.438)	296274	1000.00	926.58
170 1,3,5-Trichlorobenzene	180	13.202	13.202	(1.116)	225885	50.0000	45.76
172 tert-Butyl formate	59	4.903	4.903	(0.849)	608546	100.000	95.22
173 3,3-Dimethyl-1-butanol	57	9.091	9.091	(0.955)	299354	1000.00	923.79
174 tert-Amyl methyl ether	73	6.251	6.251	(1.083)	554484	50.0000	45.99
175 tert-Butyl ethyl ether	59	6.229	6.229	(1.079)	256927	50.0000	42.97
176 tert-Amyl alcohol	59	6.229	6.229	(1.079)	256927	1000.00	859.49
157 2-Methylnaphthalene	142	15.191	15.191	(1.284)	111277	50.0000	35.31
156 Diisopropyl ether	45	4.412	4.412	(0.764)	750055	50.0000	48.34(T)
171 1-Methylnaphthalene	142	15.387	15.387	(1.300)	128269	50.0000	38.73
130 Ethyl Acetate	43	5.234	5.234	(0.907)	407062	50.0000	45.24

QC Flag Legend

T - Target compound detected outside RT window.
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180509.b\D050902.D
Date : 09-MAY-2018 09:05
Client ID: CCV
Sample Info: CCV;CCV;2;;
Purge Volume: 5.0
Column phase: DB624

\\NAHSTWS003\Target\CHEM\VOA2.i\D180509.b\D050902.D

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180509.b\D050905.D
Lab Smp Id: VLCSW-180509 Client Smp ID: VLCSW-180509
Inj Date : 09-MAY-2018 10:18
Operator : AP Inst ID: VOA2.i
Smp Info : VLCSW-180509;VLCSW-180509;3;;LCS
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180509.b\8260LL.m
Meth Date : 14-May-2018 17:19 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 5 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

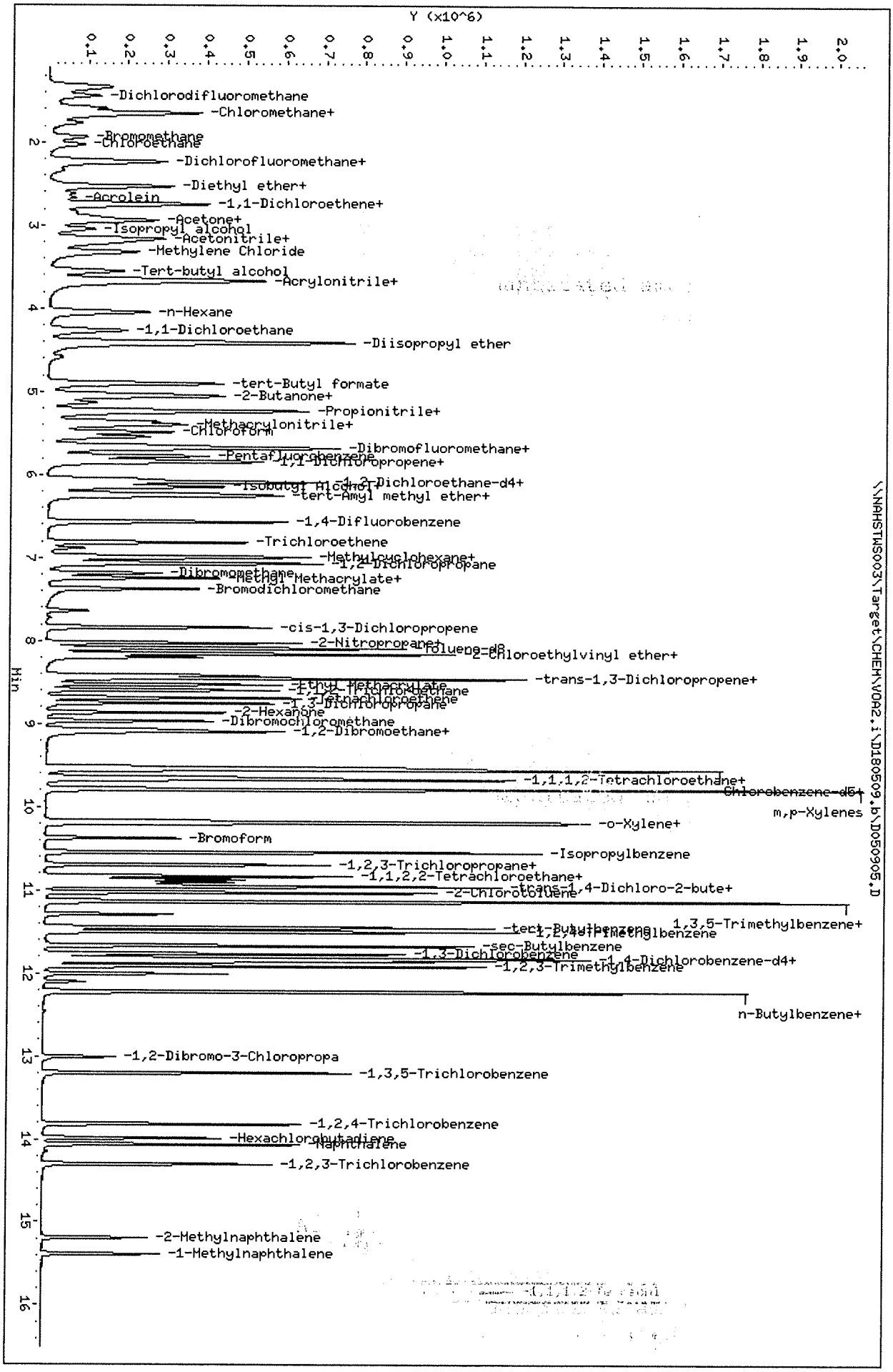
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	5.773	5.773	(1.000)	352874	50.0000	
2 Dichlorodifluoromethane	85	1.441	1.441	(0.250)	182825	56.0278	56.02
186 Isobutylene	56	1.643	1.649	(0.285)	181700	53.2105	53.21(AM)
3 Chloromethane	50	1.585	1.588	(0.275)	316676	55.8549	55.85
4 Propionitrile	54	5.227	5.224	(0.906)	614393	502.370	502.37
5 Vinyl Chloride	62	1.672	1.672	(0.290)	232585	52.8484	52.84
6 Bromomethane	94	1.932	1.941	(0.335)	113643	43.6033	43.60
7 Chloroethane	64	2.025	2.034	(0.351)	128363	54.3932	54.39
159 Dichlorofluoromethane	67	2.217	2.224	(0.384)	323236	49.8184	49.81
8 Trichlorofluoromethane	101	2.237	2.246	(0.387)	227487	54.6165	54.61
9 Acrolein	56	2.670	2.673	(0.463)	89539	102.602	102.60
10 Acetone	43	2.846	2.850	(0.493)	116786	100.417	100.41
11 1,1-Dichloroethene	96	2.740	2.740	(0.475)	145411	54.5777	54.57
12 Isobutyl Alcohol	74	6.152	6.148	(1.066)	15494	870.107	870.10(A)
13 Acetonitrile	39	3.161	3.158	(0.548)	225074	499.630	499.63
14 Allyl Chloride	41	3.164	3.167	(0.548)	560490	48.8115	48.81
15 Iodomethane	142	2.894	2.904	(0.501)	241751	88.4755	88.47
16 Acrylonitrile	53	3.677	3.674	(0.637)	166438	106.292	106.29
17 Methylene Chloride	84	3.321	3.324	(0.575)	175720	47.1238	47.12
18 Methyl tert-butyl ether	73	3.677	3.674	(0.637)	491115	48.2644	48.26
19 Carbon Disulfide	76	2.943	2.943	(0.510)	617636	101.232	101.23

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.658	3.655	(0.634)	158628	54.4315	54.43
	21 Vinyl Acetate	43	5.234	5.234	(0.907)	425620	93.6968	93.69
	22 1,1-Dichloroethane	63	4.268	4.268	(0.739)	355008	50.0933	50.09
	24 2-Butanone	43	5.131	5.134	(0.889)	186097	101.440	101.43
	25 Methacrylonitrile	41	5.397	5.397	(0.935)	213554	48.8733	48.87
	26 2,2-Dichloropropane	77	5.035	5.035	(0.872)	257089	53.6490	53.64
	27 cis-1,2-Dichloroethene	96	5.057	5.064	(0.876)	187438	51.4081	51.40
	28 Chloroform	83	5.484	5.487	(0.950)	303302	49.6098	49.60
	29 Bromochloromethane	128	5.356	5.359	(0.928)	94156	53.5098	53.50
$	30 Dibromofluoromethane	113	5.677	5.680	(0.983)	153476	50.2821	50.28
	31 1,1,1-Trichloroethane	97	5.645	5.648	(0.978)	269096	52.4286	52.42
	32 1,1-Dichloropropene	75	5.847	5.847	(0.891)	217937	47.4489	47.44
	33 1,2-Dichloroethane	62	6.139	6.139	(0.935)	256546	51.0397	51.03
	34 Carbon Tetrachloride	117	5.827	5.827	(0.888)	222337	47.6015	47.60
$	35 1,2-Dichloroethane-d4	65	6.049	6.052	(1.048)	201158	52.4153	52.41
*	36 1,4-Difluorobenzene	114	6.565	6.569	(1.000)	532902	50.0000	
	37 Benzene	78	6.087	6.087	(0.927)	665545	49.1319	49.13
	38 Trichloroethene	130	6.816	6.813	(1.038)	189350	54.0029	54.00
	39 Bromodichloromethane	83	7.374	7.374	(1.123)	253076	51.4387	51.43
	40 Methyl Methacrylate	41	7.243	7.239	(1.255)	212734	51.0213	51.02
	41 2-Chloroethylvinyl ether	63	8.154	8.157	(1.242)	61848	101.707	101.70(A)
	42 1,2-Dichloropropane	63	7.060	7.063	(1.075)	201700	49.6170	49.61
	43 2-Nitropropane	43	8.022	8.022	(1.390)	425339	48.4170	48.41
	44 Dibromomethane	93	7.188	7.185	(1.095)	110476	54.4325	54.43
	45 4-Methyl-2-Pentanone	43	8.022	8.022	(0.842)	425339	97.3204	97.32
	46 cis-1,3-Dichloropropene	75	7.836	7.836	(1.194)	300863	54.8041	54.80
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	476279	50.0000	
$	48 Toluene-d8	98	8.090	8.090	(0.849)	591004	51.2833	51.28
	49 Ethyl Methacrylate	69	8.526	8.529	(1.299)	249212	55.8635	55.86
	50 Toluene	91	8.154	8.157	(0.856)	704063	48.3958	48.39
	51 trans-1,3-Dichloropropene	75	8.414	8.417	(1.282)	257244	56.4634	56.46
	52 2-Hexanone	43	8.863	8.863	(0.931)	275641	100.647	100.64
	53 1,1,2-Trichloroethane	83	8.594	8.590	(0.902)	139146	50.9223	50.92
	54 1,3-Dichloropropane	76	8.751	8.751	(0.919)	277135	51.0877	51.08
	55 Dibromochloromethane	129	8.969	8.969	(0.942)	211441	52.8448	52.84
	56 Tetrachloroethene	164	8.687	8.690	(0.912)	149693	51.4844	51.48
	57 1,2-Dibromoethane	107	9.068	9.065	(0.952)	177843	52.1341	52.13
	58 1-Chlorohexane	55	9.550	9.550	(1.455)	187733	57.1099	57.10
	59 Chlorobenzene	112	9.550	9.553	(1.003)	445197	48.9024	48.90
	60 1,1,1,2-Tetrachloroethane	131	9.646	9.643	(1.013)	184710	51.1022	51.10
	61 Ethylbenzene	106	9.669	9.668	(1.015)	242552	49.1650	49.16
	62 m,p-Xylenes	106	9.790	9.787	(1.028)	588122	119.593	119.59
	63 o-Xylene	106	10.176	10.176	(1.068)	309908	50.0220	50.02
	64 Styrene	104	10.195	10.195	(1.070)	507185	51.1019	51.10
	66 Bromoform	173	10.374	10.374	(1.089)	151219	53.1988	53.19
	67 Isopropylbenzene	105	10.545	10.545	(1.107)	759054	50.8892	50.88
	68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.919)	222707	46.2856	46.28
$	69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	229480	57.4579	57.45(M)
*	70 1,4-Dichlorobenzene-d4	152	11.835	11.835	(1.000)	217151	50.0000	
	71 1,2,3-Trichloropropane	75	10.692	10.692	(0.903)	106554	53.7928	53.79
	72 trans-1,4-Dichloro-2-butene	53	10.926	10.926	(1.147)	61296	51.5697	51.56
	73 n-Propylbenzene	91	10.952	10.952	(0.925)	820351	48.1635	48.16
	74 Bromobenzene	156	10.830	10.830	(0.915)	209505	48.0663	48.06
	75 1,3,5-Trimethylbenzene	105	11.132	11.132	(0.941)	606613	47.1131	47.11

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
	76 2-Chlorotoluene	91	11.026	11.026	(0.932)	525749	54.9568	54.95
	77 4-Chlorotoluene	91	11.138	11.138	(0.941)	578516	55.7513	55.75
	78 tert-Butylbenzene	119	11.449	11.449	(0.967)	519410	48.8162	48.81
	79 1,2,4-Trimethylbenzene	105	11.498	11.501	(0.972)	619171	56.3257	56.32
	81 sec-Butylbenzene	105	11.664	11.668	(0.986)	710116	50.0491	50.04
	82 p-Isopropyltoluene	119	11.818	11.818	(0.999)	601680	49.7139	49.71
	83 1,3-Dichlorobenzene	146	11.767	11.767	(0.994)	355541	47.8557	47.85
	84 1,4-Dichlorobenzene	146	11.857	11.860	(1.002)	342480	47.7034	47.70
	87 n-Butylbenzene	91	12.220	12.223	(1.033)	475585	51.8182	51.81
	88 1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	342144	49.0802	49.08
	89 1,2-Dibromo-3-Chloropropane	75	13.009	13.012	(1.099)	40592	52.2571	52.25
	90 1,2,4-Trichlorobenzene	180	13.818	13.818	(1.168)	203917	50.5735	50.57
	91 Hexachlorobutadiene	225	13.988	13.988	(1.182)	89613	50.8478	50.84
	92 Naphthalene	128	14.062	14.065	(1.188)	493764	50.8601	50.86
	93 1,2,3-Trichlorobenzene	182	14.302	14.302	(1.209)	172659	49.4154	49.41
	146 Methyl acetate	43	3.219	3.215	(0.558)	201284	47.5969	47.59
	138 Freon TF	101	2.753	2.753	(0.477)	147017	55.8933	55.89
	139 Diethyl ether	59	2.532	2.532	(0.439)	316174	50.4557	50.45
	147 Methylcyclohexane	83	6.983	6.986	(1.064)	244348	52.2288	52.22
	135 1,4-Dioxane	88	7.233	7.236	(1.253)	33606	1035.93	1035.93
	132 n-Butanol	56	6.989	6.995	(1.211)	131256	1020.40	1020.40
	131 Methyl Acrylate	55	5.256	5.259	(0.911)	310440	52.4445	52.44
	133 Ethyl Acrylate	55	7.005	7.005	(1.213)	547455	51.1817	51.18
	136 n-Hexane	57	4.050	4.046	(0.702)	242706	57.5513	57.55
	141 Cyclohexane	56	5.683	5.683	(0.984)	311118	53.0429	53.04
	142 Tetrahydrofuran	42	5.410	5.407	(0.937)	137183	97.0027	97.00
	148 Tert-butyl alcohol	59	3.552	3.552	(0.615)	420371	996.710	996.70
	149 Isopropyl alcohol	45	3.045	3.042	(0.528)	248161	925.211	925.21
	151 4-Methyl-2-pentanol	45	8.452	8.449	(0.887)	908174	991.656	991.65
	166 1,2,3-Trimethylbenzene	105	11.915	11.915	(1.007)	583078	47.5668	47.56
	167 Ethanol	45	2.529	2.529	(0.438)	314380	1017.03	1017.03
	170 1,3,5-Trichlorobenzene	180	13.202	13.202	(1.116)	237767	50.3129	50.31
	172 tert-Butyl formate	59	4.903	4.903	(0.849)	603020	97.6035	97.60
	173 3,3-Dimethyl-1-butanol	57	9.091	9.091	(0.955)	327876	1034.50	1034.49
	174 tert-Amyl methyl ether	73	6.254	6.251	(1.083)	569229	48.8449	48.84
	175 tert-Butyl ethyl ether	59	6.229	6.229	(1.079)	284191	49.1702	49.17
	176 tert-Amyl alcohol	59	6.229	6.229	(1.079)	284191	983.405	983.40
	157 2-Methylnaphthalene	142	15.188	15.191	(1.283)	126950	40.8860	40.88
	156 Diisopropyl ether	45	4.412	4.412	(0.764)	743663	49.5781	49.57
	171 1-Methylnaphthalene	142	15.387	15.387	(1.300)	145769	44.9308	44.93
	130 Ethyl Acetate	43	5.234	5.234	(0.907)	425620	48.9394	48.93
M	94 1,2-Dichloroethylene (total)	96				346066	105.840	105.83
M	95 Xylenes (total)	106				898030	169.615	169.61

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180509.b\D050905.D
Date : 09-MAY-2018 10:18
Client ID: VLCSW-180509
Sample Info: VLCSW-180509;VLCSW-180509;3;;LCS
Purge Volume: 5.0
Column phase: DB624

\\NAHSTWS003\Target\CHEM\VOA2.i\D180509.b\D050905.D

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180509.b\D050907.D
Lab Smp Id: VBLKW-180509 Client Smp ID: VBLKW-180509
Inj Date : 09-MAY-2018 11:11
Operator : AP Inst ID: VOA2.i
Smp Info : VBLKW-180509;VBLKW-180509;3;;BLANK
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180509.b\8260LL.m
Meth Date : 14-May-2018 17:19 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 7 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

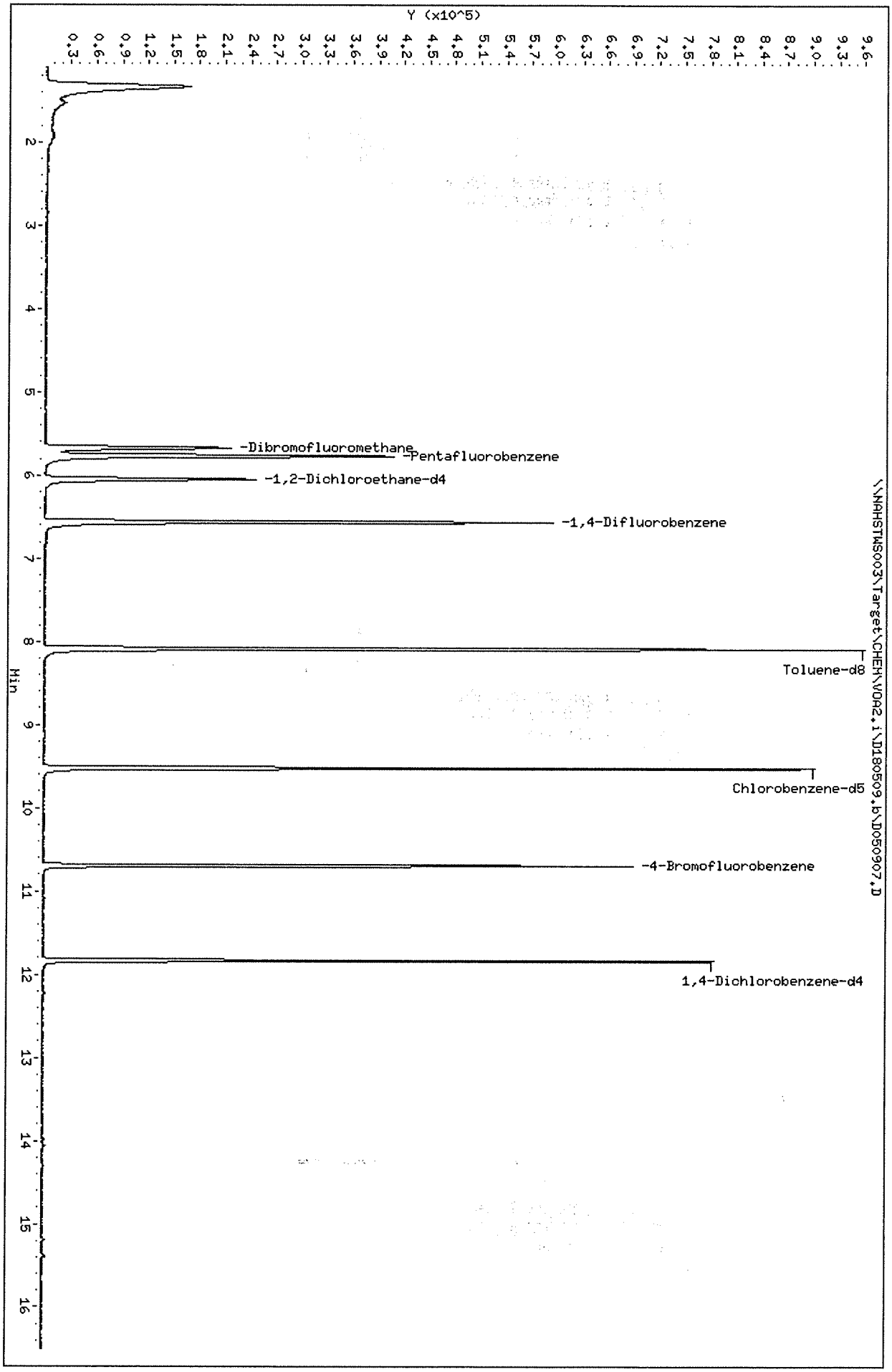
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
* 1 Pentafluorobenzene	168	5.770	5.773	(1.000)	368685	50.0000	
$ 30 Dibromofluoromethane	113	5.673	5.680	(0.983)	167517	52.6912	52.69
$ 35 1,2-Dichloroethane-d4	65	6.049	6.052	(1.048)	199207	49.5736	49.57
* 36 1,4-Difluorobenzene	114	6.562	6.569	(1.000)	527273	50.0000	
* 47 Chlorobenzene-d5	117	9.521	9.524	(1.000)	480615	50.0000	
$ 48 Toluene-d8	98	8.086	8.090	(0.849)	615222	53.2611	53.26
$ 69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	221898	54.9177	54.91
* 70 1,4-Dichlorobenzene-d4	152	11.834	11.835	(1.000)	203735	50.0000	

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180509.b\D0509O7.D
Date : 09-MAY-2018 11:11
Client ID: VBLKW-180509
Sample Info: VBLKW-180509;VBLKW-180509;3;;BLANK
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180509.b\D050919.D Page 1
Report Date: 14-May-2018 17:19

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180509.b\D050919.D
Lab Smp Id: HS18050395-10MS Client Smp ID: HS18050395-10MS
Inj Date : 09-MAY-2018 16:04
Operator : AP Inst ID: VOA2.i
Smp Info : HS18050395-10MS;HS18050395-10MS;3;;MS
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180509.b\8260LL.m
Meth Date : 14-May-2018 17:19 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 19 QC Sample: MS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

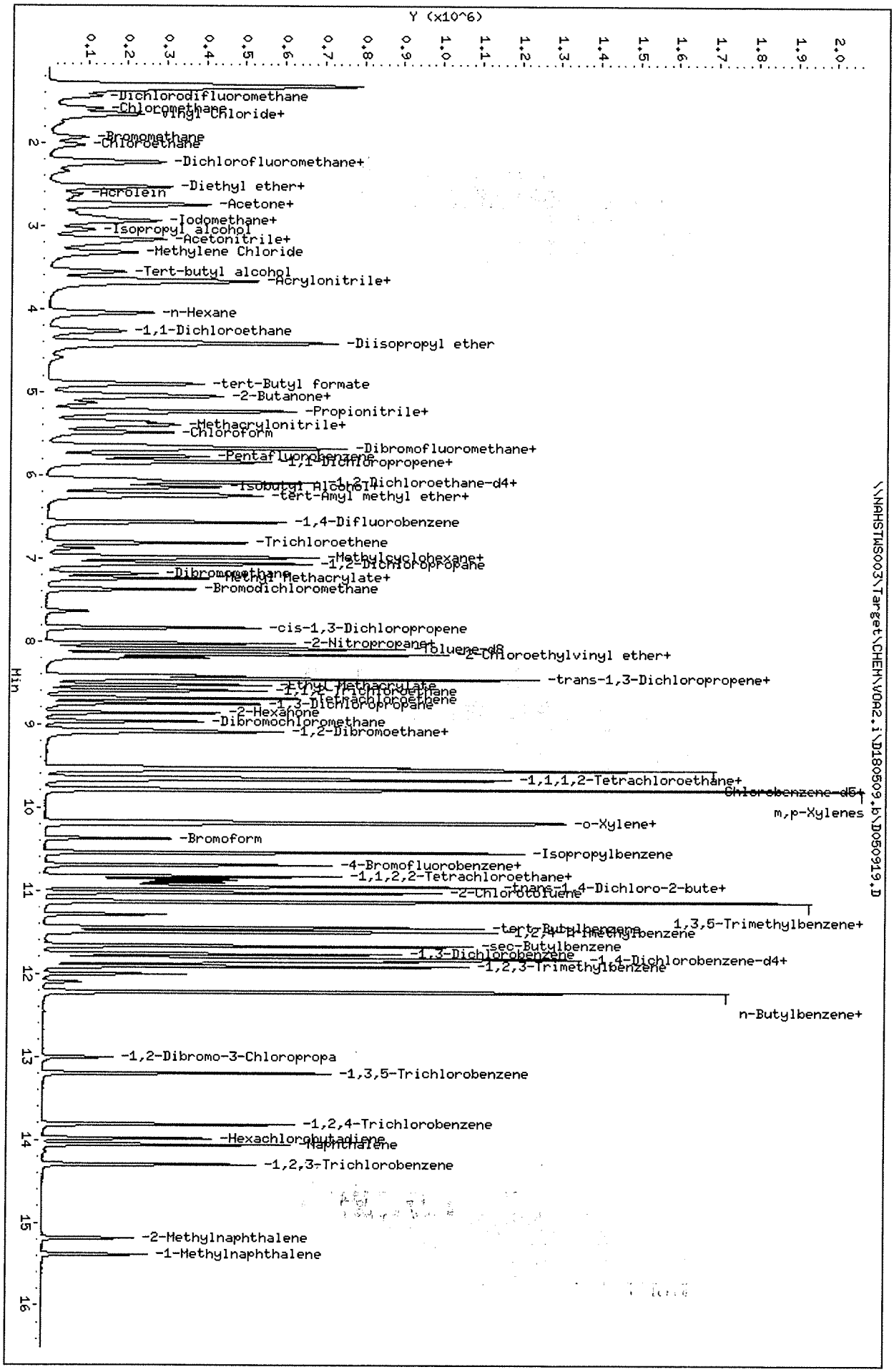
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1	Pentafluorobenzene	168	5.773	5.773	(1.000)	349967	50.0000	
2	Dichlorodifluoromethane	85	1.438	1.441	(0.249)	155289	47.8465	47.84
186	Isobutylene	56	1.646	1.649	(0.285)	92492	27.3111	27.31(AM)
3	Chloromethane	50	1.585	1.588	(0.275)	284467	50.4245	50.42
4	Propionitrile	54	5.230	5.224	(0.906)	601914	496.255	496.25
5	Vinyl Chloride	62	1.665	1.672	(0.289)	233035	53.3905	53.39
6	Bromomethane	94	1.932	1.941	(0.335)	108808	42.0950	42.09
7	Chloroethane	64	2.025	2.034	(0.351)	130257	55.6916	55.69
159	Dichlorofluoromethane	67	2.221	2.224	(0.385)	326292	50.7072	50.70
8	Trichlorofluoromethane	101	2.240	2.246	(0.388)	234925	56.8708	56.87
9	Acrolein	56	2.673	2.673	(0.463)	72335	83.5042	83.50
10	Acetone	43	2.840	2.850	(0.492)	111269	96.3222	96.32
11	1,1-Dichloroethene	96	2.734	2.740	(0.474)	147952	55.9927	55.99
12	Isobutyl Alcohol	74	6.155	6.148	(1.066)	14163	802.846	802.84(A)
13	Acetonitrile	39	3.164	3.158	(0.548)	223313	499.839	499.83
14	Allyl Chloride	41	3.164	3.167	(0.548)	582137	51.1178	51.11
15	Iodomethane	142	2.898	2.904	(0.502)	262937	96.6326	96.63
16	Acrylonitrile	53	3.681	3.674	(0.638)	164440	105.889	105.88
17	Methylene Chloride	84	3.321	3.324	(0.575)	169235	45.7616	45.76
18	Methyl tert-butyl ether	73	3.674	3.674	(0.636)	459821	45.5643	45.56
19	Carbon Disulfide	76	2.939	2.943	(0.509)	633716	104.730	104.72

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.648	3.655	(0.632)	155024	53.6318	53.63
	21 Vinyl Acetate	43	5.234	5.234	(0.907)	392799	87.1898	87.18
	22 1,1-Dichloroethane	63	4.265	4.268	(0.739)	350366	49.8489	49.84
	24 2-Butanone	43	5.131	5.134	(0.889)	180133	99.0044	99.00
	25 Methacrylonitrile	41	5.394	5.397	(0.934)	209101	48.2517	48.25
	26 2,2-Dichloropropane	77	5.035	5.035	(0.872)	248435	52.2737	52.27
	27 cis-1,2-Dichloroethene	96	5.054	5.064	(0.875)	182490	50.4668	50.46
	28 Chloroform	83	5.487	5.487	(0.951)	298857	49.2887	49.28
	29 Bromochloromethane	128	5.356	5.359	(0.928)	90079	51.6180	51.61
$	30 Dibromofluoromethane	113	5.677	5.680	(0.983)	151118	49.8957	49.89
	31 1,1,1-Trichloroethane	97	5.644	5.648	(0.978)	269087	52.8624	52.86
	32 1,1-Dichloropropene	75	5.847	5.847	(0.890)	216972	47.3815	47.38
	33 1,2-Dichloroethane	62	6.135	6.139	(0.934)	249906	49.8689	49.86
	34 Carbon Tetrachloride	117	5.824	5.827	(0.887)	233562	50.1558	50.15
$	35 1,2-Dichloroethane-d4	65	6.049	6.052	(1.048)	198955	52.2662	52.26
*	36 1,4-Difluorobenzene	114	6.569	6.569	(1.000)	531297	50.0000	
	37 Benzene	78	6.087	6.087	(0.927)	659974	48.8678	48.86
	38 Trichloroethene	130	6.816	6.813	(1.038)	184618	52.8124	52.81
	39 Bromodichloromethane	83	7.371	7.374	(1.122)	240850	49.1016	49.10
	40 Methyl Methacrylate	41	7.242	7.239	(1.255)	201616	48.7564	48.75
	41 2-Chloroethylvinyl ether	63	8.157	8.157	(1.242)	60315	99.4858	99.48
	42 1,2-Dichloropropane	63	7.060	7.063	(1.075)	198130	48.8860	48.88
	43 2-Nitropropane	43	8.022	8.022	(1.390)	424152	48.6829	48.68
	44 Dibromomethane	93	7.188	7.185	(1.094)	105670	52.2218	52.22
	45 4-Methyl-2-Pentanone	43	8.022	8.022	(0.843)	424152	98.0964	98.09
	46 cis-1,3-Dichloropropene	75	7.836	7.836	(1.193)	284278	51.9394	51.93
*	47 Chlorobenzene-d5	117	9.521	9.524	(1.000)	471193	50.0000	
$	48 Toluene-d8	98	8.086	8.090	(0.849)	589041	51.7470	51.74
	49 Ethyl Methacrylate	69	8.526	8.529	(1.298)	238540	53.5421	53.54
	50 Toluene	91	8.154	8.157	(0.856)	691499	48.0452	48.04
	51 trans-1,3-Dichloropropene	75	8.414	8.417	(1.281)	236666	52.1036	52.10
	52 2-Hexanone	43	8.863	8.863	(0.931)	268650	99.1530	99.15
	53 1,1,2-Trichloroethane	83	8.593	8.590	(0.903)	131823	48.7631	48.76
	54 1,3-Dichloropropane	76	8.747	8.751	(0.919)	265073	49.3916	49.39
	55 Dibromochloromethane	129	8.969	8.969	(0.942)	198269	50.0877	50.08
	56 Tetrachloroethene	164	8.686	8.690	(0.912)	149265	51.8913	51.89
	57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	167931	49.7598	49.75
	58 1-Chlorohexane	55	9.550	9.550	(1.454)	191530	58.5095	58.50
	59 Chlorobenzene	112	9.550	9.553	(1.003)	435318	48.3334	48.33
	60 1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.013)	178492	49.9149	49.91
	61 Ethylbenzene	106	9.668	9.668	(1.016)	239618	49.0945	49.09
	62 m,p-Xylenes	106	9.787	9.787	(1.028)	581299	119.475	119.47
	63 o-Xylene	106	10.175	10.176	(1.069)	303557	49.5258	49.52
	64 Styrene	104	10.195	10.195	(1.071)	488024	49.7020	49.70
	66 Bromoform	173	10.371	10.374	(1.089)	145111	51.6011	51.60
	67 Isopropylbenzene	105	10.544	10.545	(1.108)	754097	51.1026	51.10
	68 1,1,2,2-Tetrachloroethane	83	10.869	10.872	(0.918)	211073	44.2396	44.23
$	69 4-Bromofluorobenzene	95	10.692	10.695	(1.123)	224319	56.7317	56.73
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.835	(1.000)	215325	50.0000	
	71 1,2,3-Trichloropropane	75	10.692	10.692	(0.903)	102140	51.9150	51.91
	72 trans-1,4-Dichloro-2-butene	53	10.926	10.926	(1.148)	51458	43.8769	43.87
	73 n-Propylbenzene	91	10.952	10.952	(0.925)	808922	47.8952	47.89
	74 Bromobenzene	156	10.830	10.830	(0.915)	201628	46.6514	46.65
	75 1,3,5-Trimethylbenzene	105	11.128	11.132	(0.940)	594345	46.5517	46.55

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
76	2-Chlorotoluene	91	11.026	11.026	(0.932)	519695	54.7773	54.77
77	4-Chlorotoluene	91	11.135	11.138	(0.941)	560497	54.4118	54.41
78	tert-Butylbenzene	119	11.446	11.449	(0.967)	510475	48.3833	48.38
79	1,2,4-Trimethylbenzene	105	11.497	11.501	(0.972)	600374	55.0171	55.01
81	sec-Butylbenzene	105	11.668	11.668	(0.986)	703207	49.9825	49.98
82	p-Isopropyltoluene	119	11.815	11.818	(0.998)	590935	49.2401	49.24
83	1,3-Dichlorobenzene	146	11.764	11.767	(0.994)	342878	46.5427	46.54
84	1,4-Dichlorobenzene	146	11.857	11.860	(1.002)	326038	45.7983	45.79
87	n-Butylbenzene	91	12.219	12.223	(1.033)	464241	51.0111	51.01
88	1,2-Dichlorobenzene	146	12.219	12.223	(1.033)	326108	47.1766	47.17
89	1,2-Dibromo-3-Chloropropane	75	13.006	13.012	(1.099)	38824	50.4049	50.40
90	1,2,4-Trichlorobenzene	180	13.814	13.818	(1.167)	193098	48.3160	48.31
91	Hexachlorobutadiene	225	13.988	13.988	(1.182)	86017	49.2203	49.22
92	Naphthalene	128	14.061	14.065	(1.188)	467035	48.5385	48.53
93	1,2,3-Trichlorobenzene	182	14.299	14.302	(1.208)	160182	46.2991	46.29
146	Methyl acetate	43	3.218	3.215	(0.558)	184320	43.9476	43.94
138	Freon TF	101	2.756	2.753	(0.478)	149844	57.4815	57.48
139	Diethyl ether	59	2.532	2.532	(0.439)	309924	49.8691	49.86
147	Methylcyclohexane	83	6.986	6.986	(1.064)	254218	54.5027	54.50
135	1,4-Dioxane	88	7.233	7.236	(1.253)	34426	1070.69	1070.68
132	n-Butanol	56	6.986	6.995	(1.210)	124027	972.215	972.21
131	Methyl Acrylate	55	5.253	5.259	(0.910)	303997	51.7827	51.78
133	Ethyl Acrylate	55	7.002	7.005	(1.213)	545290	51.4028	51.40
136	n-Hexane	57	4.050	4.046	(0.702)	237204	56.7138	56.71
141	Cyclohexane	56	5.680	5.683	(0.984)	338550	58.1993	58.19
142	Tetrahydrofuran	42	5.410	5.407	(0.937)	137520	98.0487	98.04
148	Tert-butyl alcohol	59	3.555	3.552	(0.616)	427394	1021.78	1021.77
149	Isopropyl alcohol	45	3.045	3.042	(0.528)	249784	938.998	938.99
151	4-Methyl-2-pentanol	45	8.449	8.449	(0.887)	920587	1016.06	1016.06
166	1,2,3-Trimethylbenzene	105	11.911	11.915	(1.007)	560195	46.0875	46.08
167	Ethanol	45	2.529	2.529	(0.438)	306632	1000.21	1000.20
170	1,3,5-Trichlorobenzene	180	13.198	13.202	(1.115)	229955	49.0724	49.07
172	tert-Butyl formate	59	4.903	4.903	(0.849)	531886	86.8050	86.80
173	3,3-Dimethyl-1-butanol	57	9.091	9.091	(0.955)	323106	1030.45	1030.45
174	tert-Amyl methyl ether	73	6.254	6.251	(1.083)	500529	43.3066	43.30
175	tert-Butyl ethyl ether	59	6.228	6.229	(1.079)	281362	49.0851	49.08
176	tert-Amyl alcohol	59	6.228	6.229	(1.079)	281362	981.703	981.70
157	2-Methylnaphthalene	142	15.191	15.191	(1.284)	110180	36.5713	36.57
156	Diisopropyl ether	45	4.412	4.412	(0.764)	722864	48.5918	48.59
171	1-Methylnaphthalene	142	15.383	15.387	(1.300)	130822	41.2052	41.20
130	Ethyl Acetate	43	5.234	5.234	(0.907)	392799	45.5407	45.54
M 94	1,2-Dichloroethylene (total)	96				337514	104.099	104.09
M 95	Xylenes (total)	106				884856	169.001	169.00

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180509.b\D050919.D
Date : 09-MAY-2018 16:04
Client ID: HS18050395-10MS
Sample Info: HS18050395-10MS;HS18050395-10MS;3;;MS
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

\\NAHSTWS003\Target\CHEM\VOA2.i\D180509.b\D050919.D

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180509.b\D050920.D Page 1
Report Date: 14-May-2018 17:19

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180509.b\D050920.D
Lab Smp Id: HS18050395-10MSD Client Smp ID: HS18050395-10MSD
Inj Date : 09-MAY-2018 16:29
Operator : AP Inst ID: VOA2.i
Smp Info : HS18050395-10MSD;HS18050395-10MSD;3;;MSD
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180509.b\8260LL.m
Meth Date : 14-May-2018 17:19 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 19 QC Sample: MSD
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

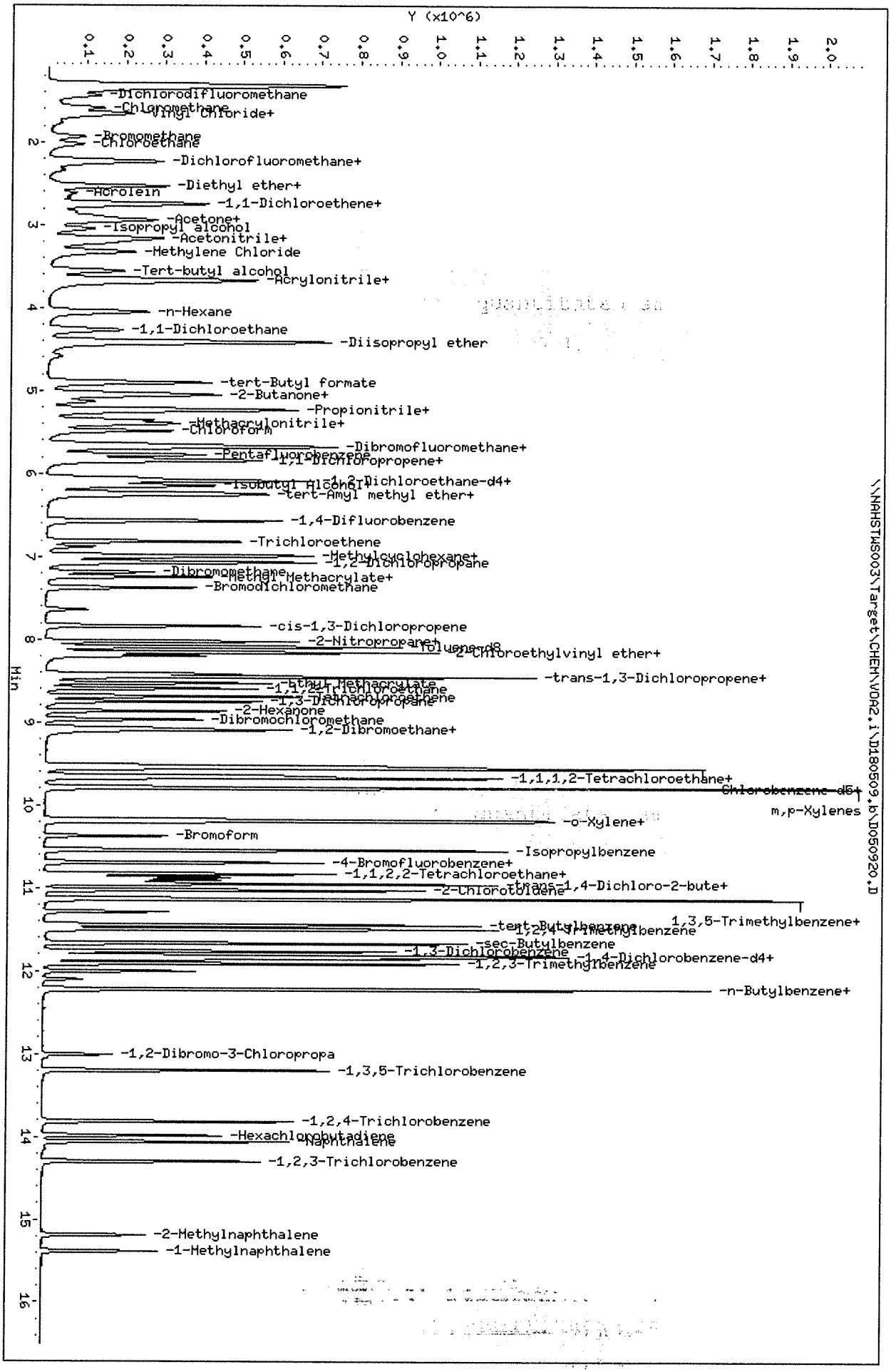
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1	Pentafluorobenzene	168	5.773	5.773	(1.000)	349768	50.0000	
2	Dichlorodifluoromethane	85	1.434	1.441	(0.249)	153940	47.4501	47.45
186	Isobutylene	56	1.649	1.649	(0.286)	79012	23.3440	23.34(AM)
3	Chloromethane	50	1.585	1.588	(0.275)	293775	52.1628	52.16
4	Propionitrile	54	5.227	5.224	(0.306)	615953	508.118	508.11
5	Vinyl Chloride	62	1.672	1.672	(0.290)	227763	52.2123	52.21
6	Bromomethane	94	1.932	1.941	(0.335)	110802	42.8908	42.89
7	Chloroethane	64	2.031	2.034	(0.352)	130328	55.7555	55.75
159	Dichlorofluoromethane	67	2.217	2.224	(0.384)	314387	48.8849	48.88
8	Trichlorofluoromethane	101	2.240	2.246	(0.388)	233054	56.4500	56.44
9	Acrolein	56	2.673	2.673	(0.463)	70416	81.3250	81.32
10	Acetone	43	2.846	2.850	(0.493)	116769	101.327	101.32
11	1,1-Dichloroethene	96	2.743	2.740	(0.475)	146382	55.4300	55.43
12	Isobutyl Alcohol	74	6.158	6.148	(1.067)	14241	807.659	807.65(A)
13	Acetonitrile	39	3.157	3.158	(0.547)	223067	499.572	499.57
14	Allyl Chloride	41	3.161	3.167	(0.548)	565973	49.7267	49.72
15	Iodomethane	142	2.894	2.904	(0.501)	268534	98.6562	98.65
16	Acrylonitrile	53	3.677	3.674	(0.637)	163822	105.551	105.55
17	Methylene Chloride	84	3.324	3.324	(0.576)	165778	44.8524	44.85
18	Methyl tert-butyl ether	73	3.671	3.674	(0.636)	468200	46.4210	46.42
19	Carbon Disulfide	76	2.939	2.943	(0.509)	631402	104.407	104.40

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.652	3.655	(0.633)	161846	56.0385	56.03
	21 Vinyl Acetate	43	5.234	5.234	(0.907)	396707	88.1073	88.10
	22 1,1-Dichloroethane	63	4.268	4.268	(0.739)	346442	49.3187	49.31
	24 2-Butanone	43	5.131	5.134	(0.889)	183842	101.100	101.10
	25 Methacrylonitrile	41	5.397	5.397	(0.935)	212449	49.0521	49.05
	26 2,2-Dichloropropane	77	5.035	5.035	(0.872)	245428	51.6704	51.67
	27 cis-1,2-Dichloroethene	96	5.057	5.064	(0.876)	181533	50.2307	50.23
	28 Chloroform	83	5.484	5.487	(0.950)	296038	48.8516	48.85
	29 Bromochloromethane	128	5.356	5.359	(0.928)	88741	50.8803	50.88
$	30 Dibromofluoromethane	113	5.676	5.680	(0.983)	150240	49.6159	49.61
	31 1,1,1-Trichloroethane	97	5.644	5.648	(0.978)	271071	53.2824	53.28
	32 1,1-Dichloropropene	75	5.846	5.847	(0.891)	216167	47.8186	47.81
	33 1,2-Dichloroethane	62	6.135	6.139	(0.935)	242482	49.0157	49.01
	34 Carbon Tetrachloride	117	5.830	5.827	(0.888)	235283	51.1814	51.18
$	35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	200052	52.5969	52.59
*	36 1,4-Difluorobenzene	114	6.565	6.569	(1.000)	524487	50.0000	
	37 Benzene	78	6.087	6.087	(0.927)	650065	48.7591	48.75
	38 Trichloroethene	130	6.816	6.813	(1.038)	184995	53.6074	53.60
	39 Bromodichloromethane	83	7.371	7.374	(1.123)	239873	49.5373	49.53
	40 Methyl Methacrylate	41	7.242	7.239	(1.255)	204310	49.4360	49.43
	41 2-Chloroethylvinyl ether	63	8.154	8.157	(1.242)	60734	101.478	101.47(A)
	42 1,2-Dichloropropane	63	7.063	7.063	(1.076)	195242	48.7990	48.79
	43 2-Nitropropane	43	8.022	8.022	(1.390)	429322	49.3043	49.30
	44 Dibromomethane	93	7.185	7.185	(1.094)	103748	51.9377	51.93
	45 4-Methyl-2-Pentanone	43	8.022	8.022	(0.842)	429322	100.018	100.01
	46 cis-1,3-Dichloropropene	75	7.836	7.836	(1.194)	285082	52.7626	52.76
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	467771	50.0000	
$	48 Toluene-d8	98	8.086	8.090	(0.849)	584452	51.7135	51.71
	49 Ethyl Methacrylate	69	8.526	8.529	(1.299)	234994	53.4263	53.42
	50 Toluene	91	8.154	8.157	(0.856)	690262	48.3101	48.31
	51 trans-1,3-Dichloropropene	75	8.410	8.417	(1.281)	243664	54.3408	54.34
	52 2-Hexanone	43	8.863	8.863	(0.931)	277813	103.285	103.28
	53 1,1,2-Trichloroethane	83	8.593	8.590	(0.902)	133018	49.5651	49.56
	54 1,3-Dichloropropane	76	8.751	8.751	(0.919)	262797	49.3257	49.32
	55 Dibromochloromethane	129	8.966	8.969	(0.941)	199743	50.8292	50.82
	56 Tetrachloroethene	164	8.686	8.690	(0.912)	148803	52.1091	52.10
	57 1,2-Dibromoethane	107	9.062	9.065	(0.951)	170803	50.9810	50.98
	58 1-Chlorohexane	55	9.550	9.550	(1.455)	187178	57.8930	57.89
	59 Chlorobenzene	112	9.550	9.553	(1.003)	429503	48.0366	48.03
	60 1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.012)	178001	50.1417	50.14
	61 Ethylbenzene	106	9.668	9.668	(1.015)	239862	49.5040	49.50
	62 m,p-Xylenes	106	9.787	9.787	(1.028)	577313	119.527	119.52
	63 o-Xylene	106	10.175	10.176	(1.068)	302718	49.7502	49.75
	64 Styrene	104	10.195	10.195	(1.070)	488756	50.1407	50.14
	66 Bromoform	173	10.371	10.374	(1.089)	142780	51.1436	51.14
	67 Isopropylbenzene	105	10.544	10.545	(1.107)	746105	50.9309	50.93
	68 1,1,2,2-Tetrachloroethane	83	10.872	10.872	(0.919)	214352	44.6054	44.60
$	69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	225781	57.5659	57.56
*	70 1,4-Dichlorobenzene-d4	152	11.834	11.835	(1.000)	216877	50.0000	
	71 1,2,3-Trichloropropane	75	10.692	10.692	(0.903)	105691	53.4067	53.40
	72 trans-1,4-Dichloro-2-butene	53	10.926	10.926	(1.147)	56744	48.6526	48.65
	73 n-Propylbenzene	91	10.952	10.952	(0.925)	809511	47.5871	47.58
	74 Bromobenzene	156	10.830	10.830	(0.915)	198787	45.6649	45.66
	75 1,3,5-Trimethylbenzene	105	11.128	11.132	(0.940)	596883	46.4160	46.41

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
76	2-Chlorotoluene	91	11.026	11.026	(0.932)	511123	53.4325	53.43
77	4-Chlorotoluene	91	11.138	11.138	(0.941)	557457	53.6960	53.69
78	tert-Butylbenzene	119	11.446	11.449	(0.967)	510431	48.0329	48.03
79	1,2,4-Trimethylbenzene	105	11.497	11.501	(0.972)	610527	55.5741	55.57
81	sec-Butylbenzene	105	11.664	11.668	(0.986)	703570	49.6504	49.65
82	p-Isopropyltoluene	119	11.815	11.818	(0.998)	590739	48.8715	48.87
83	1,3-Dichlorobenzene	146	11.764	11.767	(0.994)	343609	46.3081	46.30
84	1,4-Dichlorobenzene	146	11.857	11.860	(1.002)	328274	45.7824	45.78
87	n-Butylbenzene	91	12.219	12.223	(1.033)	471993	51.4918	51.49
88	1,2-Dichlorobenzene	146	12.219	12.223	(1.033)	326018	46.8261	46.82
89	1,2-Dibromo-3-Chloropropane	75	13.009	13.012	(1.099)	39955	51.5020	51.50
90	1,2,4-Trichlorobenzene	180	13.814	13.818	(1.167)	198828	49.3840	49.38
91	Hexachlorobutadiene	225	13.988	13.988	(1.182)	88871	50.4903	50.49
92	Naphthalene	128	14.058	14.065	(1.188)	478970	49.4133	49.41
93	1,2,3-Trichlorobenzene	182	14.299	14.302	(1.208)	167459	48.0173	48.01
146	Methyl acetate	43	3.215	3.215	(0.557)	185284	44.2025	44.20
138	Freon TF	101	2.750	2.753	(0.476)	150145	57.6335	57.63
139	Diethyl ether	59	2.532	2.532	(0.439)	306387	49.3280	49.32
147	Methylcyclohexane	83	6.986	6.986	(1.064)	248642	53.9994	53.99
135	1,4-Dioxane	88	7.236	7.236	(1.253)	32774	1018.93	1018.93
132	n-Butanol	56	6.986	6.995	(1.210)	124912	979.709	979.70
131	Methyl Acrylate	55	5.256	5.259	(0.911)	306273	52.2000	52.20
133	Ethyl Acrylate	55	7.005	7.005	(1.213)	541337	51.0592	51.05
136	n-Hexane	57	4.050	4.046	(0.702)	240973	57.6477	57.64
141	Cyclohexane	56	5.680	5.683	(0.984)	333935	57.4386	57.43
142	Tetrahydrofuran	42	5.400	5.407	(0.936)	138224	98.6067	98.60
148	Tert-butyl alcohol	59	3.552	3.552	(0.615)	425959	1018.93	1018.92
149	Isopropyl alcohol	45	3.048	3.042	(0.528)	253492	953.479	953.47
151	4-Methyl-2-pentanol	45	8.449	8.449	(0.887)	921122	1024.09	1024.08
166	1,2,3-Trimethylbenzene	105	11.911	11.915	(1.007)	552176	45.1027	45.10
167	Ethanol	45	2.528	2.529	(0.438)	304531	993.917	993.91
170	1,3,5-Trichlorobenzene	180	13.201	13.202	(1.116)	234803	49.7484	49.74
172	tert-Butyl formate	59	4.900	4.903	(0.849)	557579	91.0499	91.04
173	3,3-Dimethyl-1-butanol	57	9.091	9.091	(0.955)	335668	1078.35	1078.34
174	tert-Amyl methyl ether	73	6.254	6.251	(1.083)	532543	46.1027	46.10
175	tert-Butyl ethyl ether	59	6.225	6.229	(1.078)	291142	50.8202	50.82
176	tert-Amyl alcohol	59	6.225	6.229	(1.078)	291142	1016.40	1016.40
157	2-Methylnaphthalene	142	15.188	15.191	(1.283)	130437	41.8761	41.87
156	Diisopropyl ether	45	4.412	4.412	(0.764)	716519	48.1927	48.19
171	1-Methylnaphthalene	142	15.383	15.387	(1.300)	146749	45.2438	45.24
130	Ethyl Acetate	43	5.234	5.234	(0.907)	396707	46.0199	46.01
M 94	1,2-Dichloroethylene (total)	96				343379	106.269	106.26
M 95	Xylenes (total)	106				880031	169.277	169.27

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180509.b\D050920.D
Date : 09-MAY-2018 16:29
Client ID: HS18050395-10MSD
Sample Info: HS18050395-10MSD;HS18050395-10MSD;3;;MSD
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

\\NAHSTWS003\Target\CHEM\VOA2.i\D180509.b\D050920.D

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180509.b\D050921.D Page 1
Report Date: 14-May-2018 17:19

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180509.b\D050921.D
Lab Smp Id: HS18050286-02 Client Smp ID: HS18050286-02
Inj Date : 09-MAY-2018 16:56
Operator : AP Inst ID: VOA2.i
Smp Info : HS18050286-02;HS18050286-02;;;
Misc Info : HS15080001;WATER;0;5;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180509.b\8260LL.m
Meth Date : 14-May-2018 17:19 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 20
Dil Factor: 5.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

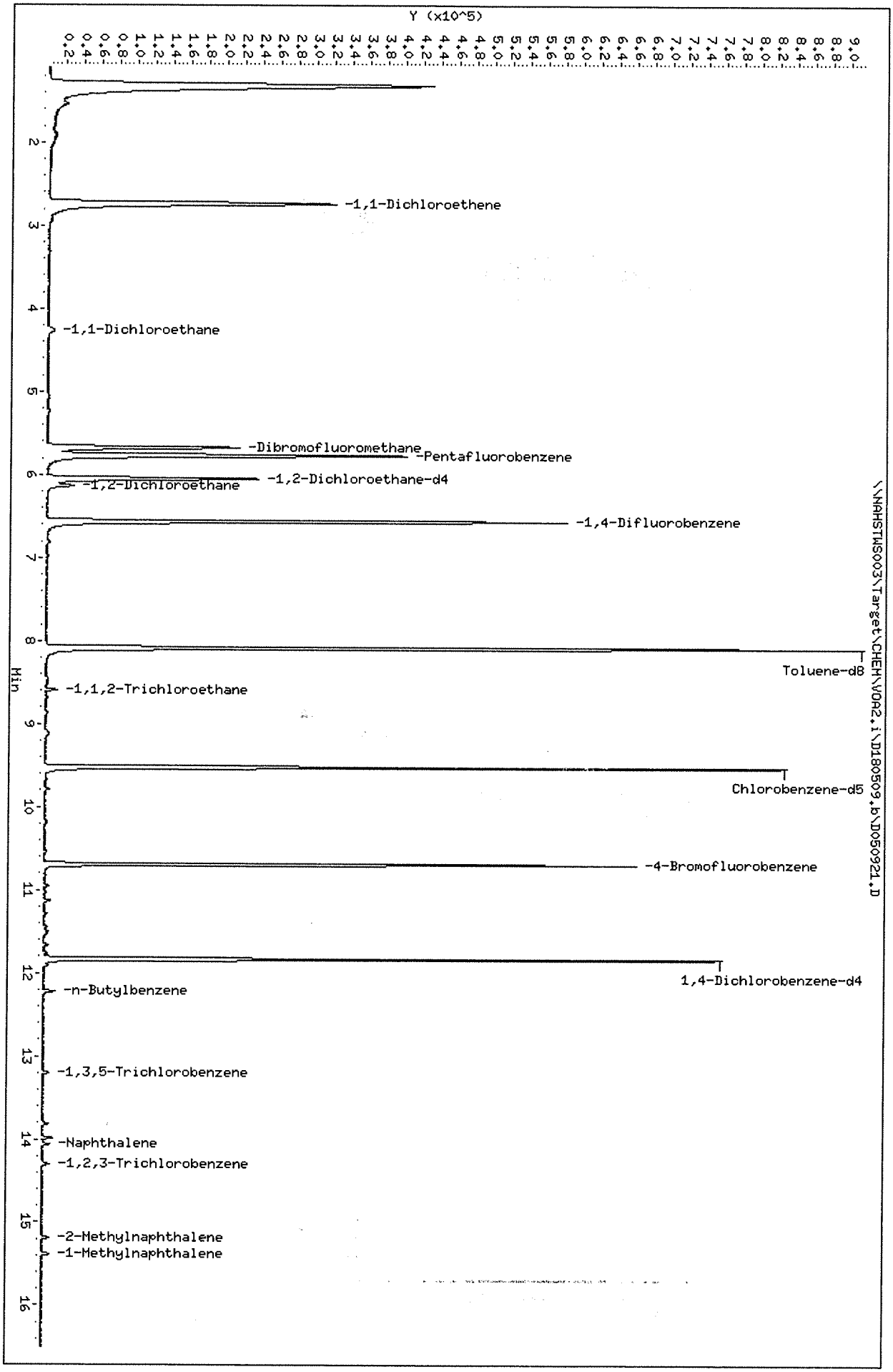
Concentration Formula: Amt * DF * (Uf/Vo) * 1 * CpndVariable

Name	Value	Description
DF	5.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1	Pentafluorobenzene	168	5.766	5.773	(1.000)	366877	50.0000	
11	1,1-Dichloroethene	96	2.737	2.740	(0.475)	210058	75.8326	379.16
22	1,1-Dichloroethane	63	4.265	4.268	(0.740)	14938	2.02737	10.13(M)
$ 30	Dibromofluoromethane	113	5.673	5.680	(0.984)	167108	52.8309	52.83
33	1,2-Dichloroethane	62	6.132	6.139	(0.934)	25874	5.25240	26.26(M)
$ 35	1,2-Dichloroethane-d4	65	6.049	6.052	(1.049)	201769	50.4953	50.49
* 36	1,4-Difluorobenzene	114	6.562	6.569	(1.000)	522272	50.0000	
* 47	Chlorobenzene-d5	117	9.524	9.524	(1.000)	459397	50.0000	
$ 48	Toluene-d8	98	8.083	8.090	(0.849)	596499	54.1955	54.19
53	1,1,2-Trichloroethane	83	8.590	8.590	(0.902)	2745	1.04149	5.20
$ 69	4-Bromofluorobenzene	95	10.692	10.695	(1.123)	210538	54.4881	54.48
* 70	1,4-Dichlorobenzene-d4	152	11.831	11.835	(1.000)	196401	50.0000	
87	n-Butylbenzene	91	12.223	12.223	(1.033)	5279	0.63595	3.17(a)
92	Naphthalene	128	14.061	14.065	(1.188)	8338	1.45319	7.26
93	1,2,3-Trichlorobenzene	182	14.299	14.302	(1.209)	3368	2.06681	10.33
170	1,3,5-Trichlorobenzene	180	13.211	13.202	(1.117)	2714	0.63497	3.17(a)
157	2-Methylnaphthalene	142	15.194	15.191	(1.284)	5078	6.93637	34.68
171	1-Methylnaphthalene	142	15.380	15.387	(1.300)	5262	6.47481	32.37

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180509.b\D050921.D
Date : 09-MAY-2018 16:56
Client ID: HS18050286-02
Sample Info: HS18050286-02;HS18050286-02;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180509.b\D050922.D Page 1
Report Date: 14-May-2018 17:19

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180509.b\D050922.D
Lab Smp Id: HS18050286-09 Client Smp ID: HS18050286-09
Inj Date : 09-MAY-2018 17:23
Operator : AP Inst ID: VOA2.i
Smp Info : HS18050286-09;HS18050286-09;;;
Misc Info : HS15080001;WATER;0;5;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180509.b\8260LL.m
Meth Date : 14-May-2018 17:19 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 21
Dil Factor: 5.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

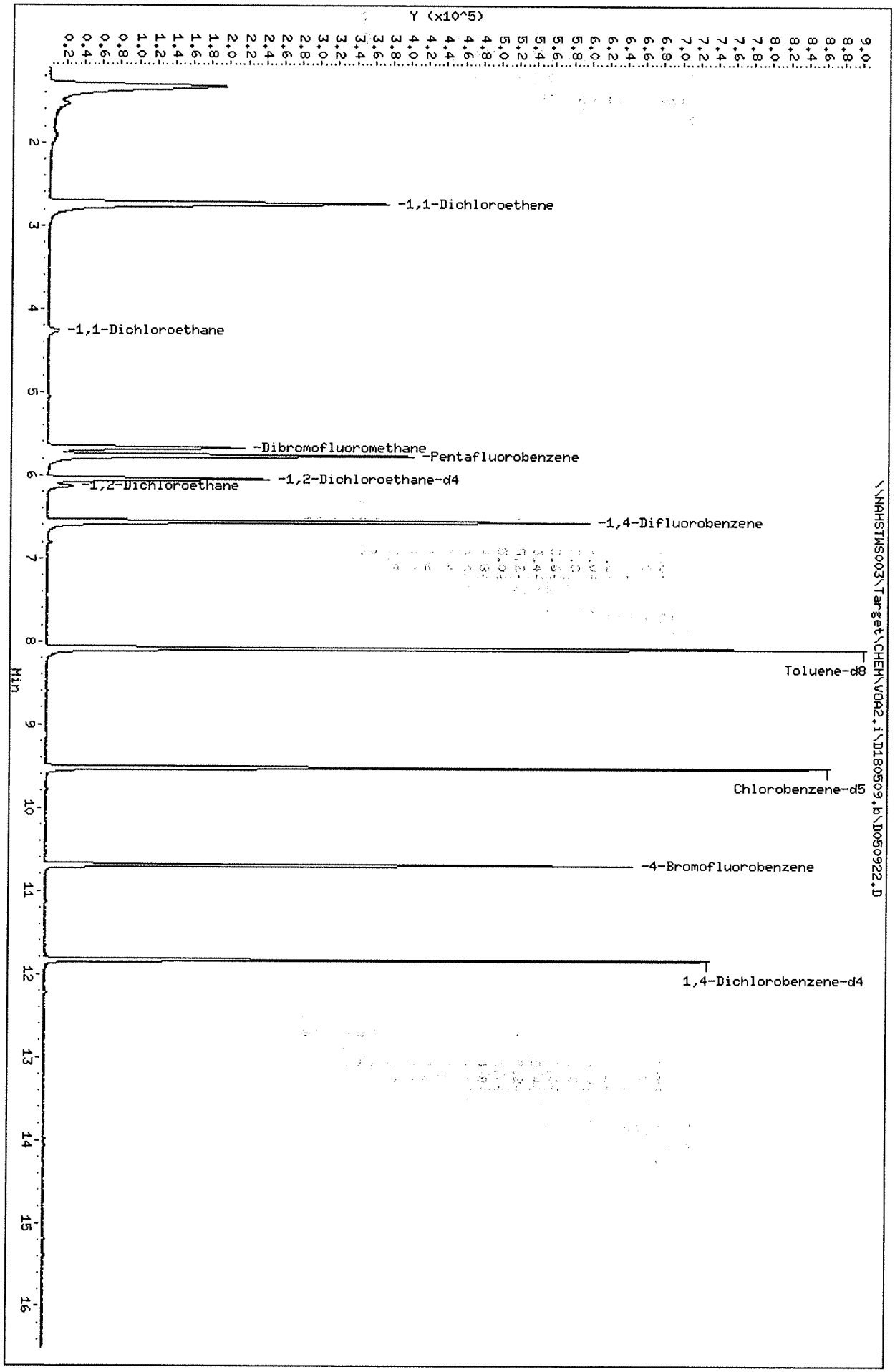
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	5.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
*	1 Pentafluorobenzene	168	5.763	5.773	(1.000)	363879	50.0000	
	11 1,1-Dichloroethene	96	2.734	2.740	(0.474)	245548	89.3751	446.87
	22 1,1-Dichloroethane	63	4.261	4.268	(0.739)	22610	3.09389	15.46
$	30 Dibromofluoromethane	113	5.673	5.680	(0.984)	163570	52.0894	52.08
	33 1,2-Dichloroethane	62	6.135	6.139	(0.935)	23632	4.80626	24.03(M)
$	35 1,2-Dichloroethane-d4	65	6.045	6.052	(1.049)	198100	49.9648	49.96
*	36 1,4-Difluorobenzene	114	6.562	6.569	(1.000)	521295	50.0000	
*	47 Chlorobenzene-d5	117	9.521	9.524	(1.000)	456730	50.0000	
$	48 Toluene-d8	98	8.086	8.090	(0.849)	593283	54.2231	54.22
$	69 4-Bromofluorobenzene	95	10.692	10.695	(1.123)	209094	54.4268	54.42
*	70 1,4-Dichlorobenzene-d4	152	11.831	11.835	(1.000)	191895	50.0000	

QC Flag Legend

M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180509.b\D050922.D
Date : 09-MAY-2018 17:23
Client ID: HS18050286-09
Sample Info: HS18050286-09;HS18050286-09;;;
Purge Volume: 5.0
Column phase: DB624

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

ALS Laboratory Group

Data file : \\NAHSTWS003\Target\CHEM\VOA2.i\D180509.b\D050929.D
Lab Smp Id: CCV_END Client Smp ID: CCV_END
Inj Date : 09-MAY-2018 20:14
Operator : AP Inst ID: VOA2.i
Smp Info : CCV_END;CCV_END;2;;
Misc Info : HS15080001;WATER;0;1;
Comment :
Method : \\NAHSTWS003\Target\CHEM\VOA2.i\D180509.b\8260LL.m
Meth Date : 14-May-2018 17:19 VOA2.i Quant Type: ISTD
Cal Date : 04-MAY-2018 15:19 Cal File: D050402.D
Als bottle: 28 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 00000_8260-LLw.su
Target Version: 4.14
Processing Host: ALSHSW7085

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Va	0.00000	
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1 Pentafluorobenzene	168	5.773	5.773	(1.000)	352879	50.0000	
2 Dichlorodifluoromethane	85	1.434	1.434	(0.249)	183700	50.0000	56.29
186 Isobutylene	56	1.646	1.646	(0.285)	196660	50.0000	57.59(AM)
3 Chloromethane	50	1.582	1.582	(0.274)	310211	50.0000	54.67
4 Propionitrile	54	5.224	5.224	(0.905)	572448	500.000	468.06
5 Vinyl Chloride	62	1.669	1.669	(0.289)	239504	50.0000	54.41
6 Bromomethane	94	1.932	1.932	(0.335)	110786	50.0000	42.50
7 Chloroethane	64	2.025	2.025	(0.351)	137262	50.0000	58.27
159 Dichlorofluoromethane	67	2.214	2.214	(0.384)	316378	50.0000	48.76
8 Trichlorofluoromethane	101	2.243	2.243	(0.389)	244438	50.0000	58.68
9 Acrolein	56	2.670	2.670	(0.463)	65895	100.000	75.40
10 Acetone	43	2.843	2.843	(0.493)	108467	100.000	92.99
11 1,1-Dichloroethene	96	2.734	2.734	(0.474)	148896	50.0000	55.88
12 Isobutyl Alcohol	74	6.148	6.148	(1.065)	13961	1000.00	785.11(A)
13 Acetonitrile	39	3.154	3.154	(0.546)	228084	500.000	506.30
14 Allyl Chloride	41	3.161	3.161	(0.548)	562704	50.0000	49.00
15 Iodomethane	142	2.901	2.901	(0.503)	237123	100.000	86.85
16 Acrylonitrile	53	3.681	3.681	(0.638)	151143	100.000	96.52
17 Methylene Chloride	84	3.325	3.325	(0.576)	170483	50.0000	45.71
18 Methyl tert-butyl ether	73	3.671	3.671	(0.636)	451998	50.0000	44.41
19 Carbon Disulfide	76	2.946	2.946	(0.510)	630263	100.000	103.29

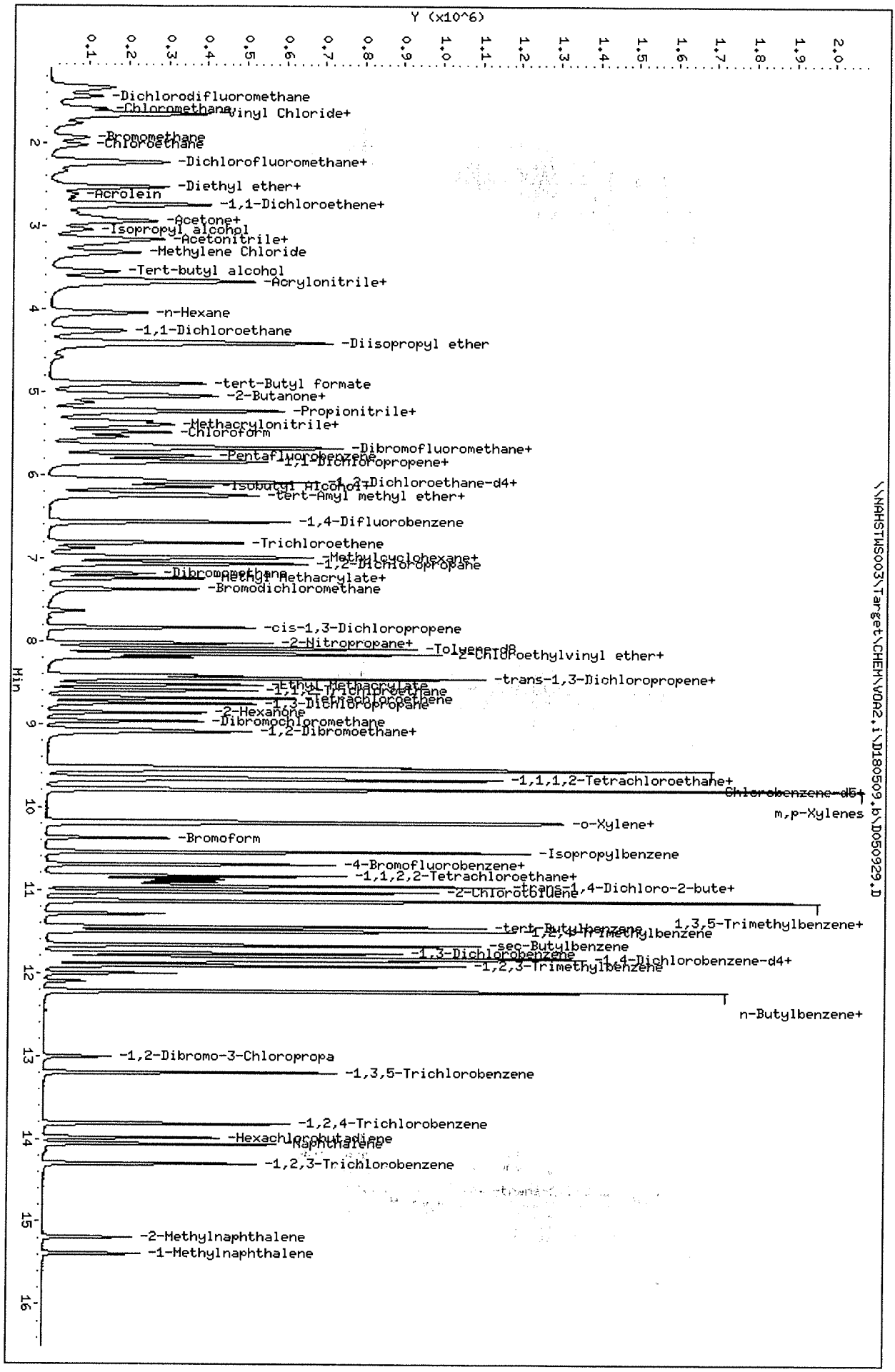
Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180509.b\D050929.D Page 2
Report Date: 14-May-2018 17:19

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
	20 trans-1,2-Dichloroethene	96	3.655	3.655	(0.633)	156898	50.0000	53.83
	21 Vinyl Acetate	43	5.234	5.234	(0.907)	393800	100.000	86.69
	22 1,1-Dichloroethane	63	4.265	4.265	(0.739)	346425	50.0000	48.88
	24 2-Butanone	43	5.131	5.131	(0.889)	169662	100.000	92.47
	25 Methacrylonitrile	41	5.401	5.401	(0.936)	198112	50.0000	45.33
	26 2,2-Dichloropropane	77	5.032	5.032	(0.872)	233227	50.0000	48.66
	27 cis-1,2-Dichloroethene	96	5.061	5.061	(0.877)	180572	50.0000	49.52
	28 Chloroform	83	5.487	5.487	(0.951)	293640	50.0000	48.02
	29 Bromochloromethane	128	5.356	5.356	(0.928)	89445	50.0000	50.83
$	30 Dibromofluoromethane	113	5.677	5.677	(0.983)	152951	50.0000	50.09
	31 1,1,1-Trichloroethane	97	5.645	5.645	(0.978)	271229	50.0000	52.84
	32 1,1-Dichloropropene	75	5.847	5.847	(0.891)	220758	50.0000	47.97
	33 1,2-Dichloroethane	62	6.136	6.136	(0.935)	237208	50.0000	47.10
	34 Carbon Tetrachloride	117	5.827	5.827	(0.888)	230580	50.0000	49.27
$	35 1,2-Dichloroethane-d4	65	6.052	6.052	(1.048)	195931	50.0000	50.99
*	36 1,4-Difluorobenzene	114	6.566	6.566	(1.000)	533851	50.0000	
	37 Benzene	78	6.087	6.087	(0.927)	655185	50.0000	48.28
	38 Trichloroethene	130	6.816	6.816	(1.038)	186878	50.0000	53.20
	39 Bromodichloromethane	83	7.371	7.371	(1.123)	238861	50.0000	48.46
	40 Methyl Methacrylate	41	7.239	7.239	(1.254)	196438	50.0000	47.11
	41 2-Chloroethylvinyl ether	63	8.151	8.151	(1.241)	59514	100.000	97.69(T)
	42 1,2-Dichloropropane	63	7.060	7.060	(1.075)	193810	50.0000	47.59
	43 2-Nitropropane	43	8.022	8.022	(1.390)	385345	50.0000	43.86
	44 Dibromomethane	93	7.182	7.182	(1.094)	101835	50.0000	50.08
	45 4-Methyl-2-Pentanone	43	8.022	8.022	(0.842)	385345	100.000	86.69
	46 cis-1,3-Dichloropropene	75	7.836	7.836	(1.194)	277739	50.0000	50.50
*	47 Chlorobenzene-d5	117	9.524	9.524	(1.000)	484375	50.0000	
$	48 Toluene-d8	98	8.087	8.087	(0.849)	599454	50.0000	51.11
	49 Ethyl Methacrylate	69	8.526	8.526	(1.299)	230344	50.0000	51.36
	50 Toluene	91	8.154	8.154	(0.856)	691040	50.0000	46.70
	51 trans-1,3-Dichloropropene	75	8.414	8.414	(1.281)	234795	50.0000	51.44
	52 2-Hexanone	43	8.863	8.863	(0.931)	250529	100.000	89.94
	53 1,1,2-Trichloroethane	83	8.594	8.594	(0.902)	128604	50.0000	46.27
	54 1,3-Dichloropropane	76	8.751	8.751	(0.919)	260067	50.0000	47.14
	55 Dibromochloromethane	129	8.966	8.966	(0.941)	196239	50.0000	48.22
	56 Tetrachloroethene	164	8.687	8.687	(0.912)	148065	50.0000	50.07
	57 1,2-Dibromoethane	107	9.065	9.065	(0.952)	166465	50.0000	47.98
	58 1-Chlorohexane	55	9.550	9.550	(1.455)	190471	50.0000	57.87
	59 Chlorobenzene	112	9.550	9.550	(1.003)	429896	50.0000	46.43
	60 1,1,1,2-Tetrachloroethane	131	9.643	9.643	(1.012)	177620	50.0000	48.31
	61 Ethylbenzene	106	9.669	9.669	(1.015)	241781	50.0000	48.18
	62 m,p-Xylenes	106	9.787	9.787	(1.028)	583260	100.000	116.45
	63 o-Xylene	106	10.176	10.176	(1.068)	305421	50.0000	48.47
	64 Styrene	104	10.195	10.195	(1.070)	493797	50.0000	48.92
	66 Bromoform	173	10.375	10.375	(1.089)	139528	50.0000	48.26
	67 Isopropylbenzene	105	10.545	10.545	(1.107)	760418	50.0000	50.12
	68 1,1,2,2-Tetrachloroethane	83	10.869	10.869	(0.918)	205651	50.0000	41.24
$	69 4-Bromofluorobenzene	95	10.695	10.695	(1.123)	231092	50.0000	56.86
*	70 1,4-Dichlorobenzene-d4	152	11.835	11.835	(1.000)	225041	50.0000	
	71 1,2,3-Trichloropropane	75	10.692	10.692	(0.903)	108160	50.0000	52.63
	72 trans-1,4-Dichloro-2-butene	53	10.926	10.926	(1.147)	51878	50.0000	43.04
	73 n-Propylbenzene	91	10.952	10.952	(0.925)	817655	50.0000	46.32
	74 Bromobenzene	156	10.830	10.830	(0.915)	203450	50.0000	45.04
	75 1,3,5-Trimethylbenzene	105	11.129	11.129	(0.940)	601224	50.0000	45.05

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	AMOUNTS ON-COL (ug/l)
76 2-Chlorotoluene	91	11.026	11.026	(0.932)	521471	50.0000	52.49
77 4-Chlorotoluene	91	11.135	11.135	(0.941)	571064	50.0000	52.97
78 tert-Butylbenzene	119	11.446	11.446	(0.967)	515499	50.0000	46.74
79 1,2,4-Trimethylbenzene	105	11.498	11.498	(0.972)	605946	50.0000	53.03
81 sec-Butylbenzene	105	11.664	11.664	(0.986)	718820	50.0000	48.88
82 p-Isopropyltoluene	119	11.815	11.815	(0.998)	599458	50.0000	47.79
83 1,3-Dichlorobenzene	146	11.764	11.764	(0.994)	345400	50.0000	44.86
84 1,4-Dichlorobenzene	146	11.857	11.857	(1.002)	326692	50.0000	43.90
87 n-Butylbenzene	91	12.220	12.220	(1.033)	474564	50.0000	49.89
88 1,2-Dichlorobenzene	146	12.223	12.223	(1.033)	328235	50.0000	45.43
89 1,2-Dibromo-3-Chloropropane	75	13.006	13.006	(1.099)	35974	50.0000	44.68
90 1,2,4-Trichlorobenzene	180	13.818	13.818	(1.168)	195309	50.0000	46.77
91 Hexachlorobutadiene	225	13.985	13.985	(1.182)	88640	50.0000	48.53
92 Naphthalene	128	14.062	14.062	(1.188)	448806	50.0000	44.67
93 1,2,3-Trichlorobenzene	182	14.299	14.299	(1.208)	157075	50.0000	43.50
146 Methyl acetate	43	3.215	3.215	(0.557)	185777	50.0000	43.92
138 Freon TF	101	2.757	2.757	(0.478)	149908	50.0000	57.02
139 Diethyl ether	59	2.529	2.529	(0.438)	299854	50.0000	47.85
147 Methylcyclohexane	83	6.983	6.983	(1.064)	249909	50.0000	53.32
135 1,4-Dioxane	88	7.236	7.236	(1.253)	31325	1000.00	964.23
132 n-Butanol	56	6.992	6.992	(1.211)	120555	1000.00	937.20
131 Methyl Acrylate	55	5.253	5.253	(0.910)	288966	50.0000	48.81
133 Ethyl Acrylate	55	7.005	7.005	(1.213)	527508	50.0000	49.31
136 n-Hexane	57	4.040	4.040	(0.700)	230484	50.0000	54.65
141 Cyclohexane	56	5.680	5.680	(0.984)	338141	50.0000	57.64
142 Tetrahydrofuran	42	5.407	5.407	(0.937)	123509	100.000	87.33
148 Tert-butyl alcohol	59	3.549	3.549	(0.615)	381835	1000.00	905.32
149 Isopropyl alcohol	45	3.045	3.045	(0.528)	221351	1000.00	825.24
151 4-Methyl-2-pentanol	45	8.449	8.449	(0.887)	819047	1000.00	879.38
166 1,2,3-Trimethylbenzene	105	11.915	11.915	(1.007)	566655	50.0000	44.60
167 Ethanol	45	2.526	2.526	(0.438)	290267	1000.00	939.01
170 1,3,5-Trichlorobenzene	180	13.198	13.198	(1.115)	231920	50.0000	47.35
172 tert-Butyl formate	59	4.897	4.897	(0.848)	535038	100.000	86.59
173 3,3-Dimethyl-1-butanol	57	9.091	9.091	(0.955)	296051	1000.00	918.47
174 tert-Amyl methyl ether	73	6.251	6.251	(1.083)	495959	50.0000	42.55
175 tert-Butyl ethyl ether	59	6.225	6.225	(1.078)	246806	50.0000	42.70
176 tert-Amyl alcohol	59	6.225	6.225	(1.078)	246806	1000.00	854.02
157 2-Methylnaphthalene	142	15.188	15.188	(1.283)	107594	50.0000	34.57
156 Diisopropyl ether	45	4.412	4.412	(0.764)	702703	50.0000	46.84(T)
171 1-Methylnaphthalene	142	15.387	15.387	(1.300)	123915	50.0000	37.86
130 Ethyl Acetate	43	5.234	5.234	(0.907)	393800	50.0000	45.27

QC Flag Legend

T - Target compound detected outside RT window.
A - Target compound detected but, quantitated amount exceeded maximum amount.
M - Compound response manually integrated.



Data File: \\NAHSTWS003\Target\CHEM\VOA2.i\D180509.b\D0050929.D
Date : 09-MAY-2018 20:14
Client ID: CCV_END
Sample Info: CCV_END;CCV_END;2;;
Purge Volume: 5.0
Column phase: DB624

\\NAHSTWS003\Target\CHEM\VOA2.i\D180509.b\D0050929.D

Instrument: VOA2.i
Operator: AP
Column diameter: 0.18

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
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May 10, 2018

Sharon Pennington
Aptim Environmental & Infrastucture, Inc.
2500 City West Blvd., Suite 1700
Houston, TX 77042

Work Order: **HS18050286**

Laboratory Results for: **Longhorn Army Ammunition Plant - 67**

Dear Sharon,

ALS Environmental received 14 sample(s) on May 04, 2018 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Work Order: HS18050286

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18050286-01	67WW14-180502	GW		02-May-2018 08:15	04-May-2018 08:35	☐
HS18050286-02	67WW15-180502	GW		02-May-2018 09:10	04-May-2018 08:35	☐
HS18050286-03	67WW09-180502	GW		02-May-2018 10:00	04-May-2018 08:35	☐
HS18050286-04	67WW11-180502	GW		02-May-2018 10:55	04-May-2018 08:35	☐
HS18050286-05	67WW05-180503	GW		03-May-2018 07:50	04-May-2018 08:35	☐
HS18050286-06	67WW02-180503	GW		03-May-2018 08:10	04-May-2018 08:35	☐
HS18050286-07	67WW02-180503-FD	GW		03-May-2018 08:10	04-May-2018 08:35	☐
HS18050286-08	67WW07-180503	GW		03-May-2018 08:30	04-May-2018 08:35	☐
HS18050286-09	67WW01-180503	GW		03-May-2018 08:50	04-May-2018 08:35	☐
HS18050286-10	67WW16I-180503	GW		03-May-2018 09:40	04-May-2018 08:35	☐
HS18050286-11	67WW09A-180503	GW		03-May-2018 10:35	04-May-2018 08:35	☐
HS18050286-12	67WW10-180503	GW		03-May-2018 11:25	04-May-2018 08:35	☐
HS18050286-13	67WW12-180503	GW		03-May-2018 12:20	04-May-2018 08:35	☐
HS18050286-14	67TB02-180503’	Water	ALS-041918-50	03-May-2018 00:00	04-May-2018 08:35	☐

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc. **CASE NARRATIVE**
Project: Longhorn Army Ammunition Plant - 67
Work Order: HS18050286

GCMS Volatiles by Method SW8260

Batch ID: R315785

Sample ID: 67WW10-180503 (HS18050286-12MSD)

- The recovery of the Matrix Spike Duplicate (MSD) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The failed recovery of the MSD may be due to sample matrix interference.

Batch ID: R315922

Sample ID: HS18050395-10MS

- MS and MSD are for an unrelated sample.

Batch ID: R315767

Sample ID: HS18050260-01MS

- MS and MSD are for an unrelated sample

Batch ID: ,R315785,R315922

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW14-180502
Collection Date: 02-May-2018 08:15

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-01
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:01
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:01
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:01
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:01
1,1-Dichloroethene	**4.2**		**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 16:01
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:01
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:01
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:01
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 16:01
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:01
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:01
1,2-Dichloroethane	**1.9**		**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 16:01
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:01
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:01
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:01
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:01
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 16:01
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 16:01
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:01
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	07-May-2018 16:01
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	07-May-2018 16:01
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:01
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:01
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:01
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:01
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:01
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:01
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	07-May-2018 16:01
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:01
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW14-180502
Collection Date: 02-May-2018 08:15

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-01
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:01
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:01
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:01
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	07-May-2018 16:01
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:01
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 16:01
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 16:01
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 16:01
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:01
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:01
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:01
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:01
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:01
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:01
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:01
Surr: 1,2-Dichloroethane-d4	*102*			**0**	*70-126*	*%REC*	*1*	*07-May-2018 16:01*
Surr: 4-Bromofluorobenzene	*110*			**0**	*81-113*	*%REC*	*1*	*07-May-2018 16:01*
Surr: Dibromofluoromethane	*107*			**0**	*77-123*	*%REC*	*1*	*07-May-2018 16:01*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*07-May-2018 16:01*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW15-180502
Collection Date: 02-May-2018 09:10

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-02
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:25
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:25
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:25
1,1,2-Trichloroethane	**5.6**		**0.30**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 16:25
1,1-Dichloroethane	**10**		**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 16:25
1,1-Dichloroethene	**380**		**1.0**	**2.5**	**5.0**	**ug/L**	5	09-May-2018 16:56
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:25
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:25
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:25
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 16:25
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:25
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:25
1,2-Dichloroethane	**26**		**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 16:25
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:25
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:25
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:25
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:25
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 16:25
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 16:25
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:25
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	07-May-2018 16:25
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	07-May-2018 16:25
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:25
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:25
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:25
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:25
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:25
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:25
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	07-May-2018 16:25
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:25
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW15-180502
Collection Date: 02-May-2018 09:10

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-02
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:25
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:25
cis-1,2-Dichloroethene	**1.3**		**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 16:25
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	07-May-2018 16:25
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:25
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 16:25
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 16:25
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 16:25
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:25
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:25
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:25
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:25
Trichloroethene	**1.2**		**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 16:25
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:25
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:25
Surr: 1,2-Dichloroethane-d4	*102*			**0**	*70-126*	*%REC*	*1*	*07-May-2018 16:25*
Surr: 1,2-Dichloroethane-d4	*101*			**0**	*70-126*	*%REC*	*5*	*09-May-2018 16:56*
Surr: 4-Bromofluorobenzene	*111*			**0**	*81-113*	*%REC*	*1*	*07-May-2018 16:25*
Surr: 4-Bromofluorobenzene	*109*			**0**	*81-113*	*%REC*	*5*	*09-May-2018 16:56*
Surr: Dibromofluoromethane	*108*			**0**	*77-123*	*%REC*	*1*	*07-May-2018 16:25*
Surr: Dibromofluoromethane	*106*			**0**	*77-123*	*%REC*	*5*	*09-May-2018 16:56*
Surr: Toluene-d8	*107*			**0**	*82-127*	*%REC*	*1*	*07-May-2018 16:25*
Surr: Toluene-d8	*108*			**0**	*82-127*	*%REC*	*5*	*09-May-2018 16:56*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW09-180502
Collection Date: 02-May-2018 10:00

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-03
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:50
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:50
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:50
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:50
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:50
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:50
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:50
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:50
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 16:50
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:50
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:50
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:50
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:50
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:50
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:50
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:50
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 16:50
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 16:50
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:50
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	07-May-2018 16:50
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	07-May-2018 16:50
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:50
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:50
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:50
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:50
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:50
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:50
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	07-May-2018 16:50
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 16:50
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW09-180502
Collection Date: 02-May-2018 10:00

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-03
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:50
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:50
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:50
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	07-May-2018 16:50
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:50
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 16:50
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 16:50
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 16:50
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 16:50
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:50
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:50
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:50
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:50
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 16:50
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 16:50
Surr: 1,2-Dichloroethane-d4	*103*			**0**	*70-126*	*%REC*	*1*	*07-May-2018 16:50*
Surr: 4-Bromofluorobenzene	*110*			**0**	*81-113*	*%REC*	*1*	*07-May-2018 16:50*
Surr: Dibromofluoromethane	*109*			**0**	*77-123*	*%REC*	*1*	*07-May-2018 16:50*
Surr: Toluene-d8	*107*			**0**	*82-127*	*%REC*	*1*	*07-May-2018 16:50*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW11-180502
Collection Date: 02-May-2018 10:55

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-04
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:14
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 17:14
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 17:14
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
1,1-Dichloroethane	**3.3**		**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 17:14
1,1-Dichloroethene	**5.5**		**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 17:14
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 17:14
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 17:14
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 17:14
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 17:14
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:14
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 17:14
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:14
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 17:14
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 17:14
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 17:14
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:14
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 17:14
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 17:14
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 17:14
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	07-May-2018 17:14
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	07-May-2018 17:14
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:14
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 17:14
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:14
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:14
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 17:14
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 17:14
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	07-May-2018 17:14
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 17:14
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW11-180502
Collection Date: 02-May-2018 10:55

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-04
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:14
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:14
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:14
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	07-May-2018 17:14
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:14
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 17:14
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 17:14
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 17:14
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 17:14
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:14
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:14
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:14
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:14
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:14
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:14
Surr: 1,2-Dichloroethane-d4	*101*			**0**	*70-126*	*%REC*	*1*	*07-May-2018 17:14*
Surr: 4-Bromofluorobenzene	*111*			**0**	*81-113*	*%REC*	*1*	*07-May-2018 17:14*
Surr: Dibromofluoromethane	*108*			**0**	*77-123*	*%REC*	*1*	*07-May-2018 17:14*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*07-May-2018 17:14*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW05-180503
Collection Date: 03-May-2018 07:50

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-05
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:39
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 17:39
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 17:39
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:39
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:39
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 17:39
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 17:39
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 17:39
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 17:39
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:39
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 17:39
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:39
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 17:39
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 17:39
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 17:39
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:39
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 17:39
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 17:39
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 17:39
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	07-May-2018 17:39
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	07-May-2018 17:39
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:39
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 17:39
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:39
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:39
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 17:39
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 17:39
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	07-May-2018 17:39
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 17:39
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW05-180503
Collection Date: 03-May-2018 07:50

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-05
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:39
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:39
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:39
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	07-May-2018 17:39
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:39
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 17:39
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 17:39
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 17:39
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 17:39
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:39
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:39
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:39
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:39
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 17:39
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 17:39
Surr: 1,2-Dichloroethane-d4	*101*			**0**	*70-126*	*%REC*	*1*	*07-May-2018 17:39*
Surr: 4-Bromofluorobenzene	*109*			**0**	*81-113*	*%REC*	*1*	*07-May-2018 17:39*
Surr: Dibromofluoromethane	*108*			**0**	*77-123*	*%REC*	*1*	*07-May-2018 17:39*
Surr: Toluene-d8	*107*			**0**	*82-127*	*%REC*	*1*	*07-May-2018 17:39*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW02-180503
Collection Date: 03-May-2018 08:10

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-06
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:03
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:03
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:03
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
1,1-Dichloroethane	**7.8**		**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 18:03
1,1-Dichloroethene	**190**		**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 18:03
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:03
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:03
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:03
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 18:03
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:03
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:03
1,2-Dichloroethane	**2.0**		**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 18:03
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:03
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:03
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:03
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:03
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 18:03
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 18:03
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:03
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	07-May-2018 18:03
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	07-May-2018 18:03
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:03
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:03
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:03
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:03
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:03
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:03
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	07-May-2018 18:03
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:03
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW02-180503
Collection Date: 03-May-2018 08:10

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-06
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:03
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:03
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:03
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	07-May-2018 18:03
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:03
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 18:03
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 18:03
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 18:03
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:03
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:03
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:03
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:03
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:03
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:03
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:03
Surr: 1,2-Dichloroethane-d4	*101*			**0**	*70-126*	*%REC*	*1*	*07-May-2018 18:03*
Surr: 4-Bromofluorobenzene	*111*			**0**	*81-113*	*%REC*	*1*	*07-May-2018 18:03*
Surr: Dibromofluoromethane	*107*			**0**	*77-123*	*%REC*	*1*	*07-May-2018 18:03*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*07-May-2018 18:03*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW02-180503-FD
Collection Date: 03-May-2018 08:10

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-07
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:28
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:28
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:28
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
1,1-Dichloroethane	**7.7**		**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 18:28
1,1-Dichloroethene	**190**		**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 18:28
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:28
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:28
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:28
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 18:28
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:28
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:28
1,2-Dichloroethane	**1.9**		**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 18:28
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:28
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:28
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:28
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:28
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 18:28
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 18:28
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:28
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	07-May-2018 18:28
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	07-May-2018 18:28
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:28
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:28
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:28
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:28
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:28
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:28
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	07-May-2018 18:28
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:28
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW02-180503-FD
Collection Date: 03-May-2018 08:10

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-07
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:28
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:28
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:28
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	07-May-2018 18:28
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:28
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 18:28
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 18:28
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 18:28
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:28
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:28
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:28
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:28
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:28
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:28
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:28
Surr: 1,2-Dichloroethane-d4	*101*			**0**	*70-126*	*%REC*	*1*	*07-May-2018 18:28*
Surr: 4-Bromofluorobenzene	*110*			**0**	*81-113*	*%REC*	*1*	*07-May-2018 18:28*
Surr: Dibromofluoromethane	*104*			**0**	*77-123*	*%REC*	*1*	*07-May-2018 18:28*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*07-May-2018 18:28*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW07-180503
Collection Date: 03-May-2018 08:30

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-08
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:52
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:52
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:52
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:52
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:52
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:52
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:52
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:52
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 18:52
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:52
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:52
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:52
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:52
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:52
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:52
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:52
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 18:52
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 18:52
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:52
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	07-May-2018 18:52
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	07-May-2018 18:52
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:52
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:52
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:52
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:52
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:52
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:52
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	07-May-2018 18:52
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 18:52
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW07-180503
Collection Date: 03-May-2018 08:30

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-08
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:52
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:52
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:52
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	07-May-2018 18:52
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:52
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 18:52
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 18:52
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 18:52
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 18:52
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:52
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:52
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:52
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:52
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 18:52
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 18:52
Surr: 1,2-Dichloroethane-d4	*103*			**0**	*70-126*	*%REC*	*1*	*07-May-2018 18:52*
Surr: 4-Bromofluorobenzene	*111*			**0**	*81-113*	*%REC*	*1*	*07-May-2018 18:52*
Surr: Dibromofluoromethane	*108*			**0**	*77-123*	*%REC*	*1*	*07-May-2018 18:52*
Surr: Toluene-d8	*108*			**0**	*82-127*	*%REC*	*1*	*07-May-2018 18:52*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc. **ANALYTICAL REPORT**
Project: Longhorn Army Ammunition Plant - 67 WorkOrder:HS18050286
Sample ID: 67WW01-180503 Lab ID:HS18050286-09
Collection Date: 03-May-2018 08:50 Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:16
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 19:16
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 19:16
1,1,2-Trichloroethane	**1.2**		**0.30**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 19:16
1,1-Dichloroethane	**15**		**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 19:16
1,1-Dichloroethene	**450**		**1.0**	**2.5**	**5.0**	**ug/L**	5	09-May-2018 17:23
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 19:16
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 19:16
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 19:16
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 19:16
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:16
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 19:16
1,2-Dichloroethane	**22**		**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 19:16
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 19:16
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 19:16
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 19:16
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:16
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 19:16
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 19:16
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 19:16
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	07-May-2018 19:16
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	07-May-2018 19:16
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:16
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 19:16
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:16
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:16
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 19:16
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 19:16
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	07-May-2018 19:16
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 19:16
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW01-180503
Collection Date: 03-May-2018 08:50

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-09
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:16
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:16
cis-1,2-Dichloroethene	**0.95**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 19:16
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	07-May-2018 19:16
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:16
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 19:16
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 19:16
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 19:16
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 19:16
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:16
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:16
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:16
Trichloroethene	**1.7**		**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 19:16
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:16
Vinyl chloride	**1.4**		**0.20**	**0.50**	**1.0**	**ug/L**	1	07-May-2018 19:16
Surr: 1,2-Dichloroethane-d4	*102*			**0**	*70-126*	*%REC*	*1*	*07-May-2018 19:16*
Surr: 1,2-Dichloroethane-d4	*99.9*			**0**	*70-126*	*%REC*	*5*	*09-May-2018 17:23*
Surr: 4-Bromofluorobenzene	*111*			**0**	*81-113*	*%REC*	*1*	*07-May-2018 19:16*
Surr: 4-Bromofluorobenzene	*109*			**0**	*81-113*	*%REC*	*5*	*09-May-2018 17:23*
Surr: Dibromofluoromethane	*107*			**0**	*77-123*	*%REC*	*1*	*07-May-2018 19:16*
Surr: Dibromofluoromethane	*104*			**0**	*77-123*	*%REC*	*5*	*09-May-2018 17:23*
Surr: Toluene-d8	*108*			**0**	*82-127*	*%REC*	*1*	*07-May-2018 19:16*
Surr: Toluene-d8	*108*			**0**	*82-127*	*%REC*	*5*	*09-May-2018 17:23*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW16I-180503
Collection Date: 03-May-2018 09:40

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-10
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:41
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 19:41
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 19:41
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:41
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:41
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 19:41
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 19:41
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 19:41
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 19:41
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:41
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 19:41
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:41
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 19:41
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 19:41
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 19:41
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:41
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 19:41
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 19:41
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 19:41
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	07-May-2018 19:41
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	07-May-2018 19:41
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:41
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 19:41
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:41
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:41
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 19:41
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 19:41
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	07-May-2018 19:41
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 19:41
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW16I-180503
Collection Date: 03-May-2018 09:40

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-10
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:41
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:41
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:41
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	07-May-2018 19:41
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:41
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 19:41
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 19:41
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 19:41
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 19:41
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:41
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:41
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:41
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:41
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 19:41
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 19:41
Surr: 1,2-Dichloroethane-d4	*101*			**0**	*70-126*	*%REC*	*1*	*07-May-2018 19:41*
Surr: 4-Bromofluorobenzene	*108*			**0**	*81-113*	*%REC*	*1*	*07-May-2018 19:41*
Surr: Dibromofluoromethane	*107*			**0**	*77-123*	*%REC*	*1*	*07-May-2018 19:41*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*07-May-2018 19:41*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW09A-180503
Collection Date: 03-May-2018 10:35

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-11
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 20:05
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 20:05
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 20:05
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 20:05
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 20:05
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 20:05
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 20:05
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 20:05
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 20:05
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 20:05
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 20:05
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 20:05
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 20:05
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 20:05
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 20:05
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 20:05
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 20:05
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 20:05
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 20:05
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	07-May-2018 20:05
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	07-May-2018 20:05
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 20:05
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 20:05
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 20:05
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 20:05
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 20:05
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 20:05
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	07-May-2018 20:05
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 20:05
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastructure, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW09A-180503
Collection Date: 03-May-2018 10:35

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-11
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 20:05
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 20:05
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 20:05
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	07-May-2018 20:05
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 20:05
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 20:05
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 20:05
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 20:05
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 20:05
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 20:05
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 20:05
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 20:05
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 20:05
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 20:05
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 20:05
Surr: 1,2-Dichloroethane-d4	*100*			**0**	*70-126*	*%REC*	*1*	*07-May-2018 20:05*
Surr: 4-Bromofluorobenzene	*109*			**0**	*81-113*	*%REC*	*1*	*07-May-2018 20:05*
Surr: Dibromofluoromethane	*107*			**0**	*77-123*	*%REC*	*1*	*07-May-2018 20:05*
Surr: Toluene-d8	*108*			**0**	*82-127*	*%REC*	*1*	*07-May-2018 20:05*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW10-180503
Collection Date: 03-May-2018 11:25

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-12
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 01:23
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-May-2018 01:23
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-May-2018 01:23
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 01:23
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 01:23
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-May-2018 01:23
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-May-2018 01:23
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-May-2018 01:23
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	08-May-2018 01:23
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 01:23
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-May-2018 01:23
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 01:23
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-May-2018 01:23
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-May-2018 01:23
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-May-2018 01:23
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 01:23
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	08-May-2018 01:23
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	08-May-2018 01:23
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	08-May-2018 01:23
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	08-May-2018 01:23
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	08-May-2018 01:23
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 01:23
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-May-2018 01:23
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 01:23
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 01:23
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	08-May-2018 01:23
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	08-May-2018 01:23
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	08-May-2018 01:23
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	08-May-2018 01:23
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW10-180503
Collection Date: 03-May-2018 11:25

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-12
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C	**Method:SW8260**							Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 01:23
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 01:23
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 01:23
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	08-May-2018 01:23
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 01:23
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	08-May-2018 01:23
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	08-May-2018 01:23
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	08-May-2018 01:23
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-May-2018 01:23
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 01:23
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 01:23
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 01:23
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 01:23
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 01:23
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 01:23
Surr: 1,2-Dichloroethane-d4	*100*			**0**	*70-126*	*%REC*	*1*	*08-May-2018 01:23*
Surr: 4-Bromofluorobenzene	*111*			**0**	*81-113*	*%REC*	*1*	*08-May-2018 01:23*
Surr: Dibromofluoromethane	*106*			**0**	*77-123*	*%REC*	*1*	*08-May-2018 01:23*
Surr: Toluene-d8	*106*			**0**	*82-127*	*%REC*	*1*	*08-May-2018 01:23*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW12-180503
Collection Date: 03-May-2018 12:20

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-13
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 03:00
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-May-2018 03:00
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	08-May-2018 03:00
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 03:00
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 03:00
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-May-2018 03:00
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-May-2018 03:00
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-May-2018 03:00
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	08-May-2018 03:00
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 03:00
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	08-May-2018 03:00
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 03:00
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	08-May-2018 03:00
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-May-2018 03:00
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-May-2018 03:00
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 03:00
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	08-May-2018 03:00
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	08-May-2018 03:00
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	08-May-2018 03:00
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	08-May-2018 03:00
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	08-May-2018 03:00
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 03:00
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-May-2018 03:00
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 03:00
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 03:00
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	08-May-2018 03:00
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	08-May-2018 03:00
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	08-May-2018 03:00
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	08-May-2018 03:00
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67WW12-180503
Collection Date: 03-May-2018 12:20

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-13
Matrix:GW

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 03:00
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 03:00
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 03:00
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	08-May-2018 03:00
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 03:00
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	08-May-2018 03:00
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	08-May-2018 03:00
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	08-May-2018 03:00
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	08-May-2018 03:00
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 03:00
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 03:00
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 03:00
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 03:00
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	08-May-2018 03:00
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	08-May-2018 03:00
Surr: 1,2-Dichloroethane-d4	*99.9*			**0**	*70-126*	*%REC*	*1*	*08-May-2018 03:00*
Surr: 4-Bromofluorobenzene	*109*			**0**	*81-113*	*%REC*	*1*	*08-May-2018 03:00*
Surr: Dibromofluoromethane	*108*			**0**	*77-123*	*%REC*	*1*	*08-May-2018 03:00*
Surr: Toluene-d8	*108*			**0**	*82-127*	*%REC*	*1*	*08-May-2018 03:00*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67TB02-180503'
Collection Date: 03-May-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-14
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 23:45
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 23:45
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 23:45
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 23:45
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 23:45
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 23:45
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 23:45
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 23:45
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
1,2-Dibromo-3-chloropropane	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 23:45
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 23:45
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 23:45
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 23:45
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 23:45
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 23:45
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 23:45
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 23:45
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 23:45
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 23:45
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 23:45
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	07-May-2018 23:45
Acetone	1.0	U	2.0	1.0	2.0	ug/L	1	07-May-2018 23:45
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 23:45
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 23:45
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 23:45
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 23:45
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 23:45
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 23:45
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	07-May-2018 23:45
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	07-May-2018 23:45
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
Sample ID: 67TB02-180503'
Collection Date: 03-May-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18050286
Lab ID:HS18050286-14
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**						Analyst: AKP
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 23:45
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 23:45
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 23:45
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	07-May-2018 23:45
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 23:45
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	07-May-2018 23:45
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	07-May-2018 23:45
Methylene chloride	1.0	U	1.0	1.0	2.0	ug/L	1	07-May-2018 23:45
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	07-May-2018 23:45
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 23:45
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 23:45
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 23:45
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 23:45
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	07-May-2018 23:45
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	07-May-2018 23:45
Surr: 1,2-Dichloroethane-d4	*99.9*			**0**	*70-126*	*%REC*	*1*	*07-May-2018 23:45*
Surr: 4-Bromofluorobenzene	*108*			**0**	*81-113*	*%REC*	*1*	*07-May-2018 23:45*
Surr: Dibromofluoromethane	*108*			**0**	*77-123*	*%REC*	*1*	*07-May-2018 23:45*
Surr: Toluene-d8	*105*			**0**	*82-127*	*%REC*	*1*	*07-May-2018 23:45*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R315767	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** GW		
HS18050286-01	67WW14-180502	02 May 2018 08:15			07 May 2018 16:01	1
HS18050286-02	67WW15-180502	02 May 2018 09:10			07 May 2018 16:25	1
HS18050286-03	67WW09-180502	02 May 2018 10:00			07 May 2018 16:50	1
HS18050286-04	67WW11-180502	02 May 2018 10:55			07 May 2018 17:14	1
HS18050286-05	67WW05-180503	03 May 2018 07:50			07 May 2018 17:39	1
HS18050286-06	67WW02-180503	03 May 2018 08:10			07 May 2018 18:03	1
HS18050286-07	67WW02-180503-FD	03 May 2018 08:10			07 May 2018 18:28	1
HS18050286-08	67WW07-180503	03 May 2018 08:30			07 May 2018 18:52	1
HS18050286-09	67WW01-180503	03 May 2018 08:50			07 May 2018 19:16	1
HS18050286-10	67WW16I-180503	03 May 2018 09:40			07 May 2018 19:41	1
HS18050286-11	67WW09A-180503	03 May 2018 10:35			07 May 2018 20:05	1
Batch ID R315785	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** Water		
HS18050286-14	67TB02-180503'	03 May 2018 00:00			07 May 2018 23:45	1
Batch ID R315785	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** GW		
HS18050286-12	67WW10-180503	03 May 2018 11:25			08 May 2018 01:23	1
HS18050286-13	67WW12-180503	03 May 2018 12:20			08 May 2018 03:00	1
Batch ID R315922	**Test Name :** LOW LEVEL VOLATILES BY SW8260C			**Matrix:** GW		
HS18050286-02	67WW15-180502	02 May 2018 09:10			09 May 2018 16:56	5
HS18050286-09	67WW01-180503	03 May 2018 08:50			09 May 2018 17:23	5

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315767 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180507** Units: **ug/L** Analysis Date: **07-May-2018 11:32**
Client ID: Run ID: **VOA2_315767** SeqNo: **4550420** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315767 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180507** Units: **ug/L** Analysis Date: **07-May-2018 11:32**
Client ID: Run ID: **VOA2_315767** SeqNo: **4550420** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	0.50	1.0								U
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*49.64*	*1.0*	*50*	*0*	*99.3*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*54.48*	*1.0*	*50*	*0*	*109*	*82 - 115*				
Surr: Dibromofluoromethane	*53.42*	*1.0*	*50*	*0*	*107*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315767 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180507** Units: **ug/L** Analysis Date: **07-May-2018 11:32**
Client ID: Run ID: **VOA2_315767** SeqNo: **4550420** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*53.94*	*1.0*	*50*	*0*	*108*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315767 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180507** Units: **ug/L** Analysis Date: **07-May-2018 10:43**
Client ID: Run ID: **VOA2_315767** SeqNo: **4550418** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	51.87	1.0	50	0	104	77 - 118				
1,1,1-Trichloroethane	50.92	1.0	50	0	102	70 - 130				
1,1,2,2-Tetrachloroethane	46.43	1.0	50	0	92.9	70 - 120				
1,1,2-Trichlor-1,2,2-trifluoroethane	50.41	1.0	50	0	101	70 - 130				
1,1,2-Trichloroethane	50.55	1.0	50	0	101	77 - 113				
1,1-Dichloroethane	50.35	1.0	50	0	101	71 - 122				
1,1-Dichloroethene	52.91	1.0	50	0	106	70 - 130				
1,1-Dichloropropene	44.3	1.0	50	0	88.6	78 - 118				
1,2,3-Trichlorobenzene	48.03	1.0	50	0	96.1	70 - 130				
1,2,3-Trichloropropane	53.86	1.0	50	0	108	70 - 127				
1,2,4-Trichlorobenzene	49.24	1.0	50	0	98.5	77 - 126				
1,2,4-Trimethylbenzene	54.24	1.0	50	0	108	73 - 121				
1,2-Dibromo-3-chloropropane	52.55	1.0	50	0	105	70 - 130				
1,2-Dibromoethane	52.71	1.0	50	0	105	76 - 123				
1,2-Dichlorobenzene	47.93	1.0	50	0	95.9	77 - 113				
1,2-Dichloroethane	50.42	1.0	50	0	101	70 - 124				
1,2-Dichloropropane	49.3	1.0	50	0	98.6	72 - 119				
1,3,5-Trimethylbenzene	45.23	1.0	50	0	90.5	75 - 118				
1,3-Dichlorobenzene	47.09	1.0	50	0	94.2	78 - 118				
1,3-Dichloropropane	50.58	1.0	50	0	101	75 - 116				
1,4-Dichlorobenzene	46.62	1.0	50	0	93.2	79 - 113				
2,2-Dichloropropane	52.93	1.0	50	0	106	70 - 130				
2-Butanone	104.9	2.0	100	0	105	70 - 130				
2-Chlorotoluene	54.24	1.0	50	0	108	70 - 128				
2-Hexanone	100.9	2.0	100	0	101	70 - 130				
4-Chlorotoluene	54.41	1.0	50	0	109	74 - 126				
4-Isopropyltoluene	46.28	1.0	50	0	92.6	74 - 126				
4-Methyl-2-pentanone	96.83	2.0	100	0	96.8	70 - 130				
Acetone	103.8	2.0	100	0	104	70 - 130				
Benzene	48.99	1.0	50	0	98.0	74 - 120				
Bromobenzene	47.64	1.0	50	0	95.3	78 - 113				
Bromochloromethane	54.29	1.0	50	0	109	76 - 124				
Bromodichloromethane	51.64	1.0	50	0	103	74 - 122				
Bromoform	53.6	1.0	50	0	107	73 - 128				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315767 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180507** Units: **ug/L** Analysis Date: **07-May-2018 10:43**
Client ID: Run ID: **VOA2_315767** SeqNo: **4550418** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	44.04	1.0	50	0	88.1	70 - 130				
Carbon disulfide	100.5	2.0	100	0	101	70 - 130				
Carbon tetrachloride	46.4	1.0	50	0	92.8	71 - 125				
Chlorobenzene	48.77	1.0	50	0	97.5	76 - 113				
Chloroethane	55.58	1.0	50	0	111	70 - 130				
Chloroform	49.98	1.0	50	0	100.0	71 - 121				
Chloromethane	56.51	1.0	50	0	113	70 - 129				
cis-1,2-Dichloroethene	51.9	1.0	50	0	104	75 - 122				
cis-1,3-Dichloropropene	54.69	1.0	50	0	109	73 - 127				
Dibromochloromethane	52.72	1.0	50	0	105	77 - 122				
Dibromomethane	53.92	1.0	50	0	108	78 - 121				
Dichlorodifluoromethane	53.98	1.0	50	0	108	70 - 130				
Ethylbenzene	47.39	1.0	50	0	94.8	77 - 117				
Hexachlorobutadiene	46.75	1.0	50	0	93.5	70 - 130				
Isopropylbenzene	48.7	1.0	50	0	97.4	73 - 127				
m,p-Xylene	115.6	2.0	100	0	116	77 - 122				
Methylene chloride	46.96	2.0	50	0	93.9	70 - 127				
Naphthalene	49.21	1.0	50	0	98.4	70 - 130				
n-Butylbenzene	48.48	1.0	50	0	97.0	72 - 130				
n-Propylbenzene	45.69	1.0	50	0	91.4	73 - 124				
o-Xylene	48.94	1.0	50	0	97.9	75 - 119				
sec-Butylbenzene	46.71	1.0	50	0	93.4	73 - 128				
Styrene	50.64	1.0	50	0	101	72 - 126				
tert-Butylbenzene	45.12	1.0	50	0	90.2	73 - 124				
Tetrachloroethene	48.02	1.0	50	0	96.0	76 - 119				
Toluene	47.45	1.0	50	0	94.9	77 - 118				
trans-1,2-Dichloroethene	54.65	1.0	50	0	109	72 - 127				
trans-1,3-Dichloropropene	56.91	1.0	50	0	114	77 - 119				
Trichloroethene	51.48	1.0	50	0	103	77 - 121				
Trichlorofluoromethane	53.39	1.0	50	0	107	70 - 130				
Vinyl chloride	50.83	1.0	50	0	102	70 - 130				
Surr: 1,2-Dichloroethane-d4	*52.05*	*1.0*	*50*	*0*	*104*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*57.3*	*1.0*	*50*	*0*	*115*	*82 - 115*				
Surr: Dibromofluoromethane	*50.21*	*1.0*	*50*	*0*	*100*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315767 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180507** Units: **ug/L** Analysis Date: **07-May-2018 10:43**
Client ID: Run ID: **VOA2_315767** SeqNo: **4550418** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*51.58*	*1.0*	*50*	*0*	*103*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315767 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18050260-01MS** Units: **ug/L** Analysis Date: **07-May-2018 14:47**
Client ID: Run ID: **VOA2_315767** SeqNo: **4550800** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	48.07	1.0	50	0	96.1	70 - 120				
1,1,1-Trichloroethane	53.93	1.0	50	0	108	70 - 130				
1,1,2,2-Tetrachloroethane	42.99	1.0	50	0	86.0	70 - 123				
1,1,2-Trichlor-1,2,2-trifluoroethane	59.89	1.0	50	0	120	70 - 130				
1,1,2-Trichloroethane	47.09	1.0	50	0	94.2	70 - 117				
1,1-Dichloroethane	49.21	1.0	50	0	98.4	70 - 127				
1,1-Dichloroethene	57	1.0	50	0	114	70 - 130				
1,1-Dichloropropene	47.16	1.0	50	0	94.3	70 - 129				
1,2,3-Trichlorobenzene	39.17	1.0	50	0	78.3	70 - 130				
1,2,3-Trichloropropane	52.41	1.0	50	0	105	70 - 130				
1,2,4-Trichlorobenzene	38.68	1.0	50	0	77.4	70 - 125				
1,2,4-Trimethylbenzene	51.55	1.0	50	0	103	70 - 125				
1,2-Dibromo-3-chloropropane	46.7	1.0	50	0	93.4	70 - 130				
1,2-Dibromoethane	49.09	1.0	50	0	98.2	70 - 124				
1,2-Dichlorobenzene	43.23	1.0	50	0	86.5	70 - 115				
1,2-Dichloroethane	50.24	1.0	50	0	100	70 - 127				
1,2-Dichloropropane	48.36	1.0	50	0	96.7	70 - 122				
1,3,5-Trimethylbenzene	43.58	1.0	50	0	87.2	70 - 126				
1,3-Dichlorobenzene	42.12	1.0	50	0	84.2	70 - 119				
1,3-Dichloropropane	47.93	1.0	50	0	95.9	70 - 121				
1,4-Dichlorobenzene	40.56	1.0	50	0	81.1	70 - 114				
2,2-Dichloropropane	54.15	1.0	50	0	108	70 - 130				
2-Butanone	95.33	2.0	100	6.139	89.2	70 - 130				
2-Chlorotoluene	50.57	1.0	50	0	101	70 - 130				
2-Hexanone	104.3	2.0	100	0	104	70 - 130				
4-Chlorotoluene	50.38	1.0	50	0	101	70 - 130				
4-Isopropyltoluene	45.88	1.0	50	0	91.8	70 - 130				
4-Methyl-2-pentanone	101.9	2.0	100	0	102	70 - 130				
Acetone	98	2.0	100	11.45	86.6	70 - 130				
Benzene	48.28	1.0	50	0	96.6	70 - 127				
Bromobenzene	43.82	1.0	50	0	87.6	70 - 115				
Bromochloromethane	52.49	1.0	50	0	105	70 - 127				
Bromodichloromethane	49.34	1.0	50	0	98.7	70 - 124				
Bromoform	48.34	1.0	50	0	96.7	70 - 129				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315767 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18050260-01MS** Units: **ug/L** Analysis Date: **07-May-2018 14:47**
Client ID: Run ID: **VOA2_315767** SeqNo: **4550800** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	27.84	1.0	50	0	55.7	70 - 130				S
Carbon disulfide	106.4	2.0	100	0	106	70 - 130				
Carbon tetrachloride	50.16	1.0	50	0	100	70 - 130				
Chlorobenzene	46.19	1.0	50	0	92.4	70 - 114				
Chloroethane	49.99	1.0	50	0	100.0	70 - 130				
Chloroform	48.69	1.0	50	0	97.4	70 - 125				
Chloromethane	48.23	1.0	50	0	96.5	70 - 130				
cis-1,2-Dichloroethene	54.02	1.0	50	3.843	100	70 - 128				
cis-1,3-Dichloropropene	51.99	1.0	50	0	104	70 - 125				
Dibromochloromethane	49.03	1.0	50	0	98.1	70 - 124				
Dibromomethane	51.26	1.0	50	0	103	70 - 124				
Dichlorodifluoromethane	53.77	1.0	50	0	108	70 - 130				
Ethylbenzene	47.26	1.0	50	0	94.5	70 - 124				
Hexachlorobutadiene	41.83	1.0	50	0	83.7	70 - 130				
Isopropylbenzene	49.52	1.0	50	0	99.0	70 - 130				
m,p-Xylene	113.8	2.0	100	0	114	70 - 130				
Methylene chloride	45.95	2.0	50	0	91.9	70 - 128				
Naphthalene	42.51	1.0	50	0	85.0	70 - 130				
n-Butylbenzene	46.03	1.0	50	0	92.1	70 - 130				
n-Propylbenzene	44.77	1.0	50	0	89.5	70 - 130				
o-Xylene	47.58	1.0	50	0	95.2	70 - 124				
sec-Butylbenzene	46.61	1.0	50	0	93.2	70 - 130				
Styrene	46.55	1.0	50	0	93.1	70 - 130				
tert-Butylbenzene	46.42	1.0	50	0	92.8	70 - 130				
Tetrachloroethene	49.74	1.0	50	0	99.5	70 - 130				
Toluene	46.9	1.0	50	0.3202	93.2	70 - 123				
trans-1,2-Dichloroethene	55.8	1.0	50	0	112	70 - 130				
trans-1,3-Dichloropropene	52.22	1.0	50	0	104	70 - 121				
Trichloroethene	54.64	1.0	50	2.291	105	70 - 129				
Trichlorofluoromethane	56.7	1.0	50	0	113	70 - 130				
Vinyl chloride	53.38	1.0	50	0	107	70 - 130				
Surr: 1,2-Dichloroethane-d4	*52.66*	*1.0*	*50*	*0*	*105*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*56.63*	*1.0*	*50*	*0*	*113*	*81 - 113*				S
Surr: Dibromofluoromethane	*50.76*	*1.0*	*50*	*0*	*102*	*77 - 123*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315767 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18050260-01MS** Units: **ug/L** Analysis Date: **07-May-2018 14:47**
Client ID: Run ID: **VOA2_315767** SeqNo: **4550800** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*51.44*	*1.0*	*50*	*0*	*103*	*82 - 127*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315767 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18050260-01MSD** Units: **ug/L** Analysis Date: **07-May-2018 15:12**
Client ID: Run ID: **VOA2_315767** SeqNo: **4550801** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	48.39	1.0	50	0	96.8	70 - 120	48.07	0.649	20	
1,1,1-Trichloroethane	53.9	1.0	50	0	108	70 - 130	53.93	0.0482	20	
1,1,2,2-Tetrachloroethane	44.05	1.0	50	0	88.1	70 - 123	42.99	2.43	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	58.59	1.0	50	0	117	70 - 130	59.89	2.18	20	
1,1,2-Trichloroethane	48.01	1.0	50	0	96.0	70 - 117	47.09	1.92	20	
1,1-Dichloroethane	49.44	1.0	50	0	98.9	70 - 127	49.21	0.46	20	
1,1-Dichloroethene	56.19	1.0	50	0	112	70 - 130	57	1.43	20	
1,1-Dichloropropene	46.98	1.0	50	0	94.0	70 - 129	47.16	0.366	20	
1,2,3-Trichlorobenzene	40.13	1.0	50	0	80.3	70 - 130	39.17	2.43	20	
1,2,3-Trichloropropane	52.55	1.0	50	0	105	70 - 130	52.41	0.269	20	
1,2,4-Trichlorobenzene	38.58	1.0	50	0	77.2	70 - 125	38.68	0.269	20	
1,2,4-Trimethylbenzene	52.13	1.0	50	0	104	70 - 125	51.55	1.13	20	
1,2-Dibromo-3-chloropropane	48.78	1.0	50	0	97.6	70 - 130	46.7	4.34	20	
1,2-Dibromoethane	50.31	1.0	50	0	101	70 - 124	49.09	2.45	20	
1,2-Dichlorobenzene	43.39	1.0	50	0	86.8	70 - 115	43.23	0.356	20	
1,2-Dichloroethane	49.16	1.0	50	0	98.3	70 - 127	50.24	2.17	20	
1,2-Dichloropropane	47.68	1.0	50	0	95.4	70 - 122	48.36	1.4	20	
1,3,5-Trimethylbenzene	43.95	1.0	50	0	87.9	70 - 126	43.58	0.852	20	
1,3-Dichlorobenzene	41.83	1.0	50	0	83.7	70 - 119	42.12	0.709	20	
1,3-Dichloropropane	48.75	1.0	50	0	97.5	70 - 121	47.93	1.68	20	
1,4-Dichlorobenzene	40.71	1.0	50	0	81.4	70 - 114	40.56	0.37	20	
2,2-Dichloropropane	53.15	1.0	50	0	106	70 - 130	54.15	1.87	20	
2-Butanone	97.63	2.0	100	6.139	91.5	70 - 130	95.33	2.38	20	
2-Chlorotoluene	50.47	1.0	50	0	101	70 - 130	50.57	0.203	20	
2-Hexanone	108.8	2.0	100	0	109	70 - 130	104.3	4.28	20	
4-Chlorotoluene	49.72	1.0	50	0	99.4	70 - 130	50.38	1.32	20	
4-Isopropyltoluene	45.8	1.0	50	0	91.6	70 - 130	45.88	0.18	20	
4-Methyl-2-pentanone	106.2	2.0	100	0	106	70 - 130	101.9	4.14	20	
Acetone	100.1	2.0	100	11.45	88.7	70 - 130	98	2.13	20	
Benzene	48.17	1.0	50	0	96.3	70 - 127	48.28	0.229	20	
Bromobenzene	43.62	1.0	50	0	87.2	70 - 115	43.82	0.452	20	
Bromochloromethane	51.79	1.0	50	0	104	70 - 127	52.49	1.34	20	
Bromodichloromethane	48.76	1.0	50	0	97.5	70 - 124	49.34	1.2	20	
Bromoform	48.94	1.0	50	0	97.9	70 - 129	48.34	1.24	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315767 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18050260-01MSD** Units: **ug/L** Analysis Date: **07-May-2018 15:12**
Client ID: Run ID: **VOA2_315767** SeqNo: **4550801** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	27.99	1.0	50	0	56.0	70 - 130	27.84	0.544	20	S
Carbon disulfide	105.5	2.0	100	0	105	70 - 130	106.4	0.885	20	
Carbon tetrachloride	49.89	1.0	50	0	99.8	70 - 130	50.16	0.535	20	
Chlorobenzene	46.46	1.0	50	0	92.9	70 - 114	46.19	0.575	20	
Chloroethane	49.3	1.0	50	0	98.6	70 - 130	49.99	1.4	20	
Chloroform	48.7	1.0	50	0	97.4	70 - 125	48.69	0.0111	20	
Chloromethane	46.37	1.0	50	0	92.7	70 - 130	48.23	3.93	20	
cis-1,2-Dichloroethene	54.35	1.0	50	3.843	101	70 - 128	54.02	0.601	20	
cis-1,3-Dichloropropene	50.92	1.0	50	0	102	70 - 125	51.99	2.07	20	
Dibromochloromethane	49.39	1.0	50	0	98.8	70 - 124	49.03	0.743	20	
Dibromomethane	51.84	1.0	50	0	104	70 - 124	51.26	1.12	20	
Dichlorodifluoromethane	52.97	1.0	50	0	106	70 - 130	53.77	1.49	20	
Ethylbenzene	46.59	1.0	50	0	93.2	70 - 124	47.26	1.42	20	
Hexachlorobutadiene	43.05	1.0	50	0	86.1	70 - 130	41.83	2.86	20	
Isopropylbenzene	49.1	1.0	50	0	98.2	70 - 130	49.52	0.852	20	
m,p-Xylene	113	2.0	100	0	113	70 - 130	113.8	0.749	20	
Methylene chloride	46.42	2.0	50	0	92.8	70 - 128	45.95	1.02	20	
Naphthalene	44.27	1.0	50	0	88.5	70 - 130	42.51	4.06	20	
n-Butylbenzene	45.99	1.0	50	0	92.0	70 - 130	46.03	0.0724	20	
n-Propylbenzene	44.76	1.0	50	0	89.5	70 - 130	44.77	0.0215	20	
o-Xylene	47.66	1.0	50	0	95.3	70 - 124	47.58	0.168	20	
sec-Butylbenzene	46.4	1.0	50	0	92.8	70 - 130	46.61	0.46	20	
Styrene	46.34	1.0	50	0	92.7	70 - 130	46.55	0.461	20	
tert-Butylbenzene	46.44	1.0	50	0	92.9	70 - 130	46.42	0.035	20	
Tetrachloroethene	50.15	1.0	50	0	100	70 - 130	49.74	0.815	20	
Toluene	46.89	1.0	50	0.3202	93.1	70 - 123	46.9	0.0175	20	
trans-1,2-Dichloroethene	53.97	1.0	50	0	108	70 - 130	55.8	3.34	20	
trans-1,3-Dichloropropene	52.61	1.0	50	0	105	70 - 121	52.22	0.741	20	
Trichloroethene	54.54	1.0	50	2.291	105	70 - 129	54.64	0.176	20	
Trichlorofluoromethane	56.92	1.0	50	0	114	70 - 130	56.7	0.395	20	
Vinyl chloride	52.38	1.0	50	0	105	70 - 130	53.38	1.88	20	
Surr: 1,2-Dichloroethane-d4	*53.35*	*1.0*	*50*	*0*	*107*	*70 - 126*	*52.66*	*1.3*	*20*	
Surr: 4-Bromofluorobenzene	*56.96*	*1.0*	*50*	*0*	*114*	*81 - 113*	*56.63*	*0.584*	*20*	S
Surr: Dibromofluoromethane	*50.54*	*1.0*	*50*	*0*	*101*	*77 - 123*	*50.76*	*0.447*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315767 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18050260-01MSD** Units: **ug/L** Analysis Date: **07-May-2018 15:12**
Client ID: Run ID: **VOA2_315767** SeqNo: **4550801** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*51.37*	*1.0*	*50*	*0*	*103*	*82 - 127*	*51.44*	*0.129*	*20*	

The following samples were analyzed in this batch:

HS18050286-01	HS18050286-02	HS18050286-03	HS18050286-04
HS18050286-05	HS18050286-06	HS18050286-07	HS18050286-08
HS18050286-09	HS18050286-10	HS18050286-11	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315785 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180507** Units: **ug/L** Analysis Date: **07-May-2018 23:21**
Client ID: Run ID: **VOA2_315785** SeqNo: **4550958** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichlor-1,2,2-trifluoroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315785 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180507** Units: **ug/L** Analysis Date: **07-May-2018 23:21**
Client ID: Run ID: **VOA2_315785** SeqNo: **4550958** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	0.50	1.0								U
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*48.46*	*1.0*	*50*	*0*	*96.9*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*54.47*	*1.0*	*50*	*0*	*109*	*82 - 115*				
Surr: Dibromofluoromethane	*53.32*	*1.0*	*50*	*0*	*107*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315785 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180507** Units: **ug/L** Analysis Date: **07-May-2018 23:21**
Client ID: Run ID: **VOA2_315785** SeqNo: **4550958** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*52.89*	*1.0*	*50*	*0*	*106*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315785 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180507** Units: **ug/L** Analysis Date: **07-May-2018 22:32**
Client ID: Run ID: **VOA2_315785** SeqNo: **4550956** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	50.4	1.0	50	0	101	77 - 118				
1,1,1-Trichloroethane	50.21	1.0	50	0	100	70 - 130				
1,1,2,2-Tetrachloroethane	45.25	1.0	50	0	90.5	70 - 120				
1,1,2-Trichlor-1,2,2-trifluoroethane	49.4	1.0	50	0	98.8	70 - 130				
1,1,2-Trichloroethane	50.44	1.0	50	0	101	77 - 113				
1,1-Dichloroethane	50.33	1.0	50	0	101	71 - 122				
1,1-Dichloroethene	52.14	1.0	50	0	104	70 - 130				
1,1-Dichloropropene	43.79	1.0	50	0	87.6	78 - 118				
1,2,3-Trichlorobenzene	46.95	1.0	50	0	93.9	70 - 130				
1,2,3-Trichloropropane	52.45	1.0	50	0	105	70 - 127				
1,2,4-Trichlorobenzene	46.98	1.0	50	0	94.0	77 - 126				
1,2,4-Trimethylbenzene	52.42	1.0	50	0	105	73 - 121				
1,2-Dibromo-3-chloropropane	51.22	1.0	50	0	102	70 - 130				
1,2-Dibromoethane	51.79	1.0	50	0	104	76 - 123				
1,2-Dichlorobenzene	47.21	1.0	50	0	94.4	77 - 113				
1,2-Dichloroethane	51.98	1.0	50	0	104	70 - 124				
1,2-Dichloropropane	50.1	1.0	50	0	100	72 - 119				
1,3,5-Trimethylbenzene	43.49	1.0	50	0	87.0	75 - 118				
1,3-Dichlorobenzene	46	1.0	50	0	92.0	78 - 118				
1,3-Dichloropropane	49.85	1.0	50	0	99.7	75 - 116				
1,4-Dichlorobenzene	45.59	1.0	50	0	91.2	79 - 113				
2,2-Dichloropropane	47.48	1.0	50	0	95.0	70 - 130				
2-Butanone	101	2.0	100	0	101	70 - 130				
2-Chlorotoluene	52.37	1.0	50	0	105	70 - 128				
2-Hexanone	96.53	2.0	100	0	96.5	70 - 130				
4-Chlorotoluene	53.19	1.0	50	0	106	74 - 126				
4-Isopropyltoluene	44.22	1.0	50	0	88.4	74 - 126				
4-Methyl-2-pentanone	94.79	2.0	100	0	94.8	70 - 130				
Acetone	104.5	2.0	100	0	105	70 - 130				
Benzene	48.99	1.0	50	0	98.0	74 - 120				
Bromobenzene	46.89	1.0	50	0	93.8	78 - 113				
Bromochloromethane	54.04	1.0	50	0	108	76 - 124				
Bromodichloromethane	51.72	1.0	50	0	103	74 - 122				
Bromoform	52.66	1.0	50	0	105	73 - 128				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315785 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180507** Units: **ug/L** Analysis Date: **07-May-2018 22:32**
Client ID: Run ID: **VOA2_315785** SeqNo: **4550956** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	41	1.0	50	0	82.0	70 - 130				
Carbon disulfide	98.43	2.0	100	0	98.4	70 - 130				
Carbon tetrachloride	45.87	1.0	50	0	91.7	71 - 125				
Chlorobenzene	47.46	1.0	50	0	94.9	76 - 113				
Chloroethane	55.71	1.0	50	0	111	70 - 130				
Chloroform	50.16	1.0	50	0	100	71 - 121				
Chloromethane	53.69	1.0	50	0	107	70 - 129				
cis-1,2-Dichloroethene	51.89	1.0	50	0	104	75 - 122				
cis-1,3-Dichloropropene	53.34	1.0	50	0	107	73 - 127				
Dibromochloromethane	52.1	1.0	50	0	104	77 - 122				
Dibromomethane	54.82	1.0	50	0	110	78 - 121				
Dichlorodifluoromethane	52.76	1.0	50	0	106	70 - 130				
Ethylbenzene	46.02	1.0	50	0	92.0	77 - 117				
Hexachlorobutadiene	43.68	1.0	50	0	87.4	70 - 130				
Isopropylbenzene	46.5	1.0	50	0	93.0	73 - 127				
m,p-Xylene	111.5	2.0	100	0	112	77 - 122				
Methylene chloride	47.19	2.0	50	0	94.4	70 - 127				
Naphthalene	48.25	1.0	50	0	96.5	70 - 130				
n-Butylbenzene	44.86	1.0	50	0	89.7	72 - 130				
n-Propylbenzene	43.93	1.0	50	0	87.9	73 - 124				
o-Xylene	47.86	1.0	50	0	95.7	75 - 119				
sec-Butylbenzene	43.98	1.0	50	0	88.0	73 - 128				
Styrene	49.91	1.0	50	0	99.8	72 - 126				
tert-Butylbenzene	44.02	1.0	50	0	88.0	73 - 124				
Tetrachloroethene	45.59	1.0	50	0	91.2	76 - 119				
Toluene	46.13	1.0	50	0	92.3	77 - 118				
trans-1,2-Dichloroethene	53.43	1.0	50	0	107	72 - 127				
trans-1,3-Dichloropropene	56.42	1.0	50	0	113	77 - 119				
Trichloroethene	51.26	1.0	50	0	103	77 - 121				
Trichlorofluoromethane	52.77	1.0	50	0	106	70 - 130				
Vinyl chloride	50.69	1.0	50	0	101	70 - 130				
Surr: 1,2-Dichloroethane-d4	*52.2*	*1.0*	*50*	*0*	*104*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*57.02*	*1.0*	*50*	*0*	*114*	*82 - 115*				
Surr: Dibromofluoromethane	*50.82*	*1.0*	*50*	*0*	*102*	*73 - 126*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315785 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180507** Units: **ug/L** Analysis Date: **07-May-2018 22:32**
Client ID: Run ID: **VOA2_315785** SeqNo: **4550956** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*52.02*	*1.0*	*50*	*0*	*104*	*81 - 120*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315785 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18050286-12MS** Units: **ug/L** Analysis Date: **08-May-2018 01:47**
Client ID: **67WW10-180503** Run ID: **VOA2_315785** SeqNo: **4550964** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	47.19	1.0	50	0	94.4	70 - 120				
1,1,1-Trichloroethane	50.98	1.0	50	0	102	70 - 130				
1,1,2,2-Tetrachloroethane	40.28	1.0	50	0	80.6	70 - 123				
1,1,2-Trichlor-1,2,2-trifluoroethane	51.01	1.0	50	0	102	70 - 130				
1,1,2-Trichloroethane	46.01	1.0	50	0	92.0	70 - 117				
1,1-Dichloroethane	48.05	1.0	50	0	96.1	70 - 127				
1,1-Dichloroethene	52.62	1.0	50	0	105	70 - 130				
1,1-Dichloropropene	44.49	1.0	50	0	89.0	70 - 129				
1,2,3-Trichlorobenzene	42.16	1.0	50	0	84.3	70 - 130				
1,2,3-Trichloropropane	52.61	1.0	50	0	105	70 - 130				
1,2,4-Trichlorobenzene	43.46	1.0	50	0	86.9	70 - 125				
1,2,4-Trimethylbenzene	51.65	1.0	50	0	103	70 - 125				
1,2-Dibromo-3-chloropropane	42.88	1.0	50	0	85.8	70 - 130				
1,2-Dibromoethane	46.56	1.0	50	0	93.1	70 - 124				
1,2-Dichlorobenzene	44.1	1.0	50	0	88.2	70 - 115				
1,2-Dichloroethane	46.32	1.0	50	0	92.6	70 - 127				
1,2-Dichloropropane	46.23	1.0	50	0	92.5	70 - 122				
1,3,5-Trimethylbenzene	43.54	1.0	50	0	87.1	70 - 126				
1,3-Dichlorobenzene	43.89	1.0	50	0	87.8	70 - 119				
1,3-Dichloropropane	45.6	1.0	50	0	91.2	70 - 121				
1,4-Dichlorobenzene	43.12	1.0	50	0	86.2	70 - 114				
2,2-Dichloropropane	44.34	1.0	50	0	88.7	70 - 130				
2-Butanone	86.57	2.0	100	0	86.6	70 - 130				
2-Chlorotoluene	51.61	1.0	50	0	103	70 - 130				
2-Hexanone	84.13	2.0	100	0	84.1	70 - 130				
4-Chlorotoluene	51	1.0	50	0	102	70 - 130				
4-Isopropyltoluene	44.87	1.0	50	0	89.7	70 - 130				
4-Methyl-2-pentanone	82.82	2.0	100	0	82.8	70 - 130				
Acetone	86.91	2.0	100	0	86.9	70 - 130				
Benzene	46.9	1.0	50	0	93.8	70 - 127				
Bromobenzene	44.17	1.0	50	0	88.3	70 - 115				
Bromochloromethane	49.63	1.0	50	0	99.3	70 - 127				
Bromodichloromethane	47.91	1.0	50	0	95.8	70 - 124				
Bromoform	46.53	1.0	50	0	93.1	70 - 129				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315785 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18050286-12MS** Units: **ug/L** Analysis Date: **08-May-2018 01:47**
Client ID: **67WW10-180503** Run ID: **VOA2_315785** SeqNo: **4550964** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Bromomethane	38.84	1.0	50	0	77.7	70 - 130				
Carbon disulfide	100.1	2.0	100	0	100	70 - 130				
Carbon tetrachloride	47.83	1.0	50	0	95.7	70 - 130				
Chlorobenzene	45.11	1.0	50	0	90.2	70 - 114				
Chloroethane	51.37	1.0	50	0	103	70 - 130				
Chloroform	46.74	1.0	50	0	93.5	70 - 125				
Chloromethane	45.41	1.0	50	0	90.8	70 - 130				
cis-1,2-Dichloroethene	49.19	1.0	50	0	98.4	70 - 128				
cis-1,3-Dichloropropene	49.24	1.0	50	0	98.5	70 - 125				
Dibromochloromethane	47.47	1.0	50	0	94.9	70 - 124				
Dibromomethane	49.01	1.0	50	0	98.0	70 - 124				
Dichlorodifluoromethane	44.26	1.0	50	0	88.5	70 - 130				
Ethylbenzene	45.6	1.0	50	0	91.2	70 - 124				
Hexachlorobutadiene	43.48	1.0	50	0	87.0	70 - 130				
Isopropylbenzene	47.55	1.0	50	0	95.1	70 - 130				
m,p-Xylene	111.7	2.0	100	0	112	70 - 130				
Methylene chloride	43.52	2.0	50	0	87.0	70 - 128				
Naphthalene	42.28	1.0	50	0	84.6	70 - 130				
n-Butylbenzene	45.76	1.0	50	0	91.5	70 - 130				
n-Propylbenzene	44.49	1.0	50	0	89.0	70 - 130				
o-Xylene	46.36	1.0	50	0	92.7	70 - 124				
sec-Butylbenzene	45.59	1.0	50	0	91.2	70 - 130				
Styrene	46.81	1.0	50	0	93.6	70 - 130				
tert-Butylbenzene	45.2	1.0	50	0	90.4	70 - 130				
Tetrachloroethene	47.73	1.0	50	0	95.5	70 - 130				
Toluene	45.17	1.0	50	0	90.3	70 - 123				
trans-1,2-Dichloroethene	53.25	1.0	50	0	107	70 - 130				
trans-1,3-Dichloropropene	49.27	1.0	50	0	98.5	70 - 121				
Trichloroethene	50.31	1.0	50	0	101	70 - 129				
Trichlorofluoromethane	52.97	1.0	50	0	106	70 - 130				
Vinyl chloride	49.5	1.0	50	0	99.0	70 - 130				
Surr: 1,2-Dichloroethane-d4	*52.31*	*1.0*	*50*	*0*	*105*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*56.34*	*1.0*	*50*	*0*	*113*	*81 - 113*				
Surr: Dibromofluoromethane	*50.39*	*1.0*	*50*	*0*	*101*	*77 - 123*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315785 **Instrument:** VOA2 **Method:** SW8260

MS Sample ID: **HS18050286-12MS** Units: **ug/L** Analysis Date: **08-May-2018 01:47**
Client ID: **67WW10-180503** Run ID: **VOA2_315785** SeqNo: **4550964** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*51.17*	*1.0*	*50*	*0*	*102*	*82 - 127*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315785 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18050286-12MSD** Units: **ug/L** Analysis Date: **08-May-2018 02:11**
Client ID: **67WW10-180503** Run ID: **VOA2_315785** SeqNo: **4550965** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	49.07	1.0	50	0	98.1	70 - 120	47.19	3.91	20	
1,1,1-Trichloroethane	50.79	1.0	50	0	102	70 - 130	50.98	0.368	20	
1,1,2,2-Tetrachloroethane	40.42	1.0	50	0	80.8	70 - 123	40.28	0.352	20	
1,1,2-Trichlor-1,2,2-trifluoroethane	50.51	1.0	50	0	101	70 - 130	51.01	0.981	20	
1,1,2-Trichloroethane	45.88	1.0	50	0	91.8	70 - 117	46.01	0.277	20	
1,1-Dichloroethane	48.05	1.0	50	0	96.1	70 - 127	48.05	0.0128	20	
1,1-Dichloroethene	52.65	1.0	50	0	105	70 - 130	52.62	0.0681	20	
1,1-Dichloropropene	45.12	1.0	50	0	90.2	70 - 129	44.49	1.4	20	
1,2,3-Trichlorobenzene	42.09	1.0	50	0	84.2	70 - 130	42.16	0.165	20	
1,2,3-Trichloropropane	54.19	1.0	50	0	108	70 - 130	52.61	2.94	20	
1,2,4-Trichlorobenzene	44.81	1.0	50	0	89.6	70 - 125	43.46	3.06	20	
1,2,4-Trimethylbenzene	52	1.0	50	0	104	70 - 125	51.65	0.682	20	
1,2-Dibromo-3-chloropropane	44.31	1.0	50	0	88.6	70 - 130	42.88	3.3	20	
1,2-Dibromoethane	46.55	1.0	50	0	93.1	70 - 124	46.56	0.0193	20	
1,2-Dichlorobenzene	44.78	1.0	50	0	89.6	70 - 115	44.1	1.52	20	
1,2-Dichloroethane	47.8	1.0	50	0	95.6	70 - 127	46.32	3.15	20	
1,2-Dichloropropane	46.92	1.0	50	0	93.8	70 - 122	46.23	1.47	20	
1,3,5-Trimethylbenzene	44.13	1.0	50	0	88.3	70 - 126	43.54	1.33	20	
1,3-Dichlorobenzene	44.36	1.0	50	0	88.7	70 - 119	43.89	1.07	20	
1,3-Dichloropropane	46.3	1.0	50	0	92.6	70 - 121	45.6	1.54	20	
1,4-Dichlorobenzene	43.81	1.0	50	0	87.6	70 - 114	43.12	1.58	20	
2,2-Dichloropropane	44.13	1.0	50	0	88.3	70 - 130	44.34	0.467	20	
2-Butanone	85.31	2.0	100	0	85.3	70 - 130	86.57	1.47	20	
2-Chlorotoluene	51.7	1.0	50	0	103	70 - 130	51.61	0.175	20	
2-Hexanone	87.04	2.0	100	0	87.0	70 - 130	84.13	3.39	20	
4-Chlorotoluene	52.18	1.0	50	0	104	70 - 130	51	2.29	20	
4-Isopropyltoluene	45.39	1.0	50	0	90.8	70 - 130	44.87	1.15	20	
4-Methyl-2-pentanone	83.98	2.0	100	0	84.0	70 - 130	82.82	1.4	20	
Acetone	88.51	2.0	100	0	88.5	70 - 130	86.91	1.82	20	
Benzene	46.76	1.0	50	0	93.5	70 - 127	46.9	0.3	20	
Bromobenzene	43.98	1.0	50	0	88.0	70 - 115	44.17	0.438	20	
Bromochloromethane	49.77	1.0	50	0	99.5	70 - 127	49.63	0.291	20	
Bromodichloromethane	48.14	1.0	50	0	96.3	70 - 124	47.91	0.483	20	
Bromoform	48.03	1.0	50	0	96.1	70 - 129	46.53	3.17	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315785 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18050286-12MSD** Units: **ug/L** Analysis Date: **08-May-2018 02:11**
Client ID: **67WW10-180503** Run ID: **VOA2_315785** SeqNo: **4550965** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Bromomethane	38.84	1.0	50	0	77.7	70 - 130	38.84	0.00661	20	
Carbon disulfide	99.14	2.0	100	0	99.1	70 - 130	100.1	1.01	20	
Carbon tetrachloride	47.95	1.0	50	0	95.9	70 - 130	47.83	0.254	20	
Chlorobenzene	46.92	1.0	50	0	93.8	70 - 114	45.11	3.93	20	
Chloroethane	53.07	1.0	50	0	106	70 - 130	51.37	3.25	20	
Chloroform	47.26	1.0	50	0	94.5	70 - 125	46.74	1.13	20	
Chloromethane	46.74	1.0	50	0	93.5	70 - 130	45.41	2.89	20	
cis-1,2-Dichloroethene	48.01	1.0	50	0	96.0	70 - 128	49.19	2.42	20	
cis-1,3-Dichloropropene	48.69	1.0	50	0	97.4	70 - 125	49.24	1.13	20	
Dibromochloromethane	48.45	1.0	50	0	96.9	70 - 124	47.47	2.06	20	
Dibromomethane	48.27	1.0	50	0	96.5	70 - 124	49.01	1.52	20	
Dichlorodifluoromethane	42.98	1.0	50	0	86.0	70 - 130	44.26	2.94	20	
Ethylbenzene	47.08	1.0	50	0	94.2	70 - 124	45.6	3.2	20	
Hexachlorobutadiene	43.84	1.0	50	0	87.7	70 - 130	43.48	0.824	20	
Isopropylbenzene	48.59	1.0	50	0	97.2	70 - 130	47.55	2.16	20	
m,p-Xylene	113.8	2.0	100	0	114	70 - 130	111.7	1.84	20	
Methylene chloride	43.48	2.0	50	0	87.0	70 - 128	43.52	0.0958	20	
Naphthalene	44.13	1.0	50	0	88.3	70 - 130	42.28	4.3	20	
n-Butylbenzene	46.18	1.0	50	0	92.4	70 - 130	45.76	0.918	20	
n-Propylbenzene	45.05	1.0	50	0	90.1	70 - 130	44.49	1.25	20	
o-Xylene	47.8	1.0	50	0	95.6	70 - 124	46.36	3.07	20	
sec-Butylbenzene	46.31	1.0	50	0	92.6	70 - 130	45.59	1.57	20	
Styrene	48.13	1.0	50	0	96.3	70 - 130	46.81	2.78	20	
tert-Butylbenzene	45.11	1.0	50	0	90.2	70 - 130	45.2	0.208	20	
Tetrachloroethene	49.56	1.0	50	0	99.1	70 - 130	47.73	3.75	20	
Toluene	46.36	1.0	50	0	92.7	70 - 123	45.17	2.6	20	
trans-1,2-Dichloroethene	53.57	1.0	50	0	107	70 - 130	53.25	0.601	20	
trans-1,3-Dichloropropene	48.75	1.0	50	0	97.5	70 - 121	49.27	1.06	20	
Trichloroethene	50.21	1.0	50	0	100	70 - 129	50.31	0.183	20	
Trichlorofluoromethane	52.03	1.0	50	0	104	70 - 130	52.97	1.8	20	
Vinyl chloride	48.42	1.0	50	0	96.8	70 - 130	49.5	2.21	20	
Surr: 1,2-Dichloroethane-d4	*51.65*	*1.0*	*50*	*0*	*103*	*70 - 126*	*52.31*	*1.26*	*20*	
Surr: 4-Bromofluorobenzene	*57.48*	*1.0*	*50*	*0*	*115*	*81 - 113*	*56.34*	*2*	*20*	S
Surr: Dibromofluoromethane	*50.37*	*1.0*	*50*	*0*	*101*	*77 - 123*	*50.39*	*0.0294*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315785 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18050286-12MSD** Units: **ug/L** Analysis Date: **08-May-2018 02:11**
Client ID: **67WW10-180503** Run ID: **VOA2_315785** SeqNo: **4550965** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Surr: Toluene-d8	*51.94*	*1.0*	*50*	*0*	*104*	*82 - 127*	*51.17*	*1.49*	*20*	

The following samples were analyzed in this batch: HS18050286-12 HS18050286-13 HS18050286-14

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315922 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180509** Units: **ug/L** Analysis Date: **09-May-2018 11:11**
Client ID: Run ID: **VOA2_315922** SeqNo: **4554182** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1-Dichloroethene	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*49.57*	*1.0*	*50*	*0*	*99.1*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*54.92*	*1.0*	*50*	*0*	*110*	*82 - 115*				
Surr: Dibromofluoromethane	*52.69*	*1.0*	*50*	*0*	*105*	*73 - 126*				
Surr: Toluene-d8	*53.26*	*1.0*	*50*	*0*	*107*	*81 - 120*				

LCS Sample ID: **VLCSW-180509** Units: **ug/L** Analysis Date: **09-May-2018 10:18**
Client ID: Run ID: **VOA2_315922** SeqNo: **4554180** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1-Dichloroethene	54.58	1.0	50	0	109	70 - 130				
Surr: 1,2-Dichloroethane-d4	*52.42*	*1.0*	*50*	*0*	*105*	*70 - 130*				
Surr: 4-Bromofluorobenzene	*57.46*	*1.0*	*50*	*0*	*115*	*82 - 115*				
Surr: Dibromofluoromethane	*50.28*	*1.0*	*50*	*0*	*101*	*73 - 126*				
Surr: Toluene-d8	*51.28*	*1.0*	*50*	*0*	*103*	*81 - 120*				

MS Sample ID: **HS18050395-10MS** Units: **ug/L** Analysis Date: **09-May-2018 16:04**
Client ID: Run ID: **VOA2_315922** SeqNo: **4554194** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1-Dichloroethene	55.99	1.0	50	0	112	70 - 130				
Surr: 1,2-Dichloroethane-d4	*52.27*	*1.0*	*50*	*0*	*105*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*56.73*	*1.0*	*50*	*0*	*113*	*81 - 113*				S
Surr: Dibromofluoromethane	*49.9*	*1.0*	*50*	*0*	*99.8*	*77 - 123*				
Surr: Toluene-d8	*51.75*	*1.0*	*50*	*0*	*103*	*82 - 127*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: HS18050286

QC BATCH REPORT

Batch ID: R315922 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18050395-10MSD** Units: **ug/L** Analysis Date: **09-May-2018 16:29**
Client ID: Run ID: **VOA2_315922** SeqNo: **4554195** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1-Dichloroethene	55.43	1.0	50	0	111	70 - 130	55.99	1.01	20	
Surr: 1,2-Dichloroethane-d4	*52.6*	*1.0*	*50*	*0*	*105*	*70 - 126*	*52.27*	*0.631*	*20*	
Surr: 4-Bromofluorobenzene	*57.57*	*1.0*	*50*	*0*	*115*	*81 - 113*	*56.73*	*1.46*	*20*	S
Surr: Dibromofluoromethane	*49.62*	*1.0*	*50*	*0*	*99.2*	*77 - 123*	*49.9*	*0.562*	*20*	
Surr: Toluene-d8	*51.71*	*1.0*	*50*	*0*	*103*	*82 - 127*	*51.75*	*0.0647*	*20*	

The following samples were analyzed in this batch: HS18050286-02 HS18050286-09

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 10-May-18

Client: Aptim Environmental & Infrastucture, Inc.
Project: Longhorn Army Ammunition Plant - 67
WorkOrder: **HS18050286**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919 2016-2018	31-Jul-2018
Oklahoma	2017-088	31-Aug-2018
North Carolina	624-2018	31-Dec-2018
Louisiana	03087 2017-2018	30-Jun-2018
Arkansas	88-0356	27-Mar-2019
Kansas	E-10352 2017-218	31-Jul-2018

Date: 10-May-18

Sample Receipt Checklist

Client Name: CBI-Houston
Work Order: HS18050286
Date/Time Received: **04-May-2018 08:35**
Received by: **RPG**

Checklist completed by: *Pablo Marinez* eSignature — 5-May-2018 Date
Reviewed by: *RJ Modashia* eSignature — 7-May-2018 Date

Matrices: **WATER**
Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	1.6C/1.0C UC/C	IR # 25	
Cooler(s)/Kit(s):	24554		
Date/Time sample(s) sent to storage:	5/5/2018 14:50		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

APTIM

Page 1 of _____

COC ID: 67-MAY2018-GW-ALSHT-1805 **TURNAROUND TIME:** normal **RUSH:**

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name	Longhorn AAP			Lab Name	ALS Laboratories			Email Invoice To	FedInvoices@CBIFederalServices.com		
Project Number	501032			Lab Contact	RJ Modashia						
	LHAAP-67			Email	RJ.Modashia@alsglobal.com			Email Report To	Sharon.Pennington@CBIFederalServices.com		
Address	1203-B East Grand Avenue			Address	10450 Stancliff Rd., Suite 210			Mail Reports To	Sharon Pennington		
	PMB 202							Address	2410 Cherahala Blvd.		
City	Marshall	State	TX	City	Houston	State	TX	City	Knoxville	State	TN
Postal Code	75670	Country	USA	Postal Code	77099	Country	USA	Postal Code	37932	Country	USA
Phone Number	713.243.7264			Phone Number	281.575.2279 or 281.530.5656						
Project Manager	Praveen Srivastav							Shipping Company			

SAMPLE DETAILS / **ANALYSIS REQUESTED**

Sample ID	Location	Start Depth	End Depth	Depth Unit	Field Matrix	Date	Time (24hr)	# Of Cont.	ANALYSIS	VOCs in Water by 8260B	Carbon Dioxide in Water by RSK175	Methane, Ethane, Ethene in Water by RSK175	Anions in Water by E300.0	TOC in Water by E415.1	TIC in Water by E415.1	Sulfide in Water by E376.1	Ferrous Iron in Water by SM3500-FE B		
67WW14-180502	LHAAP 67	19.90	20.15		WG	5/2/18	0815	3		X									
67WW15-180502	LHAAP 67	23.00	23.23		WG	5/2/18	0910	3		X									
67WW09-180502	LHAAP 67	20.95	21.21		WG	5/2/18	1000	3		X									
67WW11-180502	LHAAP 67	22.37	22.54		WG	5/2/18	1055	3		X									
67WW05-180503	LHAAP 67	25.80	25.80		WG	5/3/18	0750	3		X									
67WW02-180503	LHAAP 67	24.15	24.15		WG	5/3/18	0810	3		X									
67WW02-180503-FD	LHAAP 67	24.15	24.15		WG	5/3/18	0810	3		X									
67WW07-180503	LHAAP 67	24.25	24.25		WG	5/3/18	0830	3		X									
67WW01-180503	LHAAP 67	24.00	24.00		WG	5/3/18	0850	3		X									
67WW16I-180503	LHAAP 67	22.75	22.91		WG	5/3/18	0940	3		X									
67WW09A-180503	LHAAP 67	25.78	26.01		WG	5/3/18	1035	3		X									
67WW10-180503	LHAAP 67	23.77	23.93		WG	5/3/18	1125	3		X									
67WW12-180503	LHAAP 67	24.85	25.03		WG	5/3/18	1220	3		X									
TRIP BLANK						5/3/18		2		X									

HS18050286

Aptim Environmental & Infrastucture, Inc.

Longhorn Army Ammunition Plant - 67

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS

Anions should include chloride, nitrate, nitrite, and sulfate.

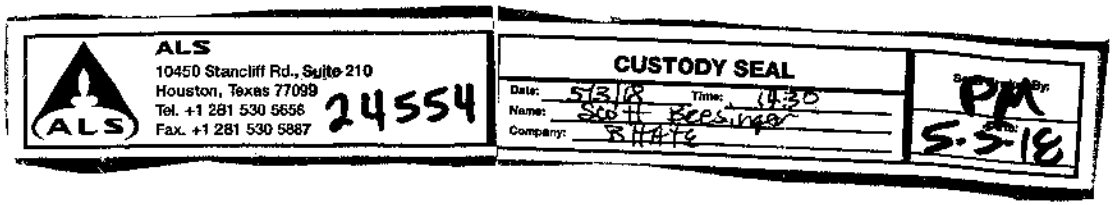
RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
[signature] / BHATE	5/3/18 1330	RC. [signature]	5/4/18 08:35
		24554	

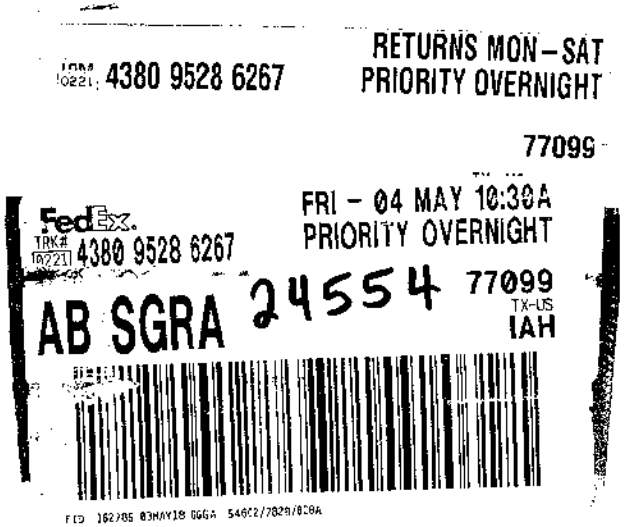
VIC. 1-6-C

#25

CIF-0.6

00912745


ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887
24554
CUSTODY SEAL
Date: 5/3/18
Time: 14:30
Name: Scott Beesinger
Company: BHate
PR
5-5-18


TRK# 4380 9528 6267
RETURNS MON-SAT
PRIORITY OVERNIGHT
77099
FedEx.
TRK# 4380 9528 6267
FRI - 04 MAY 10:30A
PRIORITY OVERNIGHT
AB SGRA 24554 77099
TX-US
IAH

00912746

ADR Data Validation Checklist
Volatile Organics by SW846 8260C

Project Name:	LHAAP-67	SDG/Report No.:	HS18050286
Project No.:		Lab ID:	ALS-Houston
No. of Samples:	12 Originals & 1 FD	Matrix:	GW
1ST ADR / 2nd by	SP		

Automated Data Review (ADR) was performed for all areas evaluate except internal standards. 2ND Review of these areas was performed manually and the results of the validation findings are identified in this report. It should also be noted that the ADR produces "Outlier Reports" for areas where anomalies are noted. If all QC criterions are met, no "Outlier Reports" are generated.

ADR Generated Reports

EDD Nonconformance Report
Field QC and Associated Sample Report*
Outlier Reports
Sample Qualification Report with Reason Codes

EQUiS Generated Reports (Copies Attached):

QC Checkprint (QCVALDNT) Report

* Note: If field QC samples (i.e. TB, ER, FB, etc.) are reported in another SDG, the SDG, blanks, detected contaminants, and associated samples are identified in the comment/discussion section provided below

All areas evaluated by **DoD_5.0** and/or SW846 8260 methods and the identification as to whether qualification is necessary are identified below:

Area Evaluated	ADR Outlier Reports	Qualification Necessary (ADR and Manual Validation)	
		YES	NO
1. Hold Time/Preservation.			X
2. BFB Tune.			X
3. ICAL (RRF and/or %RSD)			X
4. CCAL opening (RRF and/or 20% D)			X
5. CCAL closing (%D<±50%)			X
6. Blanks (Method and/or Field QC)			X
7. LCS			X
8. Surrogates			X
9. MS/MSD			X
10. Field Duplicate			X
11. Internal Standards			X
12. Form1 vs Database/ADR			X

The following section is intended to specify areas evaluated and to provide an explanation (as applicable) for those areas where changes in ADR qualifiers were identified during the manual review and to provide an explanation (as applicable) for the need of additional qualifiers identified during the manual review.

Comments/Discussion:

Associated samples (13): 67WW14-180502, 67WW15-180502, 67WW09-180502, 67WW11-180502, 67WW05-180503, 67WW02-180503, 67WW02-180503FD, 67WW07-180503, 67WW01-180503, 67WW16I-180503, 67WW09A-180503, 67WW10-180503, 67WW12-180503

ADR Data Validation Checklist
Volatile Organics by SW846 8260C

1. Hold Time/Preservation (QAPP - Worksheet#19/SW846/ASTM methods).
No Qualification Necessary
Rec'd <6ºC; collected 5/2,3/2018; analyzed 5/7,8,9/2018
2. BFB Tune (instr. performance criteria)
No Qualification Necessary
3. ICAL (DoD: RSD≤15% or linear R^2≥0.99 and Avg RRF's; 2-butanone & acetone >0.05; J/UJ < recommended criteria)
No Qualification Necessary
VOA2 D050402-D050412 5/4/2018 @ 15:19-18:34 – Criteria were met.
4. ICV (20%D only) /CCAL opening (DoD: %D≤20% and/or SW846 8260 Table 4 Avg RRF's: J/UJ < recommended criteria)
No Qualification Necessary
VOA2 D050703 5/7/2018 @ 09:54 – (67WW14-180502, 67WW15-180502, 67WW09-180502, 67WW11-180502, 67WW05-180503, 67WW02-180503, 67WW02-180503FD, 67WW07-180503, 67WW01-180503, 67WW16I-180503, 67WW09A-180503) Criteria were met.
VOA2 E050703 5/7/2018 @ 21:43 – (67WW10-180503, 67WW12-180503) Criteria were met.
VOA2 D050902 5/9/2018 @ 09:05 – (67WW15-180502, 67WW01-180503) 2-Methylnaphthalene (-29.36%), 1-Methylnaphthalene (-22.52%); Both samples were reanalyzed for 1,1-Dichloroethene only; therefore, no qualification for 2-methylnaphthalene or 1-methylnaphthalene was required.
5. Closing CCV (DoD_5.0: %D<±50%) (if applicable by lab)
No Qualification Necessary
VOA2 D050729 5/7/2018 @ 20:30 – (67WW14-180502, 67WW15-180502, 67WW09-180502, 67WW11-180502, 67WW05-180503, 67WW02-180503, 67WW02-180503FD, 67WW07-180503, 67WW01-180503, 67WW16I-180503, 67WW09A-180503) Criteria were met.
VOA2 E050730 5/8/2018 @ 08:49 – (67WW10-180503, 67WW12-180503) Criteria were met.
VOA2 D050929 5/9/2018 @ 20:14 – (67WW15-180502, 67WW01-180503) Criteria were met.
6. Blanks "UB" 5X/10X (EPA Region 3&4: Method and/or Field QC)
No Qualification Necessary
TB 67TB02-180503 – Results are nondetect.
VBLKW's – Results are nondetect.
7. LCS (QAPP – Worksheet#12/#28)
No Qualification Necessary
VLCSW's – All criteria were met; Therefore, no qualification required.
8. Surrogates (QAPP - Worksheet#12/#28)
No Qualification Necessary – All recoveries were within acceptance criteria.

ADR Data Validation Checklist
Volatile Organics by SW846 8260C

9. MS/MSD (DoD/QAPP – Worksheet#12/#28; parent sample only)

No Qualification Necessary

Batch QC MS/MSD on 67WW10-180503 – All criteria were met.

Batch QC HS18050260-01MS/MSD – Bromomethane %Rs low bias. However, not a site sample; therefore, no qualification required.

10. Field Duplicate (QAPP – Worksheet#12 - WATERS ≤20% / SOILS ≤50%)

(non-detect & result <RL or both <RL no qualifiers / non-detect & result >RL "J/UJ" qualifiers)

No Qualification Necessary – Criteria were met.

67WW02-180503 / 67WW02-180503FD

VOCs	Method	Units	67WW02-180503	LQ	67WW02-180503FD	LQ	%RPD
1,1-Dichloroethane	8260B	ug/L	7.8		7.7		1.29
1,1-Dichloroethene	8260B	ug/L	190		190		0.00
1,2-Dichloroethane	8260B	ug/L	2.0		1.9		5.13
	8260B	ug/L					
	8260B	ug/L					
	8260B	ug/L					

11.Internal Standards (DoD/QAPP – Worksheet#12/#28; -50% to +100% and RT ±0.5sec)

No Qualification Necessary

12. Form 1 vs Database/ADR

Check laboratory's Form1 against Database; one sample per SDG per fraction; list sample number:

13. Multiple Results

No Qualification Necessary

QUARTERLY EVALUATION REPORT
3RD QUARTER (JULY - SEPTEMBER) 2018
GROUNDWATER TREATMENT PLANT
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

DECEMBER 2018

Prepared For:





U.S. Army Corps of Engineers
Tulsa District

Contract No. W9128F-13-D-0012
Task Order No. W912BV17F0150
Bhate Project No. NWO1312.0150.016.0001.03

Prepared By:

bhate

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ACRONYMS AND ABBREVIATIONS

AECOM	AECOM Technical Services, Inc.
AMCV	Air Monitoring Comparison Value
bgs	Below ground surface
Bhate	Bhate Environmental Associates, Inc.
CD	Compact disc
COD	Chemical oxygen demand
DCE	Dichloroethene
ESD	Explanation of Significant Difference
ESL	Effects Screening Level
FBR	Fluidized bed reactor
ft	Feet or foot
GAC	Granular activated carbon
gpd	Gallons per day
gph	Gallons per hour
gpm	Gallons per minute
GWTP	Groundwater Treatment Plant
HCl	Hydrochloric acid
HDPE	High density polyethylene
ICT	Interception-collection trench
IRA	Interim Remedial Action
lbs/hr	Pounds per hour
LHAAP	Longhorn Army Ammunition Plant
MC	Methylene chloride
MCL	Maximum Contaminant Level
µg/L	Micrograms per liter
$Mg(OH)_2$	Magnesium hydroxide
MSC	Medium Specific Concentration
mV	Millivolts
NA	Not applicable
NaOH	Sodium hydroxide

No.	Number
ORP	Oxidation-reduction potential
PID	Photoionization detector
PLC	Programmable Logic Controller
ppmv	Parts per million by volume
psi	Pounds per square inch
ROD	Record of Decision
SWEPCO	Southwestern Electric Power Company
TAC	Texas Administrative Code
TCE	Trichloroethene
TCEQ	Texas Commission on Environmental Quality
tpy	Tons per year
UEP	Unlined Evaporation Pond
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

EXECUTIVE SUMMARY

The operation of the Groundwater Treatment Plant (GWTP) is part of the Interim Remedial Action (IRA) at Burning Ground Number (No.) 3, also referred to as Longhorn Army Ammunition Plant (LHAAP)-18/24. A historical pilot test for nearby landfill LHAAP-16 resulted in the installation of eight extraction wells which also contribute groundwater to the GWTP. Groundwater extraction, treatment, and monitoring activities consist of:

- Continuous extraction of groundwater from multiple interception-collection trenches (ICTs) and extraction wells at both LHAAP-18/24 and LHAAP-16;
- Treatment of extracted groundwater for heavy metals, chlorinated compounds, and perchlorate using precipitation, air stripping, and biological methods, respectively;
- Evaluation of the hydraulic effectiveness of the extraction system by groundwater monitoring;
- Monitoring of treated groundwater to ensure compliance with the discharge limits; and
- Discharge of treated water to Harrison Bayou, or to a holding pond (INF Pond), or release of treated water as irrigation water on LHAAP-18/24.

The location of the extraction wells and ICTs are shown on **Figure A-1** in **Appendix A**. The process flow diagram of the GWTP is shown on **Figure A-2** in **Appendix A**.

Figure ES-1 depicts the monthly total volume of groundwater that was extracted from the ICTs and extraction wells at LHAAP-18/24 and LHAAP-16 between September 2012 and September 2018.

The GWTP was not operational during June, July, and August 2012. This was related to meltdown of the scrubber system, associated with the catalytic oxidizer, due to system overheating. Overheating occurred when the blower became inoperable after the bearing on the scrubber blower unit was shattered and damaged the blower. This occurred around 1:00 PM on May 21, 2012.

After developing an interim air monitoring plan and obtaining concurrence from the Texas Commission on Environmental Quality (TCEQ) and the United States Environmental Protection Agency (USEPA) to operate the GWTP without use of air abatement equipment, a pilot run of the GWTP was conducted on September 6, 2012. In that first pilot run, 85,170 gallons of water that had been stored in the influent equalization tank (TK-140) were treated. The treated water was re-circulated through the fluidized bed reactor (FBR) to revive the FBR after 3 months of dormancy. Treated groundwater and air samples were collected and analyzed respectively for perchlorate, metals, and Volatile Organic Compounds (VOCs); and VOCs only. On September 19, 2012, a second pilot run was performed at the GWTP and 107,264 gallons of water were treated. Based on the successful re-start of the GWTP, continuous groundwater extraction began again on September 24, 2012. While groundwater extraction occurs on a continuous basis, operation of the GWTP occurs intermittently due to the low volume of water available for treatment with respect to the design capacity of the GWTP. During the 3rd quarter of 2012, groundwater

extraction occurred only from LHAAP-18/24. Groundwater extraction from LHAAP-16 was not performed due to equipment failure. However, extraction from LHAAP-16 began in October 2012 and the extraction volumes increased steadily throughout the 4th quarter of 2012, as pumping equipment was gradually repaired/replaced. The GWTP operated under normal conditions until September 2015.

On September 14, 2015, at 11:15 AM, the blower on the air stripper (BL-340) malfunctioned during routine operation. The wiring on the blower was repaired and the blower operated for less than 2 hours on September 17, 2015, when the blower malfunctioned again. It was determined that the blower needed to be replaced, and groundwater extraction and operation of the GWTP ceased beginning September 18, 2015, as the influent equalization tank (TK-140) became full. Beginning on October 2, 2015, it was determined that the GWTP could operate without the blower at a reduced extraction rate. The operation of the GWTP allowed extraction of groundwater from ICTs 12E, 13A, 13B, and 13C (13C was changed to ICT 13E on October 12, 2015), which were considered critical ICTs to prevent migration of contaminants to Harrison Bayou. Groundwater extraction was switched frequently between ICTs 12E, 13A, 13B, and 13E to ICTs 14B, 14C, and 14D beginning on December 14, 2015.

On December 12, 2016, flange bolts at TK-380 failed and allowed hydrochloric acid (HCl) to drain into the sump. The containment area was washed down and the sump contents were transferred into the equalization tank (TK-140). Because of the acid release, extraction of groundwater from the ICTs was halted, and the GWTP was put into recycle mode (effluent sent back as influent) until the acid was neutralized and perchlorate, metals, and VOCs were below discharge criteria on March 17, 2017.

On August 12, 2017, severe storms caused a power outage at LHAAP-18/24. When electrical service was restored, the main transformer failed due to a manufacturing defect. A portable emergency generator was brought on-site on August 21, 2017, to allow the FBR to operate in full recycle mode. After a replacement transformer was installed on September 12, 2017, extraction began from ICT-13B, 13C, 13D, 13E, 13F, 7, and EW01 and the FBR was put into normal operation. Beginning on September 21, 2017, groundwater was extracted from all of the ICTs.

As shown on **Figure ES-1**, the total extracted groundwater volume from LHAAP-18/24 during the 3rd quarter of 2018 was within normal range. The extracted groundwater volume was measured on a monthly basis as the sum of the ICTs flow meter totalizers' differences between the beginning and end of each month. Extraction volumes were depressed due to maintenance of the FBR as well as the ICT pumps and motors in addition to the normal decrease in precipitation during the summer that decreases overall extraction volumes. The quantities in LHAAP-18/24 ranged between 155,239 gallons in August 2018 and 461,503 gallons in September 2018. Treated effluent was only discharged after laboratory results confirmed that the perchlorate levels were acceptable, which resulted in delays in the treated batches being discharged.

Due to equipment failure, no extraction from LHAAP-16 occurred in July or August 2018. Repairs were completed on August 31, 2018. A new compressor was installed in September 18, 2018. In September 2018, 13,924 gallons were extracted from LHAAP-16, which is also the total volume

of groundwater extracted during the 3rd quarter. Approximately 1,030,110 gallons of groundwater were extracted from LHAAP-18/24 and LHAAP 16 during the 3rd quarter of 2018 compared to approximately 1,108,407 gallons extracted during the 3rd quarter of 2017. No treated water was returned to ICTs 6 and 9 during the 3rd quarter of 2018 because this practice was discontinued after system restart in September 2012.

The average discharged flowrate from the GWTP was calculated as approximately 12 gallons per minute (gpm) during the 3rd quarter of 2018. Approximately 634,806 gallons of groundwater treated by the GWTP was discharged to the Harrison Bayou, with a majority of the discharged water from the INF Pond.

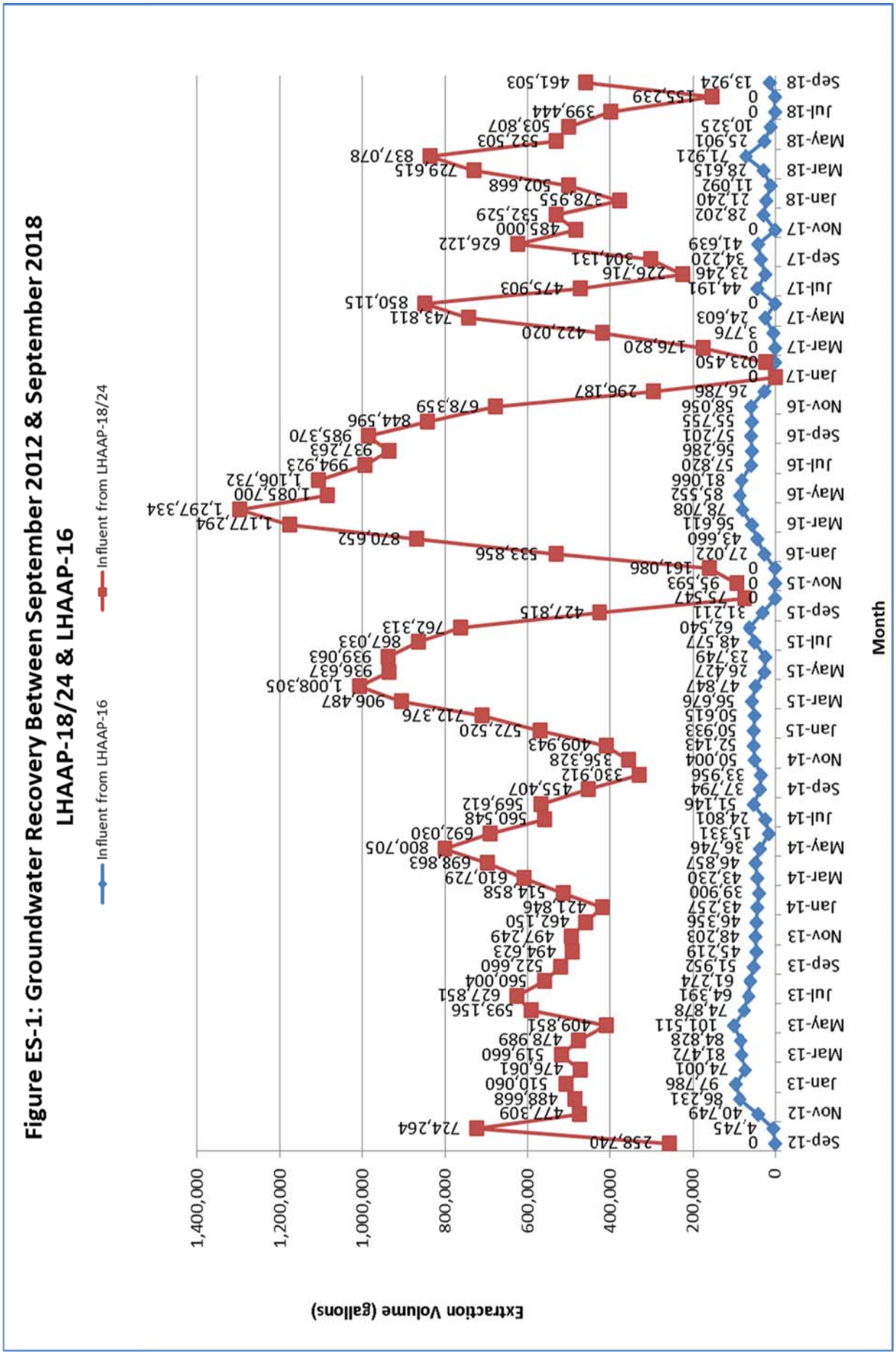
Grab perchlorate samples from the GWTP influent were collected on July 6, August 30, and September 13, 2018, and the following concentrations were reported: 15,000 micrograms per liter (µg/L), 4,800 µg/L, and 7,100 µg/L, respectively. A quarterly influent sample was collected and analyzed for perchlorate on September 27, 2018, and had a detection of 8,800 µg/L. Considering all four perchlorate results, the average perchlorate concentration in the GWTP influent during the quarter was 8,925 µg/L. No perchlorate concentrations in any effluent (TK-650) samples discharged to the Harrison Bayou exceeded daily maximum effluent limits of 589 µg/L, respectively, during the quarter. Groundwater was treated by both the FBR and the ion exchange vessels prior to discharge to the INF Pond to ensure that perchlorate would be 17 µg L.

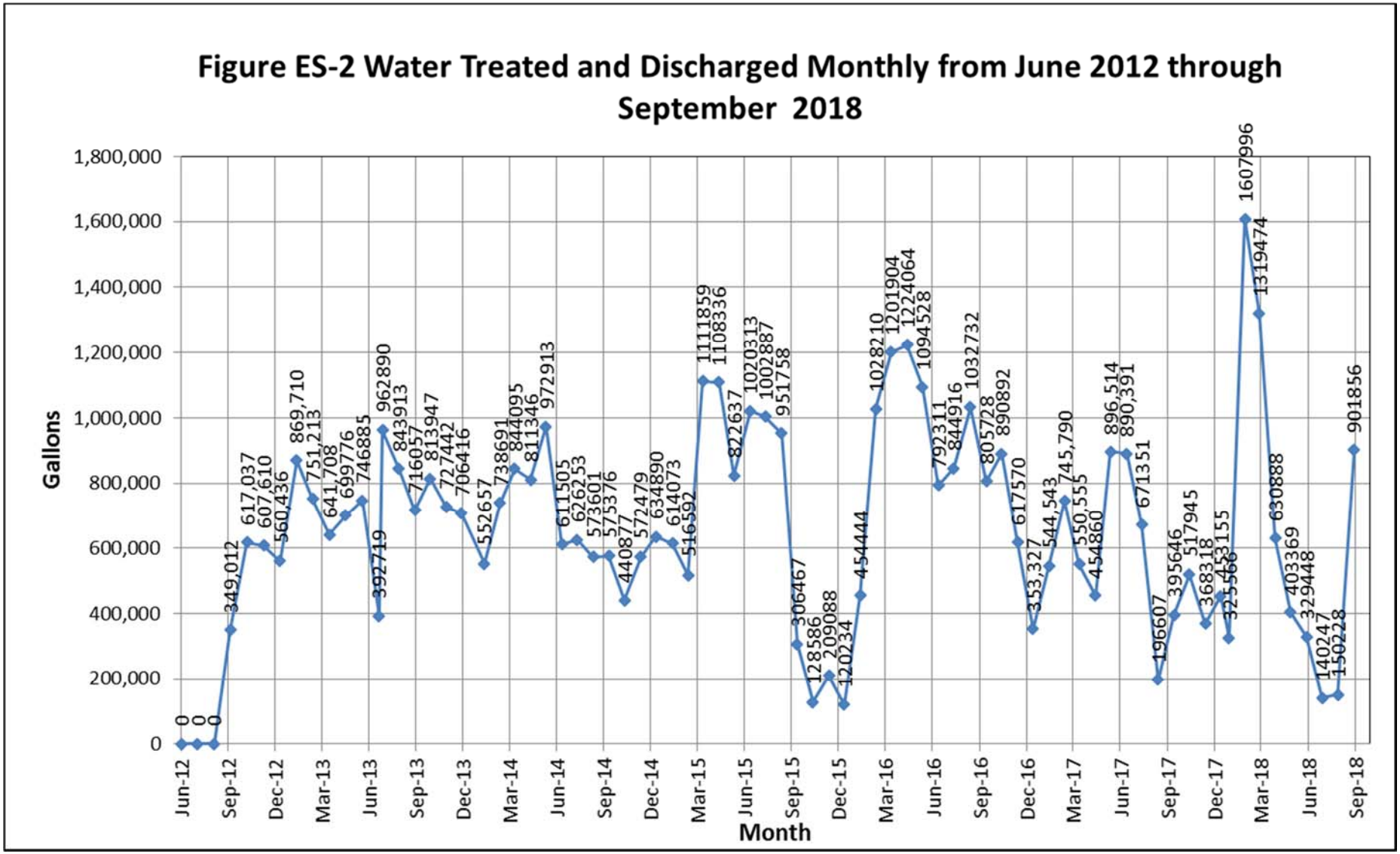
As shown in **Table ES-1**, 110,322 gallons of treated groundwater was discharged directly to the Harrison Bayou, with a majority of that occurring in September 2018. An additional 524,484 was discharged from the INF Pond to the Harrison Bayou during the 3rd quarter. **Table ES-1** also presents the INF Pond staff gauge readings by date, which is used to determine the freeboard available in the pond. During the 3rd quarter, the freeboard did not reduce to 3 feet, which would require TCEQ notification and request for reduction of the pond by another foot of freeboard. No treated groundwater was discharged to the Harrison Bayou in July 2018, due to low or little flow in the Harrison Bayou. A total of 557,525 gallons was discharged to the INF Pond during the 3rd quarter.

The groundwater volume extracted for treatment at the GWTP ranged from a low of approximately 155,239 gallons in August 2018 to a high of approximately 475,427 gallons in September 2018. The total water extracted for treatment by the GWTP in the 3rd quarter of 2018 was approximately 1,030,110 gallons. The 3 month average was approximately 343,370 gallons per month. The water quantities treated and discharged each month, based upon FIT-140, since June 2012 are shown on **Figure ES-2**. The total volume of water extracted based upon the sum of the individual extraction wells and ICTs from LHAAP-18/24 and LHAAP-16 in the 3rd quarter 2018 (1,030,110 gallons) is higher than the volume of water discharged to the Harrison Bayou and the INF Pond combined (667,847 gallons). The primary reason for the difference is the volume of groundwater stored in the GWTP at the end of September 2018 (335,386 gallons), the amount of water lost with the removed metals precipitation sludge, and the amount of evaporative water lost in the air stripper (which is included in the volume processed, but not in the volume discharged).

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Figure ES-1: Groundwater Recovery Between September 2012 & September 2018
LHAAP-18/24 & LHAAP-16




Figure ES-2 Water Treated and Discharged Monthly from June 2012 through September 2018
Gallons
Month
1,800,000
1,600,000
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0
Jun-12
Sep-12
Dec-12
Mar-13
Jun-13
Sep-13
Dec-13
Mar-14
Jun-14
Sep-14
Dec-14
Mar-15
Jun-15
Sep-15
Dec-15
Mar-16
Jun-16
Sep-16
Dec-16
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Jun-18
Sep-18
0 0 0 349,012 617,037 607,610 560,436 869,710 751,213 641,708 699776 746885 392719 962890 843913 716057 813947 727442 706416 552657 738691 844095 811346 972913 611505 626253 573601 575376 440877 572479 634890 614073 516592 1111859 1108336 822637 1020313 1002887 951758 306467 128586 209088 120234 454444 1028210 1201904 1224064 1094528 792311 844916 1032732 805728 890892 617570 353,327 544,543 745,790 550,555 454860 896,514 890,391 671351 196607 395646 517945 368318 453155 325568 1607996 1319474 630888 403369 329448 140247 150228 901856

00912761

Table ES-1. Discharge Information to Harrison Bayou During 3rd Quarter 2018

DATE	Harrison Bayou (GPM)	Calculated Maximum Rate Allowable (GPM)	Released From GWTP To Harrison Bayou	Released From INF Pond to Harrison Bayou	Released From GWTP to INF Pond	Combined Total Released from GWTP	Combined Total Released to Harrison Bayou	INF Pond Staff Reading (6.20 = 3 feet Freeboard)
07/01/2018	No Release	Not Applicable	0	0	0	0	0	3.94
07/02/2018	No Release	Not Applicable	0	0	75,722	75,722	0	3.96
07/03/2018	No Release	Not Applicable	0	0	0	0	0	3.94
07/04/2018	No Release	Not Applicable	0	0	0	0	0	3.92
07/05/2018	No Release	Not Applicable	0	0	0	0	0	3.90
07/06/2018	No Release	Not Applicable	0	0	0	0	0	3.88
07/07/2018	No Release	Not Applicable	0	0	0	0	0	3.86
07/08/2018	No Release	Not Applicable	0	0	0	0	0	3.84
07/09/2018	No Release	Not Applicable	0	0	0	0	0	3.82
07/10/2018	No Release	Not Applicable	0	0	0	0	0	3.80
07/11/2018	No Release	Not Applicable	0	0	0	0	0	3.77
07/12/2018	No Release	Not Applicable	0	0	0	0	0	3.75
07/13/2018	No Release	Not Applicable	0	0	0	0	0	3.75
07/14/2018	No Release	Not Applicable	0	0	0	0	0	3.73
07/15/2018	No Release	Not Applicable	0	0	0	0	0	3.71
07/16/2018	No Release	Not Applicable	0	0	0	0	0	3.68
07/17/2018	No Release	Not Applicable	0	0	0	0	0	3.66
07/18/2018	No Release	Not Applicable	0	0	13,233	13,233	0	3.73
07/19/2018	No Release	Not Applicable	0	0	11,343	11,343	0	3.79
07/20/2018	No Release	Not Applicable	0	0	8,518	8,518	0	3.83
07/21/2018	No Release	Not Applicable	0	0	0	0	0	3.83
07/22/2018	No Release	Not Applicable	0	0	0	0	0	3.82
07/23/2018	No Release	Not Applicable	0	0	31,431	31,431	0	4.00
07/24/2018	No Release	Not Applicable	0	0	0	0	0	4.00
07/25/2018	No Release	Not Applicable	0	0	0	0	0	3.99
07/26/2018	No Release	Not Applicable	0	0	0	0	0	3.98
07/27/2018	No Release	Not Applicable	0	0	0	0	0	3.97

00912762

DATE	Harrison Bayou (GPM)	Calculated Maximum Rate Allowable (GPM)	Released From GWTP To Harrison Bayou	Released From INF Pond to Harrison Bayou	Released From GWTP to INF Pond	Combined Total Released from GWTP	Combined Total Released to Harrison Bayou	INF Pond Staff Reading (6.20 = 3 feet Freeboard)
07/28/2018	No Release	Not Applicable	0	0	0	0	0	3.95
07/29/2018	No Release	Not Applicable	0	0	0	0	0	3.93
07/30/2018	No Release	Not Applicable	0	0	0	0	0	3.91
07/31/2018	No Release	Not Applicable	0	0	0	0	0	3.96
08/01/2018	No Release	Not Applicable	0	0	0	0	0	3.95
08/02/2018	No Release	Not Applicable	0	0	0	0	0	3.94
08/03/2018	No Release	Not Applicable	0	0	0	0	0	3.92
08/04/2018	No Release	Not Applicable	0	0	0	0	0	3.91
08/05/2018	No Release	Not Applicable	0	0	0	0	0	3.90
08/06/2018	No Release	Not Applicable	0	0	0	0	0	3.88
08/07/2018	No Release	Not Applicable	0	0	0	0	0	3.86
08/08/2018	No Release	Not Applicable	0	0	0	0	0	3.85
08/09/2018	No Release	Not Applicable	0	0	0	0	0	3.83
08/10/2018	No Release	Not Applicable	0	0	0	0	0	3.81
08/11/2018	No Release	Not Applicable	0	0	0	0	0	3.98
08/12/2018	No Release	Not Applicable	0	0	0	0	0	4.21
08/13/2018	No Release	Not Applicable	0	0	42,246	42,246	0	4.26
08/14/2018	3,770	689	29,101	0	0	29,101	29,101	4.25
08/15/2018	1,673	306	20,308	0	0	20,308	20,308	4.23
08/16/2018	No Release	Not Applicable	0	0	0	0	0	4.22
08/17/2018	No Release	Not Applicable	0	0	0	0	0	4.20
08/18/2018	No Release	Not Applicable	0	0	0	0	0	4.18
08/19/2018	No Release	Not Applicable	0	0	0	0	0	4.16
08/20/2018	No Release	Not Applicable	0	0	0	0	0	4.14
08/21/2018	No Release	Not Applicable	0	0	0	0	0	4.12
08/22/2018	No Release	Not Applicable	0	0	2,608	2,608	0	4.10
08/23/2018	No Release	Not Applicable	0	0	28,586	28,586	0	4.12
08/24/2018	No Release	Not Applicable	0	0	22,331	22,331	0	4.14
08/25/2018	No Release	Not Applicable	0	0	0	0	0	4.23
08/26/2018	No Release	Not Applicable	0	0	0	0	0	4.21

00912763

DATE	Harrison Bayou (GPM)	Calculated Maximum Rate Allowable (GPM)	Released From GWTP To Harrison Bayou	Released From INF Pond to Harrison Bayou	Released From GWTP to INF Pond	Combined Total Released from GWTP	Combined Total Released to Harrison Bayou	INF Pond Staff Reading (6.20 = 3 feet Freeboard)
08/27/2018	No Release	Not Applicable	0	0	0	0	0	4.20
08/28/2018	No Release	Not Applicable	0	0	0	0	0	4.18
08/29/2018	No Release	Not Applicable	0	0	0	0	0	4.16
08/30/2018	No Release	Not Applicable	0	0	0	0	0	4.14
08/31/2018	No Release	Not Applicable	0	0	5,048	5,048	0	4.13
09/01/2018	No Release	Not Applicable	0	0	0	0	0	4.16
09/02/2018	No Release	Not Applicable	0	0	0	0	0	4.19
09/03/2018	No Release	Not Applicable	0	0	0	0	0	4.26
09/04/2018	No Release	Not Applicable	0	0	72,756	72,756	0	4.28
09/05/2018	No Release	Not Applicable	0	0	13,434	13,434	0	4.31
09/06/2018	No Release	Not Applicable	0	0	15,278	15,278	0	4.34
09/07/2018	No Release	Not Applicable	0	0	13,469	13,469	0	4.37
09/08/2018	No Release	Not Applicable	0	0	0	0	0	4.42
09/09/2018	No Release	Not Applicable	0	0	0	0	0	4.51
09/10/2018	No Release	Not Applicable	0	0	41,286	41,286	0	4.54
09/11/2018	No Release	Not Applicable	0	0	13,953	13,953	0	4.57
09/12/2018	No Release	Not Applicable	0	0	11,095	11,095	0	4.60
09/13/2018	No Release	Not Applicable	0	0	11,923	11,923	0	4.64
09/14/2018	No Release	Not Applicable	0	0	9,339	9,339	0	4.67
09/15/2018	No Release	Not Applicable	0	0	0	0	0	4.70
09/16/2018	No Release	Not Applicable	0	0	0	0	0	4.73
09/17/2018	No Release	Not Applicable	0	0	35,282	35,282	0	4.76
09/18/2018	No Release	Not Applicable	0	0	9,004	9,004	0	4.78
09/19/2018	No Release	Not Applicable	0	0	11,169	11,169	0	4.80
09/20/2018	No Release	Not Applicable	0	0	10,643	10,643	0	4.83
09/21/2018	No Release	Not Applicable	0	0	10,439	10,439	0	4.86
09/22/2018	No Release	Not Applicable	0	0	0	0	0	5.33
09/23/2018	No Release	Not Applicable	0	0	0	0	0	5.88
09/24/2018	Flood Stage	Maximum	3,543	0	37,389	40,932	3,543	5.92
09/25/2018	10,859	1,986	9,076	0	0	9,076	9,076	5.92

00912764

DATE	Harrison Bayou (GPM)	Calculated Maximum Rate Allowable (GPM)	Released From GWTP To Harrison Bayou	Released From INF Pond to Harrison Bayou	Released From GWTP to INF Pond	Combined Total Released from GWTP	Combined Total Released to Harrison Bayou	INF Pond Staff Reading (6.20 = 3 feet Freeboard)
09/26/2018	4,945	904	9,037	122,464	0	9,037	131,501	5.70
09/27/2018	6,583	1,204	11,276	93,470	0	11,276	104,746	5.48
09/28/2018	7,909	1,446	10,033	113,100	0	10,033	123,133	5.36
09/29/2018	4,460	815	10,391	116,850	0	10,391	127,241	4.92
09/30/2018	2,692	492	7,557	78,600	0	7,557	86,157	4.66
Totals			**110,322**	**524,484**	**557,525**	**667,847**	**634,806**	

Notes: GPM = Gallons per minute

00912765

1 EVALUATION OF GROUNDWATER TREATMENT PLANT

The Groundwater Treatment Plant (GWTP) was constructed as part of the Interim Remedial Action (IRA) at Burning Ground Number (No.) 3, also referred to as Longhorn Army Ammunition Plant (LHAAP)-18/24, to treat groundwater extracted from interception-collection trenches (ICTs) and extraction wells. **Figure A-1** located in **Appendix A** presents the layout of the ICTs and extraction wells at LHAAP-18/24. The groundwater contamination at LHAAP-18/24 likely resulted from infiltration from an Unlined Evaporation Pond (UEP) that was used to store manufacturing wastewater, and from burning trenches and other industrial processes used to flash pyrotechnic, propellant, and explosive waste streams. The groundwater at LHAAP-18/24 is contaminated mainly with chlorinated ethenes and perchlorate, with lesser concentrations of 1,4-dioxane.

The GWTP also receives flow from eight extraction wells installed at LHAAP-16 as part of a historical treatability study. The extraction wells were installed in 1996 and 1997. The wells are located between the landfill at LHAAP-16 and Harrison Bayou. The groundwater at LHAAP-16 is also contaminated mainly with chlorinated ethenes and perchlorate.

1.1 Treatment Configuration

The process flow diagram for the GWTP is presented in **Appendix A, Figure A-2**. The GWTP was not operational between May 24, 2012, and September 6, 2012, due to malfunction of the scrubber unit associated with the catalytic oxidizer. Since September 6, 2012, the GWTP has operated without air abatement equipment. Although major repairs were conducted on the GWTP (e.g., replacement of level alarms, repair of the hydrochloric acid [HCl] tank, replacement of TK-650, replacement of malfunctioning valves and flow meters, replacement of metering pumps, repair or replacement of various system pumps, rust removal and repainting of various tanks, and replacement and repair of various extraction pumps, motors, and level switches), the GWTP treatment configuration has remained unchanged.

Malfunction of the blower on the air stripper (BL-340) on September 14, 2015, and on September 17, 2015, disrupted continuous extraction and routine operations of the GWTP, which lasted through January 7, 2016. Prior to this occurrence, the GWTP performed as designed and the GWTP was operated on an as needed basis (i.e., semi-continuous operational basis). During the 4th quarter of 2015, groundwater was extracted from a limited number of ICTs (ICTs 12E, 13A, 13B, 13C, and/or 13E, or ICTs 14B, 14C, and 14D). Operation of the GWTP occurred on a batch basis through the fluidized bed reactor (FBR). After replacement of the blower, attempts were made to restore continuous operations to the FBR but remained predominantly on a batch basis throughout January 2016.

In December 2016, a HCl spill caused plant operations to shut down until the issue could be properly addressed. The FBR performance was challenged by the increased chlorides in the neutralized wastewater, but performance gradually returned to normal in the 1st quarter of 2017. Groundwater extraction was gradually increased to full rates during the 2nd quarter of 2017.

On August 12, 2017, severe storms caused a power outage at LHAAP-18/24. When electrical service was restored, the main transformer failed due to a manufacturing defect. A portable emergency generator was brought on-site on August 21, 2017, to allow the FBR to operate in full recycle mode. After a replacement transformer was installed on September 12, 2017, extraction began from ICT-13B, 13C, 13D, 13E, 13F, 7, and EW01 and the FBR was put into normal operation. Beginning on September 21, 2017, groundwater was extracted from all of the ICTs.

Flow rates for the treatment processes for metals and Volatile Organic Compounds (VOCs) ranged between 170 and 210 gallons per minute (gpm) with an average of approximately 185 gpm for the operating hours (i.e., this flow rate does not represent continuous flows). The GWTP operated for 107 hours during the quarter. The treatment configuration of the plant at these rates (with minor variations) is as follows:

GWTP Metals Precipitation Operating Parameters

Pretreatment Settings	Tank 200-A $Mg(OH)_2$ Mixing	Tank 200-B NaOH Mixing	Tank 200-C Polymer Mixing	Tank 300 feed line to Air Stripper
pH Adjustment	9.0	10.5	NA	5.0 to meet ≤ 8.0 release from stripper
Feed Pump Settings	Speed 100% Stroke 100% 10 gph $Mg(OH)_2$	Speed 100% Stroke 100% 9.0 gph NaOH	Speed 90% Stroke 100% 40 gph water	Speed 80% Stroke 80% 10 gph HCl
Notes: gph - gallons per hour, NaOH - sodium hydroxide, $Mg(OH)_2$ - magnesium hydroxide, NA - not applicable				

GWTP Air Compressors Operating Parameters

Air Compressors	K-700A	K-700B	K-701
Air Pressure Settings	88 psi	88 psi	105 psi
Note: psi - pounds per square inch			

GWTP Stripper Operating Parameters

Stripper Tower	
pH Setting	7.4
Inlet Pressure Gauge	Not operational
Stripper Pressure Gauge	Not operational
Air Flow Rate	Not operational

GWTP Fluidized Bed Reactor Operating Parameters

Fluidized Bed Reactor	
Carbon Bed Height	12 feet & 8 to 11 inches

Recycle Flow Rate	200 gpm
pH	7.1 to 7.4
Recycle oxidation-reduction potential (ORP)	<-430 mV
Note: mV - millivolts	

1.2 Work Performed at the GWTP

Work performed at the GWTP during the 3rd quarter of 2018 is described in the following subsections.

1.2.1 Major Maintenance

The major maintenance items that were completed at the GWTP during this quarterly reporting period are:

- July 3, 2018: Responded to a call out for loss of power. A power line was broken so the power was turned off until power line could be repaired.
- July 5, 2018: Ark-La-Tex Electric was on site to repair broken power line.
- July 5, 2018: Rogers Heat & Air Conditioning on site to repair air conditioning unit at GWTP office.
- July 6, 2018: Ingersoll-Rand on site to install new controller in K-700B.
- July 15, 2018: Responded to a call out for FBR feed shut down. After arriving on site it was determined that the problem was in the PLC, BLOC was called to come out on Monday morning.
- July 16, 2018: BLOC Design was on site to repair programmable logic controller (PLC), blown fuses.
- July 17, 2018: BLOC Design back on site to troubleshoot PLC problem, power supply was too small.
- July 23, 2018: BLOC Design on site to fine tune control loop for FV-172.
- July 30 – August 1, 2018: Envirogen on site for FBR maintenance.
- August 12, 2018: Responded to a call out for loss of power. Power was out on Southwestern Electric Power Company's (SWEPCO's) side, and was restored at 15:20.
- August 12, 2018: Responded to a call out for loss of power. It was discovered that a tree had fallen across the line between Landfill 12 and Landfill 16. Called Ark-La-Tex Electric and they came out, shut the power off, repaired the broken line, and restored power to the GWTP.
- August 13, 2018: BLOC Design was on site to reset an internal switch on P-101B.
- August 31, 2018: BLOC Design was on site to repair electric motor on air compressor at Site 16 and replace bad transformer on mixer motor MX-210.

1.2.2 Routine Maintenance

The following routine maintenance items were completed at the GWTP during this quarterly reporting period:

- Performed housekeeping in GWTP office, Army trailer, GWTP Shop, and around the GWTP including the containment area.
- Mowed and weed-eated grass around GWTP and Army trailer.
- Installed bulkhead fitting in 1,720-gallon poly tank that was to be used to hold the granular active carbon (GAC) from the FBR during maintenance activities.
- Repaired 4-inch discharge piping on P-320.
- Moved 1,500-gallon poly tank beside FBR and filled with potable water to assist in the movement of GAC from the poly tank and back due to potable water pressure issues.
- Removed carbon from FBR then replaced laterals, nozzles, clamps, and hardware inside FBR.
- Pumped carbon back into FBR following maintenance activities and then added inoculum.
- Removed rusted out blower duct from blower, had a new one fabricated, and installed back on blower.
- Removed electric motor from P-101A and carried to repair shop.
- Repaired broken 2-inch piping on discharge side of sump pump.
- Bush-hogged and weed-eated around discharge valve at Harrison Bayou.
- Made adjustments to impeller on P-320 and installed new Woods #8 coupling.

1.2.2.1 Safety

The GWTP Operators, Mr. Scott Beesinger and Mr. Kennie Moore, received confined space entry training in July 2018. Mr. Kennie Moore received his respirator fit test on July 10, 2018. During entry into the FBR, Ms. Sally Smith, Bhate's Health and Safety Director, was onsite to be the Confined Space Supervisor and Monitor. Attendants during the confined space entry were Mr. Scott Beesinger and Ms. Sally Smith. Mr. Kennie Moore was the only entrant into the FBR for the maintenance activities.

1.2.2.2 Lubrication

No lubrication maintenance was conducted during the reporting period.

1.2.2.3 Air Compressors

No maintenance was completed on the air compressors during the reporting period.

1.2.2.4 Belt Press and Waste Disposal

No belt press or waste disposal was conducted during the reporting period.

1.2.2.5 Sand Filter

No maintenance or repairs were conducted on the sand filter during the reporting period.

1.2.2.6 Well Field at LHAAP-18/24

- Collected monthly flowmeter readings and water level measurements.
- Replaced level probes on EW01.
- Cleaned level probes on ICT 7.
- Replaced low level probe wire and probe on ICT 12C.
- Cleaned level probes on ICT 14C.
- Replaced high level probe wire and probe on ICT 14D.
- Replaced high level and low level probe wires and probes along with the electrical relay and relay base plate on ICT 12B.
- Replaced flow meter and cleared plugged piping on ICT 13E.

1.2.2.7 Miscellaneous Activities

- August 19, 2018: Responded to a call out for loss of power at 22:00 on SWEPCO's side; power was restored at 01:15 on August 20, 2018.
- September 9, 2018: Responded to a call out for loss of power at 24:00 on SWEPCO's side; power was restored to the GWTP at 01:15.
- September 21, 2018: Responded to a call out for loss of power at 15:00 on SWEPCO's side; power was restored to the GWTP at 17:00.
- September 22, 2018: Responded to a call out for loss of power at 06:30 on SWEPCO's side; power was restored to the GWTP at 09:00.

1.2.3 Routine Maintenance at LHAAP-16

- Checked site daily.
- Collected monthly water levels.
- Used bulldozer to clear two new well locations on opposite side of Harrison Bayou from Site 16.
- Bush-hogged around monitoring wells.
- Mowed grass around TK-700, pump house, and extraction wells.
- Cleared brush from around several of the old Geosyntec wells.
- Installed portable air compressor at pump house.

1.2.4 Routine Maintenance (Potable Water Wells)

- Flushed potable water lines.
- Added chlorine tablets to potable water well # 1.
- Mowed grass around potable water pump house.
- Potable water pressure was lost on July 10, 2018, and it was restored on July 16, 2018.

1.3 Filter Cake Operations and Management

No filter cake operations took place during this reporting period.

1.4 Fluidized Bed Reactor Operations

During the 3rd quarter of 2018, maintenance overseen by Envirogen, the manufacturer of the reactor, was completed. Based upon conversations with the current GWTP operator as well as Envirogen, the FBR was last shut-down for complete maintenance in 2010. Nozzles and laterals within the unit were replaced during the maintenance activities. The existing carbon was not replaced but additional inoculant was added following maintenance to assist with microbial growth.

Per the protocol for discharging (**Appendix D**), the ion exchange vessels were brought online when treated effluent was to be discharged to the INF pond. The average perchlorate concentration in the GWTP influent (based upon monthly influent samples collected in July, August, and September 2018 and the quarterly influent sample collected in September 2018) during the 3rd quarter of 2018 was 8,925 micrograms per liter (µg/L).

The operating parameters for the GWTP FBR are presented in **Table 1,** which includes shading for days that had at least one parameter outside of the optimal operating parameters. Note that the PLC was not initially programmed to record FBR parameters on the weekends, which was corrected in mid-July 2018. Following maintenance of the FBR in July 2018, perchlorate has not been detected in water sampled. However, the ORP was observed to increase when the initial batch of water was added to the FBR following completion of maintenance activities and with each batch of treated groundwater. In order to assess the FBR treatment prior to discharge to the INF pond, water was held and the FBR placed on recycle until perchlorate results were received. Then the groundwater was processed fully through the FBR which resulted in start and stop of the FBR process which caused an increase in the ORP. In September 2018, the FBR was run continuously such that this increase in the ORP between batches was not observed. During the quarter, the ORP ranged between -351 and -562 mV, and the pH ranged between 7.0 and 7.5 standard units.

Table 1. Enhanced Fluidized Bed Reactor Operating Parameters – 3rd Quarter 2018

Date	pH (7.1-7.4)	ORP (<-430mV)	Temperature Degrees Fahrenheit
7/1/2018	Weekend	Weekend	Weekend
7/2/2018	7.5	-521	88
7/3/2018	Holiday	Holiday	Holiday
7/4/2018	Holiday	Holiday	Holiday
7/5/2018	7.4	-543	89
7/6/2018	7.4	-533	89
7/7/2018	Weekend	Weekend	Weekend
7/8/2018	Weekend	Weekend	Weekend
7/9/2018	7.2	-518	88

Date	pH (7.1-7.4)	ORP (<-430mV)	Temperature Degrees Fahrenheit
7/10/2018	7.2	-520	89
7/11/2018	7.2	-523	90
7/12/2018	7.2	-526	90
7/13/2018	Weekend	Weekend	Weekend
7/14/2018	Weekend	Weekend	Weekend
7/15/2018	Weekend	Weekend	Weekend
7/16/2018	7.1	-529	94
7/17/2018	7.1	-539	95
7/18/2018	7.3	-543	94
7/19/2018	7.4	-562	96
7/20/2018	7.4	-556	94
7/21/2018	7.4	-555	95
7/22/2018	7.4	-546	95
7/23/2018	7.4	-490	96
7/24/2018	7.5	-421	87
7/25/2018	7.3	-523	88
7/26/2018	7.4	-534	89
7/27/2018	7.4	-541	89
7/28/2018	7.4	-535	89
7/29/2018	7.3	-536	89
7/30/2018	Shutdown	Shutdown	Shutdown
7/31/2018	Shutdown	Shutdown	Shutdown
8/1/2018	Shutdown	Shutdown	Shutdown
8/2/2018	7.0	-492	89
8/3/2018	7.0	-501	88
8/4/2018	7.0	-498	90
8/5/2018	7.0	-500	90
8/6/2018	7.0	-519	92
8/7/2018	7.2	-529	92
8/8/2018	7.3	-540	92
8/9/2018	7.3	-539	93
8/10/2018	7.4	-530	89
8/11/2018	7.4	-534	90
8/12/2018	7.4	-540	90
8/13/2018	7.3	-490	88
8/14/2018	7.2	-460	89
8/15/2018	7.3	-368	87
8/16/2018	7.1	-477	87
8/17/2018	7.0	-496	88

Date	pH (7.1-7.4)	ORP (<-430mV)	Temperature Degrees Fahrenheit
8/18/2018	7.2	-518	89
8/19/2018	7.3	-521	89
8/20/2018	7.4	-526	91
8/21/2018	7.4	-527	91
8/22/2018	7.4	-525	91
8/23/2018	7.3	-518	91
8/24/2018	7.4	-351	87
8/25/2018	7.2	-507	88
8/26/2018	7.2	-510	89
8/27/2018	7.1	-510	91
8/28/2018	7.1	-511	92
8/29/2018	7.1	-508	92
8/30/2018	7.2	-515	92
8/31/2018	7.2	-519	93
9/1/2018	7.3	-515	93
9/2/2018	7.2	-523	92
9/3/2018	7.3	-520	90
9/4/2018	7.4	-368	88
9/5/2018	7.3	-398	88
9/6/2018	7.2	-482	88
9/7/2018	7.3	-491	87
9/8/2018	7.3	-494	88
9/9/2018	7.3	-495	87
9/10/2018	7.3	-450	84
9/11/2018	7.4	-470	79
9/12/2018	7.4	-472	80
9/13/2018	7.3	-470	81
9/14/2018	7.3	-476	81
9/15/2018	7.3	-480	83
9/16/2018	7.3	-489	83
9/17/2018	7.4	-483	84
9/18/2018	7.3	-480	85
9/19/2018	7.3	-482	86
9/20/2018	7.3	-481	86
9/21/2018	7.4	-483	86
9/22/2018	7.3	-477	84
9/23/2018	7.3	-482	84
9/24/2018	7.3	-471	81
9/25/2018	7.4	-473	81

Date	pH (7.1-7.4)	ORP (<-430mV)	Temperature Degrees Fahrenheit
9/26/2018	7.3	-477	81
9/27/2018	7.4	-480	80
9/28/2018	7.4	-483	79
9/29/2018	7.3	-485	78
9/30/2018	7.3	-484	78
Note: Readings outside of the optimal operating parameters are shaded in gray			

1.5 Process Chemical Usage at GWTP

Approximate chemical consumption and the quantities delivered during the 3rd quarter of 2018 are shown in **Table 2**.

Table 2. Chemical Usage and Delivery Table

Chemical	Usage 3rd Quarter 2018	Quantity Delivered 3rd Quarter 2018
Hydrochloric acid	335 gallons	0
Sodium hydroxide (35%)	590 gallons	0
Acetic acid (50%)	13 drums = 715 gallons	0
Phosphoric acid (75%)	49.9 liters	1 drum = 55 gallons
Magnesium hydroxide	170 gallons	0
Urea	369.2 pounds	0
Polymer (magnafloc 110-L)	6.7 liters	0

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2 EVALUATION OF LHAAP-18/24 ICT EFFECTIVENESS

The ICT system at Burning Ground No. 3 is composed of 14 sections ranging in length from 100 feet (ft) to 1,300 ft. A total of approximately 5,000 linear ft of trench was installed within and around three sides of Burning Ground No. 3. The trench sections extend approximately 22 ft to 45 ft below ground surface (bgs). Most, but not all of the trenches are as deep as the confining clay layer of the shallow groundwater zone. High density polyethylene (HDPE) liners were installed in ICTs 12 and 13, located on the western and northern boundaries of LHAAP-18/24, respectively. The locations of the liners are shown on **Figure A-1** in **Appendix A**. **Table A-1** in **Appendix A** presents the depths of the ICTs.

2.1 Groundwater Elevation

Water levels from 95 monitoring wells and 11 piezometers (piezometer 12 was damaged and plugged and abandoned in May 2013) are measured monthly to generate potentiometric surface maps that assist in monitoring the effectiveness of the groundwater extraction system on plume containment. The groundwater contours are generated using the water levels from the shallow zone and Wilcox Formation wells. The water level data are presented in **Table 3**. No reinjection of treated groundwater or reapplication to LHAAP-18/24 grounds via the existing irrigation system occurred during the 3rd quarter of 2018. Potentiometric surface maps are presented in **Appendix B** and groundwater elevations from the 3rd quarter of 2018 are discussed in Section 2.2.

2.2 Performance of Plume Capture

The intent of the ICTs is to control groundwater gradients, prevent off-site migration of contaminated groundwater, extract the most highly contaminated groundwater, and reduce the mass of contaminants in groundwater. Liners were installed in the ICTs on the northern (ICT 13) and western (ICT 12) site boundaries to limit migration of contaminated water from the site towards Harrison Bayou. At the same time, the liners reduce or prevent removal of contaminated groundwater that is outside the containment zone, between the site and Harrison Bayou. The ICTs are installed within the shallow subsurface at the site and capture primarily shallow groundwater (e.g., < 40 ft bgs).

In 2007 and 2008, in consultation with the Texas Commission on Environmental Quality (TCEQ) and the United States Environmental Protection Agency (USEPA), the Army ceased operations of ICTs 1, 3, 5, 10, and 12A for groundwater extraction (note that extraction from ICT 12A was resumed after pump replacement in December 2012). Two other ICTs (ICT 6 and ICT 9) were changed from extraction ICTs to re-injection ICTs. Groundwater extraction from well EW-1 located in the northeast central portion of the site began in October 2008 and well 18WW17 located to the northeast of the ICT containment area began in January 2008. **Table B-1** in **Appendix B** presents a summary of extraction equipment replacement since 2011, as dictated by poor extraction performance (malfunctioning pumps, poor pump positioning with respect to groundwater, non-operational level probes, scale build up, etc.). Further discussion of extraction performance of various ICTs and extraction wells is presented in Section 2.3.

Potentiometric surface maps of the shallow zone groundwater in the vicinity of LHAAP-18/24, based on groundwater elevations measured on August 2, August 31, and September 25, 2018, are shown on **Figures B-1, B-2, and B-3 in Appendix B**, respectively.

The potentiometric surface maps of the shallow zone were contoured using the Kriging geostatistical interpolation method included in the Golden Software Surfer® data analysis software. The HDPE liners in the ICTs, where present, were interpreted as groundwater flow barriers. The potentiometric surface maps for July (water data collected on August 2, 2018, due to FBR repairs), August, and September 2018 reflect high groundwater elevations at 123 and AWD-2, inside the ICT containment area.

The elevated potentiometric surface contours within the ICTs compared to the lower potentiometric surface contours on the outside of the ICTs is likely due to a no flow boundary condition caused by the ICT liners and groundwater extraction along the ICTs. From the groundwater highs at monitoring wells 123 and AWD-2, groundwater flows radially towards the surrounding ICTs. East of the groundwater mound and in the northeastern third of the site, groundwater flow is primarily towards ICT 14 along the northeast site boundary.

Groundwater extraction volumes from the ICTs were 399,444 gallons in July 2018; 155,239 gallons in August 2018; and 461,503 gallons in September 2018. Rainfall amounts recorded at the GWTP were 2.95 inches in July 2018, 3.54 inches in August 2018, and 7.51 inches in September 2018. This amount of rainfall resulted in over 104,728 gallons of additional water treated and discharged but not metered with the influent totals.

During the reporting period, approximately 110,322 gallons of treated groundwater was discharged to Harrison Bayou from the GWTP. In addition, approximately 524,484 gallons of water was released from the INF pond to the Harrison Bayou. No treated groundwater from the GWTP was returned to LHAAP-18/24 via the sprinkler system. A total of 557,525 gallons was released to the INF Pond from the GWTP in the third quarter. **Table 4** presents the daily discharge rates and volume for the 3rd quarter of 2018. Overall groundwater levels decreased throughout the 3rd quarter of 2018.

Groundwater levels in Wilcox Formation wells (generally > 40 to 50 ft bgs) were measured during the 3rd quarter of 2018 groundwater gauging events. Wilcox Formation wells correspond generally to those wells previously identified as “Intermediate” and “Deep” wells. “Intermediate” wells are designated as Upper Wilcox Formation wells and “Deep” wells are designated as Lower Wilcox Formation wells. Generally, groundwater in the Upper and Lower Wilcox Formation wells are in hydraulic communication and so can be treated as a single hydrogeologic unit. Therefore, the groundwater elevations in Upper Wilcox wells were used to construct the potentiometric surface maps for the Wilcox Formation. **Figures B-4, B-5, and B-6** in **Appendix B** show the locations of the Wilcox Formation monitoring wells and the potentiometric surface of the Wilcox Formation, based on static water levels measured during the July, August, and September 2018 gauging events, respectively. Groundwater in the Wilcox Formation generally flows in a northerly direction, towards Caddo Lake and there is a downward vertical gradient between the overlying shallow zone and the Wilcox Formation. However, a groundwater high in the Wilcox Formation occurs in the area of MW-14.

2.3 Quantity of Water Extracted from LHAAP-18/24

The average daily extraction rates from the ICTs were 12,885 gallons per day (gpd) in July 2018, approximately 5,008 gpd in August 2018, and approximately 15,383 gpd in September 2018. The increase in average daily extraction rates observed in September was due to the completed maintenance on the FBR and ICT wells in addition to high levels of precipitation that occurred towards the end of the month. The extraction rates were lower in July and August 2018 due primarily to maintenance of the FBR followed by verification of effluent results prior to discharging. However the reduced extraction rate overall is due to either extraction wells not pumping or a decrease in extraction rate from pumps requiring additional maintenance.

The volume of groundwater removed from LHAAP-18/24 during the 3rd quarter of 2018 measured approximately 1,016,186 gallons, based on total flow measured from the extraction wells and ICT wells. LHAAP-16 contributed 13,924 gallons to the GWTP due to issues with the compressor, which was repaired and then later replaced at site LHAAP-16. Together, approximately 1,030,110 gallons was extracted from both LHAAP-16 and LHAAP-18/24. **Figure 2-1** shows the historical trends of extracted volumes by quarter.

In contrast to the approximate total extracted volume based on total flow measured at the GWTP, the total estimated volume discharged to the INF pond and/or Harrison Bayou (**Table 4**) following treatment by the GWTP was 140,247 gallons in July 2018; 150,228 in August 2018; and 377,372 gallons in September 2018 for a total of 667,847 gallons discharged in the 3rd quarter of 2018. However, this volume does not account for water present in the decant tank at the end of September 2018 or the influent that was not treated after the GWTP last ran on September 24, 2018. The difference between the influent and effluent volumes is approximately 47.5%. However, considering the over 335,000 gallons of water within the treatment plant as of June 29, 2018, this percent difference is closer to 6% variation, which is contributable to variations in the influent flow meter recordings and evaporative losses.

As indicated by **Table 5**, 20 of 27 ICTs and wells produced water during the 3rd quarter of 2018. However, ICTs 7, 12B, 12D, 13E, 13F, and 14D produced water during only a portion of the quarter. In general, the reduction in production is associated with pumps or motors requiring repairs. Pumps located in EW-1 and 13F are placed shallow in the extraction well resulting in low output. Repairs to the pumps and motors are completed as time allows. A large effort to repairs or replace pumps and motors is planned for January 2019.

2.4 Groundwater Monitoring at LHAAP-18/24

No groundwater was sampled for offsite analysis at LHAAP-18/24 in the 3rd quarter of 2018. The next sampling event will be completed in the 4th quarter of 2018.

2.5 Groundwater Treatment Plant Sampling and Analysis

As part of the GWTP operations, samples from various water streams are required to be collected and analyzed for the parameters in accordance with the *Final Revised Sampling and Analysis Plan for Groundwater Treatment Plan and Well Fields* (AECOM Technical Services, Inc. [AECOM],

September 2017), which was developed in accordance with the Interim Record of Decision (ROD) and the TCEQ letter dated January 8, 2002 (see Administrate Record Volume 1 of 4 in 2002, Document A). Besides the ROD sampling requirement, additional sample analyses are typically performed on the influent and effluent samples to monitor the effectiveness of the perchlorate treatment (FBR and/or ion exchange vessels) process. Sections 2.5.1 through 2.5.4 present the results of analyses conducted during the 3rd quarter of 2018. The complete laboratory results are provided on a compact disc (CD) (**Appendix C**).

2.5.1 Perchlorate Sampling

Table 6 presents the weekly effluent perchlorate results for the 3rd quarter of 2018. None of the effluent samples exceeded the protocol for discharge (**Appendix D**) for perchlorate. All of the GWTP effluent was discharged to the INF Pond in July 2018, and all but two days of August 2018 had effluent discharged to the INF Pond. Prior to discharging in both July and August 2018, analytical results for perchlorate were received from the laboratory to ensure that the treated effluent met the requirements of the protocol. Effluent released to the INF pond was treated by the ion exchange vessels prior to discharge resulting in non-detect results for perchlorate. In addition, use of the ion exchange vessels ensured perchlorate was fully treated prior to being discharged to the INF Pond. Samples presented in **Table 6** also include samples collected before the ion exchange to assess the FBR performance. Treated groundwater from the GWTP was discharged to Harrison Bayou during the current quarter when effluent perchlorate concentrations were less than the daily maximum concentration of 589 µg/L and adequate flow in the bayou was observed. When the flow in the bayou ceased in August, effluent was discharged to the INF pond once the water was analyzed and determined to have less than 17 µg/L of perchlorate. However, perchlorate sampling in September 2018 was completed but discharge was continued prior to receipt of the analytical results based upon the successful maintenance of the FBR as evidenced by the August 2018 analytical results. This also allowed the system to continually operate versus the batch process in July and August 2018, which minimized fluctuations in the FBR operating parameters.

Table 6 also presents the effluent concentration of ammonia as N and ortho-phosphate, which are soluble nutrients used by the microbes in the metabolic process within the FBR. Effluent samples at the reactor outlet are analyzed to verify that trace amounts of these are present, which indicates that there is enough to sustain the biomass. If there is bypassing or short circuiting in the reactor and perchlorate is not being fully degraded, elevated levels of these nutrients may be present at the FBR outlet. While ortho-phosphate was elevated in July and August 2018, the levels dropped in September 2018 when the FBR was continually operated as designed. The maintenance of the FBR occurred in July 2018 and was then operated in a batch mode through August 2018 to verify effluent results prior to discharge, which may have resulted in the elevated ortho-phosphate detections. The table also notes which samples were collected after the ion exchange vessels. Perchlorate in the effluent is treated by the FBR prior to the ion exchange vessels, which are used to polish the effluent prior to discharge to the INF Pond.

Three monthly grab samples from the influent to the GWTP (TK-140) and one quarterly grab sample (total of four influent samples) were collected in the 3rd quarter of 2018. The perchlorate concentrations in these samples ranged from 4,800 µg/L to 15,000 µg/L.

2.5.2 VOC Sampling

Tables 7 through 9 present the effluent VOC results for July, August, and September 2018. With the exception of July and August 2018 due to FBR maintenance activities, sampling of the effluent for VOCs was conducted on a biweekly basis beginning on April 4, 2018. The results, where applicable, were below the discharge limits. The tables also provide monthly influent concentrations for VOCs and perchlorate.

2.5.3 Monthly Metals Sampling

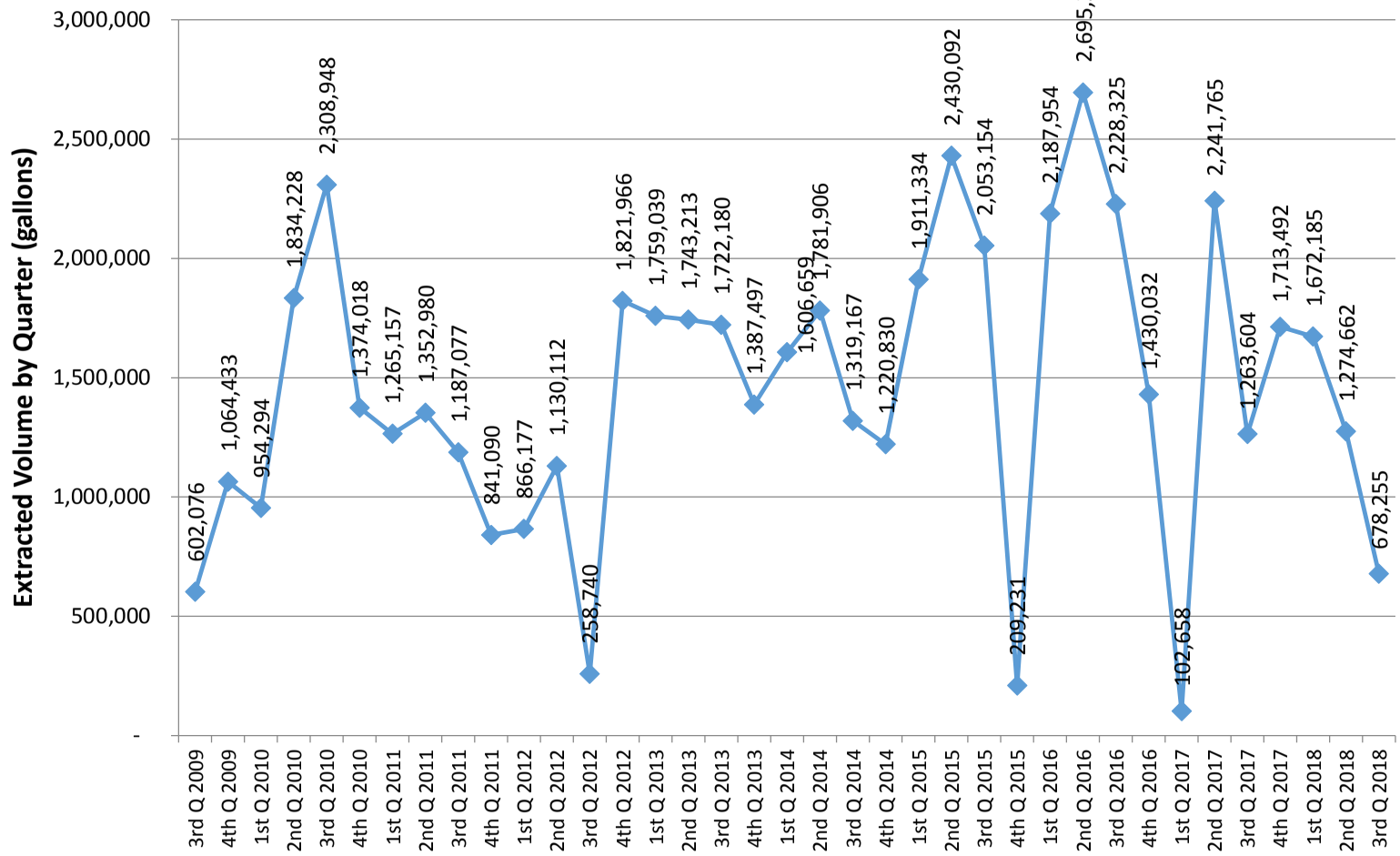
As per the Final Installation-Wide Work Plan (AECOM, July 2014), the monthly metals sampling is reported in **Tables 7 through 9**. None of the metals exceeded the effluent discharge limits.

2.5.4 Quarterly Sampling

Sampling of the effluent for VOCs, anions, chemical oxygen demand (COD), oil and grease, metals, and perchlorate was conducted during this quarter and the results were below the discharge limits. **Table 10** presents the analytical results for the 3rd quarter of 2018.

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Figure 2-1. Quarterly Extraction Rate



Extraction rate beginning at 3rd Q 2013 is based in FIT-140 (influent totalizer)

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Table 3. Groundwater Elevations at LHAAP-18/24 Piezometers, Monitoring Wells, and Surface Water

Location Identification	Type	Reference Elevation (feet amsl)	Depth to Water (feet) 8/2/18	Groundwater Elevation (feet amsl) 8/2/18	Depth to Water (feet) 8/31/18	Groundwater Elevation (feet amsl) 8/31/18	Depth to Water (feet) 9/25/18	Groundwater Elevation (feet amsl) 9/25/18
BGPZ-1	Piezometer	184.99	10.79	174.20	11.08	173.91	10.39	174.60
BGPZ-2	Piezometer	184.39	15.07	169.32	15.28	169.11	15.39	169.00
BGPZ-3	Piezometer	180.35	11.12	169.23	11.25	169.10	10.92	169.43
BGPZ-4	Piezometer	177.77	10.88	166.89	11.07	166.70	10.81	166.96
BGPZ-5	Piezometer	180.76	13.85	166.91	14.06	166.70	13.89	166.87
BGPZ-6	Piezometer	197.82	29.37	168.45	29.59	168.23	29.68	168.14
BGPZ-7	Piezometer	195.96	28.91	167.05	29.10	166.86	29.21	166.75
BGPZ-8	Piezometer	197.08	30.95	166.13	31.13	165.95	31.05	166.03
BGPZ-9	Piezometer	196.45	29.61	166.84	29.84	166.61	29.75	166.70
BGPZ-10	Piezometer	197.00	28.98	168.02	29.19	167.81	29.30	167.70
BGPZ-11	Piezometer	196.99	28.71	168.28	28.90	168.09	29.02	167.97
BGPZ-12	Piezometer	188.17	NM	Plugged	NM	Plugged	NM	Plugged
AWD-1	Monitoring Well	182.27	11.65	170.62	11.87	170.40	11.95	170.32
AWD-2	Monitoring Well	186.78	14.25	172.53	14.40	172.38	15.07	171.71
AWD-3	Monitoring Well	200.13	30.03	170.10	30.25	169.88	30.54	169.59
AWD-4	Monitoring Well	193.89	25.02	168.87	25.22	168.67	25.39	168.50
MW-1	Monitoring Well	199.22	28.89	170.33	29.10	170.12	28.84	170.38
MW-2	Monitoring Well	196.73	28.14	168.59	28.30	168.43	28.45	168.28
MW-3	Monitoring Well	196.54	27.90	168.64	28.15	168.39	27.93	168.61
MW-4	Monitoring Well	197.27	27.87	169.40	28.11	169.16	28.00	169.27
MW-5	Monitoring Well	194.97	26.49	168.48	26.69	168.28	26.83	168.14
MW-6	Monitoring Well	192.18	24.29	167.89	24.50	167.68	24.77	167.41
MW-7	Monitoring Well	188.47	19.87	168.60	20.09	168.38	20.29	168.18
MW-8	Monitoring Well	187.13	18.19	168.94	18.35	168.78	18.49	168.64
MW-9	Monitoring Well	184.73	15.45	169.28	15.63	169.10	15.72	169.01
MW-10	Monitoring Well	178.12	10.00	168.12	10.27	167.85	10.20	167.92
MW-11	Monitoring Well	184.65	14.16	170.49	14.37	170.28	14.86	169.79

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Location Identification	Type	Reference Elevation (feet amsl)	Depth to Water (feet) 8/2/18	Groundwater Elevation (feet amsl) 8/2/18	Depth to Water (feet) 8/31/18	Groundwater Elevation (feet amsl) 8/31/18	Depth to Water (feet) 9/25/18	Groundwater Elevation (feet amsl) 9/25/18
MW-12	Monitoring Well	178.33	10.53	167.80	10.77	167.56	10.44	167.89
MW-13	Monitoring Well	176.72	8.89	167.83	9.09	167.63	8.78	167.94
MW-14	Monitoring Well	186.19	14.77	171.42	14.98	171.21	15.12	171.07
MW-16	Monitoring Well	178.59	10.59	168.00	10.82	167.77	10.21	168.38
MW-17	Monitoring Well	179.03	10.70	168.33	10.94	168.09	10.60	168.43
MW-18	Monitoring Well	178.58	9.81	168.77	10.04	168.54	9.73	168.85
MW-19	Monitoring Well	178.60	9.96	168.64	10.21	168.39	9.91	168.69
MW-20	Monitoring Well	186.64	12.10	174.54	12.33	174.31	12.45	174.19
MW-21	Monitoring Well	198.70	30.91	167.79	31.26	167.44	31.49	167.21
MW-22	Monitoring Well	197.51	28.75	168.76	28.97	168.54	28.79	168.72
MW-23	Monitoring Well	198.79	28.03	170.76	28.35	170.44	28.50	170.29
101	Monitoring Well	197.53	10.21	187.32	10.47	187.06	9.81	187.72
102	Monitoring Well	193.94	22.14	171.80	22.39	171.55	22.48	171.46
109	Monitoring Well	197.02	28.74	168.28	28.96	168.06	29.91	167.11
120	Monitoring Well	184.19	15.22	168.97	15.46	168.73	15.55	168.64
123	Monitoring Well	186.21	14.84	171.37	15.05	171.16	15.22	170.99
125	Monitoring Well	196.28	27.10	169.18	27.10	169.18	26.95	169.33
126	Monitoring Well	199.37	30.09	169.28	30.35	169.02	30.51	168.86
129	Monitoring Well	197.24	27.22	170.02	27.45	169.79	27.63	169.61
130	Monitoring Well	177.73	9.73	168.00	10.03	167.70	9.33	168.40
C-01	Monitoring Well	193.89	24.96	168.93	25.20	168.69	25.42	168.47
C-02	Monitoring Well	175.95	7.75	168.20	8.08	167.87	7.69	168.26
C-03	Monitoring Well	196.34	28.04	168.30	28.30	168.04	28.41	167.93
C-04	Monitoring Well	194.64	26.41	168.23	26.65	167.99	26.80	167.84
C-04A	Monitoring Well	194.61	26.06	168.55	26.31	168.30	26.47	168.14
C-05	Monitoring Well	180.74	13.89	166.85	14.12	166.62	14.23	166.51
C-06	Monitoring Well	192.22	26.59	165.63	26.85	165.37	26.76	165.46
C-07	Monitoring Well	196.80	29.19	167.61	29.40	167.40	29.53	167.27
C-08	Monitoring Well	193.10	24.87	168.23	25.09	168.01	24.92	168.18
C-09	Monitoring Well	202.35	33.55	168.80	33.77	168.58	33.82	168.53

00912785

Location Identification	Type	Reference Elevation (feet amsl)	Depth to Water (feet) 8/2/18	Groundwater Elevation (feet amsl) 8/2/18	Depth to Water (feet) 8/31/18	Groundwater Elevation (feet amsl) 8/31/18	Depth to Water (feet) 9/25/18	Groundwater Elevation (feet amsl) 9/25/18
C-10	Monitoring Well	201.86	33.08	168.78	33.32	168.54	33.40	168.46
17WW08	Monitoring Well	179.72	11.11	168.61	11.36	168.36	10.98	168.74
18WW01	Monitoring Well	201.31	32.74	168.57	32.80	168.51	32.94	168.37
18WW02	Monitoring Well	179.30	10.49	168.81	10.72	168.58	10.49	168.81
18WW03	Monitoring Well	195.59	27.33	168.26	27.57	168.02	27.70	167.89
18WW04	Monitoring Well	183.74	16.80	166.94	16.95	166.79	17.04	166.70
18WW05	Monitoring Well	189.59	22.11	167.48	22.25	167.34	22.39	167.20
18WW06	Monitoring Well	179.70	11.85	167.85	12.07	167.63	11.88	167.82
18WW07	Monitoring Well	183.67	8.15	175.52	NM	NM	NM	NM
18WW08	Monitoring Well	177.77	11.19	166.58	11.40	166.37	10.95	166.82
18WW09	Monitoring Well	177.51	9.79	167.72	10.05	167.46	9.62	167.89
18WW10	Monitoring Well	182.26	11.69	170.57	11.86	170.40	11.60	170.66
18WW11	Monitoring Well	182.29	13.12	169.17	13.41	168.88	13.19	169.10
18WW14	Monitoring Well	186.47	18.08	168.39	18.30	168.17	18.43	168.04
18WW15	Monitoring Well	186.24	17.60	168.64	17.85	168.39	17.96	168.28
18WW16	Monitoring Well	201.88	33.57	168.31	33.80	168.08	33.85	168.03
18WW18	Monitoring Well	196.82	28.67	168.15	28.94	167.88	29.09	167.73
18WW19	Monitoring Well	179.56	12.90	166.66	13.16	166.40	12.86	166.70
18WW20	Monitoring Well	180.42	13.71	166.71	13.96	166.46	13.60	166.82
18WW21	Monitoring Well	195.20	27.24	167.96	27.47	167.73	27.61	167.59
18WW22	Monitoring Well	195.37	28.41	166.96	28.66	166.71	28.79	166.58
18WW24	Monitoring Well	176.40	8.83	167.57	9.05	167.35	8.12	168.28
18WW25	Monitoring Well	175.15	8.54	166.61	8.77	166.38	7.53	167.62
18CPTMW01SW	Monitoring Well	198.20	28.77	169.43	28.98	169.22	29.10	169.10
18CPTMW01DW	Monitoring Well	197.92	29.43	168.49	29.65	168.27	29.78	168.14
18CPTMW03SW	Monitoring Well	198.53	30.25	168.28	30.50	168.03	30.90	167.63
18CPTMW04	Monitoring Well	196.60	25.85	170.75	26.07	170.53	26.20	170.40
18CPTMW04SW	Monitoring Well	196.42	28.04	168.38	28.31	168.11	28.45	167.97
18CPTMW06	Monitoring Well	198.12	29.66	168.46	29.90	168.22	29.77	168.35

00912786

Location Identification	Type	Reference Elevation (feet amsl)	Depth to Water (feet) 8/2/18	Groundwater Elevation (feet amsl) 8/2/18	Depth to Water (feet) 8/31/18	Groundwater Elevation (feet amsl) 8/31/18	Depth to Water (feet) 9/25/18	Groundwater Elevation (feet amsl) 9/25/18
18CPTMW07	Monitoring Well	197.32	28.97	168.35	29.19	168.13	28.97	168.35
18CPTMW08SW	Monitoring Well	196.38	28.08	168.30	28.33	168.05	28.50	167.88
18CPTMW08DW	Monitoring Well	196.59	28.63	167.96	28.82	167.77	28.98	167.61
18CPTMW10SW	Monitoring Well	186.98	18.59	168.39	18.80	168.18	18.96	168.02
18CPTMW10DW	Monitoring Well	187.38	19.45	167.93	19.64	167.74	19.81	167.57
18CPTMW12SW	Monitoring Well	190.90	22.79	168.11	22.97	167.93	23.13	167.77
18CPTMW12DW	Monitoring Well	190.25	22.17	168.08	22.40	167.85	22.55	167.70
18CPTMW14	Monitoring Well	196.69	28.02	168.67	28.34	168.35	28.44	168.25
18CPTMW15	Monitoring Well	179.79	12.08	167.71	12.30	167.49	11.91	167.88
18CPTMW16	Monitoring Well	175.37	8.10	167.27	8.53	166.84	7.62	167.75
18CPTMW18	Monitoring Well	194.53	27.69	166.84	27.95	166.58	28.15	166.38
18CPTMW19	Monitoring Well	193.59	24.91	168.68	25.12	168.47	25.29	168.30
18CPTMW19SW	Monitoring Well	193.29	25.44	167.85	25.70	167.59	25.86	167.43
18CPTMW22SW	Monitoring Well	187.79	19.63	168.16	19.86	167.93	19.95	167.84
18CPTMW22R	Monitoring Well	187.23	11.16	176.07	11.31	175.92	11.40	175.83
18CPTMW22DW	Monitoring Well	188.00	19.59	168.41	19.84	168.16	19.97	168.03
18CPTMW23	Monitoring Well	177.47	10.12	167.35	10.40	167.07	9.92	167.55
18CPTMW23SW	Monitoring Well	177.43	9.70	167.73	9.95	167.48	9.64	167.79
18CPTMW24	Monitoring Well	194.89	27.57	167.32	27.81	167.08	27.95	166.94
18CPTMW26	Monitoring Well	182.60	17.45	165.15	17.60	165.00	17.60	165.00
18CPTMW26SW	Monitoring Well	182.00	13.54	168.46	13.79	168.21	13.57	168.43
1824HBSW7	Surface Water Sample	167.92	0.10	167.82	0.25	167.67	2.32	165.60

Notes:
amsl - above mean sea level
NM-not measured

00912787

Table 4. Treated Groundwater Discharged – July through September 2018

DATE	Harrison Bayou (GPM)	Calculated Maximum Rate Allowable (GPM)	Released From GWTP To Harrison Bayou	Released From INF Pond to Harrison Bayou	Released From GWTP to INF Pond	Combined Total Released from GWTP	Combined Total Released to Harrison Bayou	INF Pond Staff Reading (6.20 = 3 ft. Freeboard)
07/01/2018	No Release	Not Applicable	0	0	0	0	0	3.94
07/02/2018	No Release	Not Applicable	0	0	75,722	75,722	0	3.96
07/03/2018	No Release	Not Applicable	0	0	0	0	0	3.94
07/04/2018	No Release	Not Applicable	0	0	0	0	0	3.92
07/05/2018	No Release	Not Applicable	0	0	0	0	0	3.90
07/06/2018	No Release	Not Applicable	0	0	0	0	0	3.88
07/07/2018	No Release	Not Applicable	0	0	0	0	0	3.86
07/08/2018	No Release	Not Applicable	0	0	0	0	0	3.84
07/09/2018	No Release	Not Applicable	0	0	0	0	0	3.82
07/10/2018	No Release	Not Applicable	0	0	0	0	0	3.80
07/11/2018	No Release	Not Applicable	0	0	0	0	0	3.77
07/12/2018	No Release	Not Applicable	0	0	0	0	0	3.75
07/13/2018	No Release	Not Applicable	0	0	0	0	0	3.75
07/14/2018	No Release	Not Applicable	0	0	0	0	0	3.73
07/15/2018	No Release	Not Applicable	0	0	0	0	0	3.71
07/16/2018	No Release	Not Applicable	0	0	0	0	0	3.68
07/17/2018	No Release	Not Applicable	0	0	0	0	0	3.66
07/18/2018	No Release	Not Applicable	0	0	13,233	13,233	0	3.73
07/19/2018	No Release	Not Applicable	0	0	11,343	11,343	0	3.79
07/20/2018	No Release	Not Applicable	0	0	8,518	8,518	0	3.83
07/21/2018	No Release	Not Applicable	0	0	0	0	0	3.83
07/22/2018	No Release	Not Applicable	0	0	0	0	0	3.82
07/23/2018	No Release	Not Applicable	0	0	31,431	31,431	0	4.00
07/24/2018	No Release	Not Applicable	0	0	0	0	0	4.00
07/25/2018	No Release	Not Applicable	0	0	0	0	0	3.99
07/26/2018	No Release	Not Applicable	0	0	0	0	0	3.98
07/27/2018	No Release	Not Applicable	0	0	0	0	0	3.97
07/28/2018	No Release	Not Applicable	0	0	0	0	0	3.95

00912788

DATE	Harrison Bayou (GPM)	Calculated Maximum Rate Allowable (GPM)	Released From GWTP To Harrison Bayou	Released From INF Pond to Harrison Bayou	Released From GWTP to INF Pond	Combined Total Released from GWTP	Combined Total Released to Harrison Bayou	INF Pond Staff Reading (6.20 = 3 ft. Freeboard)
07/29/2018	No Release	Not Applicable	0	0	0	0	0	3.93
07/30/2018	No Release	Not Applicable	0	0	0	0	0	3.91
07/31/2018	No Release	Not Applicable	0	0	0	0	0	3.96
08/01/2018	No Release	Not Applicable	0	0	0	0	0	3.95
08/02/2018	No Release	Not Applicable	0	0	0	0	0	3.94
08/03/2018	No Release	Not Applicable	0	0	0	0	0	3.92
08/04/2018	No Release	Not Applicable	0	0	0	0	0	3.91
08/05/2018	No Release	Not Applicable	0	0	0	0	0	3.90
08/06/2018	No Release	Not Applicable	0	0	0	0	0	3.88
08/07/2018	No Release	Not Applicable	0	0	0	0	0	3.86
08/08/2018	No Release	Not Applicable	0	0	0	0	0	3.85
08/09/2018	No Release	Not Applicable	0	0	0	0	0	3.83
08/10/2018	No Release	Not Applicable	0	0	0	0	0	3.81
08/11/2018	No Release	Not Applicable	0	0	0	0	0	3.98
08/12/2018	No Release	Not Applicable	0	0	0	0	0	4.21
08/13/2018	No Release	Not Applicable	0	0	42,246	42,246	0	4.26
08/14/2018	3,770	689	29,101	0	0	29,101	29,101	4.25
08/15/2018	1,673	306	20,308	0	0	20,308	20,308	4.23
08/16/2018	No Release	Not Applicable	0	0	0	0	0	4.22
08/17/2018	No Release	Not Applicable	0	0	0	0	0	4.20
08/18/2018	No Release	Not Applicable	0	0	0	0	0	4.18
08/19/2018	No Release	Not Applicable	0	0	0	0	0	4.16
08/20/2018	No Release	Not Applicable	0	0	0	0	0	4.14
08/21/2018	No Release	Not Applicable	0	0	0	0	0	4.12
08/22/2018	No Release	Not Applicable	0	0	2,608	2,608	0	4.10
08/23/2018	No Release	Not Applicable	0	0	28,586	28,586	0	4.12
08/24/2018	No Release	Not Applicable	0	0	22,331	22,331	0	4.14
08/25/2018	No Release	Not Applicable	0	0	0	0	0	4.23
08/26/2018	No Release	Not Applicable	0	0	0	0	0	4.21
08/27/2018	No Release	Not Applicable	0	0	0	0	0	4.20

00912789

DATE	Harrison Bayou (GPM)	Calculated Maximum Rate Allowable (GPM)	Released From GWTP To Harrison Bayou	Released From INF Pond to Harrison Bayou	Released From GWTP to INF Pond	Combined Total Released from GWTP	Combined Total Released to Harrison Bayou	INF Pond Staff Reading (6.20 = 3 ft. Freeboard)
08/28/2018	No Release	Not Applicable	0	0	0	0	0	4.18
08/29/2018	No Release	Not Applicable	0	0	0	0	0	4.16
08/30/2018	No Release	Not Applicable	0	0	0	0	0	4.14
08/31/2018	No Release	Not Applicable	0	0	5,048	5,048	0	4.13
09/01/2018	No Release	Not Applicable	0	0	0	0	0	4.16
09/02/2018	No Release	Not Applicable	0	0	0	0	0	4.19
09/03/2018	No Release	Not Applicable	0	0	0	0	0	4.26
09/04/2018	No Release	Not Applicable	0	0	72,756	72,756	0	4.28
09/05/2018	No Release	Not Applicable	0	0	13,434	13,434	0	4.31
09/06/2018	No Release	Not Applicable	0	0	15,278	15,278	0	4.34
09/07/2018	No Release	Not Applicable	0	0	13,469	13,469	0	4.37
09/08/2018	No Release	Not Applicable	0	0	0	0	0	4.42
09/09/2018	No Release	Not Applicable	0	0	0	0	0	4.51
09/10/2018	No Release	Not Applicable	0	0	41,286	41,286	0	4.54
09/11/2018	No Release	Not Applicable	0	0	13,953	13,953	0	4.57
09/12/2018	No Release	Not Applicable	0	0	11,095	11,095	0	4.60
09/13/2018	No Release	Not Applicable	0	0	11,923	11,923	0	4.64
09/14/2018	No Release	Not Applicable	0	0	9,339	9,339	0	4.67
09/15/2018	No Release	Not Applicable	0	0	0	0	0	4.70
09/16/2018	No Release	Not Applicable	0	0	0	0	0	4.73
09/17/2018	No Release	Not Applicable	0	0	35,282	35,282	0	4.76
09/18/2018	No Release	Not Applicable	0	0	9,004	9,004	0	4.78
09/19/2018	No Release	Not Applicable	0	0	11,169	11,169	0	4.80
09/20/2018	No Release	Not Applicable	0	0	10,643	10,643	0	4.83
09/21/2018	No Release	Not Applicable	0	0	10,439	10,439	0	4.86
09/22/2018	No Release	Not Applicable	0	0	0	0	0	5.33
09/23/2018	No Release	Not Applicable	0	0	0	0	0	5.88
09/24/2018	Flood Stage	Maximum	3,543	0	37,389	40,932	3,543	5.92
09/25/2018	10,859	1,986	9,076	0	0	9,076	9,076	5.92
09/26/2018	4,945	904	9,037	122,464	0	9,037	131,501	5.70

00912790

DATE	Harrison Bayou (GPM)	Calculated Maximum Rate Allowable (GPM)	Released From GWTP To Harrison Bayou	Released From INF Pond to Harrison Bayou	Released From GWTP to INF Pond	Combined Total Released from GWTP	Combined Total Released to Harrison Bayou	INF Pond Staff Reading (6.20 = 3 ft. Freeboard)
09/27/2018	6,583	1,204	11,276	93,470	0	11,276	104,746	5.48
09/28/2018	7,909	1,446	10,033	113,100	0	10,033	123,133	5.36
09/29/2018	4,460	815	10,391	116,850	0	10,391	127,241	4.92
09/30/2018	2,692	492	7,557	78,600	0	7,557	86,157	4.66
Totals			**110,322**	**524,484**	**557,525**	**667,847**	**634,806**	

Notes: GPM = Gallons per minute

00912791

Table 5. Monthly Groundwater Extraction Quantities – July through September 2018

ICT or Well Number	July 2018 (gallons)	August 2018 (gallons)	September 2018 (gallons)	Total
1	0	0	0	0
2	42,907	15,382	61,568	119,857
3	0	0	0	0
4	34,846	10,880	31,861	77,587
5	0	0	0	0
EW-1	0	0	0	0
7	0	0	2,855	2,855
8	54,937	21,189	60,910	137,036
18WW17	3,760	224	0	3,984
10	0	0	0	0
11	22,978	8,490	24,021	55,489
12A	6,424	981	7,843	15,248
12B	163	0	99	262
12C	1,512	1,786	7,731	11,029
12D	21,867	0	0	21,867
12E	10,878	7,476	11,263	29,617
13A	22,123	9,089	21,478	52,690
13B	50,362	26,877	40,032	117,271
13C	0	0	0	0
13D	12,433	5,775	10,519	28,727
13E	0	0	1,733	1,733
13F	1	0	653	654
14A	0	0	0	0
14B	18,379	1,541	1,399	21,319
14C	52,110	16,323	40,090	108,523
14D	0	0	78,725	78,725
14E	43,764	29,226	58,723	131,713
Total LHAAP-18/24	***399,444***	***155,239***	***461,503***	***1,016,186***
LHAAP-16	0	0	13,924	
Total LHAAP-16	***0***	***0***	***13,924***	***13,924***
TOTAL	**399,444**	**155,239**	**475,427**	**1,030,110**

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Table 6. Weekly Perchlorate Sample Results

Sample Identification	Lab Package	Date Sampled	Sample Location	Effluent Discharge Point	Harrison Bayou Maximum Allowable Daily Discharge Perchlorate Concentration (µg/L)	INF Pond Discharge Criteria for Perchlorate (µg/L)*	Reporting Limit	Influent Perchlorate (6850)	Effluent Perchlorate (6850)		Does Concentration Meet Discharge Limit? (Yes/No)	No Daily Maximum Concentration		
								Result (µg/L)	Result (µg/L)	DVQ		Ammonia as N (350.3) (mg/L)	Ortho-Phosphate (365.3) (mg/L)	Organic Carbon (415.1) (mg/L)
LH18/24-SP650_070618 (BIX)	HS18070297	7/6/2018	TK-650	INF Pond	589	17	4	NA	**4.9**		Yes	**30**	**5.28**	**12.7**
LH18/24-SP650_070618 (Monthly) (BIX)	HS18070295	7/6/2018	TK-650	INF Pond	589	17	4	NA	< 2.0	U	Yes	--	--	--
LH18/24-SP140_070618 (Monthly)	HS18070296	7/6/2018	TK-140	--	--	--	NA	**15,000**	NA		NA	--	--	--
LH18/24-SP650_072618 (BIX)	HS18071383/ HS18071386	7/26/2018	TK-650	INF Pond	589	17	4	NA	< 2.0	U	Yes	**10**	**2.88**	**26.9**
LH18/24_SP650_080618	HS18080340/ HS18080375	8/6/2018	TK-650	Harrison Bayou	589	17	4	NA	< 2.0	U	Yes	**37**	**7.19**	**79.3**
LH18/24-SP650_081518	HS18080783/ HS18080840	8/15/2018	TK-650	Harrison Bayou	589	17	4	NA	< 2.0	U	Yes	**27**	**4.57**	**36.4**
LH18/24-SP650_082318	HS18081206	8/23/2018	TK-650	Harrison Bayou	589	17	4	NA	< 10.0	UJ	Yes	**35**	**5.26**	**26**
LH18/24-SP650_082718	HS18081379	8/27/2018	TK-650	Harrison Bayou	589	17	4	NA	< 10.0	U	Yes	--	--	--
LH18/24-SP650_083018	HS18081539	8/30/2018	TK-650	Harrison Bayou	589	17	4	NA	< 2.0	U	Yes	**36**	**6.54**	**18**
LH18/24-SP650_083018 (Monthly) (BIX)	HS18081540	8/30/2018	TK-650	INF Pond	589	17	4	NA	< 2.0	U	Yes	--	--	--
LH18/24-SP140_083018 (Monthly)	HS18081541	8/30/2018	TK-140	--	--	--	NA	**4,800**	NA		NA	--	--	--
LH18/24-SP650_090618	HS18090275/ HS18090255	9/6/2018	TK-650	Harrison Bayou	589	17	4	NA	< 2.0	U	Yes	**15**	**2.4**	**20.4**
LH18/24-SP650_091318_AIX (Monthly)	HS18090654	9/13/2018	TK-650	Harrison Bayou	589	17	4	NA	< 20	U	Yes	--	--	--
LH18/24-SP140_091318 (Monthly)	HS18090658	9/13/2018	TK-140	--	--	--	NA	**7,100**	NA		NA	--	--	--
LH18/24-SP650_091318_BIX	HS18090657	9/13/2018	TK-650	INF Pond	589	17	4	NA	< 20	U	Yes	**89**	**2.8**	**935**

00912794

Sample Identification	Lab Package	Date Sampled	Sample Location	Effluent Discharge Point	Harrison Bayou Maximum Allowable Daily Discharge Perchlorate Concentration (µg/L)	INF Pond Discharge Criteria for Perchlorate (µg/L)*	Reporting Limit	Influent Perchlorate (6850)	Effluent Perchlorate (6850)		Does Concentration Meet Discharge Limit? (Yes/No)	No Daily Maximum Concentration		
								Result (µg/L)	Result (µg/L)	DVQ		Ammonia as N (350.3) (mg/L)	Ortho-Phosphate (365.3) (mg/L)	Organic Carbon (415.1) (mg/L)
LH18/24-SP650_091318_AIX	HS18090657 (rerun for lower detection limits)	9/13/2018	TK-650	Harrison Bayou	589	17	4	NA	**0.44**		Yes	--	--	--
LH18/24-SP650_091918_AIX	HS18091005	9/19/2018	TK-650	Harrison Bayou	589	17	4	NA	< 20	U	Yes	**27**	**1.94**	**370**
LH18/24-SP650_092718_BIX (quarterly)	HS18091521	9/27/2018	TK-650	INF Pond	589	17	4	NA	< 2.0	U	Yes	--	--	--
LH18/24-SP140_092718 (quarterly)	HS18091519	9/27/2018	TK-140	--	--	--	NA	**8,800**	NA			--	--	--
LH18/24-SP650_092718_BIX	HS18091522	9/27/2018	TK-650	INF Pond	589	17	4	NA	< 2.0	U	Yes	**13**	**1.57**	**11.9**

Notes: *Texas Risk Reduction Program (TRRP) Tier 1 Groundwater Residential Protective Concentration Level (PCL)

SP140 samples are influent samples.

µg/L - micrograms per liter

DVQ - data validation qualifier

NA - not applicable

U - non detect at the limit of detection (presented)

UJ - Estimated, non-detected

AIX - After ion exchange

BIX - before ion exchange

mg/L - milligrams per liter

00912795

Table 7. Bi-Weekly GWTP Analytical Sampling Results for July 2018

Sample Location				EFFLUENT - Biweekly		EFFLUENT - Monthly		INFLUENT - Monthly*		Does Concentration Meet Effluent Discharge Limits? (Yes/No)
Sample Identification				LH18/24-SP650_072618		LH18/24-SP650_070618		LH18/24-SP140_070618		
Lab Package				HS18071388		HS18070295		HS18070296		
Sample Date				7/26/2018		7/6/2018		7/6/2028		
Sample Type				GRAB		GRAB		GRAB		
	Effluent Limitation for Discharge (µg/L) per Table 2 of ROD			Result	DVQ	Result	DVQ	Result	DVQ	
	Daily Average Concentration	Daily Maximum Concentration	Reporting Limit							
VOLATILES	µg/L	µg/L	µg/L	µg/L		µg/L		µg/L		
1,1,1-Trichloroethane	3,417	7,230	1	< 0.5	U	< 0.5	U	NA		Yes
1,1,2-Trichloroethane	102.5	216.9	1	< 0.5	U	< 0.5	U	NA		Yes
1,1-Dichloroethane	6,633	14,032	1	< 0.5	U	< 0.5	U	NA		Yes
1,1-Dichloroethene	119	253	1	< 0.5	U	< 0.5	U	NA		Yes
1,2-Dichloroethane	85	181	1	< 0.5	U	**0.77**	**J**	NA		Yes
1,2-Dichloropropane	NA	NA	1	< 0.5	U	< 0.5	U	NA		Yes
Acetone	1,132	2,395	2	< 1.0	U	< 1.0	U	NA		Yes
Benzene	85	181	1	< 0.5	U	< 0.5	U	NA		Yes
Carbon Tetrachloride	85	181	1	< 0.5	U	< 0.5	U	NA		Yes
Chlorobenzene	22,300	47,180	1	< 0.5	U	< 0.5	U	NA		Yes
Chloroform	1,708	3,615	1	< 0.5	U	< 0.5	U	NA		Yes
Ethylbenzene	26,954	57,025	1	< 0.5	U	< 0.5	U	NA		Yes
m,p-Xylenes	39.5	83.6	2	< 1.0	U	< 1.0	U	NA		Yes
Methylene Chloride	803	1,699	2	< 1.0	U	< 1.0	U	NA		Yes
o-Xylene	39.5	83.6	1	< 0.5	U	< 0.5	U	NA		Yes
Styrene	2,829	5,987	1	< 0.5	U	< 0.5	U	NA		Yes
Tetrachloroethene	85.4	180.7	1	< 0.5	U	< 0.5	U	NA		Yes
Toluene	1,980	4,189	1	< 0.5	U	< 0.5	U	NA		Yes
Trichloroethene	85	181	1	**1.9**		**2.5**		NA		Yes
Vinyl Chloride	34	72	1	< 0.5	U	< 0.5	U	NA		Yes

00912796

	Sample Location			EFFLUENT - Biweekly		EFFLUENT - Monthly		INFLUENT - Monthly*		Does Concentration Meet Effluent Discharge Limits? (Yes/No)
	Sample Identification			LH18/24-SP650_072618		LH18/24-SP650_070618		LH18/24-SP140_070618		
	Lab Package			HS18071388		HS18070295		HS18070296		
	Sample Date			7/26/2018		7/6/2018		7/6/2028		
	Sample Type			GRAB		GRAB		GRAB		
	Effluent Limitation for Discharge (µg/L) per Table 2 of ROD			Result	DVQ	Result	DVQ	Result	DVQ	
	Daily Average Concentration	Daily Maximum Concentration	Reporting Limit							
ANIONS	**mg/L**	**mg/L**	**mg/L**	**mg/L**		**mg/L**		**mg/L**		
Chloride	NA	NA	10	**659**		NA		NA		NA
Sulfate	NA	NA	10	**25.9**		NA		NA		NA
PERCHLORATE	**µg/L**	**µg/L**	**µg/L**	**µg/L**		**µg/L**		**µg/L**		
Perchlorate	278	589	4	NA		< 2.0	U	**15,000**		Yes
METALS	**mg/L**	**mg/L**	**mg/L**	**mg/L**		**mg/L**		**mg/L**		
Hexavalent Chromium	0.058	0.124	0.010	NA		< 0.0100	U	< 0.0100	U	Yes
Barium	1	2	0.004	NA		**0.0943**		NA		Yes
Lead	0.0022	0.0046	0.002	NA		< 0.00100	U	NA		Yes
Selenium	0.0057	0.0120	0.002	NA		< 0.00200	U	< 0.00200	U	Yes
Silver	0.0014	0.0030	0.002	NA		< 0.00100	U	< 0.00100	U	Yes
SEMI-VOLATILES	**µg/L**	**µg/L**	**µg/L**	**µg/L**		**µg/L**		**µg/L**		
1,4-Dioxane**	NA	134.2	1	NA		**1.4**		NA		Yes

Notes:

µg/L - micrograms per liter mg/L - milligrams per liter

DVQ - data validation qualifier NA - not applicable or not analyzed

Grab samples are compared to the daily maximum and composite samples to the daily average.

U - not detected at limit of detection (presented); J - estimated concentration

*Influent sample not compared to discharge limits

** Calculated Effluent Limit

00912797

Table 8. Bi-Weekly GWTP Analytical Sampling Results for August 2018

Sample Location				EFFLUENT - Biweekly		EFFFLUENT - Monthly		INFLUENT - Monthly*		Does Concentration Meet Effluent Discharge Limits? (Yes/No)
Sample Identification				LH18/24-SP650_081518		LH18/24-SP650_083018		LH18/24-SP140_052418		
Lab Package				HS18080789		HS18081540		HS18081541		
Sample Date				8/15/2018		8/30/2018		8/30/2018		
Sample Type				GRAB		GRAB		GRAB		
	Effluent Limitation for Discharge (µg/L) per Table 2 of ROD			Result	DVQ	Result	DVQ	Result	DVQ	
	Daily Average Concentration	Daily Maximum Concentration	Detection Limit							
VOLATILES	**µg/L**	**µg/L**	**µg/L**	**µg/L**		**µg/L**		**µg/L**		
1,1,1-Trichloroethane	3,417	7,230	1	< 0.5	U	< 0.5	U	NA		Yes
1,1,2-Trichloroethane	102.5	216.9	1	< 0.5	U	< 0.5	U	NA		Yes
1,1-Dichloroethane	6,633	14,032	1	< 0.5	U	< 0.5	U	NA		Yes
1,1-Dichloroethene	119	253	1	< 0.5	U	< 0.5	U	NA		Yes
1,2-Dichloroethane	85	181	1	< 0.5	U	< 0.5	U	NA		Yes
1,2-Dichloropropane	NA	NA	1	< 0.5	U	< 0.5	U	NA		Yes
Acetone	1,132	2,395	2	**4.1**		< 1.0	U	NA		Yes
Benzene	85	181	1	< 0.5	U	< 0.5	U	NA		Yes
Carbon Tetrachloride	85	181	1	< 0.5	U	< 0.5	U	NA		Yes
Chlorobezene	22,300	47,180	1	< 0.5	U	< 0.5	U	NA		Yes
Chloroform	1,708	3,615	1	< 0.5	U	< 0.5	U	NA		Yes
Ethylbenzene	26,954	57,025	1	< 0.5	U	< 0.5	U	NA		Yes
m,p-Xylenes	39.5	83.6	2	< 1.0	U	< 1.0	U	NA		Yes
Methylene Chloride	803	1,699	2	< 1.0	U	< 1.0	U	NA		Yes
o-Xylene	39.5	83.6	1	< 0.5	U	< 0.5	U	NA		Yes
Styrene	2,829	5,987	1	< 0.5	U	< 0.5	U	NA		Yes
Tetrachloroethene	85.4	180.7	1	< 0.5	U	< 0.5	U	NA		Yes
Toluene	1,980	4,189	1	< 0.5	U	< 0.5	U	NA		Yes
Trichloroethene	85	181	1	< 0.5	U	< 0.5	U	NA		Yes
Vinyl Chloride	34	72	1	**2.0**		**1.4**		NA		Yes

00912798

			Sample Location	EFFLUENT - Biweekly		EFFFLUENT - Monthly		INFLUENT - Monthly*		Does Concentration Meet Effluent Discharge Limits? (Yes/No)
			Sample Identification	LH18/24-SP650_081518		LH18/24-SP650_083018		LH18/24-SP140_052418		
			Lab Package	HS18080789		HS18081540		HS18081541		
			Sample Date	8/15/2018		8/30/2018		8/30/2018		
			Sample Type	GRAB		GRAB		GRAB		
	Effluent Limitation for Discharge (µg/L) per Table 2 of ROD			Result	DVQ	Result	DV Q	Result	DVQ	
	Daily Average Concentration	Daily Maximum Concentration	Detection Limit							
ANIONS	**mg/L**	**mg/L**	**mg/L**	**mg/L**		**mg/L**		**mg/L**		
Chloride	NA	NA	10	**705**		NA		NA		NA
Sulfate	NA	NA	10	**23.8**		NA		NA		NA
PERCHLORATE	**µg/L**	**µg/L**	**µg/L**	**µg/L**		**µg/L**		**µg/L**		
Perchlorate	278	589	4	NA		< 2.0	U	**4,800**		Yes
METALS	**mg/L**	**mg/L**	**mg/L**	**mg/L**		**mg/L**		**mg/L**		
Hexavalent Chromium	0.058	0.124	0.010	NA		< 0.0100	U	< 0.0100	U	Yes
Barium	1	2	0.004	NA		**0.137**		NA		Yes
Lead	0.0022	0.0046	0.002	NA		< 0.00100	U	NA		Yes
Selenium	0.0057	0.0120	0.002	NA		< 0.00200	U	< 0.00200	U	Yes
Silver	0.0014	0.0030	0.002	NA		< 0.00100	U	< 0.00100	U	Yes
SEMI-VOLATILES	**µg/L**	**µg/L**	**µg/L**	**µg/L**		**µg/L**		**µg/L**		
1,4-Dioxane**	NA	134.2	1	NA		**6.1**		NA		Yes

Notes:
µg/L - micrograms per liter
mg/L - milligrams per liter
U - non detect at limit of detection (presented); J - estimated concentration
DVQ - data validation qualifier
Grab samples are compared to the daily maximum and composite samples to the daily average.
NA - not applicable or not analyzed
*Influent sample not compared to discharge limits
* *Calculated Effluent Limit

00912799

Table 9. Bi-Weekly GWTP Analytical Sampling Results for September 2018

Sample Location				EFFLUENT - Monthly		INFLUENT - Monthly*		EFFLUENT - Biweekly		EFFLUENT - Biweekly		Does Concentration Meet Effluent Discharge Limits? (Yes/No)
Sample Identification				LH18/24-SP650_091318		LH18/24-SP140_091318		LH18/24-SP650_090618		LH18/24-SP650_091918		
Lab Package				HS18090654		HS18090658		HS18090257		HS18091007		
Sample Date				9/13/2018		9/13/2018		9/6/2018		9/19/2018		
Sample Type				GRAB		GRAB		GRAB		GRAB		
	Effluent Limitation for Discharge (µg/L) per Table 2 of ROD			Result	DVQ	Result	DVQ	Result	DVQ	Result	DVQ	
	Daily Average Concentration	Daily Maximum Concentration	Detection Limit									
VOLATILES	µg/L	µg/L	µg/L	µg/L		µg/L				µg/L		
1,1,1-Trichloroethane	3,417	7,230	1	< 0.5	U	NA		< 0.5	U	< 0.5	U	Yes
1,1,2-Trichloroethane	102.5	216.9	1	< 0.5	U	NA		< 0.5	U	< 0.5	U	Yes
1,1-Dichloroethane	6,633	14,032	1	< 0.5	U	NA		< 0.5	U	< 0.5	U	Yes
1,1-Dichloroethene	119	253	1	< 0.5	U	NA		< 0.5	U	< 0.5	U	Yes
1,2-Dichloroethane	85	181	1	< 0.5	U	NA		< 0.5	U	< 0.5	U	Yes
1,2-Dichloropropane	NA	NA	1	< 0.5	U	NA		< 0.5	U	< 0.5	U	Yes
Acetone	1,132	2,395	2	**270**		NA		3.2	UB	**180**		Yes
Benzene	85	181	1	< 0.5	U	NA		< 0.5	U	< 0.5	U	Yes
Carbon Tetrachloride	85	181	1	< 0.5	U	NA		< 0.5	U	< 0.5	U	Yes
Chlorobenzene	22,300	47,180	1	< 0.5	U	NA		< 0.5	U	< 0.5	U	Yes
Chloroform	1,708	3,615	1	< 0.5	U	NA		< 0.5	U	< 0.5	U	Yes
Ethylbenzene	26,954	57,025	1	< 0.5	U	NA		< 0.5	U	< 0.5	U	Yes
m,p-Xylenes	39.5	83.6	2	< 1.0	U	NA		< 1.0	U	< 1.0	U	Yes
Methylene Chloride	803	1,699	2	< 1.0	U	NA		< 1.0	U	< 1.0	U	Yes
o-Xylene	39.5	83.6	1	< 0.5	U	NA		< 0.5	U	< 0.5	U	Yes
Styrene	2,829	5,987	1	< 0.5	U	NA		< 0.5	U	< 0.5	U	Yes
Tetrachloroethene	85.4	180.7	1	< 0.5	U	NA		< 0.5	U	< 0.5	U	Yes
Toluene	1,980	4,189	1	< 0.5	U	NA		< 0.5	U	**0.73**	J	Yes
Trichloroethene	85	181	1	< 0.5	U	NA		**0.77**	J	< 0.5	U	Yes
Vinyl Chloride	34	72	1	**1.1**		NA		< 0.5	U	< 0.5	U	Yes

00912800

Sample Location				EFFLUENT - Monthly		INFLUENT - Monthly*		EFFLUENT - Biweekly		EFFLUENT - Biweekly		Does Concentration Meet Effluent Discharge Limits? (Yes/No)
Sample Identification				LH18/24-SP650_091318		LH18/24-SP140_091318		LH18/24-SP650_090618		LH18/24-SP650_091918		
Lab Package				HS18090654		HS18090658		HS18090257		HS18091007		
Sample Date				9/13/2018		9/13/2018		9/6/2018		9/19/2018		
Sample Type				GRAB		GRAB		GRAB		GRAB		
	Effluent Limitation for Discharge (µg/L) per Table 2 of ROD			Result	DVQ	Result	DVQ	Result	DVQ	Result	DVQ	
	Daily Average Concentration	Daily Maximum Concentration	Detection Limit									
ANIONS	**mg/L**	**mg/L**	**mg/L**	**mg/L**		**mg/L**		**mg/L**		**mg/L**		
Chloride	NA	NA	10	NA		NA		**568**		**661**		NA
Sulfate	NA	NA	10	NA		NA		**15.6**		**65.6**		NA
PERCHLORATE	**µg/L**	**µg/L**	**µg/L**	**µg/L**		**µg/L**		**µg/L**		**µg/L**		
Perchlorate	278	589	4	< 20	U	**7,100**		NA		NA		Yes
METALS	**mg/L**	**mg/L**	**mg/L**	**mg/L**		**mg/L**		**mg/L**		**mg/L**		
Hexavalent Chromium	0.058	0.124	0.010	**0.00700**	J	< 0.0500	U	NA		NA		Yes
Barium	1	2	0.004	**0.180**		NA		NA		NA		Yes
Lead	0.0022	0.0046	0.002	< 0.00100	U	NA		NA		NA		Yes
Selenium	0.0057	0.0120	0.002	< 0.00200	U	**0.00126**	J	NA		NA		Yes
Silver	0.0014	0.0030	0.002	< 0.00100	U	< 0.00100	U	NA		NA		Yes
SEMI-VOLATILES	**µg/L**	**µg/L**	**µg/L**	**µg/L**		**µg/L**		**µg/L**		**µg/L**		
1,4-Dioxane**	NA	134.2	1	**3**		NA		NA		NA		Yes

Notes:
µg/L - micrograms per liter
DVQ - data validation qualifier
mg/L - milligrams per liter
J - estimated concentration
U - not detected at limit of detection (presented)
NA - not applicable or not analyzed
Grab samples are compared to the daily maximum and composite samples to the daily average
*Influent sample not compared to discharge limits
** Calculated Effluent Limit

00912801

Table 10. Quarterly GWTP Analytical Sampling Results for 3rd Quarter 2018

				Sample Location	EFFLUENT*		INFLUENT		Does Concentration Meet Discharge Limits? (Yes/No)
				Sample Identification	LH18/24-SP650_092718		LH18/24-SP140_092718		
				Lab Package	HS18091521		HS18091519		
				Sample Date	9/27/2018		9/27/2018		
				Sample Type	GRAB		GRAB		
	Effluent Limitation for Discharge (µg/L) per Protocol								
	Daily Average Concentration	Daily Maximum Concentration	Reporting Limit		Result	DVQ	Result	DVQ	
VOLATILES	µg/L	µg/L	µg/L		µg/L		µg/L		
1,1,1-Trichloroethane	3,417	7,230	1		< 0.5	U	**1.6**		Yes
1,1,2-Trichloroethane	102.5	216.9	1		< 0.5	U	**3.2**		Yes
1,1-Dichloroethane	6,633	14,032	1		< 0.5	U	**14**		Yes
1,1-Dichloroethene	119	253	1		< 0.5	U	**76**		Yes
1,2-Dichloroethane	85	181	1		< 0.5	U	**48**		Yes
1,2-Dichloropropane	NA	NA	1		< 0.5	U	< 0.5	U	Yes
Acetone	1,132	2,395	2		< 1.0	U	< 2.0	U	Yes
Benzene	85	181	1		< 0.5	U	**2.9**		Yes
Carbon Tetrachloride	85	181	1		< 0.5	U	**3.1**		Yes
Chlorobenzene	22,300	47,180	1		< 0.5	U	< 0.5	U	Yes
Chloroform	1,708	3,615	1		< 0.5	U	**18**		Yes
Ethylbenzene	26,954	57,025	1		< 0.5	U	< 0.5	U	Yes
m,p-Xylenes	39.5	83.6	2		< 1.0	U	< 1.0	U	Yes
Methylene Chloride	803	1,699	2		< 1.0	U	**5,800**	J	Yes
o-Xylene	39.5	83.6	1		< 0.5	U	< 0.5	U	Yes
Styrene	2,829	5,987	1		< 0.5	U	< 0.5	U	Yes
Tetrachloroethene	85.4	180.7	1		< 0.5	U	**41**		Yes
Toluene	1,980	4,189	1		< 0.5	U	**2.7**		Yes
Trichloroethene	85	181	1		**0.82**	J	**6,500**	J	Yes
Vinyl Chloride	34	72	1		< 0.5	U	**170**		Yes

00912802

			Sample Location	EFFLUENT*		INFLUENT		Does Concentration Meet Discharge Limits? (Yes/No)
			Sample Identification	LH18/24-SP650_092718		LH18/24-SP140_092718		
			Lab Package	HS18091521		HS18091519		
			Sample Date	9/27/2018		9/27/2018		
			Sample Type	GRAB		GRAB		
	Effluent Limitation for Discharge (µg/L) per Protocol			Result	DVQ	Result	DVQ	
	Daily Average Concentration	Daily Maximum Concentration	Reporting Limit					
ANIONS	**mg/L**	**mg/L**	**mg/L**	**mg/L**		**mg/L**		
Chloride	NA	NA	10	**572**		**564**		NA
Sulfate	NA	NA	10	**41.4**		**38.4**		NA
PERCHLORATE	**µg/L**	**µg/L**	**µg/L**	**µg/L**		**µg/L**		
Perchlorate	278	589	4	< 2.0	U	**8,800**		Yes
METALS	**mg/L**	**mg/L**	**mg/L**	**mg/L**		**mg/L**		
Aluminum	0.777	1.644	0.0100	0.00919	UB	**0.0375**		Yes
Antimony	NA	NA	0.00200	< 0.00100	U	< 0.00100	U	NA
Arsenic	0.365	0.772	0.00200	**0.000643**	J	**0.00148**	J	Yes
Barium	1	2	0.00400	**0.149**		**0.901**		Yes
Beryllium	NA	NA	0.00200	< 0.00100	U	**0.000371**	J	NA
Cadmium	0.0016	0.0034	0.00200	< 0.00100	U	**0.000374**	J	Yes
Calcium	NA	NA	0.500	**12.9**		**52.1**		NA
Chromium	0.355	0.752	0.00400	**0.00120**	J	**0.00284**	J	Yes
Cobalt	5.433	11.495	0.00500	**0.000427**	J	**0.0137**		Yes
Iron	1.132	2.395	0.200	**0.0997**	J	**1.50**		Yes
Lead	0.0022	0.0046	0.00200	< 0.00100	U	< 0.00100	U	Yes
Magnesium	NA	NA	0.200	**32**		**41.9**		NA
Manganese	7.323	15.494	0.00500	**0.107**		**0.888**		Yes
Nickel	0.087	0.184	0.00200	**0.00353**		**0.0201**		Yes
Potassium	NA	NA	0.200	**1.57**		**1.34**		NA
Selenium	0.0057	0.012	0.00200	< 0.00200	U	< 0.00200	U	Yes
Silver	0.0014	0.003	0.00200	< 0.00100	U	< 0.00100	U	Yes

00912803

			Sample Location	EFFLUENT*		INFLUENT		Does Concentration Meet Discharge Limits? (Yes/No)
			Sample Identification	LH18/24-SP650_092718		LH18/24-SP140_092718		
			Lab Package	HS18091521		HS18091519		
			Sample Date	9/27/2018		9/27/2018		
			Sample Type	GRAB		GRAB		
	Effluent Limitation for Discharge (µg/L) per Protocol			Result	DVQ	Result	DVQ	
	Daily Average Concentration	Daily Maximum Concentration	Reporting Limit					
Sodium	NA	NA	1.00	**433**		**245**		NA
Thallium	NA	NA	0.00200	< 0.00100	U	< 0.00100	U	NA
Vanadium	1.698	3.592	0.00500	**0.000853**	J	**0.00145**	J	Yes
Zinc	0.146	0.31	0.00400	**0.0130**		**0.0317**		No
Mercury	NA	NA	0.000200	< 0.0000100	U	< 0.0000100	U	NA
1,4-DIOXANE	**µg/L**	**µg/L**	**µg/L**	**µg/L**		**µg/L**		
1,4-Dioxane	NA	134.2	1	**7.5**		**5.7**		Yes
CHEMICAL OXYGEN DEMAND	**mg/L**	**mg/L**	**mg/L**	**mg/L**		**mg/L**		
COD	NA	200	75	**47**		**10.0**	J	Yes
OIL AND GREASE (O&G)	**mg/L**	**mg/L**	**mg/L**	**mg/L**		**mg/L**		
O&G	NA	15	2	**6.2**		< 1.00	U	Yes

Notes:
µg/L - micrograms per liter mg/L - milligrams per liter
DVQ - data validation qualifier J - Estimated concentration
NA - not applicable
Grab samples are compared to the daily maximum and composite samples to the daily average
U - non detect at the limit of detection (presented)
UB - considered non detect due to blank contamination
* only Effluent sample is compared to discharge limits

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3 EVALUATION OF LHAAP-16 EXTRACTION SYSTEM

3.1 Quantity of Groundwater Extracted From LHAAP-16

Groundwater was not extracted from LHAAP-16 during July or August 2018 due to maintenance issues with the compressor. In September 2018, approximately 13,924 gallons of groundwater was extracted. The volume of extracted groundwater from LHAAP-16 is shown in **Table 5** and on **Figure ES-1**. These flows are based on the sum of individual flow meter readings.

3.2 Groundwater Elevation

The groundwater elevations in the piezometers and monitoring wells at LHAAP-16 for July, August, and September 2018 are presented in **Table 11**. The potentiometric surface maps for the shallow and Upper Wilcox (intermediate) groundwater zones at LHAAP-16 for July, August, and September 2018 are presented on **Figures B-7** through **B-12** in **Appendix B**. Due to the lack of extraction, the groundwater flow is more true to natural conditions. Based on the potentiometric surface maps, the general groundwater flow direction in the shallow and intermediate zone is southeast towards the Harrison Bayou. The intermediate zone also demonstrated a southeastern flow towards the Harrison Bayou. However, limited flow towards the northeast was also observed in the intermediate zone.

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Table 11. Groundwater Elevations at LHAAP-16 Piezometers and Monitoring Wells

Location Identification	Type	Reference Elevation (feet amsl)	Depth to Water (feet) 7/25/18	Groundwater Elevation (feet amsl) 7/25/18	Depth to Water (feet) 8/31/18	Groundwater Elevation (feet amsl) 8/31/18	Depth to Water (feet) 9/27/18	Groundwater Elevation (feet amsl) 9/27/18
16PZ-1	Piezometer	199.44	28.90	170.54	29.05	170.39	29.23	170.21
16PZ-2	Piezometer	199.75	29.15	170.60	29.22	170.53	29.36	170.39
16PZ-3	Piezometer	198.61	27.69	170.92	27.79	170.82	27.91	170.70
16PZ-4	Piezometer	198.81	28.31	170.50	28.45	170.36	28.59	170.22
16PZ-5	Piezometer	198.31	27.07	171.24	27.20	171.11	27.33	170.98
16PZ-6	Piezometer	198.61	27.97	170.64	28.11	170.50	28.25	170.36
16PZ-7	Piezometer	200.10	29.49	170.61	29.57	170.53	29.70	170.40
16PZ-8	Piezometer	199.93	29.08	170.85	29.21	170.72	29.35	170.58
16PZ-9	Piezometer	196.49	25.75	170.74	25.88	170.61	25.97	170.52
16PZ-10	Piezometer	196.65	26.09	170.56	26.15	170.50	26.25	170.40
16PZ-11	Piezometer	198.88	27.88	171.00	27.99	170.89	28.13	170.75
16PZ-12	Piezometer	199.00	28.60	170.40	28.74	170.26	28.88	170.12
16PZ-13	Piezometer	196.58	25.94	170.64	26.09	170.49	26.24	170.34
16PZ-14	Piezometer	196.09	25.55	170.54	25.70	170.39	25.83	170.26
16PZ-15	Piezometer	191.93	20.77	171.16	20.90	171.03	20.79	171.14
16PZ-16	Piezometer	190.79	20.02	170.77	20.20	170.59	20.08	170.71
16PZ-17	Piezometer	186.67	15.67	171.00	15.85	170.82	15.60	171.07
16PZ-18	Piezometer	185.99	15.73	170.26	15.89	170.10	15.64	170.35
16PZ-19	Piezometer	183.98	13.17	170.81	13.31	170.67	12.90	171.08
16PZ-20	Piezometer	183.12	12.89	170.23	13.02	170.10	12.65	170.47
16WW12	Monitoring Well	188.81	18.01	170.80	18.18	170.63	17.91	170.90
16WW14	Monitoring Well	198.87	27.11	171.76	27.22	171.65	27.35	171.52
16WW22	Monitoring Well	200.13	29.05	171.08	29.21	170.92	29.34	170.79
16WW25	Monitoring Well	188.77	19.69	169.08	19.83	168.94	19.62	169.15
16WW26	Monitoring Well	188.83	18.29	170.54	18.39	170.44	18.23	170.60
16WW29	Monitoring Well	178.24	10.03	168.21	10.20	168.04	9.69	168.55
16WW30	Monitoring Well	178.47	10.51	167.96	10.70	167.77	10.19	168.28
16WW31	Monitoring Well	202.78	31.10	171.68	31.23	171.55	31.37	171.41

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Location Identification	Type	Reference Elevation (feet amsl)	Depth to Water (feet) 7/25/18	Groundwater Elevation (feet amsl) 7/25/18	Depth to Water (feet) 8/31/18	Groundwater Elevation (feet amsl) 8/31/18	Depth to Water (feet) 9/27/18	Groundwater Elevation (feet amsl) 9/27/18
16WW33	Monitoring Well	203.09	31.13	171.96	31.25	171.84	31.35	171.74
16WW35	Monitoring Well	191.23	19.95	171.28	20.08	171.15	20.23	171.00
16WW36	Monitoring Well	190.94	19.09	171.85	19.23	171.71	19.41	171.53

4 QUALITY CONTROL

This report summarizes the data for samples collected during July, August, and September 2018. The samples were reviewed and validated in accordance with the guidelines in the *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (USEPA, January 2017); *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review* (USEPA, January 2017); and the quality control criteria specified in the *Basewide Uniform Federal Policy - Quality Assurance Project Plan Longhorn Army Ammunition Plant* which is in Appendix C of the *Final Installation-Wide Work Plan for Longhorn Army Ammunition Plant Karnack, Texas* (Bhate, May 2018).

The purpose of the sampling program is to evaluate the effectiveness of the groundwater pump and treat system, assess water quality within the capture zone, and assure compliance with the effluent discharge requirements of the Interim ROD. Quality control and quality assurance problems noted in the case narratives received from the laboratory are minor and do not affect the usability of the data for compliance at the GWTP. No sample results from the 3rd quarter of 2018 were rejected due to quality control problems.

ALS Environmental analyzed the compliance samples collected from the GWTP. Independent data verification and validation was performed by the Bhate Environmental Associates, Inc. (Bhate) project chemist as described in the Quality Control Summary Report in **Appendix E**. The laboratory reports for the 3rd quarter of 2018 are included in **Appendix C** on a CD. Air monitoring data is presented in **Appendix F, Attachment 3**.

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5 TREATED GROUNDWATER DISCHARGED

Reinjection of groundwater in ICT 6 and ICT 9 was discontinued as of July 15, 2012. The last injection occurred on May 24, 2012, immediately prior to the scrubber system malfunction which caused GWTP operation to cease temporarily.

Treated groundwater that met the perchlorate discharge criteria was discharged to Harrison Bayou or the INF Pond in accordance with the Protocol for Discharging GWTP Effluent (**Appendix D**). **Table 4** summarizes flow rates from the GWTP to the Harrison Bayou, the maximum flow rate allowed by chloride and sulfate concentrations, the daily volume discharged to the INF Pond, and the approximate flow rate discharged for July, August, and September 2018.

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6 AIR MONITORING

6.1 Summary of Air Monitoring Approach

Operation of the GWTP without air abatement was approved by the TCEQ and USEPA conditioned on collection of air monitoring data to determine the effect of GWTP operation on ambient air quality with respect to potential human health exposure risk. An Interim Air Monitoring Plan was developed by AECOM in August 2012 and used to implement the air monitoring program. The air monitoring program included sampling emission concentrations from the air stripper, ambient air at the GWTP, and ambient air downwind of the GWTP. Collection of air data occurred on a weekly basis between September 2012 and September 2013, on a monthly basis between September 2013 and September 2014, and on a quarterly basis since that time. The sampling program includes use of Summa canisters and a photoionization detector (PID) to measure vapor phase concentrations. The air stripper emission sample is collected as a grab sample, while the ambient air samples are collected as composite samples. The GWTP sample is collected over 8 hours to represent a work day and the downwind sample is collected over 24 hours to represent potential exposure to an off-site receptor[1]. The downwind sample is collected at the closest downwind property boundary, based on prevailing wind direction.

PID data (after system calibration) are collected each time the GWTP is operated and serve as a real-time indicator of ambient air conditions at and downwind of the GWTP. Correlations between definitive analytical air data and PID measurements were established and a means to calculate contaminant concentration from PID measurements was developed. A PID threshold of 0.4 parts per million by volume (ppmv) in ambient air was established, such that Summa canister measurements would occur when the PID threshold is exceeded.

The Summa canister samples are analyzed for VOCs using USEPA Method TO-15. The PID measurements are collected after instrument calibration. The air sampling results are summarized and reported to the USEPA and TCEQ in the GWTP quarterly reports; however, the air results are reviewed immediately upon receipt for the potential presence of any exceedances of ambient air concentrations. **Appendix F** includes a summary of analytical results and PID readings, calculations of emission rates from the emission point, comparison of ambient air concentrations with TCEQ Air Monitoring Comparison Values (AMCVs) or the short-term Effects Screening Levels (ESLs) for chemicals with no published AMCVs, and a compilation of PID results and calibration records. The air monitoring results to date indicate that all ambient air concentrations are lower than the AMCVs or ESLs. The stripper stack sample concentrations are

[1] Off-site receptor - Any recreational area, residence, commercial/industrial facility, or other normally occupied structures not used solely by the owner or operator of the facilities or the owner of the site upon which the facilities are located. Measurements of distances to determine compliance with this distance restriction must be taken toward structures that are in use as of the date that a notification is filed with the commission.

used to calculate emission rates in pounds per hour (lbs/hr) and tons per year (tpy). The calculated emission rates in lbs/hr are then compared to the allowable emission rates per 30 Texas Administrative Code (TAC) §106.533(f)(1). The emission rates have been lower than the allowable emission rates to the conservatively-selected off-site receptor. The calculated emission rate in tpy is compared to the allowable limit of 5 tpy per chemical.

The air monitoring results from the first few months of operation between September and November 2012 were compiled and submitted in a separate report (December 2012) (along with validated data) to TCEQ to demonstrate compliance with Texas Permit by Rule emission standards. Approval of the analytical results and concurrence that the site will continue to meet Title 30 TAC §106.533 without the use of air abatement using a catalytic oxidation system was obtained from the TCEQ via email on February 22, 2013.

On February 18, 2013, AECOM presented analysis of the approach applicable to obtaining a variance for operating the GWTP without air abatement equipment to the TCEQ and USEPA. The analysis indicated that the use of an Explanation of Significant Difference (ESD) was the appropriate approach for the site. Approval of use of an ESD was obtained from the USEPA via email on March 21, 2013. The ESD was developed, reviewed, and accepted by USEPA and TCEQ. The ESD was signed by the designated parties on April 3, 2014, and concurrence from the TCEQ was obtained in a letter dated April 16, 2014.

6.2 Air Monitoring Results for the 3rd Quarter of 2018

During the 3rd quarter of 2018, air sampling was completed on September 11, 2018. A summary of the air sampling results is presented in **Appendix F**. All results met the criteria described in Section 6.1.

6.2.1 Summa Canister Monitoring Results

One sampling event was conducted on September 11, 2018, for presentation during the 3rd Quarter 2018 reporting period using Summa canisters. The samples were collected and analyzed as described in Section 6.1 and per the approved air monitoring plan dated August 2012. The analytical results were then compiled in spreadsheets where calculations were completed and comparisons to applicable criteria were made as described in Section 6.1.

6.2.1.1 Ambient Air Results

Acetone, n-hexane, dichlorodifluoromethane, trichlorofluoromethane, and alpha-pinene were detected in September 2018 in ambient air downwind of the GWTP. Compounds originating at the GWTP would be expected to have lower concentrations in the downwind sampling location than at the GWTP sampling location. However, the five compounds detected downwind had the same detections or slightly higher concentrations (acetone and alpha-pinene) downwind compared to at the GWTP. Compounds such as alpha-pinene, dichlorodifluoromethane, and trichlorofluoromethane typically have had similar concentrations in both GWTP ambient air and downwind ambient air and are suspected to be present in the ambient (background) air. Several compounds, particularly chlorinated compounds were detected in the ambient air at the GWTP,

but not downgradient. These compounds include cis-1,2-dichloroethene (DCE), methylene chloride, trichloroethene (TCE), and trichlorotrifluorethane.

The ambient air results during the quarter met the ambient air criteria, as presented in **Table 1** within **Appendix F**.

6.2.1.2 Air Stripper Effluent Results

The VOCs present in groundwater that are removed via the air stripper include 1,1-DCE; 1,2-dichloroethane; cis-1,2-DCE; methylene chloride; tetrachloroethene; TCE; and trichlorotrifluoroethane. The highest reported concentrations from the air stripper stack exhaust (air) are for TCE; methylene chloride; cis-1,2-DCE; and trichlorotrifluoroethane. These compounds are frequently reported in groundwater at the site, with the exception of trichlorotrifluoroethane which is not typically a groundwater analyte at LHAAP. Trichlorotrifluoroethane, however, appears to be present in groundwater as indicated by limited analysis conducted in December 2013, where it was detected in several wells, and from historical accounts. Many of the chemicals that are reported in ambient air are not detected in the air stripper effluent. This is likely because the reporting limit for the air stripper effluent is higher than the reporting limit for the ambient air samples or the source for some of these chemicals are extraneous to groundwater.

All air stripper effluent concentrations were below the emission criteria, as presented in **Table 2** within **Appendix F**.

6.2.2 PID Results

Along with collection of Summa canister air samples, PID measurements from the same sources/areas are collected and recorded. These simultaneous measurements allowed establishing a correlation between PID readings and VOC concentrations in the Summa canister air samples. Conversion from PID to compound concentrations was established by TCEQ in 30 TAC §106.533(h). The TCEQ equation allows use of a PID to determine individual compound concentrations if the distribution of chemicals in the ambient air is known or assumed. This allows the use of a PID as a tool to measure VOC concentrations and convert the PID results to estimates of compound concentrations. Ambient air PID measurements during this quarter at the GWTP were reported at 0.0 parts per million. The results of the PID readings collected during GWTP operations are presented in **Table 3** in **Attachment 2** within **Appendix F**.

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7 COMMENTS AND RESPONSES

TCEQ had no comments on the 2nd Quarter 2018 report per an email issued on November 5, 2018. USEPA comments on the 2nd Quarter 2018 report were received on October 26, 2018, and are presented as follows with associated responses.

1. **Figure D-1 and Section 4, Quality Control:** Monitoring wells MW-20, 18CPTMW22R, 126, and 18CPTMW16 have detection limits varying from less than 200 to less than 2,000 µg/L for perchlorate. What is the reason for the high detection limits? The remaining wells sampled had reporting limits of less than 2 µg/L.

   Response: As presented in Table 6, these results are part of Laboratory Package HS18060825. The case narrative for the laboratory package states: *The following samples were analyzed and reported at various dilutions. 1817055001 – 1,000. Samples 1817055002-07 failed the 50-150% method requirement for ISTD (internal standard) recoveries. These samples were reanalyzed and reported from 1:100 (samples 03 & 07) and 1:1,000 (samples 002/04-06) dilutions. The reporting limits have been adjusted accordingly.*

2. **Figure D-5:** It is interesting to note that the monitoring wells sampled in the shallow zone showed no [Maximum Contaminant Level] MCL exceedances for methylene chloride (MC); however, the two ICTs sampled to the west (12D and 12E) detected MC at 77,000 and 120,000 µg/L. In the future, EPA recommends using sampling data from the ICTs in conjunction with the monitoring wells to develop the remedial design for the site.

   Response: Noted.

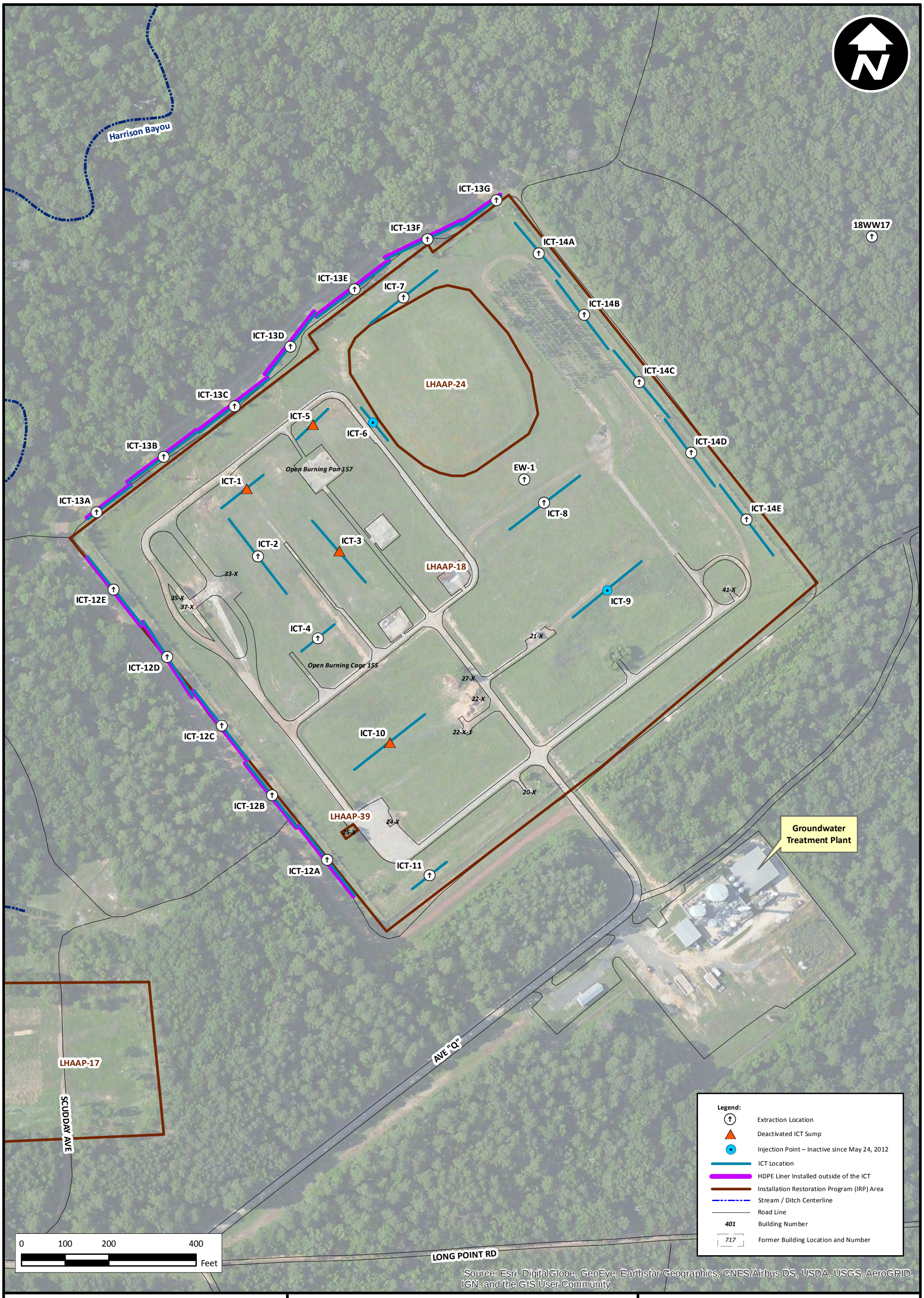
3. **General Comment:** There was no groundwater extracted from ICTs 13C (one month), 13E and 14A. Are the pumps not working?

   Response: ICT 13E had plugged lines and plugged flowmeter and was repaired on September 14, 2018. The other two ICTs require pump replacements, which will be completed in January 2019.

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APPENDIX A
ICT LAYOUT AND GWTP PROCESS FLOW DIAGRAM

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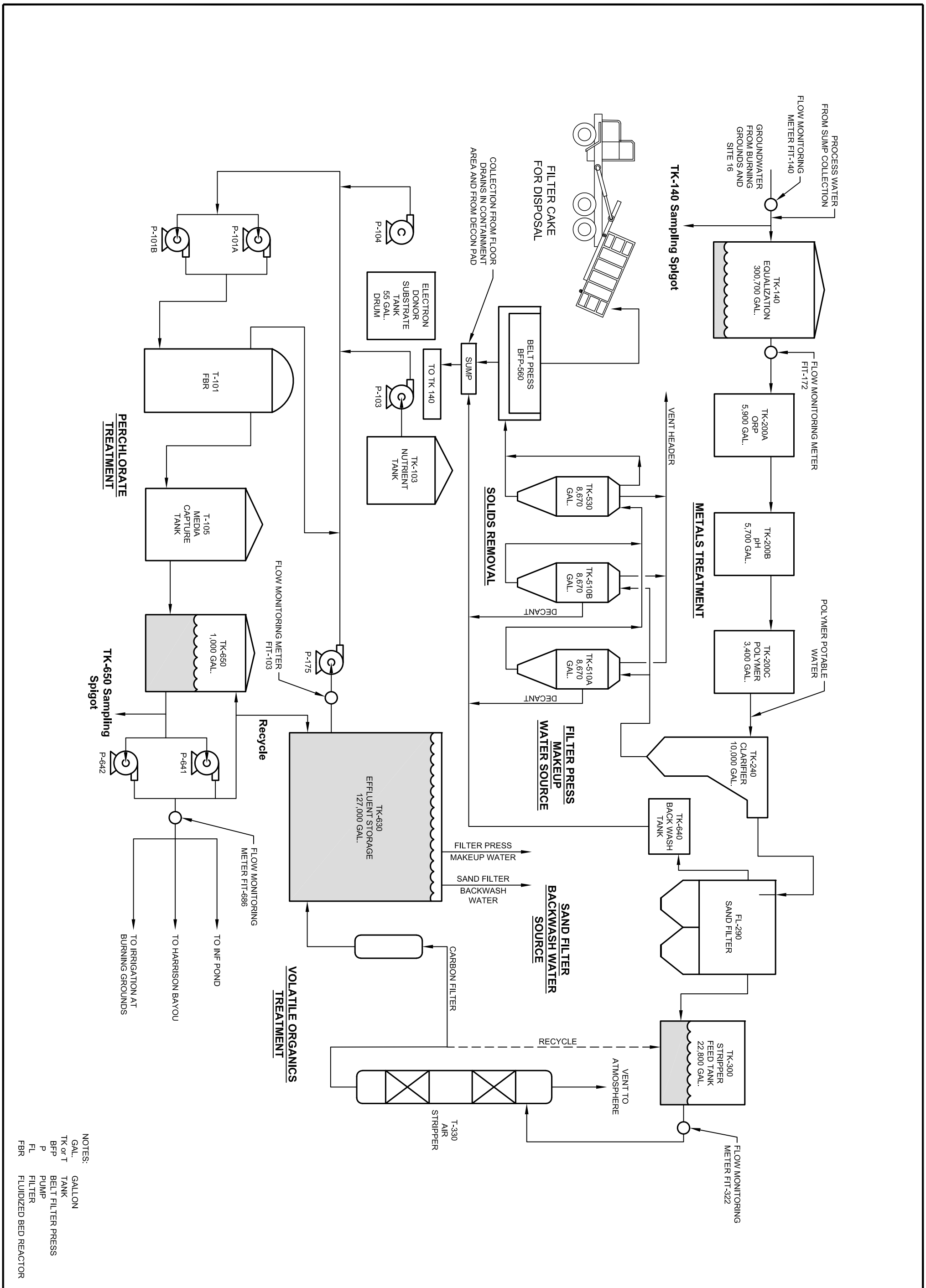
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ICT Layout Map

Figure A-1

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Process Flow Diagram

Figure A-2

Table A-1: ICTs Completion Depths

ICT	TOC Elevation	Total Depth	Sump Elevation	Comment
1	186.07	22.5	163.57	Taken out of service in 2007.
2	185.02	29.5	155.52	
3	192.27	37.75	154.52	Taken out of service in 2007.
4	193.51	37.5	156.01	
5	192.67	35	157.67	Taken out of service in 2007.
6	197.30	40.75	156.55	Converted to infiltration in 2007. Ceased reinjection in July 2012.
7	198.03	32.33	165.7	
8	198.97	44.5	154.47	
9	197.64	45.5	152.14	Converted to infiltration in 2007. Ceased reinjection in July 2012.
10	198.07	45.42	152.65	Taken out of service in 2007.
11	198.01	43.33	154.68	
12A	189.06	31.5	157.56	Taken out of service in 2007. Reinstituted in December 2012.
12B	191.97	36.25	155.72	
12C	193.90	34.33	159.57	
12D	185.64	33.75	151.89	
12E	183.38	32.25	151.13	
13A	182.59	28.17	154.42	
13B	184.72	29.58	155.14	
13C	186.13	28.17	157.96	
13D	186.72	26.17	160.55	
13E	191.79	27.08	164.71	
13F	197.81	32.33	165.48	
13G	197.03	27.25	169.78	Taken out of service in 2008.
14A	196.8	43.00	153.8	
14B	197.61	43.42	154.19	
14C	197.86	41.33	156.53	
14D	198.47	44.25	154.22	
14E	198.47	43.08	155.39	

Note(s):

ICT - interception-collection trench

TOC - top of casing, measuring point for groundwater elevations

Elevations are reported as feet above mean sea level.

Total depths are reported as feet below TOC.

Sump elevation calculated by subtracting total depth from TOC elevation.

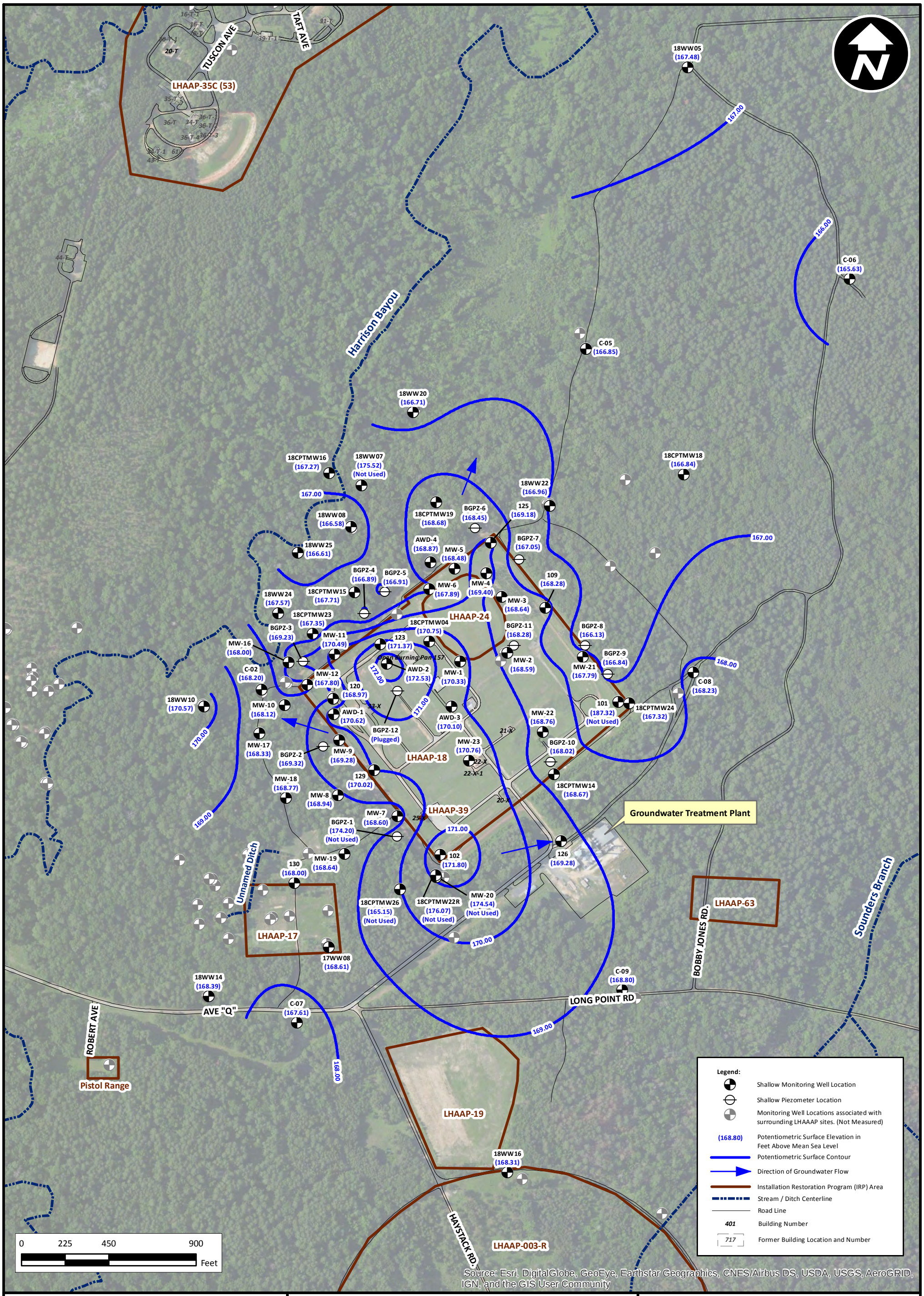
ICTs were installed in 1998.

ICT 12A was replaced on December 5, 2012, and extraction has resumed.

TOC Elevations and total depth measured in October 2003, 4th Quarter 2003, Groundwater Treatment Plant Report.

APPENDIX B
GROUNDWATER ELEVATION CONTOUR MAPS

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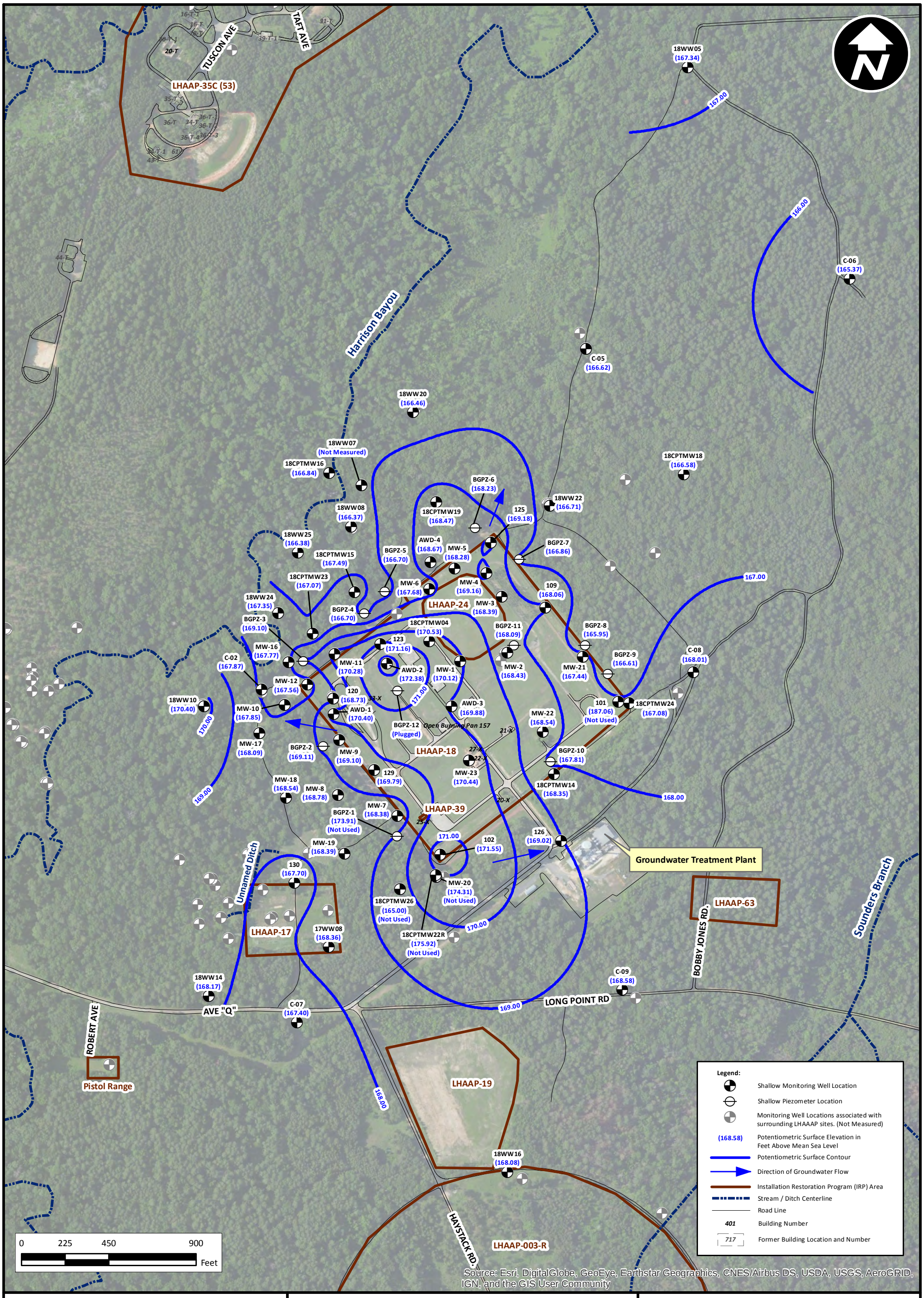
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Groundwater Potentiometric Surface Map
Shallow Zone (August 2, 2018) LHAAP-18/24

Figure B-1



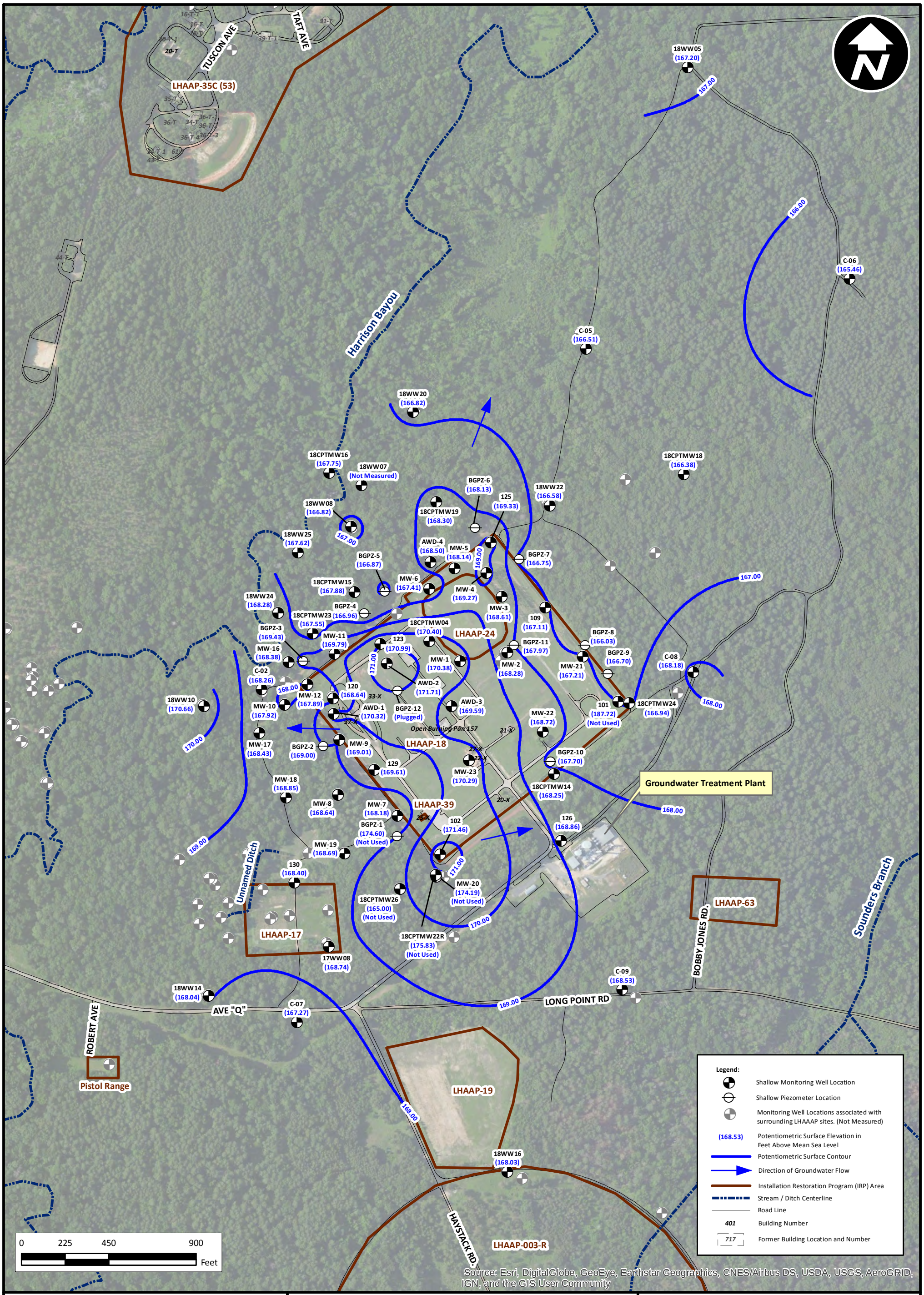
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Groundwater Potentiometric Surface Map
Shallow Zone (August 31, 2018) LHAAP-18/24

Figure B-2



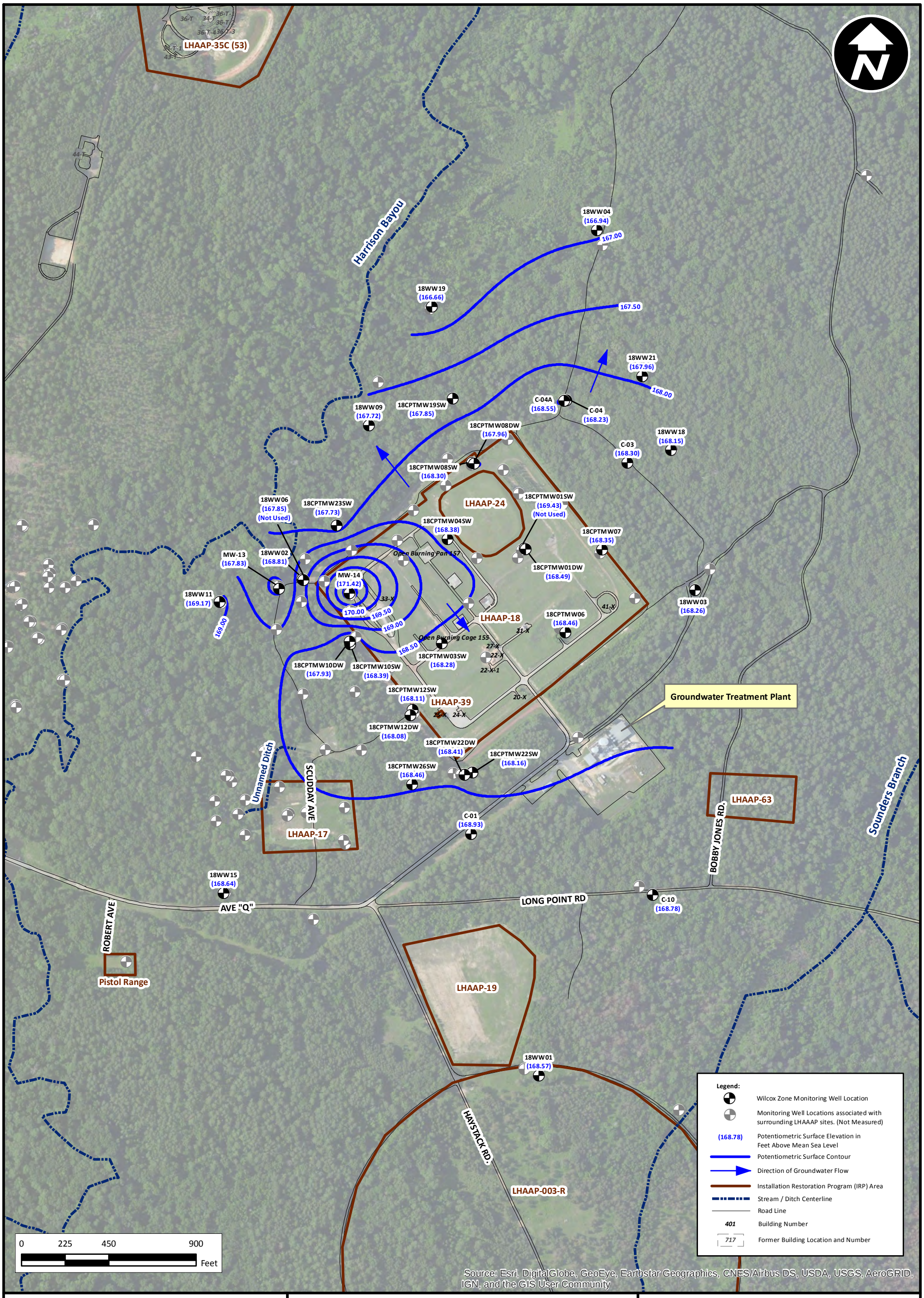
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Groundwater Potentiometric Surface Map
Shallow Zone (September 25, 2018) LHAAP-18/24

Figure B-3



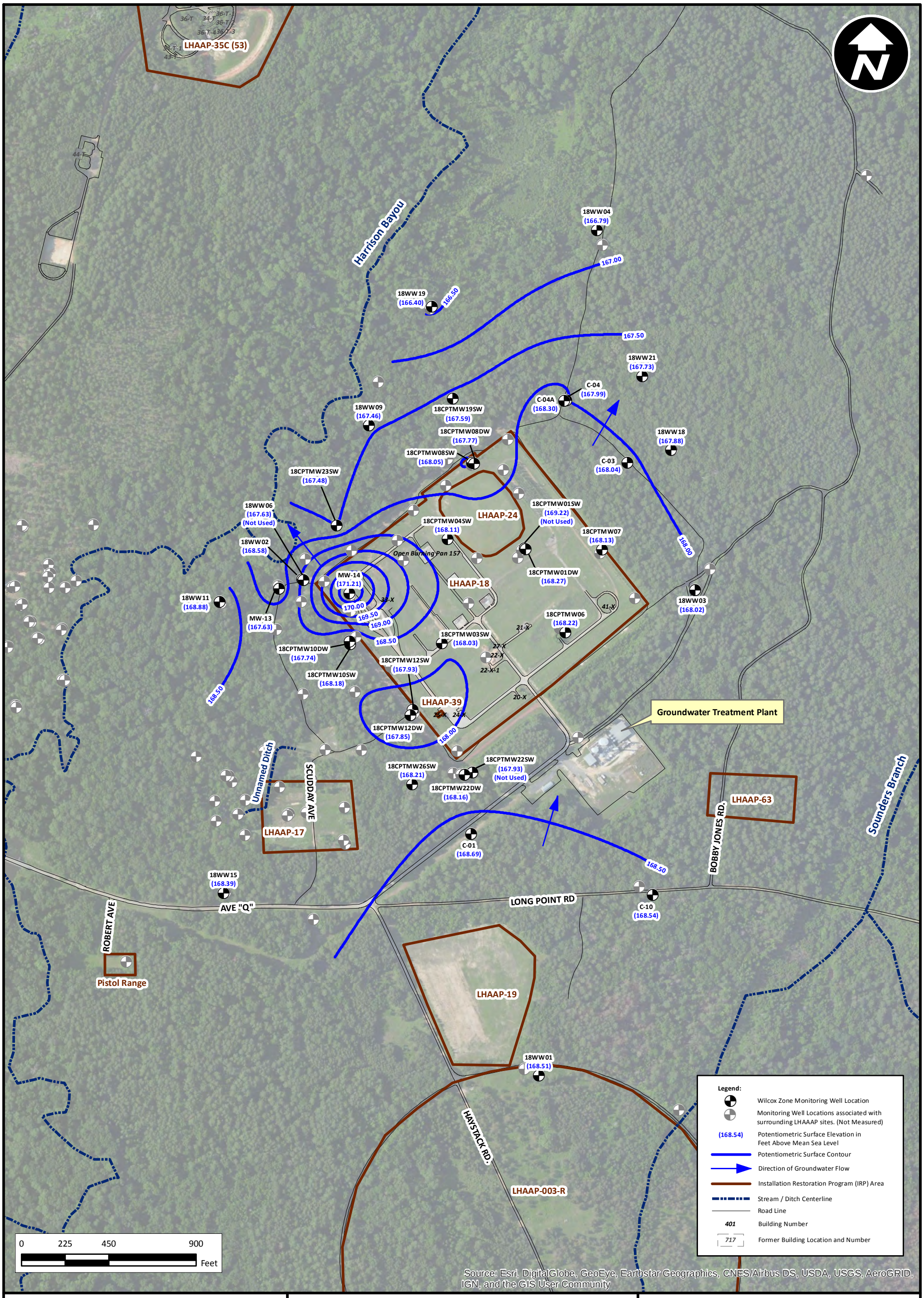
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Groundwater Potentiometric Surface Map
Wilcox Zone (August 2, 2018) LHAAP-18/24

Figure B-4



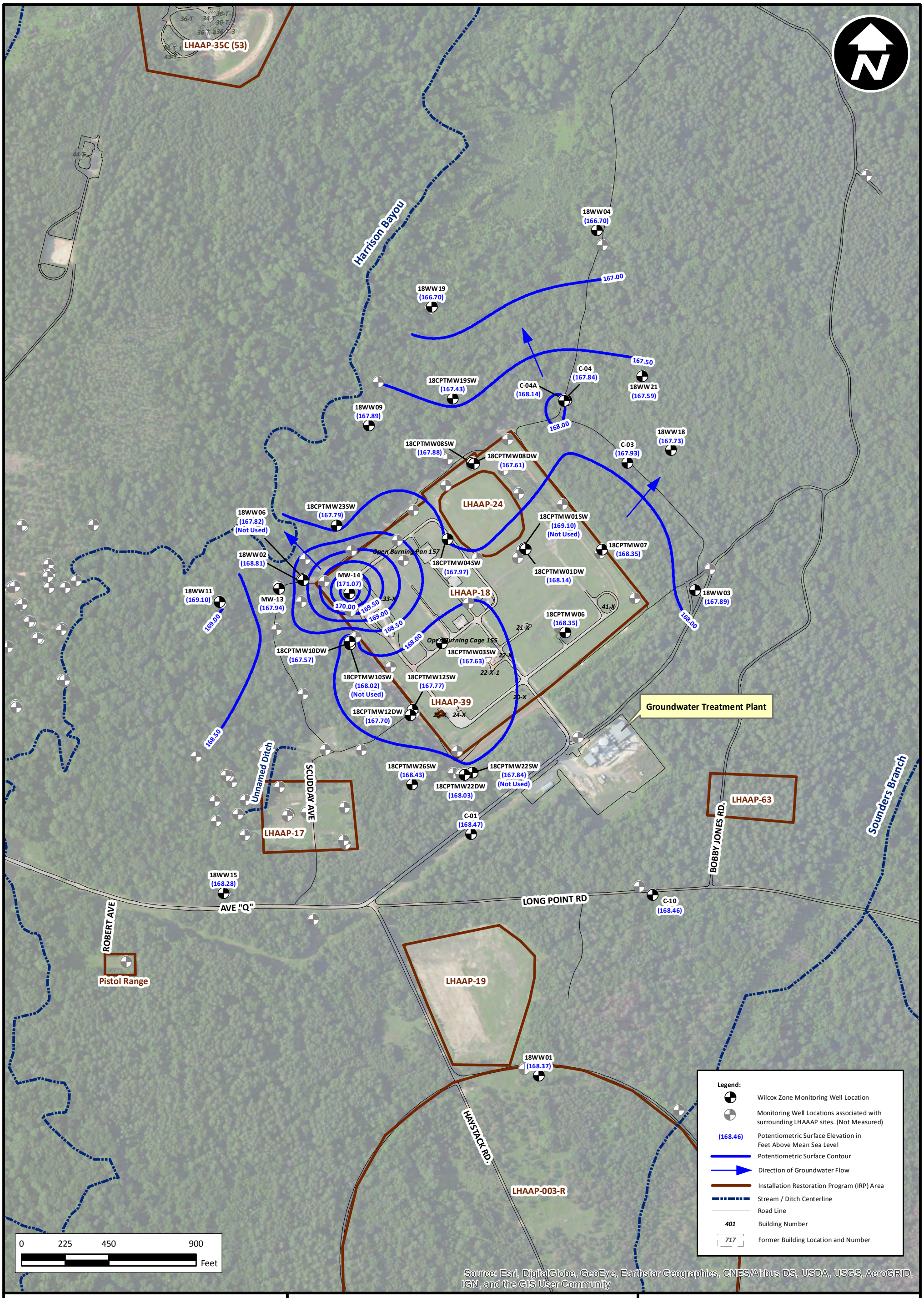
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Groundwater Potentiometric Surface Map
Wilcox Zone (August 31, 2018) LHAAP-18/24

Figure B-5



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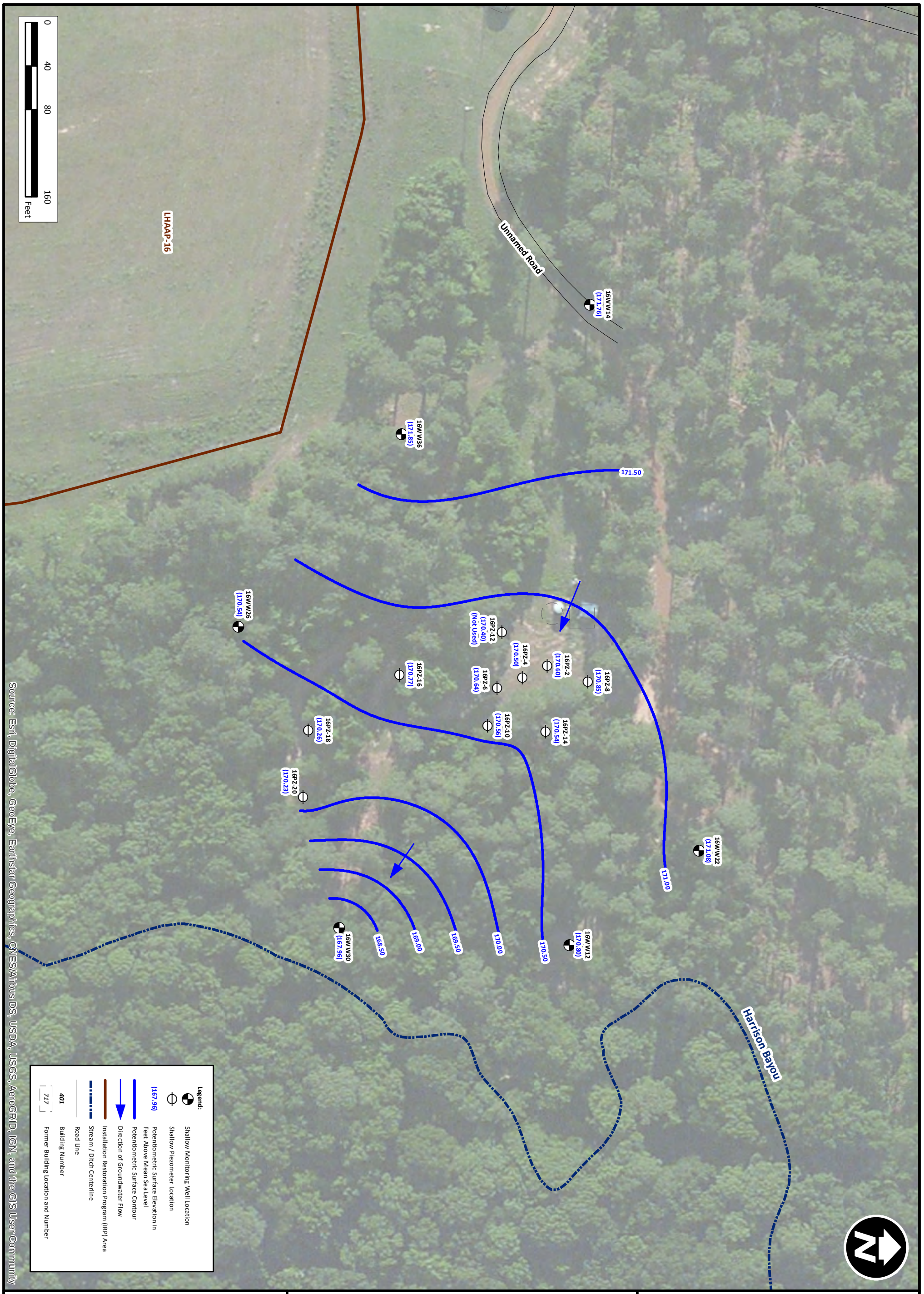
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Groundwater Potentiometric Surface Map
Wilcox Zone (September 25, 2018) LHAAP-18/24

Figure B-6

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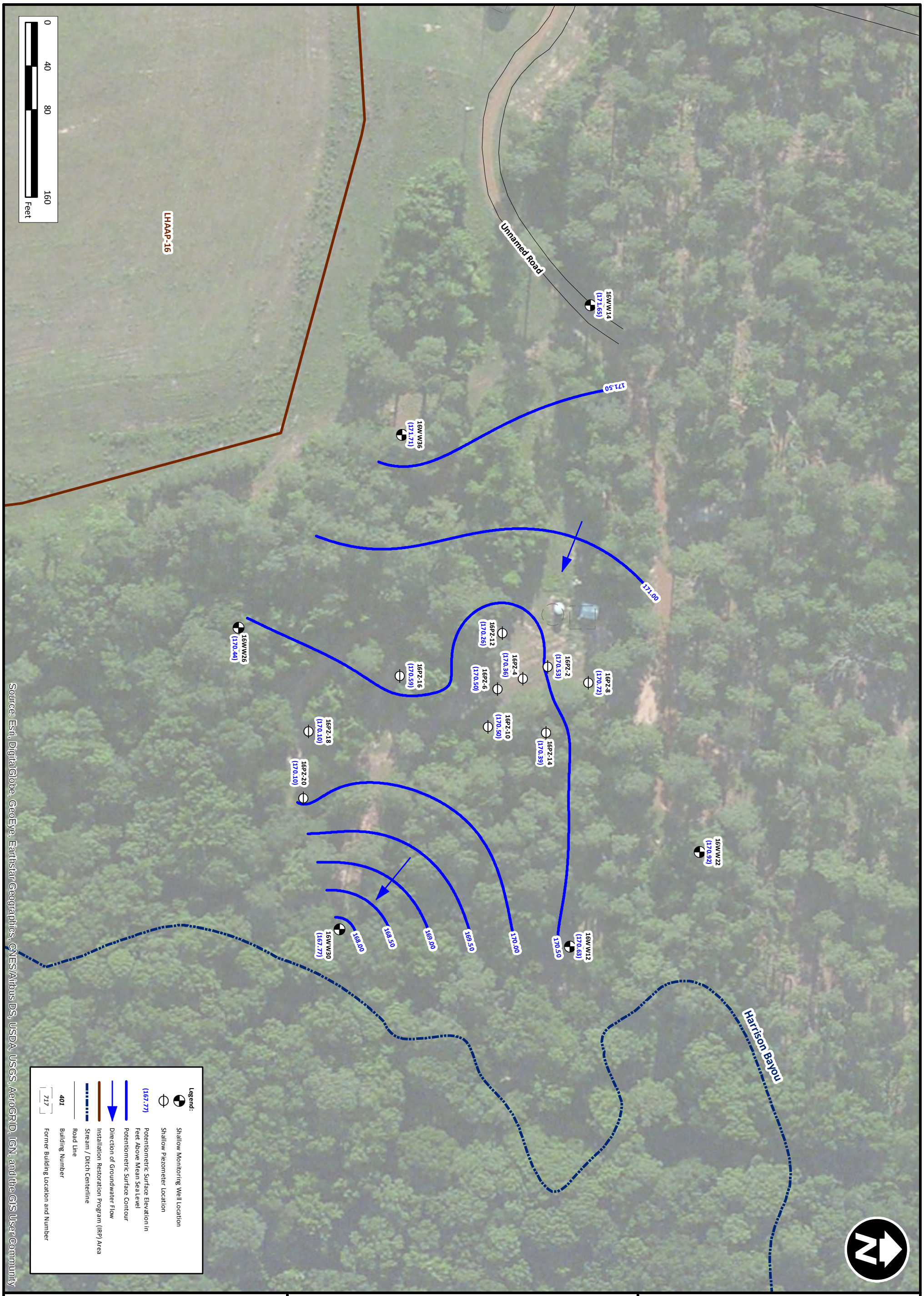
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Groundwater Potentiometric Surface Map
Shallow Zone (July 2018) LHAAP-16

Figure B-7



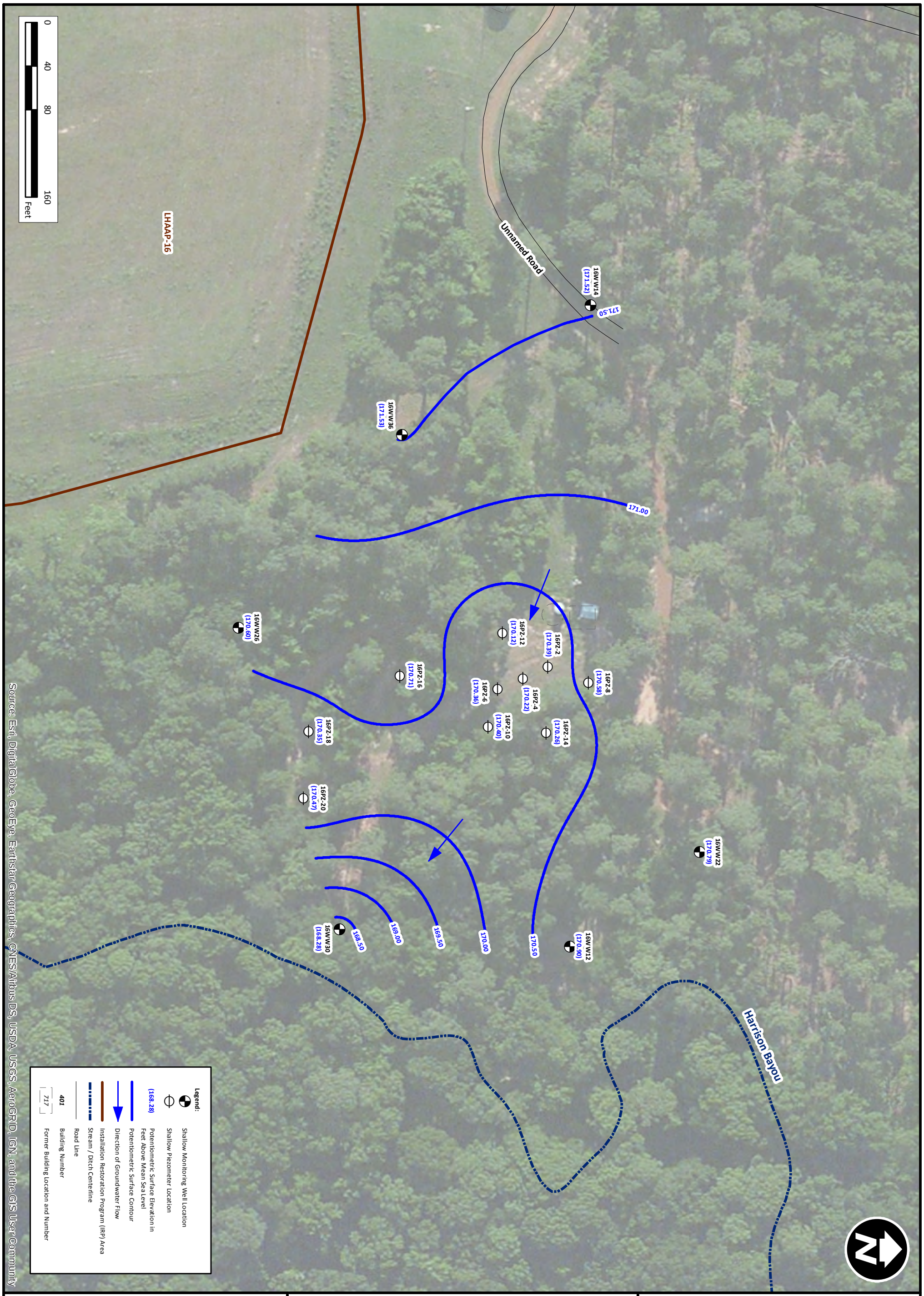
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PROJECT NO:	SCALE:	DATE:	DRAWN BY:
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Groundwater Potentiometric Surface Map
Shallow Zone (August 2018) LHAAP-16

Figure B-8



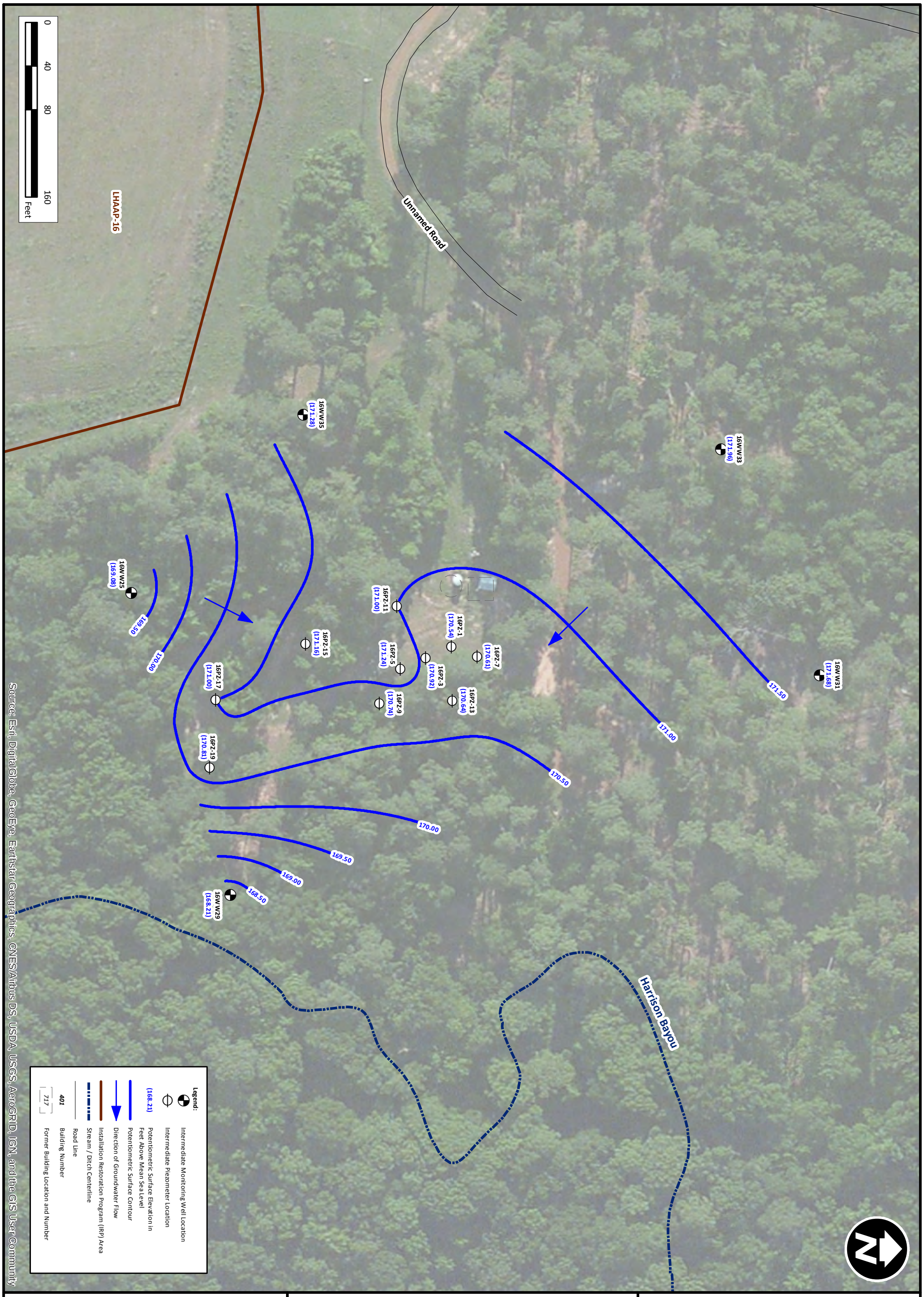
bhate

Quarterly Evaluation Report 3rd Quarter (July – September) 2018
Groundwater Treatment Plant
Longhorn Army Ammunition Plant, Karnack, Texas

PROJECT NO:	SCALE:	DATE:	DRAWN BY:
NWO1312.0150	As Shown	10/4/2018	MRM

Groundwater Potentiometric Surface Map
Shallow Zone (September 2018) LHAAP-16

Figure B-9



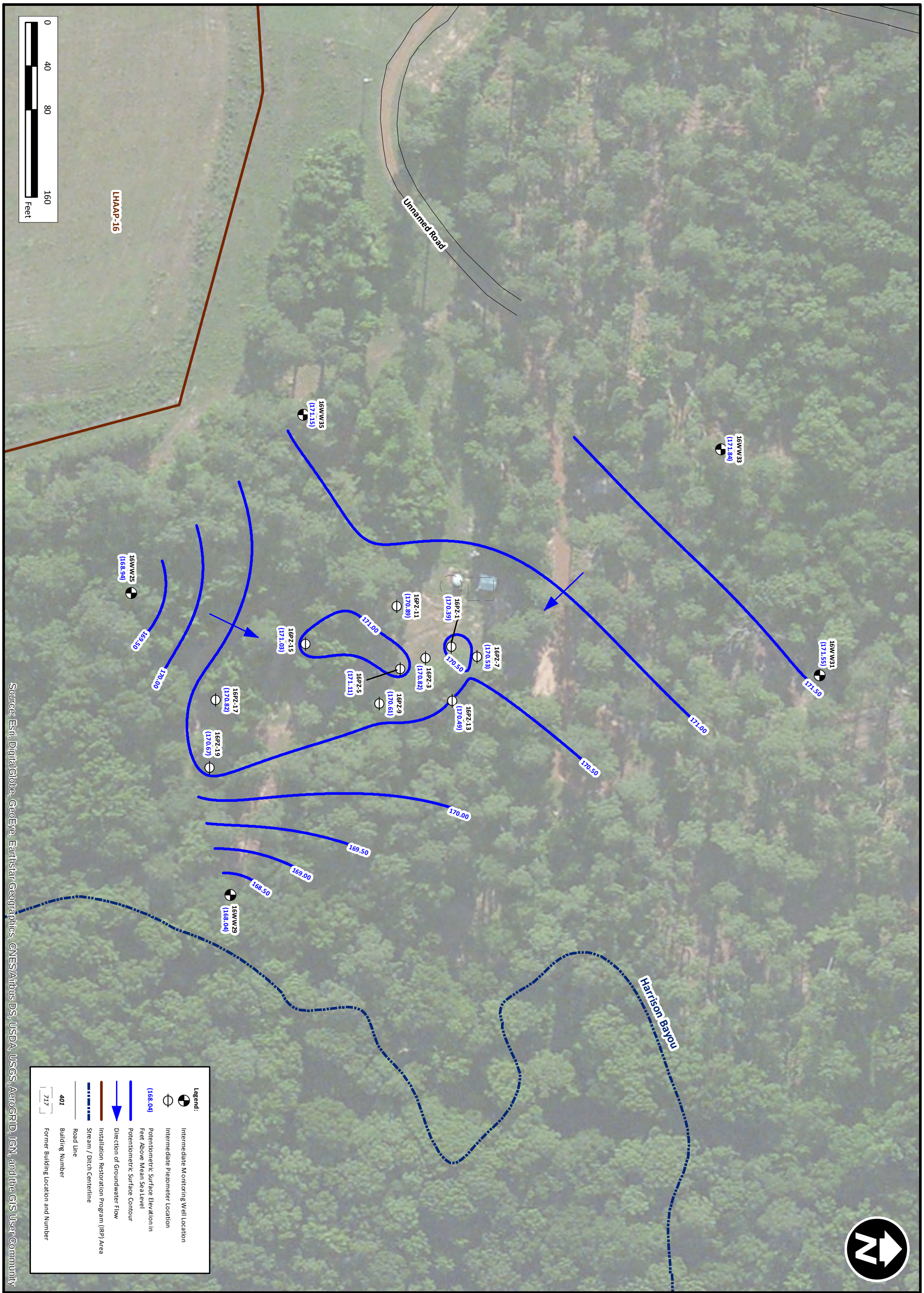
bhate

Quarterly Evaluation Report 3rd Quarter (July – September) 2018
Groundwater Treatment Plant
Longhorn Army Ammunition Plant, Karnack, Texas

PROJECT NO:	SCALE:	DATE:	DRAWN BY:
NWO1312.0150	As Shown	10/4/2018	MRM

Groundwater Potentiometric Surface Map
Intermediate Zone (July 2018) LHAAP-16

Figure B-10



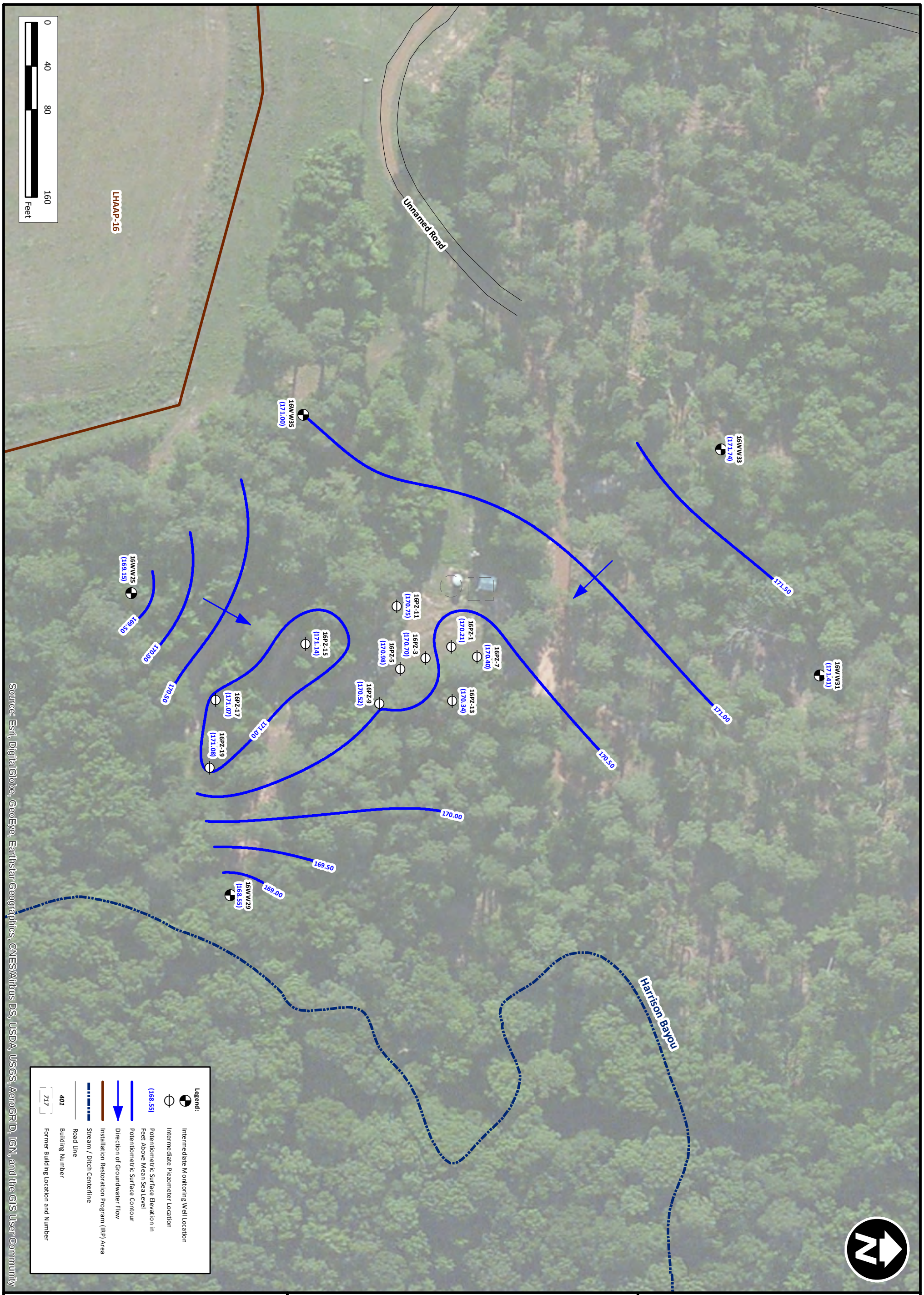
bhate

Quarterly Evaluation Report 3rd Quarter (July – September) 2018
Groundwater Treatment Plant
Longhorn Army Ammunition Plant, Karnack, Texas

PROJECT NO:	SCALE:	DATE:	DRAWN BY:
NWO1312.0150	As Shown	10/4/2018	MRM

Groundwater Potentiometric Surface Map
Intermediate Zone (August 2018) LHAAP-16

Figure B-11



bhate

Quarterly Evaluation Report 3rd Quarter (July – September) 2018
Groundwater Treatment Plant
Longhorn Army Ammunition Plant, Karnack, Texas

PROJECT NO:	SCALE:	DATE:	DRAWN BY:
NWO1312.0150	As Shown	10/4/2018	MRM

Groundwater Potentiometric Surface Map
Intermediate Zone (September 2018) LHAAP-16

Figure B-12

Table B-1: Extraction Equipment Maintenance Since 2011

LHAAP-18/24

Well I.D.	Replaced Parts	Date	Contractor
ICT 14E	Pump	3/15/2012	Shaw
ICT 14D	Pump, motor, level probes	3/16/2012	Shaw
ICT 14B	Pump, level probes, level probe wire	3/16/2012	Shaw
ICT 14A	Pump, motor, level probes, level probe wire	3/17/2012	Shaw
ICT 2	Pump, motor	3/17/2012	Shaw
ICT 13D	Pump	3/19/2012	Shaw
ICT 13B	Pump	3/20/2012	Shaw
ICT 14E	Pump, motor, broken piping	11/19/2012	AECOM
ICT 13C	Pump	11/20/2012	AECOM
ICT13E	Pump	11/20/2012	AECOM
ICT 12A	Pump, motor, wiring harness, level probes, level probe wire	12/5/2012	AECOM
ICT 7	Pump, motor, wiring harness, level probes	12/6/2012	AECOM
ICT2	Pump	6/10/2013	AECOM
ICT 13C	Pump	6/11/2013	AECOM
ICT 13D	Pump	6/12/2013	AECOM
ICT 14E	Pump rebuilt	6/15/2013	AECOM
ICT 14E	Replaced low level switch	6/19/2013	AECOM
ICT 13C	Pump, wiring harness, flow meter	4/15/2014	AECOM
ICT 14D	Repaired level probes	6/24/2014	AECOM
ICT 14E	Repaired level probes	6/24/2014	AECOM
ICT 14E	Pump and motor troubleshooting	6/26/2014	AECOM
ICT2, 13F, 14C, 14D, 14E	Repaired level probes	7/7/2014	AECOM
ICT 12E	Pump, motor	10/2/2014	AECOM
ICT 12E	Wiring harness, fixed leak	10/8/2014	AECOM
ICT 12E	Level probes	10/9/2014	AECOM
ICT13A	Pump, piping	10/15/2014	AECOM
ICT 12E	Repaired leaking fittings	10/16/2014	AECOM
ICT 11	1" tee and 1" elbow	1/13/2015	AECOM
ICT 12B	Flow meter	1/13/2015	AECOM
ICT 7	1" tee, repaired 1" pipe	1/13/2015	AECOM
ICT 13A	Flow meter	1/15/2015	AECOM
ICT 13B	Pump	1/15/2015	AECOM
ICT 13C	Pump	1/16/2015	AECOM
ICT 7	Low level probe	1/16/2015	AECOM
ICT 13D	Pump, level probes	1/17/2015	AECOM
ICT 14C	Low level probe	1/17/2015	AECOM
ICT 14C	Low level probe	1/29/2015	AECOM
ICT 14D	Low level probe	1/29/2015	AECOM
ICT 13D	Level probes	1/29/2015	AECOM
ICT 2	Pump	1/30/2015	AECOM
ICT 8	Fuse	3/2/2015	AECOM
ICT 8	Fuse	3/9/2015	AECOM
ICT 12E	Flow meter	3/13/2015	AECOM
ICT 13D	Union	3/13/2015	AECOM
ICT 14C	Cleaned level probes	4/1/2015	AECOM
ICT 14D	Cleaned level probes	4/1/2015	AECOM
ICT 13A	Cleaned level probes	4/21/2015	AECOM
ICT 14C	Cleaned level probes	4/21/2015	AECOM
ICT 8	Low level probe	7/24/2015	AECOM
ICT 13C	Installed New Pump	7/28/2015	AECOM

Table B-1: Extraction Equipment Maintenance Since 2011

Well I.D.	Replaced Parts	Date	Contractor
ICT 14C	Installed New Pump and Electric Motor	7/29/2015	AECOM
ICT 14E	Installed New Pump and Electric Motor	7/31/2015	AECOM
ICT 12E	Repaired wiring	8/12/2015	AECOM
ICT 13E	Replaced high and low level probes	8/12/2015	AECOM
ICT 2	Installed Rebuilt Pump	9/9/2015	AECOM
ICT 12 E, ICT 14E	Replaced high level probe and wiring	9/15/2015	AECOM
ICT 13A	Installed new pump	12/23/2015	AECOM
ICT 13B	Installed new pump	12/24/2015	AECOM
ICT 13D	Replaced high level probe	2/11/2016	Aerotek
ICT 14C	Replace low level probe on ICT 14C	2/15/2016	Aerotek
ICT 8	Installed new pump and electric motor	2/19/2016	Aerotek
ICT 14C	Repaired piping leak	3/10/2016	Aerotek
ICT 14E	Installed high and low level probes, level probe wire	3/22/2016	Aerotek
ICT 13D, ICT 14B	Installed high and low level probes, level probe wire	3/24/2016	Aerotek
ICT 14B	Installed new pump and electric motor	3/31/2016	Aerotek
ICT 14C	Installed new low level probe	4/20/2016	Aerotek
ICT 12B	Installed new mechanical flow meter	6/16/2016	Aerotek
ICT 13C	Installed rebuilt pump and new flow meter	8/10/2016	Aerotek
ICT 13A	Installed rebuilt pump, new flow meter, and new 1" unions	8/24/2016	Aerotek
ICT 14E	Installed new mechanical flow meter	8/26/2016	Aerotek
ICT 12C	Repair flow meter	8/30/2016	Aerotek
ICT 2	Install rebuilt pump and new flow meter	8/31/2016	Aerotek
ICT 14C	Clean and adjust level probes	9/7/2016	Aerotek
ICT 14C	Replaced level probes	9/12/2016	Aerotek
ICT 14C	Installed new level probe wire and level probes	9/21/2016	Aerotek
ICT 12C	Installed rebuilt pump, new electric motor, new wiring harness, new level probe wire, and new level probes	9/27/2016	Aerotek
ICT 14C	Cleaned and adjusted level probes	10/14/2016	Aerotek
ICT 13C	Cleaned and adjusted level probes	10/21/2016	Aerotek
ICT 13B	Installed rebuilt pump	10/25/2016	Aerotek
ICT 14D	Installed rebuilt pump	10/27/2016	Aerotek
ICT 13C	Replace low level probe	11/8/2016	Aerotek
ICT 13B	Replace relay base plate	11/8/2016	Aerotek
ICT 13E	Clean and adjust low level probe	11/15/2016	Aerotek
ICT 13B	Replace broken relay base plate and bad level probe wire	11/17/2016	Aerotek
ICT 13C	Clean & repair leaking flow meter	11/18/2016	Aerotek
ICT 13B	Clean & adjust low level probe	11/18/2016	Aerotek
ICT 13A, 13B, & 13E	Clean and adjust low level probes	12/2/2016	Aerotek
ICT 13C & 14C	Pulled piping and pumps	2/8/2017	Aerotek
ICT 14C	Installed new electric motor	2/8/2017	Aerotek
ICT 13C & 14C	Installed rebuilt grundfos pumps	2/8/2017	Aerotek
ICT 7, 13A, & 14D	Repaired sample ports	2/9/2017	Aerotek
ICT 13B & 14E	Cleaned and adjusted low level probes	3/30/2017	Aerotek
ICT 13B & 13F	Installed new flow meters	3/30/2017	Aerotek
ICT 12B	Repair flow meter	4/13/2017	Aerotek
ICT 12C	Replace broken 1" tee	5/1/2017	Aerotek
ICT 11	Installed new manual flow meter	5/5/2017	Aerotek
ICT 2	Installed new flow meter	5/9/2017	Aerotek
ICT 14C & 14D	Cleaned and adjusted low level probes	5/31/2017	Aerotek
ICT 14C	Cleaned and adjusted low level probe	6/27/2017	Aerotek
ICT 8	Clean low level probe	7/11/2017	Aerotek
ICT 2 & 14D	Cleaned and replaced level probes	7/17/2017	Aerotek
ICT 14C	Cleaned low level probe	7/24/2017	Aerotek

Table B-1: Extraction Equipment Maintenance Since 2011

Well I.D.	Replaced Parts	Date	Contractor
ICT 13A	Installed new pump and flow meter	8/8/2017	Aerotek
ICT 13C & 13B	Installed new pump and flow meter	8/9/2017	Aerotek
ICT 13B	Installed new low level probe	8/10/2017	Aerotek
ICT 11	Installed new pump and flow meter	8/11/2017	Aerotek
ICT 4	Replaced low level probe	8/11/2017	Aerotek
ICT 2	Installed rebuilt pump	9/19/2017	Aerotek
ICT 13D	Adjusted level probes	9/22/2017	Aerotek
ICT 14C	Cleaned level probes	10/11/2017	Bhate
ICT 13E	Clean and adjust level probes	10/24/2017	Bhate
ICT 12B	Adjust level probes	11/15/2017	Bhate
ICT 14D	Cleaned level probes	11/15/2017	Bhate
ICT 8	Clean and adjust level probes	11/28/2017	Bhate
ICT 2	Cleaned level probes	12/20/2017	Bhate
ICT 13C	Install new flow meter	1/30/2018	Bhate
ICT 14C	Cleaned level probes	1/30/2018	Bhate
ICT 13C	Cleaned & adjusted level probes	2/1/2018	Bhate
ICT 13B	Repair broken 1" union	2/1/2018	Bhate
ICT 14A	Repair 2 broken 1" elbows & lower high level probe	2/1/2018	Bhate
ICT 14B	Repair broken 1" tee & lower high level probe	2/1/2018	Bhate
ICT 14D	Install new flow meter	2/8/2018	Bhate
ICT 8	Replace broken 1" tee & clened level probes	2/8/2018	Bhate
ICT 14D	Cleaned level probes	2/28/2018	Bhate
ICT 14C	Replace low level probe	2/28/2018	Bhate
ICT 13B	Cleaned level probes	2/28/2018	Bhate
ICT 13A	Install new motor & replace leaking 1" union	3/14/2018	Bhate
ICT 13C	Cleaned & adjusted level probes	3/21/2018	Bhate
ICT 12B	Replace broken 1" elbow & install new flow meter	3/21/2018	Bhate
ICT 2	Install new pump	3/22/2018	Bhate
ICT 13B	Replaced level probes	3/30/2018	Bhate
ICT 14E	Lower high level probe	3/30/2018	Bhate
ICT 14C	Cleaned level probes	4/27/2018	Bhate
ICT 11	Install new breaker	4/27/2018	Bhate
ICT 14E	Cleaned level probes	6/7/2018	Bhate
ICT 12C	Cleaned level probes	6/7/2018	Bhate
EW 01	Cleaned level probes	6/7/2018	Bhate
ICT 14E	Replaced level probes	6/8/2018	Bhate
ICT 11	Install new electrical wire from breaker to well	6/14/2018	Bhate
ICT 12B	Replaced pump	6/25/2018	Bhate
ICT 14E	Cleaned level probes	6/26/2018	Bhate
ICT 8	Cleaned level probes	6/26/2018	Bhate
ICT 14C	Replaced pump	6/27/2018	Bhate
EW01	Replaced level probes	9/12/2018	Bhate
ICT 7	Cleaned level probes	9/12/2018	Bhate
ICT 12C	Replaced low level probe wire and probe	9/12/2018	Bhate
ICT 14D	Replaced high level probe wire & probe	9/13/2018	Bhate
ICT 12B	Replaced high and low level probe wires & probes	9/13/2018	Bhate
ICT 12B	Replaced electrical relay and relay base plate	9/13/2018	Bhate
ICT 14C	Cleaned level probes	9/13/2018	Bhate
ICT 13E	Replaced flow meter	9/14/2018	Bhate

Table B-1: Extraction Equipment Maintenance Since 2011

Well I.D.	Replaced Parts	Date	Contractor
	LHAAP-16		
EW08	New pump	2/28/2011	Shaw
EW01	Rebuild pump	8/25/2011	Shaw
EW06	Rebuild pump	8/25/2011	Shaw
EW02	Rebuild pump	2/12/2012	Shaw
EW03	Rebuild pump	2/12/2012	Shaw
EW08	Rebuild pump	11/8/2012	AECOM
EW01	Rebuild pump	11/8/2012	AECOM
EW04	Repair pump	11/13/2012	AECOM
EW07	Rebuild pump	11/13/2012	AECOM
EW04	Installed New Pump	11/28/2012	AECOM
EW06	Installed New Pump	11/28/2012	AECOM
EW02	Installed New Pump	12/4/2012	AECOM
EW03	Installed New Pump	12/4/2012	AECOM
EW01	Installed New Pump	12/17/2012	AECOM
EW01	Replaced Low level probe	1/17/2015	AECOM
EW01	Cleaned and adjusted level probes	10/21/2016	Aerotek

APPENDIX C
GWTP WATER SAMPLING LABORATORY ANALYTICAL RESULTS FOR THE 3RD QUARTER 2018 (PROVIDED ON CD ONLY)

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10450 Stancliff Rd. Suite 210
Houston, TX 77099
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July 19, 2018

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS18070295**

Laboratory Results for: **Longhorn GW Treatment Plant**

Dear Marcia,

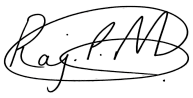
ALS Environmental received 2 sample(s) on Jul 07, 2018 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,



Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Group Houston, Corp Date: 19-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Work Order: HS18070295

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18070295-01	LH18/24-SP650_070618	Water		06-Jul-2018 13:00	07-Jul-2018 09:00	☐
HS18070295-02	Trip Blank	Water	ALS-051618-84	06-Jul-2018 00:00	07-Jul-2018 09:00	☐

ALS Group Houston, Corp Date: 19-Jul-18

Client: Bhate Environmental Associates, Inc. **CASE NARRATIVE**
Project: Longhorn GW Treatment Plant
Work Order:

Work Order Comments

• The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.

GCMS Semivolatiles by Method SW8270SIM

Batch ID: 130311

Sample ID: LH18/24-SP650_070618 (HS18070295-01)

• The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: LCSD-130311

• The RPD between the LCS and LCSD was outside of the control limit.

GCMS Volatiles by Method SW8260

Batch ID: R319642

Sample ID: HS18070079-01MS

• MS and MSD are for an unrelated sample

Metals by Method SW6020

Batch ID: 130196

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SW7196

Batch ID: R319806

• The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Group Houston, Corp Date: 19-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Sample ID: LH18/24-SP650_070618
Collection Date: 06-Jul-2018 13:00

ANALYTICAL REPORT
WorkOrder:HS18070295
Lab ID:HS18070295-01
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 19:08
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jul-2018 19:08
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jul-2018 19:08
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 19:08
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jul-2018 19:08
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jul-2018 19:08
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 19:08
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jul-2018 19:08
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jul-2018 19:08
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jul-2018 19:08
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 19:08
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jul-2018 19:08
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jul-2018 19:08
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jul-2018 19:08
1,2-Dichloroethane	**0.77**	J	**0.20**	**0.50**	**1.0**	**ug/L**	1	12-Jul-2018 19:08
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jul-2018 19:08
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 19:08
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jul-2018 19:08
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 19:08
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jul-2018 19:08
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jul-2018 19:08
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	12-Jul-2018 19:08
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 19:08
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	12-Jul-2018 19:08
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jul-2018 19:08
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 19:08
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	12-Jul-2018 19:08
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	12-Jul-2018 19:08
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jul-2018 19:08
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jul-2018 19:08
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jul-2018 19:08
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jul-2018 19:08
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jul-2018 19:08
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jul-2018 19:08
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	12-Jul-2018 19:08
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jul-2018 19:08
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 19:08
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 19:08

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Sample ID: LH18/24-SP650_070618
Collection Date: 06-Jul-2018 13:00

ANALYTICAL REPORT
WorkOrder:HS18070295
Lab ID:HS18070295-01
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jul-2018 19:08
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jul-2018 19:08
cis-1,2-Dichloroethene	**4.5**		**0.20**	**0.50**	**1.0**	**ug/L**	1	12-Jul-2018 19:08
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	12-Jul-2018 19:08
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 19:08
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jul-2018 19:08
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 19:08
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 19:08
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	12-Jul-2018 19:08
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 19:08
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	12-Jul-2018 19:08
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	12-Jul-2018 19:08
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jul-2018 19:08
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 19:08
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 19:08
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 19:08
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 19:08
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 19:08
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 19:08
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 19:08
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jul-2018 19:08
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jul-2018 19:08
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jul-2018 19:08
Trichloroethene	**2.5**		**0.20**	**0.50**	**1.0**	**ug/L**	1	12-Jul-2018 19:08
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 19:08
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jul-2018 19:08
Surr: 1,2-Dichloroethane-d4	*94.3*			**0**	*81-118*	*%REC*	*1*	*12-Jul-2018 19:08*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*12-Jul-2018 19:08*
Surr: Dibromofluoromethane	*104*			**0**	*80-119*	*%REC*	*1*	*12-Jul-2018 19:08*
Surr: Toluene-d8	*107*			**0**	*89-112*	*%REC*	*1*	*12-Jul-2018 19:08*
SEMIVOLATILES SIM	**Method:SW8270SIM**					Prep:SW3510 / 12-Jul-2018		Analyst: ACN
1,4-Dioxane	**1.4**		**0.20**	**0.20**	**0.20**	**ug/L**	20	17-Jul-2018 16:37
Surr: 2-Fluorobiphenyl	*54.6*			**0**	*40-140*	*%REC*	*20*	*17-Jul-2018 16:37*
Surr: 4-Terphenyl-d14	*59.7*			**0**	*40-140*	*%REC*	*20*	*17-Jul-2018 16:37*
Surr: Nitrobenzene-d5	*57.9*			**0**	*40-140*	*%REC*	*20*	*17-Jul-2018 16:37*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Sample ID: LH18/24-SP650_070618
Collection Date: 06-Jul-2018 13:00

ANALYTICAL REPORT
WorkOrder:HS18070295
Lab ID:HS18070295-01
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 09-Jul-2018		Analyst: JDE
Barium	**0.0943**		**0.00190**	**0.00250**	**0.00400**	**mg/L**	1	11-Jul-2018 14:40
Lead	0.00100	U	0.000600	0.00100	0.00200	mg/L	1	11-Jul-2018 14:40
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	11-Jul-2018 14:40
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	11-Jul-2018 14:40
HEXAVALENT CHROMIUM BY SW7196A		**Method:SW7196**				Prep:SW7196		Analyst: AJH
Chromium, Hexavalent	0.0100	U	0.00600	0.0100	0.0100	mg/L	1	07-Jul-2018 12:35
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	17-Jul-2018 09:23

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Sample ID: Trip Blank
Collection Date: 06-Jul-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18070295
Lab ID:HS18070295-02
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: AKP
1,1,1,2-Tetrachloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 12:32
1,1,1-Trichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jul-2018 12:32
1,1,2,2-Tetrachloroethane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jul-2018 12:32
1,1,2-Trichloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 12:32
1,1-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jul-2018 12:32
1,1-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jul-2018 12:32
1,1-Dichloropropene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 12:32
1,2,3-Trichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jul-2018 12:32
1,2,3-Trichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jul-2018 12:32
1,2,4-Trichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jul-2018 12:32
1,2,4-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 12:32
1,2-Dibromo-3-chloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jul-2018 12:32
1,2-Dibromoethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jul-2018 12:32
1,2-Dichlorobenzene	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jul-2018 12:32
1,2-Dichloroethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jul-2018 12:32
1,2-Dichloropropane	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jul-2018 12:32
1,3,5-Trimethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 12:32
1,3-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jul-2018 12:32
1,3-Dichloropropane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 12:32
1,4-Dichlorobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jul-2018 12:32
2,2-Dichloropropane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jul-2018 12:32
2-Butanone	1.0	U	0.50	1.0	2.0	ug/L	1	12-Jul-2018 12:32
2-Chlorotoluene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 12:32
2-Hexanone	1.0	U	1.0	1.0	2.0	ug/L	1	12-Jul-2018 12:32
4-Chlorotoluene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jul-2018 12:32
4-Isopropyltoluene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 12:32
4-Methyl-2-pentanone	1.0	U	0.70	1.0	2.0	ug/L	1	12-Jul-2018 12:32
Acetone	1.0	U	0.40	1.0	2.0	ug/L	1	12-Jul-2018 12:32
Benzene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jul-2018 12:32
Bromobenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jul-2018 12:32
Bromochloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jul-2018 12:32
Bromodichloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jul-2018 12:32
Bromoform	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jul-2018 12:32
Bromomethane	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jul-2018 12:32
Carbon disulfide	1.0	U	0.60	1.0	2.0	ug/L	1	12-Jul-2018 12:32
Carbon tetrachloride	0.50	U	0.50	0.50	1.0	ug/L	1	12-Jul-2018 12:32
Chlorobenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 12:32
Chloroethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 12:32

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Sample ID: Trip Blank
Collection Date: 06-Jul-2018 00:00

ANALYTICAL REPORT
WorkOrder:HS18070295
Lab ID:HS18070295-02
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES ORGANICS BY METHOD 8260C	**Method:SW8260**							Analyst: AKP
Chloroform	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jul-2018 12:32
Chloromethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jul-2018 12:32
cis-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jul-2018 12:32
cis-1,3-Dichloropropene	0.50	U	0.10	0.50	1.0	ug/L	1	12-Jul-2018 12:32
Dibromochloromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 12:32
Dibromomethane	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jul-2018 12:32
Dichlorodifluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 12:32
Ethylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 12:32
Hexachlorobutadiene	0.50	U	1.0	0.50	1.0	ug/L	1	12-Jul-2018 12:32
Isopropylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 12:32
m,p-Xylene	1.0	U	0.50	1.0	2.0	ug/L	1	12-Jul-2018 12:32
Methylene chloride	1.0	U	0.40	1.0	2.0	ug/L	1	12-Jul-2018 12:32
n-Butylbenzene	0.50	U	0.40	0.50	1.0	ug/L	1	12-Jul-2018 12:32
n-Propylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 12:32
Naphthalene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 12:32
o-Xylene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 12:32
sec-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 12:32
Styrene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 12:32
tert-Butylbenzene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 12:32
Tetrachloroethene	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 12:32
Toluene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jul-2018 12:32
trans-1,2-Dichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jul-2018 12:32
trans-1,3-Dichloropropene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jul-2018 12:32
Trichloroethene	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jul-2018 12:32
Trichlorofluoromethane	0.50	U	0.30	0.50	1.0	ug/L	1	12-Jul-2018 12:32
Vinyl chloride	0.50	U	0.20	0.50	1.0	ug/L	1	12-Jul-2018 12:32
Surr: 1,2-Dichloroethane-d4	*93.3*			**0**	*81-118*	*%REC*	*1*	*12-Jul-2018 12:32*
Surr: 4-Bromofluorobenzene	*102*			**0**	*85-114*	*%REC*	*1*	*12-Jul-2018 12:32*
Surr: Dibromofluoromethane	*104*			**0**	*80-119*	*%REC*	*1*	*12-Jul-2018 12:32*
Surr: Toluene-d8	*107*			**0**	*89-112*	*%REC*	*1*	*12-Jul-2018 12:32*

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jul-18

WEIGHT LOG

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18070295

Batch ID: 130196 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18070295-01	1	10	10 (mL)	1

Batch ID: 130311 **Method:** SEMIVOLATILES SIM **Prep:** 3510_B_SIM

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18070295-01	1	990	1 (mL)	0.00101

ALS Group Houston, Corp Date: 19-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18070295

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 130196	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Water		
HS18070295-01	LH18/24-SP650_070618	06 Jul 2018 13:00		09 Jul 2018 10:34	11 Jul 2018 14:40	1
Batch ID 130311	**Test Name :** SEMIVOLATILES SIM			**Matrix:** Water		
HS18070295-01	LH18/24-SP650_070618	06 Jul 2018 13:00		12 Jul 2018 07:00	17 Jul 2018 16:37	20
Batch ID R319642	**Test Name :** VOLATILES ORGANICS BY METHOD 8260C			**Matrix:** Water		
HS18070295-01	LH18/24-SP650_070618	06 Jul 2018 13:00			12 Jul 2018 19:08	1
HS18070295-02	Trip Blank	06 Jul 2018 00:00			12 Jul 2018 12:32	1
Batch ID R319806	**Test Name :** HEXAVALENT CHROMIUM BY SW7196A			**Matrix:** Water		
HS18070295-01	LH18/24-SP650_070618	06 Jul 2018 13:00			07 Jul 2018 12:35	1
Batch ID R319842	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)			**Matrix:** Water		
HS18070295-01	LH18/24-SP650_070618	06 Jul 2018 13:00			17 Jul 2018 09:23	1

ALS Group Houston, Corp Date: 19-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18070295

QC BATCH REPORT

Batch ID: 130196 **Instrument: ICPMS05** **Method: SW6020**

MBLK Sample ID: **MBLK-130196** Units: **mg/L** Analysis Date: **11-Jul-2018 14:18**
Client ID: Run ID: **ICPMS05_319499** SeqNo: **4644355** PrepDate: **09-Jul-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	0.00250	0.00400								U
Lead	0.00100	0.00200								U
Selenium	0.00200	0.00200								U
Silver	0.00100	0.00200								U

LCS Sample ID: **LCS-130196** Units: **mg/L** Analysis Date: **11-Jul-2018 14:20**
Client ID: Run ID: **ICPMS05_319499** SeqNo: **4644356** PrepDate: **09-Jul-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	0.04488	0.00400	0.05	0	89.8	80 - 120				
Lead	0.04975	0.00200	0.05	0	99.5	80 - 120				
Selenium	0.04648	0.00200	0.05	0	93.0	80 - 120				
Silver	0.04602	0.00200	0.05	0	92.0	80 - 120				

MS Sample ID: **HS18070079-01MS** Units: **mg/L** Analysis Date: **11-Jul-2018 14:26**
Client ID: Run ID: **ICPMS05_319499** SeqNo: **4644359** PrepDate: **09-Jul-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	0.6035	0.00400	0.05	0.5567	93.6	80 - 120				O
Lead	0.04533	0.00200	0.05	0.000366	89.9	80 - 120				
Selenium	0.04418	0.00200	0.05	-0.000058	88.5	80 - 120				
Silver	0.04369	0.00200	0.05	0.000022	87.3	80 - 120				

MSD Sample ID: **HS18070079-01MSD** Units: **mg/L** Analysis Date: **11-Jul-2018 14:32**
Client ID: Run ID: **ICPMS05_319499** SeqNo: **4644362** PrepDate: **09-Jul-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	0.612	0.00400	0.05	0.5567	111	80 - 120	0.6035	1.4	20	O
Lead	0.04645	0.00200	0.05	0.000366	92.2	80 - 120	0.04533	2.42	20	
Selenium	0.04566	0.00200	0.05	-0.000058	91.4	80 - 120	0.04418	3.29	20	
Silver	0.04532	0.00200	0.05	0.000022	90.6	80 - 120	0.04369	3.65	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18070295

QC BATCH REPORT

Batch ID: 130196 **Instrument: ICPMS05** **Method: SW6020**

PDS Sample ID: **HS18070079-01PDS** Units: **mg/L** Analysis Date: **11-Jul-2018 14:36**
Client ID: Run ID: **ICPMS05_319499** SeqNo: **4644364** PrepDate: **09-Jul-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Lead	0.0895	0.00200	0.1	0.000366	89.1	75 - 125				
Selenium	0.08957	0.00200	0.1	-0.000058	89.6	75 - 125				
Silver	0.08463	0.00200	0.1	0.000022	84.6	75 - 125				

SD Sample ID: **HS18070079-01SD** Units: **mg/L** Analysis Date: **11-Jul-2018 14:24**
Client ID: Run ID: **ICPMS05_319499** SeqNo: **4644358** PrepDate: **09-Jul-2018** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Barium	0.5366	0.0200					0.5567	3.61	10	
Lead	0.00500	0.0100					0.000366	0	10	U
Selenium	0.0100	0.0100					-0.000058	0	10	U
Silver	0.00500	0.0100					0.000022	0	10	U

The following samples were analyzed in this batch: HS18070295-01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18070295

QC BATCH REPORT

Batch ID: 130311 **Instrument: SV-5** **Method: SW8270SIM**

MBLK Sample ID: **MBLK-130311** Units: **ug/L** Analysis Date: **17-Jul-2018 14:54**
Client ID: Run ID: **SV-5_319901** SeqNo: **4653010** PrepDate: **12-Jul-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.010	0.010								U
Surr: 2-Fluorobiphenyl	*0.038*	*0*	*0.08*	*0*	*47.5*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.06274*	*0*	*0.08*	*0*	*78.4*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.04388*	*0*	*0.08*	*0*	*54.9*	*40 - 140*				

LCS Sample ID: **LCS-130311** Units: **ug/L** Analysis Date: **17-Jul-2018 15:15**
Client ID: Run ID: **SV-5_319901** SeqNo: **4653011** PrepDate: **12-Jul-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.06049	0.010	0.08	0	75.6	40 - 140				
Surr: 2-Fluorobiphenyl	*0.07203*	*0*	*0.08*	*0*	*90.0*	*40 - 140*				
Surr: 4-Terphenyl-d14	*0.06332*	*0*	*0.08*	*0*	*79.1*	*40 - 140*				
Surr: Nitrobenzene-d5	*0.07508*	*0*	*0.08*	*0*	*93.8*	*40 - 140*				

LCSD Sample ID: **LCSD-130311** Units: **ug/L** Analysis Date: **17-Jul-2018 15:35**
Client ID: Run ID: **SV-5_319901** SeqNo: **4653012** PrepDate: **12-Jul-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,4-Dioxane	0.0698	0.010	0.08	0	87.3	40 - 140	0.06049	14.3	20	
Surr: 2-Fluorobiphenyl	*0.0412*	*0*	*0.08*	*0*	*51.5*	*40 - 140*	*0.07203*	*54.5*	*20*	R
Surr: 4-Terphenyl-d14	*0.06089*	*0*	*0.08*	*0*	*76.1*	*40 - 140*	*0.06332*	*3.9*	*20*	
Surr: Nitrobenzene-d5	*0.04826*	*0*	*0.08*	*0*	*60.3*	*40 - 140*	*0.07508*	*43.5*	*20*	R

The following samples were analyzed in this batch: HS18070295-01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18070295

QC BATCH REPORT

Batch ID: R319642 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180712** Units: **ug/L** Analysis Date: **12-Jul-2018 10:53**
Client ID: Run ID: **VOA2_319642** SeqNo: **4647137** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	0.50	1.0								U
1,1,1-Trichloroethane	0.50	1.0								U
1,1,2,2-Tetrachloroethane	0.50	1.0								U
1,1,2-Trichloroethane	0.50	1.0								U
1,1-Dichloroethane	0.50	1.0								U
1,1-Dichloroethene	0.50	1.0								U
1,1-Dichloropropene	0.50	1.0								U
1,2,3-Trichlorobenzene	0.50	1.0								U
1,2,3-Trichloropropane	0.50	1.0								U
1,2,4-Trichlorobenzene	0.50	1.0								U
1,2,4-Trimethylbenzene	0.50	1.0								U
1,2-Dibromo-3-chloropropane	0.50	1.0								U
1,2-Dibromoethane	0.50	1.0								U
1,2-Dichlorobenzene	0.50	1.0								U
1,2-Dichloroethane	0.50	1.0								U
1,2-Dichloropropane	0.50	1.0								U
1,3,5-Trimethylbenzene	0.50	1.0								U
1,3-Dichlorobenzene	0.50	1.0								U
1,3-Dichloropropane	0.50	1.0								U
1,4-Dichlorobenzene	0.50	1.0								U
2,2-Dichloropropane	0.50	1.0								U
2-Butanone	1.0	2.0								U
2-Chlorotoluene	0.50	1.0								U
2-Hexanone	1.0	2.0								U
4-Chlorotoluene	0.50	1.0								U
4-Isopropyltoluene	0.50	1.0								U
4-Methyl-2-pentanone	1.0	2.0								U
Acetone	1.0	2.0								U
Benzene	0.50	1.0								U
Bromobenzene	0.50	1.0								U
Bromochloromethane	0.50	1.0								U
Bromodichloromethane	0.50	1.0								U
Bromoform	0.50	1.0								U
Bromomethane	0.50	1.0								U

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18070295

QC BATCH REPORT

Batch ID: R319642 **Instrument: VOA2** **Method: SW8260**

MBLK Sample ID: **VBLKW-180712** Units: **ug/L** Analysis Date: **12-Jul-2018 10:53**
Client ID: Run ID: **VOA2_319642** SeqNo: **4647137** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	1.0	2.0								U
Carbon tetrachloride	0.50	1.0								U
Chlorobenzene	0.50	1.0								U
Chloroethane	0.50	1.0								U
Chloroform	0.50	1.0								U
Chloromethane	0.50	1.0								U
cis-1,2-Dichloroethene	0.50	1.0								U
cis-1,3-Dichloropropene	0.50	1.0								U
Dibromochloromethane	0.50	1.0								U
Dibromomethane	0.50	1.0								U
Dichlorodifluoromethane	0.50	1.0								U
Ethylbenzene	0.50	1.0								U
Hexachlorobutadiene	0.50	1.0								U
Isopropylbenzene	0.50	1.0								U
m,p-Xylene	1.0	2.0								U
Methylene chloride	1.0	2.0								U
Naphthalene	0.50	1.0								U
n-Butylbenzene	0.50	1.0								U
n-Propylbenzene	0.50	1.0								U
o-Xylene	0.50	1.0								U
sec-Butylbenzene	0.50	1.0								U
Styrene	0.50	1.0								U
tert-Butylbenzene	0.50	1.0								U
Tetrachloroethene	0.50	1.0								U
Toluene	0.50	1.0								U
trans-1,2-Dichloroethene	0.50	1.0								U
trans-1,3-Dichloropropene	0.50	1.0								U
Trichloroethene	0.50	1.0								U
Trichlorofluoromethane	0.50	1.0								U
Vinyl chloride	0.50	1.0								U
Surr: 1,2-Dichloroethane-d4	*45.04*	*1.0*	*50*	*0*	*90.1*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*51.03*	*1.0*	*50*	*0*	*102*	*85 - 114*				
Surr: Dibromofluoromethane	*51.56*	*1.0*	*50*	*0*	*103*	*80 - 119*				
Surr: Toluene-d8	*53.96*	*1.0*	*50*	*0*	*108*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18070295

QC BATCH REPORT

Batch ID: R319642 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180712** Units: **ug/L** Analysis Date: **12-Jul-2018 10:04**
Client ID: Run ID: **VOA2_319642** SeqNo: **4647136** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	48.28	1.0	50	0	96.6	78 - 124				
1,1,1-Trichloroethane	46.98	1.0	50	0	94.0	74 - 131				
1,1,2,2-Tetrachloroethane	42.47	1.0	50	0	84.9	71 - 121				
1,1,2-Trichloroethane	47.23	1.0	50	0	94.5	80 - 119				
1,1-Dichloroethane	51.03	1.0	50	0	102	77 - 125				
1,1-Dichloroethene	47.44	1.0	50	0	94.9	71 - 131				
1,1-Dichloropropene	41.02	1.0	50	0	82.0	78 - 125				
1,2,3-Trichlorobenzene	44.53	1.0	50	0	89.1	69 - 129				
1,2,3-Trichloropropane	45.02	1.0	50	0	90.0	73 - 122				
1,2,4-Trichlorobenzene	44.81	1.0	50	0	89.6	69 - 130				
1,2,4-Trimethylbenzene	42.16	1.0	50	0	84.3	76 - 124				
1,2-Dibromo-3-chloropropane	45.96	1.0	50	0	91.9	62 - 128				
1,2-Dibromoethane	48.99	1.0	50	0	98.0	77 - 121				
1,2-Dichlorobenzene	44.11	1.0	50	0	88.2	80 - 119				
1,2-Dichloroethane	53.98	1.0	50	0	108	73 - 128				
1,2-Dichloropropane	48.34	1.0	50	0	96.7	78 - 122				
1,3,5-Trimethylbenzene	49.21	1.0	50	0	98.4	75 - 124				
1,3-Dichlorobenzene	44.2	1.0	50	0	88.4	80 - 119				
1,3-Dichloropropane	48.78	1.0	50	0	97.6	80 - 119				
1,4-Dichlorobenzene	44.73	1.0	50	0	89.5	79 - 118				
2,2-Dichloropropane	50.1	1.0	50	0	100	60 - 139				
2-Butanone	97.01	2.0	100	0	97.0	56 - 143				
2-Chlorotoluene	50.84	1.0	50	0	102	79 - 122				
2-Hexanone	93.89	2.0	100	0	93.9	57 - 139				
4-Chlorotoluene	51.46	1.0	50	0	103	78 - 122				
4-Isopropyltoluene	40.35	1.0	50	0	80.7	77 - 127				
4-Methyl-2-pentanone	92.79	2.0	100	0	92.8	67 - 130				
Acetone	97.4	2.0	100	0	97.4	39 - 160				
Benzene	47.58	1.0	50	0	95.2	79 - 120				
Bromobenzene	43.42	1.0	50	0	86.8	80 - 120				
Bromochloromethane	52.62	1.0	50	0	105	78 - 123				
Bromodichloromethane	52.05	1.0	50	0	104	79 - 125				
Bromoform	48.02	1.0	50	0	96.0	66 - 130				
Bromomethane	54.8	1.0	50	0	110	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18070295

QC BATCH REPORT

Batch ID: R319642 **Instrument: VOA2** **Method: SW8260**

LCS Sample ID: **VLCSW-180712** Units: **ug/L** Analysis Date: **12-Jul-2018 10:04**
Client ID: Run ID: **VOA2_319642** SeqNo: **4647136** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	93.55	2.0	100	0	93.6	64 - 133				
Carbon tetrachloride	47.91	1.0	50	0	95.8	72 - 136				
Chlorobenzene	46.8	1.0	50	0	93.6	82 - 118				
Chloroethane	54.25	1.0	50	0	108	60 - 138				
Chloroform	50.05	1.0	50	0	100	79 - 124				
Chloromethane	48.42	1.0	50	0	96.8	50 - 139				
cis-1,2-Dichloroethene	49.94	1.0	50	0	99.9	78 - 123				
cis-1,3-Dichloropropene	52.84	1.0	50	0	106	75 - 124				
Dibromochloromethane	48.84	1.0	50	0	97.7	74 - 126				
Dibromomethane	53.17	1.0	50	0	106	79 - 123				
Dichlorodifluoromethane	52.11	1.0	50	0	104	32 - 152				
Ethylbenzene	45.34	1.0	50	0	90.7	79 - 121				
Hexachlorobutadiene	40.4	1.0	50	0	80.8	66 - 134				
Isopropylbenzene	43.98	1.0	50	0	88.0	72 - 131				
m,p-Xylene	88.53	2.0	100	0	88.5	80 - 121				
Methylene chloride	45.5	2.0	50	0	91.0	74 - 124				
Naphthalene	46.68	1.0	50	0	93.4	61 - 128				
n-Butylbenzene	43.13	1.0	50	0	86.3	75 - 128				
n-Propylbenzene	47.9	1.0	50	0	95.8	76 - 126				
o-Xylene	45.4	1.0	50	0	90.8	78 - 122				
sec-Butylbenzene	38.57	1.0	50	0	77.1	77 - 126				
Styrene	47.76	1.0	50	0	95.5	78 - 123				
tert-Butylbenzene	45.99	1.0	50	0	92.0	78 - 124				
Tetrachloroethene	41.13	1.0	50	0	82.3	74 - 129				
Toluene	44.93	1.0	50	0	89.9	80 - 121				
trans-1,2-Dichloroethene	49.74	1.0	50	0	99.5	75 - 124				
trans-1,3-Dichloropropene	56.84	1.0	50	0	114	73 - 127				
Trichloroethene	47.3	1.0	50	0	94.6	79 - 123				
Trichlorofluoromethane	45.73	1.0	50	0	91.5	65 - 141				
Vinyl chloride	48.43	1.0	50	0	96.9	58 - 137				
Surr: 1,2-Dichloroethane-d4	*46.96*	*1.0*	*50*	*0*	*93.9*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*53.19*	*1.0*	*50*	*0*	*106*	*85 - 114*				
Surr: Dibromofluoromethane	*49.17*	*1.0*	*50*	*0*	*98.3*	*80 - 119*				
Surr: Toluene-d8	*50.97*	*1.0*	*50*	*0*	*102*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18070295

QC BATCH REPORT

Batch ID: R319642 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18070079-01MS** Units: **ug/L** Analysis Date: **12-Jul-2018 16:40**
Client ID: Run ID: **VOA2_319642** SeqNo: **4647150** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	46.81	1.0	50	0	93.6	78 - 124				
1,1,1-Trichloroethane	51.92	1.0	50	0	104	74 - 131				
1,1,2,2-Tetrachloroethane	39.96	1.0	50	0	79.9	71 - 121				
1,1,2-Trichloroethane	45.62	1.0	50	0	91.2	80 - 119				
1,1-Dichloroethane	50.81	1.0	50	0	102	77 - 125				
1,1-Dichloroethene	52.78	1.0	50	0	106	71 - 131				
1,1-Dichloropropene	49.01	1.0	50	0	98.0	78 - 125				
1,2,3-Trichlorobenzene	44.75	1.0	50	0	89.5	69 - 129				
1,2,3-Trichloropropane	45.24	1.0	50	0	90.5	73 - 122				
1,2,4-Trichlorobenzene	43.86	1.0	50	0	87.7	69 - 130				
1,2,4-Trimethylbenzene	43.36	1.0	50	0	86.7	76 - 124				
1,2-Dibromo-3-chloropropane	47.02	1.0	50	0	94.0	62 - 128				
1,2-Dibromoethane	45.73	1.0	50	0	91.5	77 - 121				
1,2-Dichlorobenzene	42.31	1.0	50	0	84.6	80 - 119				
1,2-Dichloroethane	53.59	1.0	50	0	107	73 - 128				
1,2-Dichloropropane	47.34	1.0	50	0	94.7	78 - 122				
1,3,5-Trimethylbenzene	51.46	1.0	50	0	103	75 - 124				
1,3-Dichlorobenzene	42.62	1.0	50	0	85.2	80 - 119				
1,3-Dichloropropane	48.58	1.0	50	0	97.2	80 - 119				
1,4-Dichlorobenzene	43.63	1.0	50	0	87.3	79 - 118				
2,2-Dichloropropane	45	1.0	50	0	90.0	60 - 139				
2-Butanone	105.8	2.0	100	0	106	56 - 143				
2-Chlorotoluene	50.95	1.0	50	0	102	79 - 122				
2-Hexanone	100.8	2.0	100	0	101	57 - 139				
4-Chlorotoluene	51.31	1.0	50	0	103	78 - 122				
4-Isopropyltoluene	44.16	1.0	50	0	88.3	77 - 127				
4-Methyl-2-pentanone	103.7	2.0	100	0	104	67 - 130				
Acetone	115.7	2.0	100	0	116	39 - 160				
Benzene	47.75	1.0	50	0	95.5	79 - 120				
Bromobenzene	42.45	1.0	50	0	84.9	80 - 120				
Bromochloromethane	51	1.0	50	0	102	78 - 123				
Bromodichloromethane	49.45	1.0	50	0	98.9	79 - 125				
Bromoform	45.66	1.0	50	0	91.3	66 - 130				
Bromomethane	51.95	1.0	50	0	104	53 - 141				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18070295

QC BATCH REPORT

Batch ID: R319642 **Instrument: VOA2** **Method: SW8260**

MS Sample ID: **HS18070079-01MS** Units: **ug/L** Analysis Date: **12-Jul-2018 16:40**
Client ID: Run ID: **VOA2_319642** SeqNo: **4647150** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Carbon disulfide	136	2.0	100	0	136	64 - 133				S
Carbon tetrachloride	57.21	1.0	50	0	114	72 - 136				
Chlorobenzene	46.57	1.0	50	0	93.1	82 - 118				
Chloroethane	57.63	1.0	50	0	115	60 - 138				
Chloroform	48.33	1.0	50	0	96.7	79 - 124				
Chloromethane	42.08	1.0	50	0	84.2	50 - 139				
cis-1,2-Dichloroethene	48.43	1.0	50	0	96.9	78 - 123				
cis-1,3-Dichloropropene	52.25	1.0	50	0	105	75 - 124				
Dibromochloromethane	46.88	1.0	50	0	93.8	74 - 126				
Dibromomethane	53.14	1.0	50	0	106	79 - 123				
Dichlorodifluoromethane	58.41	1.0	50	0	117	32 - 152				
Ethylbenzene	46.44	1.0	50	0	92.9	79 - 121				
Hexachlorobutadiene	42.04	1.0	50	0	84.1	66 - 134				
Isopropylbenzene	45.38	1.0	50	0	90.8	72 - 131				
m,p-Xylene	89.92	2.0	100	0	89.9	80 - 121				
Methylene chloride	45.59	2.0	50	0	91.2	74 - 124				
Naphthalene	47.48	1.0	50	0	95.0	61 - 128				
n-Butylbenzene	46.32	1.0	50	0	92.6	75 - 128				
n-Propylbenzene	52.87	1.0	50	0	106	76 - 126				
o-Xylene	45.33	1.0	50	0	90.7	78 - 122				
sec-Butylbenzene	44.08	1.0	50	0	88.2	77 - 126				
Styrene	45.56	1.0	50	0	91.1	78 - 123				
tert-Butylbenzene	51.33	1.0	50	0	103	78 - 124				
Tetrachloroethene	46.11	1.0	50	0	92.2	74 - 129				
Toluene	44.55	1.0	50	0	89.1	80 - 121				
trans-1,2-Dichloroethene	50.5	1.0	50	0	101	75 - 124				
trans-1,3-Dichloropropene	53.93	1.0	50	0	108	73 - 127				
Trichloroethene	49.02	1.0	50	0	98.0	79 - 123				
Trichlorofluoromethane	54.75	1.0	50	0	109	65 - 141				
Vinyl chloride	54.79	1.0	50	0	110	58 - 137				
Surr: 1,2-Dichloroethane-d4	*46.8*	*1.0*	*50*	*0*	*93.6*	*81 - 118*				
Surr: 4-Bromofluorobenzene	*51.47*	*1.0*	*50*	*0*	*103*	*85 - 114*				
Surr: Dibromofluoromethane	*48.69*	*1.0*	*50*	*0*	*97.4*	*80 - 119*				
Surr: Toluene-d8	*50.33*	*1.0*	*50*	*0*	*101*	*89 - 112*				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18070295

QC BATCH REPORT

Batch ID: R319642 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18070079-01MSD** Units: **ug/L** Analysis Date: **12-Jul-2018 17:05**
Client ID: Run ID: **VOA2_319642** SeqNo: **4647151** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	46.56	1.0	50	0	93.1	78 - 124	46.81	0.522	20	
1,1,1-Trichloroethane	51.34	1.0	50	0	103	74 - 131	51.92	1.13	20	
1,1,2,2-Tetrachloroethane	39.4	1.0	50	0	78.8	71 - 121	39.96	1.39	20	
1,1,2-Trichloroethane	45.32	1.0	50	0	90.6	80 - 119	45.62	0.659	20	
1,1-Dichloroethane	50.23	1.0	50	0	100	77 - 125	50.81	1.15	20	
1,1-Dichloroethene	52.06	1.0	50	0	104	71 - 131	52.78	1.37	20	
1,1-Dichloropropene	47.93	1.0	50	0	95.9	78 - 125	49.01	2.25	20	
1,2,3-Trichlorobenzene	44.93	1.0	50	0	89.9	69 - 129	44.75	0.401	20	
1,2,3-Trichloropropane	43.62	1.0	50	0	87.2	73 - 122	45.24	3.64	20	
1,2,4-Trichlorobenzene	44.58	1.0	50	0	89.2	69 - 130	43.86	1.63	20	
1,2,4-Trimethylbenzene	43.18	1.0	50	0	86.4	76 - 124	43.36	0.427	20	
1,2-Dibromo-3-chloropropane	46.16	1.0	50	0	92.3	62 - 128	47.02	1.86	20	
1,2-Dibromoethane	45.23	1.0	50	0	90.5	77 - 121	45.73	1.1	20	
1,2-Dichlorobenzene	42.42	1.0	50	0	84.8	80 - 119	42.31	0.258	20	
1,2-Dichloroethane	54.07	1.0	50	0	108	73 - 128	53.59	0.9	20	
1,2-Dichloropropane	47.01	1.0	50	0	94.0	78 - 122	47.34	0.703	20	
1,3,5-Trimethylbenzene	50.94	1.0	50	0	102	75 - 124	51.46	1.01	20	
1,3-Dichlorobenzene	42.43	1.0	50	0	84.9	80 - 119	42.62	0.446	20	
1,3-Dichloropropane	48	1.0	50	0	96.0	80 - 119	48.58	1.21	20	
1,4-Dichlorobenzene	43.73	1.0	50	0	87.5	79 - 118	43.63	0.225	20	
2,2-Dichloropropane	43.87	1.0	50	0	87.7	60 - 139	45	2.53	20	
2-Butanone	101.9	2.0	100	0	102	56 - 143	105.8	3.8	20	
2-Chlorotoluene	50.62	1.0	50	0	101	79 - 122	50.95	0.661	20	
2-Hexanone	95.75	2.0	100	0	95.7	57 - 139	100.8	5.12	20	
4-Chlorotoluene	51.07	1.0	50	0	102	78 - 122	51.31	0.472	20	
4-Isopropyltoluene	43.65	1.0	50	0	87.3	77 - 127	44.16	1.15	20	
4-Methyl-2-pentanone	100.7	2.0	100	0	101	67 - 130	103.7	2.92	20	
Acetone	115.7	2.0	100	0	116	39 - 160	115.7	0.0327	20	
Benzene	47.6	1.0	50	0	95.2	79 - 120	47.75	0.318	20	
Bromobenzene	42.16	1.0	50	0	84.3	80 - 120	42.45	0.679	20	
Bromochloromethane	51.48	1.0	50	0	103	78 - 123	51	0.937	20	
Bromodichloromethane	48.9	1.0	50	0	97.8	79 - 125	49.45	1.13	20	
Bromoform	45.49	1.0	50	0	91.0	66 - 130	45.66	0.372	20	
Bromomethane	47.47	1.0	50	0	94.9	53 - 141	51.95	9.02	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18070295

QC BATCH REPORT

Batch ID: R319642 **Instrument: VOA2** **Method: SW8260**

MSD Sample ID: **HS18070079-01MSD** Units: **ug/L** Analysis Date: **12-Jul-2018 17:05**
Client ID: Run ID: **VOA2_319642** SeqNo: **4647151** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Carbon disulfide	134.8	2.0	100	0	135	64 - 133	136	0.861	20	S
Carbon tetrachloride	55.47	1.0	50	0	111	72 - 136	57.21	3.09	20	
Chlorobenzene	46.01	1.0	50	0	92.0	82 - 118	46.57	1.22	20	
Chloroethane	55.95	1.0	50	0	112	60 - 138	57.63	2.95	20	
Chloroform	48.31	1.0	50	0	96.6	79 - 124	48.33	0.0467	20	
Chloromethane	41.85	1.0	50	0	83.7	50 - 139	42.08	0.553	20	
cis-1,2-Dichloroethene	48.72	1.0	50	0	97.4	78 - 123	48.43	0.598	20	
cis-1,3-Dichloropropene	52.62	1.0	50	0	105	75 - 124	52.25	0.701	20	
Dibromochloromethane	46.67	1.0	50	0	93.3	74 - 126	46.88	0.457	20	
Dibromomethane	52.41	1.0	50	0	105	79 - 123	53.14	1.39	20	
Dichlorodifluoromethane	56.24	1.0	50	0	112	32 - 152	58.41	3.79	20	
Ethylbenzene	45.74	1.0	50	0	91.5	79 - 121	46.44	1.51	20	
Hexachlorobutadiene	42.2	1.0	50	0	84.4	66 - 134	42.04	0.373	20	
Isopropylbenzene	44.58	1.0	50	0	89.2	72 - 131	45.38	1.79	20	
m,p-Xylene	88.68	2.0	100	0	88.7	80 - 121	89.92	1.38	20	
Methylene chloride	45.47	2.0	50	0	90.9	74 - 124	45.59	0.275	20	
Naphthalene	47.38	1.0	50	0	94.8	61 - 128	47.48	0.216	20	
n-Butylbenzene	45.56	1.0	50	0	91.1	75 - 128	46.32	1.65	20	
n-Propylbenzene	51.65	1.0	50	0	103	76 - 126	52.87	2.34	20	
o-Xylene	44.76	1.0	50	0	89.5	78 - 122	45.33	1.26	20	
sec-Butylbenzene	43.22	1.0	50	0	86.4	77 - 126	44.08	1.96	20	
Styrene	45.3	1.0	50	0	90.6	78 - 123	45.56	0.568	20	
tert-Butylbenzene	50.27	1.0	50	0	101	78 - 124	51.33	2.1	20	
Tetrachloroethene	45.38	1.0	50	0	90.8	74 - 129	46.11	1.6	20	
Toluene	43.61	1.0	50	0	87.2	80 - 121	44.55	2.14	20	
trans-1,2-Dichloroethene	50.4	1.0	50	0	101	75 - 124	50.5	0.2	20	
trans-1,3-Dichloropropene	53.03	1.0	50	0	106	73 - 127	53.93	1.68	20	
Trichloroethene	49.08	1.0	50	0	98.2	79 - 123	49.02	0.129	20	
Trichlorofluoromethane	54.07	1.0	50	0	108	65 - 141	54.75	1.24	20	
Vinyl chloride	52.95	1.0	50	0	106	58 - 137	54.79	3.41	20	
Surr: 1,2-Dichloroethane-d4	*46.92*	*1.0*	*50*	*0*	*93.8*	*81 - 118*	*46.8*	*0.259*	*20*	
Surr: 4-Bromofluorobenzene	*51.63*	*1.0*	*50*	*0*	*103*	*85 - 114*	*51.47*	*0.309*	*20*	
Surr: Dibromofluoromethane	*48.24*	*1.0*	*50*	*0*	*96.5*	*80 - 119*	*48.69*	*0.93*	*20*	
Surr: Toluene-d8	*49.86*	*1.0*	*50*	*0*	*99.7*	*89 - 112*	*50.33*	*0.933*	*20*	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jul-18

Client:	Bhate Environmental Associates, Inc.
Project:	Longhorn GW Treatment Plant
WorkOrder:	HS18070295

QC BATCH REPORT

Batch ID:	**R319642**	**Instrument:**	**VOA2**	**Method:**	**SW8260**

The following samples were analyzed in this batch:	HS18070295-01	HS18070295-02

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18070295

QC BATCH REPORT

Batch ID: R319806 **Instrument: UV-2450** **Method: SW7196**

MBLK Sample ID: **MBLK-319806** Units: **mg/L** Analysis Date: **07-Jul-2018 12:35**
Client ID: Run ID: **UV-2450_319806** SeqNo: **4650518** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	0.0100	0.0100								U

LCS Sample ID: **LCS-319806** Units: **mg/L** Analysis Date: **07-Jul-2018 12:35**
Client ID: Run ID: **UV-2450_319806** SeqNo: **4650519** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	0.249	0.0100	0.25	0	99.6	80 - 120				

MS Sample ID: **HS18070296-01MS** Units: **mg/L** Analysis Date: **07-Jul-2018 12:35**
Client ID: Run ID: **UV-2450_319806** SeqNo: **4650521** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	0.21	0.0100	0.25	-0.001	84.4	75 - 125				

MSD Sample ID: **HS18070296-01MSD** Units: **mg/L** Analysis Date: **07-Jul-2018 12:35**
Client ID: Run ID: **UV-2450_319806** SeqNo: **4650522** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	0.208	0.0100	0.25	-0.001	83.6	75 - 125	0.21	0.957	20	

The following samples were analyzed in this batch: HS18070295-01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: **HS18070295**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

ALS Group Houston, Corp Date: 19-Jul-18

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919 2016-2018	31-Jul-2018
Oklahoma	2017-088	31-Aug-2018
North Carolina	624-2018	31-Dec-2018
Arkansas	88-0356	27-Mar-2019
Kansas	E-10352 2017-218	31-Jul-2018
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193 2018-2019	30-Apr-2019
Illinois	004438	29-Jun-2019
Louisiana	03087	30-Jun-2019
Dept of Defense	L2231 Rev 3-30-2018	22-Dec-2018
Kentucky	123043 - 2018	30-Apr-2019

Date: 19-Jul-18

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS18070295
Date/Time Received: **07-Jul-2018 09:00**
Received by: **PJM**

Checklist completed by: *Pablo Marinez* eSignature — 7-Jul-2018 Date
Reviewed by: *RJ Modashia* eSignature — 11-Jul-2018 Date

Matrices: **WATER**
Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	0.9C/0.3C UC/C	IR # 25	
Cooler(s)/Kit(s):	4323		
Date/Time sample(s) sent to storage:	7/7/2018 10:30		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

HS18070295

CHAIN OF CUSTODY

Bhate Environmental Associates, Inc.
Longhorn GW Treatment Plant

Name Of Lab Shipping To: ALS 10450 Stancliff Rd., Suite 210 Houston, TX 77099 (281) 530 – 5656 ATTN: SONIA WEST

Project: BHATE LONGHORN ARMY AMMN. PLANT (LHAAP) GROUNDWATER TREATMENT PLANT (GWTP) KARNACK, TEXAS	Project No. NWO1312.0150.0 16.0001
Job: **GROUNDWATER TREATMENT PLANT MONTHLY EFFLUENT SAMPLES**	
Prepared By: Scott Beesinger	P.O. Number

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	No. OF CONTAINERS	Analyses: VOLATILES	SILVER, SELENIUM, LEAD, BARIUM	HEXAVALENT CHROMIUM	1, 4 - DIOXANE	PERCHLORATE						Remarks (Preservatives, etc.)	Lab I.D.#
LH18/24-SP650_070618	Water	07/06/18 / 13:00		3	X										HCL	
LH18/24-SP650_070618	Water	07/06/18 / 13:00		3			X	X	X						NONE	
LH18/24-SP650_070618	Water	07/06/18 / 13:00		1		X									HNO3	
Trip Blank	Water	07/06/18		2	X										HCL	

Additional Remarks: **STANDARD TURN AROUND TIME**

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
Scott Beesinger	07/06/18	13:30	PM	7-7-18	1:00						

For Lab Use Only

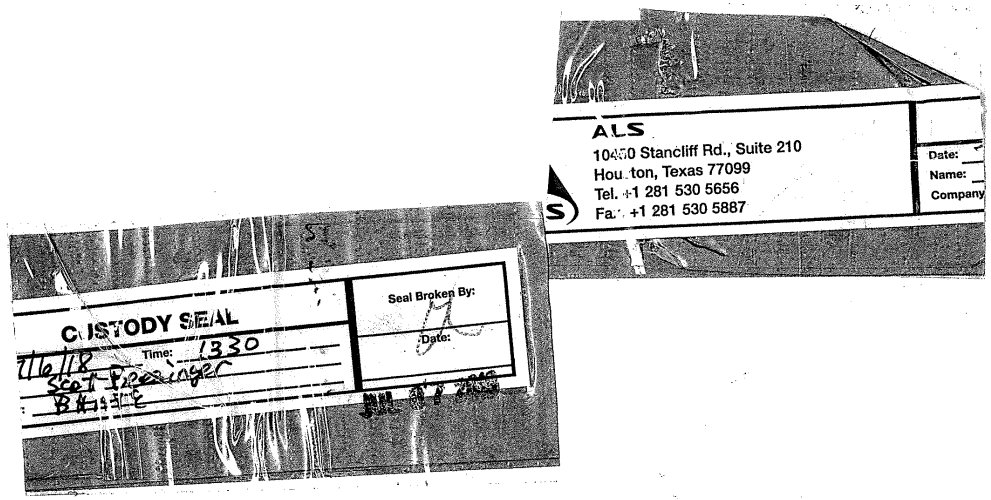
Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition

Remarks:

4323 UC 0.9C IR 25 CF -0.6

(Word) S:\1-ces\Forms\Chain of Custody - BiWeekly

00912871


ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax +1 281 530 5887
Date:
Name:
Company
CUSTODY SEAL
Time: 1330
Seal Broken By:
Date:
FedEx
TRK# 0221 7376 9751 2780
SATURDAY 12:00P
PRIORITY OVERNIGHT
77099
TX-US
IAH
XØ SGRA
FID 5090257 06JUL18 GGGA 546C2/B532/0C8A

00912872

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1819280; 1819283; 1819285

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2120 (218949)

General Set Information: There were three field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard (ISTD) of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: Sample 1819283001 was analyzed and reported from a 1:1,000 dilution. The reporting limit has been adjusted accordingly.

Method QC data: The method blank (LMB 610196) was less than 1/2 the CRDL. The recovery for the LCS (610197) was within acceptable parameters.

MS/MSD Analysis: The matrix spike and matrix spike duplicate (MS/MSD) was performed on sample 1819280001 (Client ID: LH18/24-SP650_070618). The MS/MSD percent recoveries and relative percent difference (RPD) were within the performance limits.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): NA

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 5.1.

Thomas Bosch July 16, 2018
Analyst Date

ANALYTICAL REPORT

Report Date: July 16, 2018

RJ Modashia
ALS Environmental (Houston)
10450 Stancliff Road
Suite 210
Houston, TX 77099

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1819280**
Project ID: HS18070295 070618
Purchase Order: HS18070295
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
LH18/24-SP650_070618	1819280001	07/06/18	07/10/18	

ANALYTICAL REPORT

Workorder: 34-1819280
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **LH18/24-SP650_070618**	Sampling Site: NA	Collected: 07/06/2018
Lab ID: 1819280001	Media: 125 mL Nalgene	Received: 07/10/2018
Matrix: Water	Sampling Parameter: NA	

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable	**Analysis:** EPA 6850, DoD QSM Water	**Instrument ID:** LCMS04
	Batch: ELMS/2120 (HBN: 218949)	**Percent Solid:** NA
	Analyzed: 07/16/2018 09:43	**Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	ND	1.0	2.0	4.0	1	U

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850, DoD QSM	/S/ Thomas Bosch 07/16/2018 12:52	/S/ Stephen Brose 07/16/2018 14:08

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

ANALYTICAL REPORT

Workorder: 34-1819280
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body	Certificate Number	Website
Environmental	PJLA (DoD ELAP)		
	Utah (TNI)		
	Nevada		
	Oklahoma		
	Iowa		

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< This testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

Quality Control Sample
Batch Report

Analysis Information

Workorder: 1819280

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850, DoD QSM
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2120 (HBN: 218949)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Blank

LMB: 610196
Analyzed: 07/16/2018 09:13
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 610197
Analyzed: 07/16/2018 09:28
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	4.94	5.00	98.8	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample: 1819280001	**MS:** 610198	**MSD:** 610199
Analyzed: 07/16/2018 09:43	**Analyzed:** 07/16/2018 09:57	**Analyzed:** 07/16/2018 10:11
Dilution: 1	**Dilution:** 1	**Dilution:** 1
Units: ug/L	**Units:** ug/L	**Units:** ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	ND	5.02	5	100	78.8	123.8	5.02	100	0.069	0.0	20.0

Continuing Calibration Verification

CCV: 610193	**CCV:** 610200
Analyzed: 07/16/2018 08:31	**Analyzed:** 07/16/2018 10:57
Units: ug/L	**Units:** ug/L
Criteria: ± 15%	**Criteria:** ± 15%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	24.7	25.0	98.8	25.7	25.0	103

Interference Check Sample

ICSA: 610195
Analyzed: 07/16/2018 08:59
Units: ug/L
Criteria: ± 30%

Analyte	Result	Target	% Rec.
Perchlorate	0.935	1.00	93.5

Limit of Detection Verification

LODV: 610194	**LODV:** 610201
Analyzed: 07/16/2018 08:45	**Analyzed:** 07/16/2018 11:11
Units: ug/L	**Units:** ug/L
Criteria: ± 50%	**Criteria:** ± 50%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	0.975	1.00	97.5	0.995	1.00	99.5

Quality Control Sample
Batch Report

Analysis Information

Workorder: **1819280**

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850, DoD QSM
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2120 (HBN: 218949)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Thomas Bosch	/S/ Stephen Brose
07/16/2018 12:52	07/16/2018 14:08

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◆ - Sample and Matrix Duplicate less than 5 times the reporting limit
● - Result is above the calibration range
- The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

18698 #2

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

W 1819280

Subcontract Chain of Custody

COC ID: 9395

1819280

SUBCONTRACT TO:

ALS Laboratory Group
960 West LeVoy Drive
Salt Lake City, UT 84123

Phone: +1 800 356 9135

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS18070295
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS18070295-01**	**LH18/24-SP650_070618**	**Water**	**06 Jul 2018 13:00**
	SUB_Perch-6850			17 Jul 2018

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Relinquished By: J. MAKRIS Date/Time: 07/09/18 18:00

Received By: [signature] Date/Time: 7/10/18 1025

Cooler ID(s): 872 Temperature(s): 2

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS18070295	Split:	Workorder ID: 1819280	Level: ENV_LVL4	Requested Analysis
Client: ALS Environmental (Houston)		Account: 8101	Type: 125Poly	
Comments:			Preservatives	
			COOL	
			Containers	

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	ID(s)	Count	EPA 6850, DoD QSM
1	07/06/2018 13:00	LH18/24-SP650_070618	1819280001		Water	A	1	A
2								
3								
4								
5								
6								
7								
8								
9								
10								

37 of 56

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Warath, Julie	07/10/2018 10:25	ALS Sample Receiving	Sample Login
Julie Warath 7/11/18 1300		14B	Storage
R.33.1 7.16.18/ 08:00		T. Bush	6850

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

00912881

ALS-SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)

COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)

Client Name: ALS Houston — Project/Task/Site: 1819280

Date/Time of Receipt: 7/10/17 1025 — Number of Coolers Received: 1

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Cooler Custody Seals:	Present/Absent/NA Intact/Broken/NA	Location Temp Taken:	Control/Between Samples
Container Custody Seals:	Present/Absent/NA Intact/Broken/NA	Are all temperatures within project specific guidelines?	Yes/No/NA
Ice Present:	Yes/No/NA Frozen/Melted/NA	VOA Headspace Present?	Yes/No/NA

pH Check Performed:							
	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA	
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA	
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA	
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	Gross A.B, Gamma Spec	Yes/No/NA	

Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.
1	C18 SM2	2 °C	4	C18	°C	7	C18	°C
2	C18	°C	5	C18	°C	8	C18	°C
3	C18	°C	6	C18	°C	9	C18	°C

Taken By: [signature] (Signature) — Meredith Edwards (Printed Name) — 7/10/17 (Date)

CLIENT-RELATED INFORMATION

☐ Missing Cooler	☐ Missing Samples/Bottles	☐ Incorrect Preservation	☐ Insufficient Sample Volume
☐ Cooler Conditions	☐ Broken/Leaking Samples	☐ pH Criteria Not Met	☐ Chain of Custody Problems
☐ Missing Paperwork	☐ Incorrect Bottle Type	☐ Residual Chlorine Present	☐ Other:
☐ Missing/Incorrect Bottle Labels	☐ Cooler Temperatures Out of Range	☐ Head Space in Bottles	

BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:

Client Notified? YES ☐ NO ☐

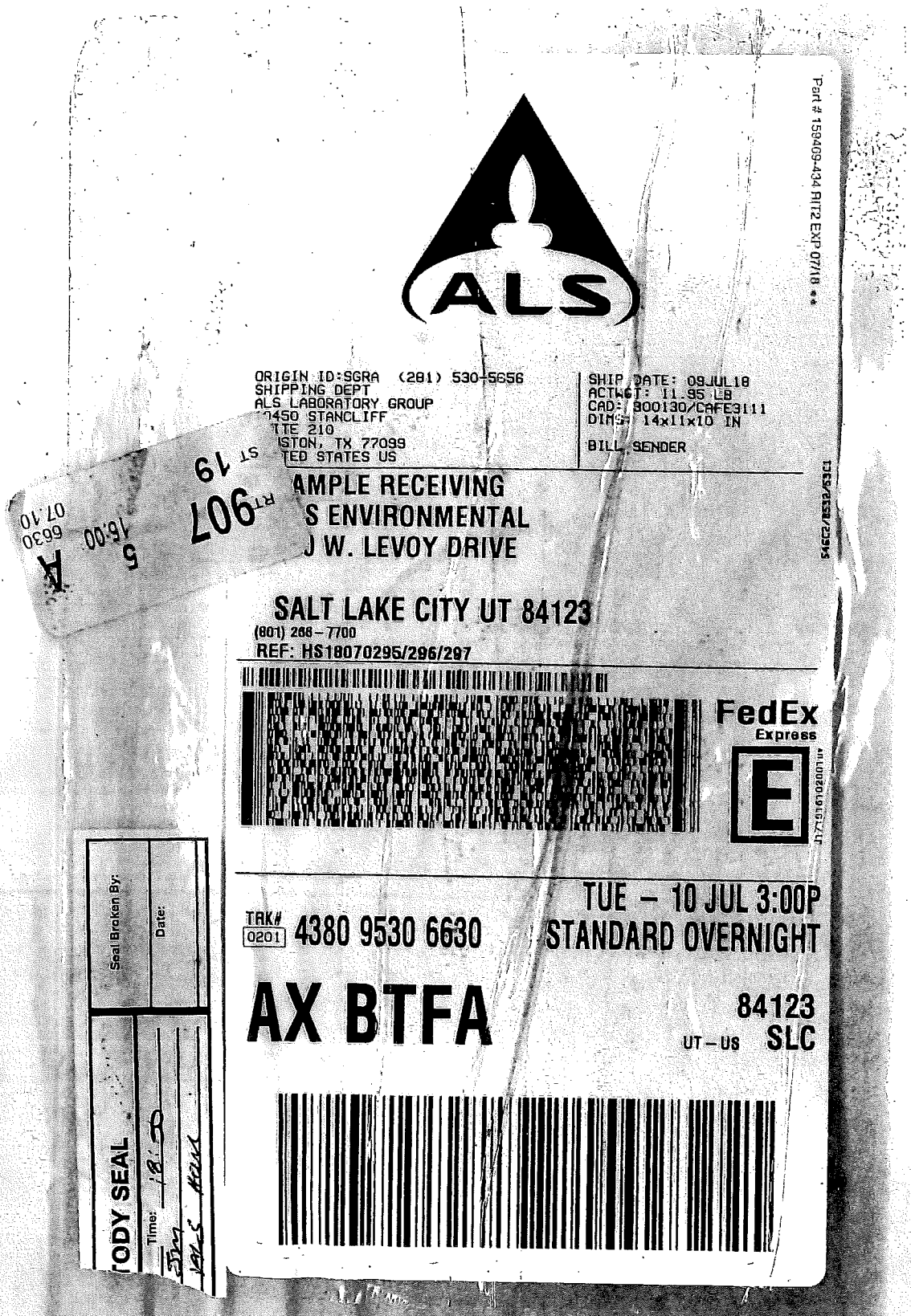
Response Required Within 24 Hours

PROJECT MANAGEMENT

PROJECT MANAGER COMMENTS:

ALS Project Manager: _____ (Printed Name) Returned to Sample Receipt by: _____ (Signature) Date: _____

CRIR.doc — Revised 01/01/2018


Part # 159409-434 RIT2 EXP 07/18 **
ORIGIN ID:SGRA (281) 530-5656
SHIPPING DEPT
ALS LABORATORY GROUP
0450 STANCLIFF
ITE 210
STON, TX 77099
TED STATES US
SHIP DATE: 09JUL18
ACTWGT: 11.95 LB
CAD: 800130/CAFE3111
DIMS: 14x11x10 IN
BILL SENDER
AMPLE RECEIVING
S ENVIRONMENTAL
J W. LEVOY DRIVE
SALT LAKE CITY UT 84123
(801) 268-7700
REF: HS18070295/296/297
FedEx
Express
TUE - 10 JUL 3:00P
STANDARD OVERNIGHT
TRK# 0201 4380 9530 6630
AX BTFA
84123
UT-US SLC
Seal Broken By:
Date:
Time:
ODY SEAL

Batch Worklist

Batch: ELMS/ 2120 **Created:** 7/16/2018 08:07 **Instrument:** **HBN:** 218949

Rule: EPA 6850, DoD QSM Water **Analyst:** T. Bosch **Status:** WP

Workorder: 1819280 [ENV_LVL4]
Workorder: 1819283 [ENV_LVL4]
Workorder: 1819285 [ENV_LVL4]

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
1	610193	CCV for HBN 218949 [ELMS/2120]				CCV	3		E685041C3Q	5311		7/16/2018	
2	610194	LODV for HBN 218949 [ELMS/2120				LODV	3		E6850..D3Q	5311		7/16/2018	
3	610195	ICS for HBN 218949 [ELMS/2120]				ICS	3		E6850..D3Q	5311		7/16/2018	
4	610196	LMB for HBN 218949 [ELMS/2120]				LMB	3		E6850Q413Q	5311		7/16/2018	
5	610197	LCS for HBN 218949 [ELMS/2120]				LCS	3		E6850Q413Q	5311		7/16/2018	
6	1819280001	LH18/24-SP650_070618				SAMPLE	3	1819280001-A	E6850Q41.3	5480	8/3/2018	7/23/2018	
7	610198	LH18/24-SP650...(1819280001MS)				MS	3		E6850Q413Q	5311		7/16/2018	
8	610199	LH18/24-SP65...(1819280001MSD)				MSD	3		E6850Q413Q	5311		7/16/2018	
9	1819283001	LH18/24-SP140_070618				SAMPLE	3	1819283001-A	E6850Q41.3	5480	8/3/2018	7/23/2018	
10	1819285001	LH18/24-SP650_070618				SAMPLE	3	1819285001-A	E6850Q41.3	5480	8/3/2018	7/16/2018	
11	610200	CCV for HBN 218949 [ELMS/2120]				CCV	3		E685041C3Q	5311		7/16/2018	
12	610201	LODV for HBN 218949 [ELMS/2120				LODV	3		E6850..D3Q	5311		7/16/2018	

40 of 56

00912884

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

ALS Work Order #'s & Sample #( )'s: 1819280 (001); 1819283 (001); 1819285 (001)
ELMS Batch/HBN ID: 2120 (218949)
Prep Date: 07/16/2018 Analysis Date: 07/16/2018 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2018\JUL\09JUL18D.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by TNB. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/ 5% ACN (B&J Lot DI735)/0.1% glacial acetic acid (JT-Baker Lot 04802).
Eluent B1: 95% ACN (B&J Lot DI735)/ 5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 04802).

STANDARDS: Internal Standard Spiking Solution Horizon# 41827. Dilutions of Working Standard Solution ID 41829 used for CCV's, LODV's, RLVS and IPC.

CALIBRATION CURVE: Used curve from 06/18/2018, sequence 18JUN18D.s Offline Quantitation Method: CLO4-DPR.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89.
Instrument ID: **LCMS04** Online Acquisition Method: CLO4-DOD.M Fragmentor: 160 Output Gain: 3 Injection Volume: 25µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.80
4.0	0.80
5.0	0.25
10.0	0.25
10.5	0.80
13.0	0.80

QC DATA: 5.0µL of QC Solution Horizon ID 41830 was used for LCS 610197; Target = 5.0µg/L. ASTM type II water was used for LMB 610196.

MS/MSD: MS/MSD was performed on sample 1819280001 (Client ID: LH18/24-SP650_070618). 5.0µl of Working Standard Solution Horizon ID 41828 was added to 10.0mL of sample preparation. Spike target = 5.0µg/L.

COMMENTS:
1) Results reported in µg/L. Sample 1819283001 was analyzed and reported from a 1:1,000 dilution. The reporting limit has been adjusted accordingly.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters.
3) Sample data can be viewed at two directories within the ALS system: \\ALSLTWS013\LCMS\LCMS04\2018\JUL\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2018\218949-DOD-ALS-HSTN-LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK		Description - 6850 WKG Std 100.ug/L
Standard: 41829	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 05/09/2018 10:05AM	**Expires:** 10/04/2018
MFG Lot: TNB: 05/09/2018		**Usable:** Yes
Pipette ID: Not Provided		**Lab Lot:** CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	0.1 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
41828	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	10/04/2018

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK	Description - 6850 Stock AccStd 1,000ug/mL

Standard: 36733
MFG: AccuStandard
MFG Lot: 216095148
Part ID: IC-PER-10X-1

Created By: Thomas Bosch
Create Date: 05/10/2017 11:05AM

Amount: 100 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

CLO4 INT — **Description - 6850 Intermdt AccStd 10.ug/mL**

Standard: 41828
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 INT

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36733	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	10/04/2018

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		Description - ASTM Type II Water
Standard: 109	Created By: ALS Support (Lims)	Amount: 1000 L
MFG: DCL In House	Create Date: 10/06/2005 09:10AM	Expires: 11/07/2025
MFG Lot: Not Provided		Usable: Yes
Part ID: Not Provided		Lab Lot: LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK		Description - Perchlorate ISTD Wrk 1,000ug/L
Standard: 41827	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 05/09/2018 10:05AM	**Expires:** 05/09/2019
MFG Lot: TNB: 05/09/2018	**Verified By:** Thomas Bosch	**Usable:** Yes
Pipette ID: Not Provided	**Verify Date:**	**Lab Lot:** CLO4ISTDWRK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/L
2	14797-73-0-89	Perchlorate 89	1000 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
23118	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.1 mL	02/27/2024

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock
Standard: 23118	**Created By:** Thomas Bosch	**Amount:** 1 mL
MFG: Cambridge Isotope	**Create Date:** 04/04/2014 03:04PM	**Expires:** 02/27/2024
MFG Lot: SDDG-013	**Verified By:** Thomas Bosch	**Usable:** Yes
Part ID: OLM-7310-S	**Verify Date:** 02/05/2009 12:02AM	**Lab Lot:** CLO4ISTDSTK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	100 ug/mL
2	14797-73-0-89	Perchlorate 89	100 ug/mL

STANDARD REPORT

Working Standard - CLO4 QC WRK

CLO4 QC WRK		Description - 6850 QC WKG STD 100ug/L
Standard: 41831	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 05/09/2018 10:05AM	**Expires:** 05/09/2019
MFG Lot: TNB: 05/09/2018		**Usable:** Yes
Pipette ID: Not Provided		**Lab Lot:** CLO4 QC WRK 100.ug/L

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	100 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
41830	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	05/09/2019

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

CLO4 QC INT — **Description - 6850 QC Intrmdt Std-QC 10ug/mL**

Standard: 41830
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
Usable: Yes
Lab Lot: CLO4 QC INT 10.ug/mL

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36748	CLO4 QCSTOCK	6850 QC Stock STD 1,000ug/mL	CLO4 QC STOCK	0.1 mL	03/31/2020

ALS

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		Description - ASTM Type II Water
Standard: 109	Created By: ALS Support (Lims)	Amount: 1000 L
MFG: DCL In House	Create Date: 10/06/2005 09:10AM	Expires: 11/07/2025
MFG Lot: Not Provided		Usable: Yes
Part ID: Not Provided		Lab Lot: LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Stock Standard - CLO4 QCSTOCK

CLO4 QCSTOCK — **Description - 6850 QC Stock STD 1,000ug/mL**

Standard: 36748
MFG: Ultra Scientific
MFG Lot: CP-0860
Part ID: ICC-013

Created By: Thomas Bosch
Create Date: 05/11/2017 01:05PM

Amount: 100 mL
Expires: 03/31/2020
Usable: Yes
Lab Lot: CLO4 QC STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Product Name: Perchlorate IC Standard

Description:
This Reference Material (RM) was gravimetrically prepared in accordance with ISO Guide 34 and under ULTRA Scientific's ISO 9001 registered quality system. The neat materials used for this product have been verified by ULTRA's ISO 17025 laboratory and under ULTRA's ISO Guide 34 accreditation. The analyte concentrations were verified by ULTRA's ISO 17025 accredited laboratory. For each analyte, the true value, with its uncertainty value calculated at the 95% confidence level, is reported below.

Analyte	Starting Material	Lot Number	Purity (%)	Calculated Value	True Value	Traceability & Method
perchlorate	potassium perchlorate	RM07987	100	1001 ± 5 µg/mL	976 ± 6 µg/mL	NIST SRM 3141A; ICP-OES

Solvent: water (low TOC, < 50 ppb)

Storage: Store at Room Temperature (15° to 30°C).

Traceability:
Traceability has been established through an unbroken chain of comparisons, each having stated uncertainties. Comparisons are based on appropriate physical or chemical measurements, including gravimetric or volumetric dilution, where the mass or volume of a solution before and after dilution is measured. The balances used for these measurements are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1, ISO 9001, ISO 17025, and ISO Guide 34. Calibrated Class A glassware is used for volumetric measurements. Thermometers are calibrated against a NIST traceable thermometer in accordance with NIST Special Publication 819.

Estimation of Uncertainties:
The true value is reported, with its uncertainty value calculated at the 95% confidence level.

Homogeneity:
This RM was formulated and unitized according to an in-house procedure and is guaranteed to be homogeneous. There is no minimum sub-sample size required.

Intended Use:
This RM is intended for the preparation of working reference samples for use in routine laboratory analyses, calibration of instruments, validation of analytical methods, assessments of measurement methods and continuing calibration verification.

Instructions for Use:
Sample aliquots for analysis should be withdrawn at 20°C to 25°C immediately after opening and should be processed without delay for the true value to be valid within the stated uncertainties. Do not pipet from the bottle. Do not return any material removed for pipetting to the bottle. Tightly cap the bottle after removing any material and store according to the instructions noted above.

Hazards:
Refer to the Safety Data Sheet for information regarding this RM.

Expiration of Certification:
The certification of this RM is valid, within the measurement uncertainty specified, until the expiration date specified above, provided the RM is handled and stored in accordance with the instructions given in this certificate. This certification is nullified if the RM is damaged, contaminated, or otherwise modified.

ANAB ACCREDITED ISO 17025 REFERENCE MATERIAL PRODUCER
ANAB ACCREDITED ISO 17025 TESTING LABORATORY

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Maintenance of Certification:
The real-time, long term stability of the RM may be monitored over the lifetime of the certification. If substantive changes occur that affect the certification before the expiration of this certificate, ULTRA Scientific will notify the purchaser.

Peter A. King, Ph.D.
VP, Technical Operations

Daniel J. Lamendola
Director of QA/RA

125 Market Street
New Haven, CT 06513
USA

AccuStandard® Inc.

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 216095148
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Signal Word: Warning

Date Certified: Oct 4, 2016
Expiration: Oct 4, 2018
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)
Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO Guide 34 Scope of Accreditation: Yes

Component		SRM #	Prepared Concentration (µg/mL)
ClO_4	Perchlorate	Ind. Std.	1000

The gravimetric uncertainty for this product is ±0.2%. See reverse side for details.
The final solution was checked against an independent standard to verify its concentration.
We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as ASTM Type I 18 megohm deionized water.
All solutions are filtered through a 0.2 µm filter prior to being bottled.
All glassware used in preparation is Class A and calibrated regularly.
All weights are traceable through NIST, Test No. 822-275872-11
All bottles are triple rinsed with deionized water prior to use.
Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.
We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By: Meigan O'Leary
Meigan O'Leary, Inorganic QC Manager

For use in routine laboratory analysis.

AccuStandard is accredited to ISO Guide 34, ISO/IEC 17025 and certified to ISO 9001

Cambridge Isotope Laboratories, Inc.

Certificate of Analysis

Quality Standards:
ISO Guide 34 • ISO/IEC 17025 • ISO 13485 • cGMP

23118

Product Name: (Isotopic Label & Enrichment Specification)	PERCHLORIC ACID, SODIUM SALT (1804, 90%+) 100 UG/ML IN WATER
Lot Number:	SDDG-013
Catalog Number:	OLM-7310-S

Product Information

Chemical Purity Specification:	≥98%
Labeled CAS Number:	NA
Unlabeled CAS Number:	7601-89-0
MW*:	130.4
Chemical Formula:	NaCl*O4
Storage:	Store at room temperature away from light and moisture.
Stability:	See storage and expiration date.

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NSCL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number. Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -10, or -0.1.

* *For isotopically labeled compounds, MW listed is for the fully enriched product.*

Approved by: T. J. Eckersley

Timothy I. Eckersley, Ph.D., Quality Assurance

Quality Control Tests and Results

QC Release Date	2/27/2014
Expiration Date	2/27/2024
Concentration Based on Gravimetry	102 µg/mL
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	109.4 ± 2.8 µg/mL (k=2)

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

July 19, 2018

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS18070296**

Laboratory Results for: **Longhorn GW Treatment Plant**

Dear Marcia,

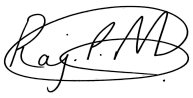
ALS Environmental received 1 sample(s) on Jul 07, 2018 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,



Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Group Houston, Corp Date: 19-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Work Order: HS18070296

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18070296-01	LH18/24-SP140_070618	Water		06-Jul-2018 13:00	07-Jul-2018 09:00	☐

ALS Group Houston, Corp Date: 19-Jul-18

Client: Bhate Environmental Associates, Inc. **CASE NARRATIVE**
Project: Longhorn GW Treatment Plant
Work Order:

Work Order Comments

- The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.

Metals by Method SW6020

Batch ID: 130196

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SW7196

Batch ID: R319806

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Group Houston, Corp Date: 19-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Sample ID: LH18/24-SP140_070618
Collection Date: 06-Jul-2018 13:00

ANALYTICAL REPORT
WorkOrder:HS18070296
Lab ID:HS18070296-01
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
ICP-MS METALS BY SW6020A		**Method:SW6020**				Prep:SW3010A / 09-Jul-2018		Analyst: JDE
Selenium	0.00200	U	0.00110	0.00200	0.00200	mg/L	1	11-Jul-2018 14:42
Silver	0.00100	U	0.000200	0.00100	0.00200	mg/L	1	11-Jul-2018 14:42
HEXAVALENT CHROMIUM BY SW7196A		**Method:SW7196**				Prep:SW7196		Analyst: AJH
Chromium, Hexavalent	0.0100	U	0.00600	0.0100	0.0100	mg/L	1	07-Jul-2018 12:35
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	17-Jul-2018 09:23

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jul-18

WEIGHT LOG

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18070296

Batch ID: 130196 **Method:** ICP-MS METALS BY SW6020A **Prep:** 3010A

SampID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS18070296-01	1	10	10 (mL)	1

ALS Group Houston, Corp Date: 19-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18070296

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 130196	**Test Name :** ICP-MS METALS BY SW6020A			**Matrix:** Water		
HS18070296-01	LH18/24-SP140_070618	06 Jul 2018 13:00		09 Jul 2018 10:34	11 Jul 2018 14:42	1
Batch ID R319806	**Test Name :** HEXAVALENT CHROMIUM BY SW7196A			**Matrix:** Water		
HS18070296-01	LH18/24-SP140_070618	06 Jul 2018 13:00			07 Jul 2018 12:35	1
Batch ID R319842	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)			**Matrix:** Water		
HS18070296-01	LH18/24-SP140_070618	06 Jul 2018 13:00			17 Jul 2018 09:23	1

ALS Group Houston, Corp Date: 19-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18070296

QC BATCH REPORT

Batch ID: 130196 **Instrument: ICPMS05** **Method: SW6020**

MBLK Sample ID: **MBLK-130196** Units: **mg/L** Analysis Date: **11-Jul-2018 14:18**
Client ID: Run ID: **ICPMS05_319499** SeqNo: **4644355** PrepDate: **09-Jul-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Selenium	0.00200	0.00200								U
Silver	0.00100	0.00200								U

LCS Sample ID: **LCS-130196** Units: **mg/L** Analysis Date: **11-Jul-2018 14:20**
Client ID: Run ID: **ICPMS05_319499** SeqNo: **4644356** PrepDate: **09-Jul-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Selenium	0.04648	0.00200	0.05	0	93.0	80 - 120				
Silver	0.04602	0.00200	0.05	0	92.0	80 - 120				

MS Sample ID: **HS18070079-01MS** Units: **mg/L** Analysis Date: **11-Jul-2018 14:26**
Client ID: Run ID: **ICPMS05_319499** SeqNo: **4644359** PrepDate: **09-Jul-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Selenium	0.04418	0.00200	0.05	-0.000058	88.5	80 - 120				
Silver	0.04369	0.00200	0.05	0.000022	87.3	80 - 120				

MSD Sample ID: **HS18070079-01MSD** Units: **mg/L** Analysis Date: **11-Jul-2018 14:32**
Client ID: Run ID: **ICPMS05_319499** SeqNo: **4644362** PrepDate: **09-Jul-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Selenium	0.04566	0.00200	0.05	-0.000058	91.4	80 - 120	0.04418	3.29	20	
Silver	0.04532	0.00200	0.05	0.000022	90.6	80 - 120	0.04369	3.65	20	

PDS Sample ID: **HS18070079-01PDS** Units: **mg/L** Analysis Date: **11-Jul-2018 14:36**
Client ID: Run ID: **ICPMS05_319499** SeqNo: **4644364** PrepDate: **09-Jul-2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Selenium	0.08957	0.00200	0.1	-0.000058	89.6	75 - 125				
Silver	0.08463	0.00200	0.1	0.000022	84.6	75 - 125				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18070296

QC BATCH REPORT

Batch ID: 130196 **Instrument: ICPMS05** **Method: SW6020**

SD Sample ID: **HS18070079-01SD** Units: **mg/L** Analysis Date: **11-Jul-2018 14:24**
Client ID: Run ID: **ICPMS05_319499** SeqNo: **4644358** PrepDate: **09-Jul-2018** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Selenium	0.0100	0.0100					-0.000058	0	10	U
Silver	0.00500	0.0100					0.000022	0	10	U

The following samples were analyzed in this batch: HS18070296-01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18070296

QC BATCH REPORT

Batch ID: R319806 **Instrument: UV-2450** **Method: SW7196**

MBLK Sample ID: **MBLK-319806** Units: **mg/L** Analysis Date: **07-Jul-2018 12:35**
Client ID: Run ID: **UV-2450_319806** SeqNo: **4650518** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	0.0100	0.0100								U

LCS Sample ID: **LCS-319806** Units: **mg/L** Analysis Date: **07-Jul-2018 12:35**
Client ID: Run ID: **UV-2450_319806** SeqNo: **4650519** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	0.249	0.0100	0.25	0	99.6	80 - 120				

MS Sample ID: **HS18070296-01MS** Units: **mg/L** Analysis Date: **07-Jul-2018 12:35**
Client ID: **LH18/24-SP140_070618** Run ID: **UV-2450_319806** SeqNo: **4650521** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	0.21	0.0100	0.25	-0.001	84.4	75 - 125				

MSD Sample ID: **HS18070296-01MSD** Units: **mg/L** Analysis Date: **07-Jul-2018 12:35**
Client ID: **LH18/24-SP140_070618** Run ID: **UV-2450_319806** SeqNo: **4650522** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	0.208	0.0100	0.25	-0.001	83.6	75 - 125	0.21	0.957	20	

The following samples were analyzed in this batch: HS18070296-01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 19-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: **HS18070296**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

ALS Group Houston, Corp Date: 19-Jul-18

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919 2016-2018	31-Jul-2018
Oklahoma	2017-088	31-Aug-2018
North Carolina	624-2018	31-Dec-2018
Arkansas	88-0356	27-Mar-2019
Kansas	E-10352 2017-218	31-Jul-2018
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193 2018-2019	30-Apr-2019
Illinois	004438	29-Jun-2019
Louisiana	03087	30-Jun-2019
Dept of Defense	L2231 Rev 3-30-2018	22-Dec-2018
Kentucky	123043 - 2018	30-Apr-2019

ALS Group Houston, Corp Date: 19-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Work Order: HS18070296

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS18070296-01	LH18/24-SP140_070618	Login	7/7/2018 10:16:48 AM	PJM	Sub
HS18070296-01	LH18/24-SP140_070618	Login	7/7/2018 10:16:48 AM	PJM	EXT056
HS18070296-01	LH18/24-SP140_070618	Login	7/7/2018 10:16:48 AM	PJM	WET332
HS18070296-01	LH18/24-SP140_070618	Login	7/7/2018 10:16:48 AM	PJM	MET053
HS18070296-01	LH18/24-SP140_070618	Login	7/7/2018 10:16:48 AM	PJM	VOA131

Date: 19-Jul-18

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS18070296
Date/Time Received: **07-Jul-2018 09:00**
Received by: **PJM**

Checklist completed by: *Pablo Marinez* eSignature — 7-Jul-2018 Date
Reviewed by: *RJ Modashia* eSignature — 11-Jul-2018 Date

Matrices: **WATER**
Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	0.9C/0.3C UC/C	IR # 25	
Cooler(s)/Kit(s):	4323		
Date/Time sample(s) sent to storage:	7/7/2018 10:30		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

HS18070296

CHAIN OF CUSTODY

Bhate Environmental Associates, Inc.
Longhorn GW Treatment Plant

Name Of Lab Shipping To: ALS 10450 Stancliff Rd., Suite 210 Houston, TX. 77099 (281) 530-5656 ATTN: SONIA WEST

Project: BHATE
LONGHORN ARMY AMMN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Project No. NWO1312.0150.0 16.0001

Job: GROUNDWATER TREATMENT PLANT MONTHLY INFLUENT SAMPLES

Prepared By: Scott Beesinger

P.O. Number

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	No. OF CONTAINERS	Analyses: SILVER & SELENIUM	HEXAVALENT CHROMIUM	PERCHLORATE	Remarks (Preservatives, etc.)	Lab I.D.#
LH18/24-SP140_070618	Water	07/06/18 / 13:00		1	X			HNO3	
LH18/24-SP140_070618	Water	07/06/18 / 13:00		2		X	X	NONE	

Additional Remarks: **STANDARD TURN AROUND TIME**

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
Scott Beesinger	07/06/18	13:30	PM	7/7/18	9:00						

For Lab Use Only

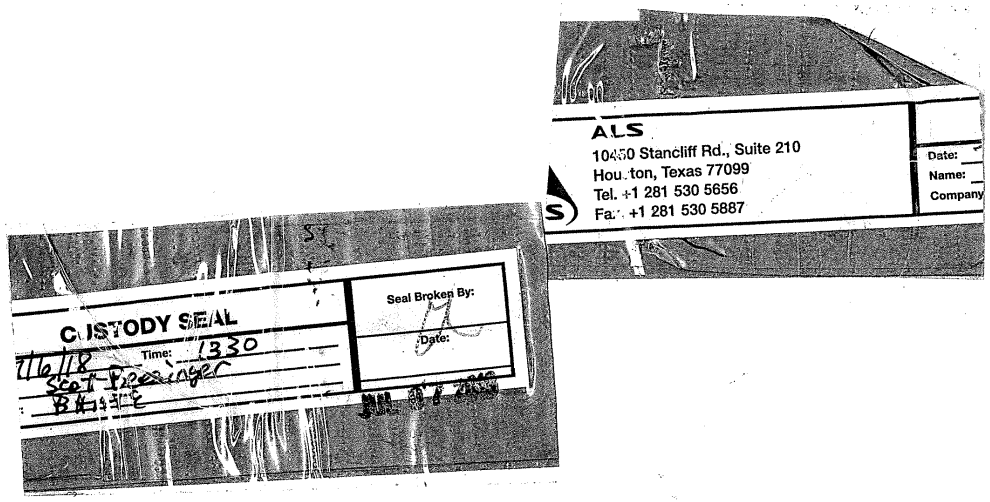
Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition

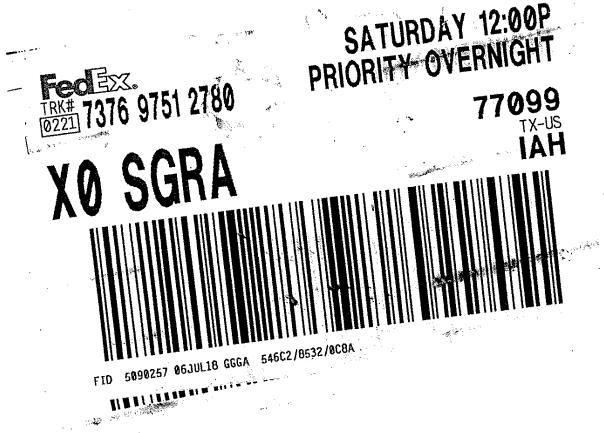
Remarks:

4323 UC 0.9C IR 25 CF -0.6

(Word) S:\1-ces\Forms\Chain of Custody - BiWeekly

00912914


ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax +1 281 530 5887
Date:
Name:
Company
CUSTODY SEAL
Time: 1330
7/6/18
Scott Pressinger
Seal Broken By:
Date:
JUL 08 2018


FedEx
TRK# 0221 7376 9751 2780
SATURDAY 12:00P
PRIORITY OVERNIGHT
77099
TX-US
IAH
XØ SGRA
FID 5090257 06JUL18 GGGA 546C2/0532/0C0A

00912915

Case Narrative

Method: 6850
Analysis: Perchlorate
Analysis SOP: LC-MS-CLO4
ALS WO ID(s): 1819280; 1819283; 1819285

Client: ALS Laboratories (Houston, TX)
Matrix: Water
ELMS Batch (HBN): 2120 (218949)

General Set Information: There were three field samples in these Work Orders. The samples were analyzed for perchlorate.

Method Summary: Each sample was prepared as noted below and analyzed using an Agilent 1100 LC/MSD system in select ion monitoring (SIM) mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. ChemStation software was used for instrument control and data analysis. The ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard (ISTD) of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in quantitation.

Sample Preparation: A 10.0mL aliquot of each sample was transferred into a 15-mL centrifuge tube. 50µL of an ^{18}O labeled perchlorate solution was added to each sample as an internal standard. The samples were then capped, vortexed, and filtered into autosampler vial using Phenex PES membrane 0.45µm Syringe filters.

Holding Times: Holding times were met for all analyses.

Dilutions: Sample 1819283001 was analyzed and reported from a 1:1,000 dilution. The reporting limit has been adjusted accordingly.

Method QC data: The method blank (LMB 610196) was less than 1/2 the CRDL. The recovery for the LCS (610197) was within acceptable parameters.

MS/MSD Analysis: The matrix spike and matrix spike duplicate (MS/MSD) was performed on sample 1819280001 (Client ID: LH18/24-SP650_070618). The MS/MSD percent recoveries and relative percent difference (RPD) were within the performance limits.

Instrument QC: Instrument initial and continuing calibrations were performed in accordance with published procedures.

NC/CAR(s): NA

Sample Calculation: Samples were reported in µg/L. Results were calculated in µg/L by the equation (A)x(B),

where: A = Analyte concentration from the standard curve (µg/L)
B = Dilution performed at time of analysis

Miscellaneous Comments: These samples were analyzed in accordance with the requirements found in the DOD QSM Version 5.1.

Thomas Bosch July 16, 2018
Analyst Date

ANALYTICAL REPORT

Report Date: July 16, 2018

RJ Modashia
ALS Environmental (Houston)
10450 Stancliff Road
Suite 210
Houston, TX 77099

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1819283**
Project ID: HS18070296 070618
Purchase Order: HS18070296
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
LH18/24-SP140_070618	1819283001	07/06/18	07/10/18	

ANALYTICAL REPORT

Workorder: 34-1819283
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **LH18/24-SP140_070618**	Sampling Site: NA	Collected: 07/06/2018
Lab ID: 1819283001	Media: 125 mL Nalgene	Received: 07/10/2018
Matrix: Water	Sampling Parameter: NA	

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable	**Analysis:** EPA 6850, DoD QSM Water	**Instrument ID:** LCMS04
	Batch: ELMS/2120 (HBN: 218949)	**Percent Solid:** NA
	Analyzed: 07/16/2018 10:25	**Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**15000**	1000	2000	4000	1000	

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850, DoD QSM	/S/ Thomas Bosch 07/16/2018 12:52	/S/ Stephen Brose 07/16/2018 14:08

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

ANALYTICAL REPORT

Workorder: 34-1819283
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body	Certificate Number	Website
Environmental	PJLA (DoD ELAP)		
	Utah (TNI)		
	Nevada		
	Oklahoma		
	Iowa		

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< This testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

Quality Control Sample Batch Report

Analysis Information

Workorder: 1819283

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850, DoD QSM
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2120 (HBN: 218949)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Blank

LMB: 610196
Analyzed: 07/16/2018 09:13
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 610197
Analyzed: 07/16/2018 09:28
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	4.94	5.00	98.8	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample: 1819280001	**MS:** 610198	**MSD:** 610199
Analyzed: 07/16/2018 09:43	**Analyzed:** 07/16/2018 09:57	**Analyzed:** 07/16/2018 10:11
Dilution: 1	**Dilution:** 1	**Dilution:** 1
Units: ug/L	**Units:** ug/L	**Units:** ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	ND	5.02	5	100	78.8	123.8	5.02	100	0.069	0.0	20.0

Continuing Calibration Verification

CCV: 610193	**CCV:** 610200
Analyzed: 07/16/2018 08:31	**Analyzed:** 07/16/2018 10:57
Units: ug/L	**Units:** ug/L
Criteria: ± 15%	**Criteria:** ± 15%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	24.7	25.0	98.8	25.7	25.0	103

Interference Check Sample

ICSA: 610195
Analyzed: 07/16/2018 08:59
Units: ug/L
Criteria: ± 30%

Analyte	Result	Target	% Rec.
Perchlorate	0.935	1.00	93.5

Limit of Detection Verification

LODV: 610194	**LODV:** 610201
Analyzed: 07/16/2018 08:45	**Analyzed:** 07/16/2018 11:11
Units: ug/L	**Units:** ug/L
Criteria: ± 50%	**Criteria:** ± 50%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	0.975	1.00	97.5	0.995	1.00	99.5

Quality Control Sample Batch Report

Analysis Information

Workorder: **1819283**

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850, DoD QSM
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2120 (HBN: 218949)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review
/S/ Thomas Bosch	/S/ Stephen Brose
07/16/2018 12:52	07/16/2018 14:08

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits
▲ - Sample result is greater than 4 times the spike added
◆ - Sample and Matrix Duplicate less than 5 times the reporting limit
● - Result is above the calibration range
- The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)
ND - Not Detected (U - Qualifier also flags analyte as not detected)
NA - Not Applicable
QC results are not adjusted for moisture correction, where applicable

18698 #2

10450 Stancliff Rd, Ste 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

W 1819283

Subcontract Chain of Custody

COC ID: 9396

1819283

SUBCONTRACT TO:

ALS Laboratory Group
960 West LeVoy Drive
Salt Lake City, UT 84123

Phone: +1 800 356 9135

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	RJ Modashia
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	RJ.Modashia@alsglobal.com
Alternate Contact:	Jumoke M. Lawal
Email:	jumoke.lawal@alsglobal.com

INVOICE INFORMATION:

Company:	ALS Houston
Contact:	Accounts Payable
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Reference:	HS18070296
TSR:	Danielle Winnings

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS18070296-01**	**LH18/24-SP140_070618**	**Water**	**06 Jul 2018 13:00**
	SUB_Perch-6850			17 Jul 2018

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.

QC Level: DOD IV (DoD Data Package)

Relinquished By: J. Mavicard Date/Time: 07/09/18 18:00

Received By: [signature] Date/Time: 7/10/18 1025

Cooler ID(s): 8722 Temperature(s): 2

ALS Environmental

CHAIN-OF-CUSTODY

Project / Job / Task: HS18070296	Split:	Workorder ID: 1819283	Level: ENV_LVL4	Requested Analysis	
Client: ALS Environmental (Houston)		Account: 8101	Type: 125Poly		
Comments:			Preservatives		
			COOL		
			Containers		

Item	Collect Date/Time	Sample ID	Lab ID	QC	Matrix	ID(s)	Count	EPA 6850, DoD QSM
1	07/06/2018 13:00	LH18/24-SP140_070618	1819283001		Water	A	1	A
2								
3								
4								
5								
6								
7								
8								
9								
10								

24 of 43

ORIGINAL FIELD SAMPLE CHAIN-OF-CUSTODY

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location
Wraith, Julie	07/10/2018 10:25	ALS Sample Receiving	Sample Login
Lilli Wamsley	7/11/18 1300	14B	storage
R33.1	7.16.18/08:00	T. Bush	6850

SAMPLE PREPARATION / ANALYSIS CHAIN-OF-CUSTODY

Sample Prep / Analysis for: _____ Lab Notebook No.: _____

Prepared / Analyzed by: _____ Date / Time: _____

Relinquished By: (Signature)	Date / Time	Received By: (Signature)	Reason for Transfer / Storage Location

00912924

ALS-Salt Lake City-Related Information Report (CRIR)

Cooler or Container Information Checklist (Fill In or Circle)

Client Name: ALS Houston

Project/Task/Site: 681983

Date/Time of Receipt: 7/10/17 1025

Number of Coolers Received: 1

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Cooler Custody Seals:	Present/Absent/NA		
	Intact/Broken/NA	Location Temp Taken:	Control/Between Samples
Container Custody Seals:	Present/Absent/NA		
	Intact/Broken/NA	Are all temperatures within project specific guidelines?	Yes/No/NA
Ice Present:	Yes/No/NA		
	Frozen/Melted/NA	VOA Headspace Present?	Yes/No/NA

pH Check Performed:							
	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
	Cyanide	Yes/No/NA	TPH – 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	Gross A.B, Gamma Spec	Yes/No/NA

Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.	Cooler Received	DCL Cooler No.	Temp.
1	C18 SM2	2 °C	4	C18	°C	7	C18	°C
2	C18	°C	5	C18	°C	8	C18	°C
3	C18	°C	6	C18	°C	9	C18	°C

Taken By: Signature _____ Printed Name _____ Date 7/10/17

Client-Related Information

☐ Missing Cooler	☐ Missing Samples/Bottles	☐ Incorrect Preservation	☐ Insufficient Sample Volume
☐ Cooler Conditions	☐ Broken/Leaking Samples	☐ pH Criteria Not Met	☐ Chain of Custody Problems
☐ Missing Paperwork	☐ Incorrect Bottle Type	☐ Residual Chlorine Present	☐ Other:
☐ Missing/Incorrect Bottle Labels	☐ Cooler Temperatures Out of Range	☐ Head Space in Bottles	

Briefly Describe the Problem and the Action Taken:

Client Notified? Yes ☐ No ☐

Response Required Within 24 Hours

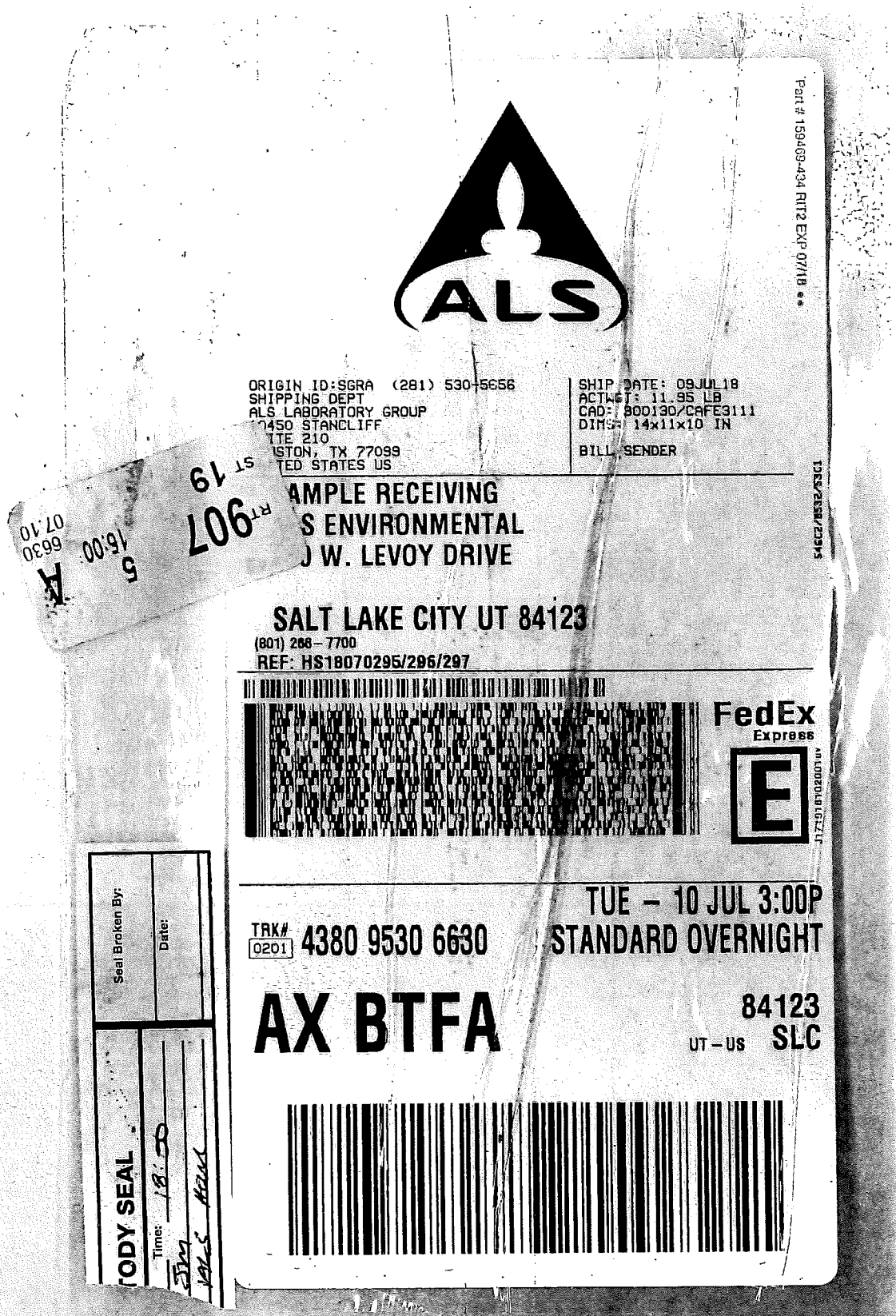
Project Management

Project Manager Comments:

ALS Project Manager: _____ Printed Name

Returned to Sample Receipt by: _____ Signature

Date: _____


Part # 159469-434 RIT2 EXP 07/18 **
ORIGIN ID:SGRA (281) 530-5656
SHIPPING DEPT
ALS LABORATORY GROUP
10450 STANCLIFF
SUITE 210
HOUSTON, TX 77099
UNITED STATES US
SHIP DATE: 09JUL18
ACTWGT: 11.95 LB
CAD: 9001130/CAFE3111
DIMS: 14x11x10 IN
BILL SENDER
AMPLE RECEIVING
S ENVIRONMENTAL
J W. LEVOY DRIVE
SALT LAKE CITY UT 84123
(801) 266-7700
REF: HS18070295/296/297
FedEx
Express
TUE - 10 JUL 3:00P
STANDARD OVERNIGHT
TRK# 0201 4380 9530 6630
AX BTFA
84123
UT-US SLC
Seal Broken By:
Date:
Time:
CUSTODY SEAL

Batch Worklist

Batch: ELMS/ 2120 **Created:** 7/16/2018 08:07 **Instrument:** **HBN:** 218949

Rule: EPA 6850, DoD QSM Water **Analyst:** T. Bosch **Status:** WP

Workorder: 1819280 [ENV_LVL4]
Workorder: 1819283 [ENV_LVL4]
Workorder: 1819285 [ENV_LVL4]

Pos	Lab ID	Sample ID	Prep Initial	Prep Final	Dust Weight	Type	Mx	Container	Procedure	Mgr	Expire Date	Due Date	Run Date
1	610193	CCV for HBN 218949 [ELMS/2120]				CCV	3		E685041C3Q	5311		7/16/2018	
2	610194	LODV for HBN 218949 [ELMS/2120				LODV	3		E6850..D3Q	5311		7/16/2018	
3	610195	ICS for HBN 218949 [ELMS/2120]				ICS	3		E6850..D3Q	5311		7/16/2018	
4	610196	LMB for HBN 218949 [ELMS/2120]				LMB	3		E6850Q413Q	5311		7/16/2018	
5	610197	LCS for HBN 218949 [ELMS/2120]				LCS	3		E6850Q413Q	5311		7/16/2018	
6	1819280001	LH18/24-SP650_070618				SAMPLE	3	1819280001-A	E6850Q41.3	5480	8/3/2018	7/23/2018	
7	610198	LH18/24-SP650...(1819280001MS)				MS	3		E6850Q413Q	5311		7/16/2018	
8	610199	LH18/24-SP65...(1819280001MSD)				MSD	3		E6850Q413Q	5311		7/16/2018	
9	1819283001	LH18/24-SP140_070618				SAMPLE	3	1819283001-A	E6850Q41.3	5480	8/3/2018	7/23/2018	
10	1819285001	LH18/24-SP650_070618				SAMPLE	3	1819285001-A	E6850Q41.3	5480	8/3/2018	7/16/2018	
11	610200	CCV for HBN 218949 [ELMS/2120]				CCV	3		E685041C3Q	5311		7/16/2018	
12	610201	LODV for HBN 218949 [ELMS/2120				LODV	3		E6850..D3Q	5311		7/16/2018	

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Analytical Documentation

ALS Work Order #'s & Sample #( )'s: 1819280 (001); 1819283 (001); 1819285 (001)
ELMS Batch/HBN ID: 2120 (218949)
Prep Date: 07/16/2018 Analysis Date: 07/16/2018 Analyst: T. Bosch
Analyte: **Perchlorate** Matrix: **Water** Method: **6850**
Sequence: \\HPCHEM\1\SEQUENCE\CLO4\2018\JUL\09JUL18D.s
Reported DL: **1.0µg/L** Reported LOD: **2.0µg/L** Reported LOQ: **4.0µg/L**

SAMPLE PREPARATION/ANALYSIS:

Water: Samples were prepared by TNB. 10.0mL of each sample was pipetted into a 15-mL centrifuge tube, and 50µL of an oxygen-18 labeled perchlorate solution was added as an internal standard. The samples were capped, vortexed, and filtered with Phenex PES membrane 0.45µm Syringe filters prior to analysis.

REAGENTS: Eluent A1: 95% ASTM Type II water (ALS)/ 5% ACN (B&J Lot DI735)/0.1% glacial acetic acid (JT-Baker Lot 04802).
Eluent B1: 95% ACN (B&J Lot DI735)/ 5% ASTM Type II water (ALS)/0.1% glacial acetic acid (JT-Baker Lot 04802).

STANDARDS: Internal Standard Spiking Solution Horizon# 41827. Dilutions of Working Standard Solution ID 41829 used for CCV's, LODV's, RLVS and IPC.

CALIBRATION CURVE: Used curve from 06/18/2018, sequence 18JUN18D.s Offline Quantitation Method: CLO4-DPR.M

INSTRUMENT CONDITIONS: Samples were analyzed with an Agilent 1100 LC/MSD system, in negative SIM mode, monitoring m/z 83, 85, and 89.
Instrument ID: **LCMS04** Online Acquisition Method: CLO4-DOD.M Fragmentor: 160 Output Gain: 3 Injection Volume: 25µL
Column: KP-RPPX C8 separator, 250mm Mobile Phase: 70% Eluent A1; 30% Eluent B1

FLOW GRADIENT:

Time (min.)	Flow (mL/min)
0	0.80
4.0	0.80
5.0	0.25
10.0	0.25
10.5	0.80
13.0	0.80

QC DATA: 5.0µL of QC Solution Horizon ID 41830 was used for LCS 610197; Target = 5.0µg/L. ASTM type II water was used for LMB 610196.

MS/MSD: MS/MSD was performed on sample 1819280001 (Client ID: LH18/24-SP650_070618). 5.0µl of Working Standard Solution Horizon ID 41828 was added to 10.0mL of sample preparation. Spike target = 5.0µg/L.

COMMENTS:
1) Results reported in µg/L. Sample 1819283001 was analyzed and reported from a 1:1,000 dilution. The reporting limit has been adjusted accordingly.
2) All QC, Blank, CCV, and MS/MSD results were within method parameters.
3) Sample data can be viewed at two directories within the ALS system: \\ALSLTWS013\LCMS\LCMS04\2018\JUL\HBN# or through NuGenesis\Tree\PrintData\LCMS\DefaultView.
4) Notebook: \\alsltws013\ORGANIC\BOSCH\LCMS\Perchlorates\Waters\2018\218949-DOD-ALS-HSTN-LCMS4 or through \\ALSLTWS013\DATAREVIEW\HBN#

STANDARD REPORT

Working Standard - CLO4 WRK

CLO4 WRK	Description - 6850 WKG Std 100.ug/L

Standard: 41829
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 WRK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	0.1 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
41828	CLO4 INT	6850 Intermdt AccStd 10.ug/mL	CLO4 INT	0.1 mL	10/04/2018

STANDARD REPORT

Constituent

Stock Standard - CLO4 STOCK

CLO4 STOCK	Description - 6850 Stock AccStd 1,000ug/mL

Standard: 36733
MFG: AccuStandard
MFG Lot: 216095148
Part ID: IC-PER-10X-1

Created By: Thomas Bosch
Create Date: 05/10/2017 11:05AM

Amount: 100 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

STANDARD REPORT

Constituent

Working Standard - CLO4 INT

CLO4 INT — **Description - 6850 Intermdt AccStd 10.ug/mL**

Standard: 41828
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 10/04/2018
Usable: Yes
Lab Lot: CLO4 INT

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36733	CLO4 STOCK	6850 Stock AccStd 1,000ug/mL	CLO4 STOCK	0.1 mL	10/04/2018

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		Description - ASTM Type II Water
Standard: 109	Created By: ALS Support (Lims)	Amount: 1000 L
MFG: DCL In House	Create Date: 10/06/2005 09:10AM	Expires: 11/07/2025
MFG Lot: Not Provided		Usable: Yes
Part ID: Not Provided		Lab Lot: LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Working Standard - CLO4ISTDWRK

CLO4ISTDWRK		Description - Perchlorate ISTD Wrk 1,000ug/L
Standard: 41827	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 05/09/2018 10:05AM	**Expires:** 05/09/2019
MFG Lot: TNB: 05/09/2018	**Verified By:** Thomas Bosch	**Usable:** Yes
Pipette ID: Not Provided	**Verify Date:**	**Lab Lot:** CLO4ISTDWRK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	1000 ug/L
2	14797-73-0-89	Perchlorate 89	1000 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
23118	CLO4ISTDSTK	Perchlorate ISTD Stock	CLO4ISTDSTK	0.1 mL	02/27/2024

STANDARD REPORT

Constituent

Stock Standard - CLO4ISTDSTK

CLO4ISTDSTK		Description - Perchlorate ISTD Stock
Standard: 23118	**Created By:** Thomas Bosch	**Amount:** 1 mL
MFG: Cambridge Isotope	**Create Date:** 04/04/2014 03:04PM	**Expires:** 02/27/2024
MFG Lot: SDDG-013	**Verified By:** Thomas Bosch	**Usable:** Yes
Part ID: OLM-7310-S	**Verify Date:** 02/05/2009 12:02AM	**Lab Lot:** CLO4ISTDSTK

Pos.	Analyte	Name	Concentration
1	14797-73-0-8385	Perchlorate 83:85 Ratio	100 ug/mL
2	14797-73-0-89	Perchlorate 89	100 ug/mL

STANDARD REPORT

Working Standard - CLO4 QC WRK

CLO4 QC WRK		Description - 6850 QC WKG STD 100ug/L
Standard: 41831	**Created By:** Thomas Bosch	**Amount:** 10 mL
MFG: ALS/SLC	**Create Date:** 05/09/2018 10:05AM	**Expires:** 05/09/2019
MFG Lot: TNB: 05/09/2018		**Usable:** Yes
Pipette ID: Not Provided		**Lab Lot:** CLO4 QC WRK 100.ug/L

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	100 ug/L

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
41830	CLO4 QC INT	6850 QC Intrmdt Std-QC 10ug/mL	CLO4 QC INT 10.ug/mL	0.1 mL	05/09/2019

STANDARD REPORT

Constituent

Working Standard - CLO4 QC INT

CLO4 QC INT	Description - 6850 QC Intrmdt Std-QC 10ug/mL

Standard: **41830**
MFG: ALS/SLC
MFG Lot: TNB: 05/09/2018
Pipette ID: Not Provided

Created By: Thomas Bosch
Create Date: 05/09/2018 10:05AM

Amount: 10 mL
Expires: 05/09/2019
Usable: Yes
Lab Lot: CLO4 QC INT 10.ug/mL

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	10 ug/mL

Composition

Standard	Standard ID	Description	Lab Lot ID	Volume	Expires
109	ASTM H2O	ASTM Type II Water	LAB 109	9.9 mL	11/07/2025
36748	CLO4 QCSTOCK	6850 QC Stock STD 1,000ug/mL	CLO4 QC STOCK	0.1 mL	03/31/2020

STANDARD REPORT

Constituent

Solvent Standard - ASTM H2O

ASTM H2O		Description - ASTM Type II Water
Standard: 109	Created By: ALS Support (Lims)	Amount: 1000 L
MFG: DCL In House	Create Date: 10/06/2005 09:10AM	Expires: 11/07/2025
MFG Lot: Not Provided		Usable: Yes
Part ID: Not Provided		Lab Lot: LAB 109

Pos.	Analyte	Name	Concentration
Solvent - Analyte(s) not applicable			

STANDARD REPORT

Constituent

Stock Standard - CLO4 QCSTOCK

CLO4 QCSTOCK	Description - 6850 QC Stock STD 1,000ug/mL

Standard: 36748
MFG: Ultra Scientific
MFG Lot: CP-0860
Part ID: ICC-013

Created By: Thomas Bosch
Create Date: 05/11/2017 01:05PM

Amount: 100 mL
Expires: 03/31/2020
Usable: Yes
Lab Lot: CLO4 QC STOCK

Pos.	Analyte	Name	Concentration
1	14797-73-0	Perchlorate	1000 ug/mL

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Product Name: Perchlorate IC Standard

Description:
This Reference Material (RM) was gravimetrically prepared in accordance with ISO Guide 34 and under ULTRA Scientific's ISO 9001 registered quality system. The neat materials used for this product have been verified by ULTRA's ISO 17025 laboratory and under ULTRA's ISO Guide 34 accreditation. The analyte concentrations were verified by ULTRA's ISO 17025 accredited laboratory. For each analyte, the true value, with its uncertainty value calculated at the 95% confidence level, is reported below.

Analyte	Starting Material	Lot Number	Purity (%)	Calculated Value	True Value	Traceability & Method
perchlorate	potassium perchlorate	RM07987	100	1001 ± 5 µg/mL	976 ± 6 µg/mL	NIST SRM 3141A; ICP-OES

Solvent: water (low TOC, < 50 ppb)

Storage: Store at Room Temperature (15° to 30°C).

Traceability:
Traceability has been established through an unbroken chain of comparisons, each having stated uncertainties. Comparisons are based on appropriate physical or chemical measurements, including gravimetric or volumetric dilution, where the mass or volume of a solution before and after dilution is measured. The balances used for these measurements are calibrated with weights traceable to NIST in compliance with ANSI/NCSL Z-540-1, ISO 9001, ISO 17025, and ISO Guide 34. Calibrated Class A glassware is used for volumetric measurements. Thermometers are calibrated against a NIST traceable thermometer in accordance with NIST Special Publication 819.

Estimation of Uncertainties:
The true value is reported, with its uncertainty value calculated at the 95% confidence level.

Homogeneity:
This RM was formulated and unitized according to an in-house procedure and is guaranteed to be homogeneous. There is no minimum sub-sample size required.

Intended Use:
This RM is intended for the preparation of working reference samples for use in routine laboratory analyses, calibration of instruments, validation of analytical methods, assessments of measurement methods and continuing calibration verification.

Instructions for Use:
Sample aliquots for analysis should be withdrawn at 20°C to 25°C immediately after opening and should be processed without delay for the true value to be valid within the stated uncertainties. Do not pipet from the bottle. Do not return any material removed for pipetting to the bottle. Tightly cap the bottle after removing any material and store according to the instructions noted above.

Hazards:
Refer to the Safety Data Sheet for information regarding this RM.

Expiration of Certification:
The certification of this RM is valid, within the measurement uncertainty specified, until the expiration date specified above, provided the RM is handled and stored in accordance with the instructions given in this certificate. This certification is nullified if the RM is damaged, contaminated, or otherwise modified.

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER
ANAB ACCREDITED TESTING LABORATORY

ULTRA SCIENTIFIC
Analytical Solutions

Certificate of Analysis

ISO Guide 34 Reference Material

Product Number: ICC-013
Lot Number: CP-0860

Lot Issue Date: 29-Feb 2016
Expiration Date: 31-Mar 2020

Maintenance of Certification:
The real-time, long term stability of the RM may be monitored over the lifetime of the certification. If substantive changes occur that affect the certification before the expiration of this certificate, ULTRA Scientific will notify the purchaser.

Peter A. King, Ph.D.
VP, Technical Operations

Daniel J. Lamendola
Director of QA/RA

125 Market Street
New Haven, CT 06513
USA

AccuStandard® Inc.

Tel (203)786-5290
Fax (203)786-5287
www.AccuStandard.com

CERTIFICATE OF ANALYSIS

AccuTrace™ Reference Standard

Catalog No: IC-PER-10X-1
Description: Perchlorate Standard
Element: Perchlorate (ClO_4)
SRM: Ind. Std.
Lot: 216095148
Matrix: Water
Hazards: *Refer to SDS for complete safety information*

Date Certified: Oct 4, 2016
Expiration: Oct 4, 2018
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)
Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO Guide 34 Scope of Accreditation: Yes



Signal Word: Warning

Component		SRM #	Prepared Concentration (µg/mL)
ClO_4	Perchlorate	Ind. Std.	1000

The gravimetric uncertainty for this product is ±0.2%. See reverse side for details.
The final solution was checked against an independent standard to verify its concentration.
We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as ASTM Type I 18 megohm deionized water.
All solutions are filtered through a 0.2 µm filter prior to being bottled.
All glassware used in preparation is Class A and calibrated regularly.
All weights are traceable through NIST, Test No. 822-275872-11
All bottles are triple rinsed with deionized water prior to use.
Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.
We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By: Meigan O'Leary
Meigan O'Leary, Inorganic QC Manager

For use in routine laboratory analysis.

AccuStandard is accredited to ISO Guide 34, ISO/IEC 17025 and certified to ISO 9001

Cambridge Isotope Laboratories, Inc. Certificate of Analysis

Quality Standards:
ISO Guide 34 • ISO/IEC 17025 • ISO 13485 • cGMP

23118

Product Name: (Isotopic Label & Enrichment Specification)	PERCHLORIC ACID, SODIUM SALT (1804, 90%+) 100 UG/ML IN WATER
Lot Number:	SDDG-013
Catalog Number:	OLM-7310-S

Product Information

Chemical Purity Specification:	≥98%
Labeled CAS Number:	NA
Unlabeled CAS Number:	7601-89-0
MW*:	130.4
Chemical Formula:	NaCl*O4
Storage:	Store at room temperature away from light and moisture.
Stability:	See storage and expiration date.

Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NSCL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number. Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -10, or -0.1.

* *For isotopically labeled compounds, MW listed is for the fully enriched product.*

Approved by: T. J. Eckersley

Timothy I. Eckersley, Ph.D., Quality Assurance

Quality Control Tests and Results

QC Release Date	2/27/2014
Expiration Date	2/27/2024
Concentration Based on Gravimetry	102 µg/mL
Chemical Purity of Neat Material(s)	98%
LC/MS for Concentration	109.4 ± 2.8 µg/mL (k=2)

10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

July 18, 2018

Marcia Olive
Bhate Environmental Associates, Inc.
445 Union Blvd Ste 129
Lakewood, CO 80228

Work Order: **HS18070297**

Laboratory Results for: **Longhorn GW Treatment Plant**

Dear Marcia,

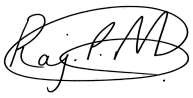
ALS Environmental received 1 sample(s) on Jul 07, 2018 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,



Generated By: JUMOKE.LAWAL
RJ Modashia
Project Manager

ALS Group Houston, Corp Date: 18-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Work Order: HS18070297

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS18070297-01	LH18/24-SP650_070618	Water		06-Jul-2018 13:00	07-Jul-2018 09:00	☐

ALS Group Houston, Corp Date: 18-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Work Order:

CASE NARRATIVE

Work Order Comments

- The analysis for Perchlorate was subcontracted to ALS Salt Lake City, UT. Final report attached.

WetChemistry by Method E415.1

Batch ID: R319705

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method E365.3

Batch ID: R319583

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method E350.3

Batch ID: R319366

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

ALS Group Houston, Corp Date: 18-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
Sample ID: LH18/24-SP650_070618
Collection Date: 06-Jul-2018 13:00

ANALYTICAL REPORT
WorkOrder:HS18070297
Lab ID:HS18070297-01
Matrix:Water

ANALYSES	RESULT	QUAL	DL	LOD	LOQ	UNITS	DILUTION FACTOR	DATE ANALYZED
AMMONIA AS N BY E350.3(ISE)		**Method:E350.3**						Analyst: MZD
Nitrogen, Ammonia (As N)	**30**		**2.0**	**2.0**	**2.0**	**mg/L**	10	09-Jul-2018 14:00
ORTHO PHOSPHATE (PO4) AS P BY E365.3		**Method:E365.3**						Analyst: AJH
Phosphorus, Total Orthophosphate (As P)	**5.28**		**0.100**	**0.400**	**0.250**	**mg/L**	10	07-Jul-2018 11:53
TOTAL ORGANIC CARBON BY E415.1		**Method:E415.1**						Analyst: AJH
Organic Carbon, Total	**12.7**		**0.500**	**0.600**	**1.00**	**mg/L**	1	12-Jul-2018 19:48
SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)		**Method:NA**						Analyst: SUB
Subcontract Analysis	See Attached		0	0		NA	1	16-Jul-2018 11:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 18-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18070297

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R319366	**Test Name :** AMMONIA AS N BY E350.3(ISE)			**Matrix:** Water		
HS18070297-01	LH18/24-SP650_070618	06 Jul 2018 13:00			09 Jul 2018 14:00	10
Batch ID R319583	**Test Name :** ORTHO PHOSPHATE (PO4) AS P BY E365.3			**Matrix:** Water		
HS18070297-01	LH18/24-SP650_070618	06 Jul 2018 13:00			07 Jul 2018 11:53	10
Batch ID R319705	**Test Name :** TOTAL ORGANIC CARBON BY E415.1			**Matrix:** Water		
HS18070297-01	LH18/24-SP650_070618	06 Jul 2018 13:00			12 Jul 2018 19:48	1
Batch ID R319784	**Test Name :** SUBCONTRACT ANALYSIS - PERCHLORATE (EPA 6850)			**Matrix:** Water		
HS18070297-01	LH18/24-SP650_070618	06 Jul 2018 13:00			16 Jul 2018 11:37	1

ALS Group Houston, Corp Date: 18-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18070297

QC BATCH REPORT

Batch ID: R319366 **Instrument: WetChem_HS** **Method: E350.3**

MBLK Sample ID: **MBLK-319366** Units: **mg/L** Analysis Date: **09-Jul-2018 14:00**
Client ID: Run ID: **WetChem_HS_319366** SeqNo: **4640832** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	0.20	0.20								U

LCS Sample ID: **LCS-319366** Units: **mg/L** Analysis Date: **09-Jul-2018 14:00**
Client ID: Run ID: **WetChem_HS_319366** SeqNo: **4640833** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	10.04	0.20	10	0	100	80 - 120				

MS Sample ID: **HS18070083-01MS** Units: **mg/L** Analysis Date: **09-Jul-2018 14:00**
Client ID: Run ID: **WetChem_HS_319366** SeqNo: **4640836** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	9.221	0.20	10	0.4008	88.2	80 - 120				

MSD Sample ID: **HS18070083-01MSD** Units: **mg/L** Analysis Date: **09-Jul-2018 14:00**
Client ID: Run ID: **WetChem_HS_319366** SeqNo: **4640837** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nitrogen, Ammonia (As N)	10.02	0.20	10	0.4008	96.2	80 - 120	9.221	8.31	20	

The following samples were analyzed in this batch: HS18070297-01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 18-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18070297

QC BATCH REPORT

Batch ID: R319583 **Instrument: UV-2450** **Method: E365.3**

MBLK Sample ID: **MBLK-319583** Units: **mg/L** Analysis Date: **07-Jul-2018 11:53**
Client ID: Run ID: **UV-2450_319583** SeqNo: **4645671** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	0.0400	0.0250								U

LCS Sample ID: **LCS-319583** Units: **mg/L** Analysis Date: **07-Jul-2018 11:53**
Client ID: Run ID: **UV-2450_319583** SeqNo: **4645672** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	0.246	0.0250	0.25	0	98.4	85 - 115				

MS Sample ID: **HS18070297-01MS** Units: **mg/L** Analysis Date: **07-Jul-2018 11:53**
Client ID: **LH18/24-SP650_070618** Run ID: **UV-2450_319583** SeqNo: **4645674** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	7.35	0.250	2.5	5.28	82.8	80 - 120				

MSD Sample ID: **HS18070297-01MSD** Units: **mg/L** Analysis Date: **07-Jul-2018 11:53**
Client ID: **LH18/24-SP650_070618** Run ID: **UV-2450_319583** SeqNo: **4645675** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Phosphorus, Total Orthophosphate (As P)	7.37	0.250	2.5	5.28	83.6	80 - 120	7.35	0.272	20	

The following samples were analyzed in this batch: HS18070297-01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 18-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: HS18070297

QC BATCH REPORT

Batch ID: R319705 **Instrument: TOC_02** **Method: E415.1**

MBLK Sample ID: **WBLKW1-180712** Units: **mg/L** Analysis Date: **12-Jul-2018 19:08**
Client ID: Run ID: **TOC_02_319705** SeqNo: **4648331** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	0.600	1.00								U

LCS Sample ID: **WLCSW1-180712** Units: **mg/L** Analysis Date: **12-Jul-2018 19:21**
Client ID: Run ID: **TOC_02_319705** SeqNo: **4648332** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	10	1.00	10	0	100	80 - 120				

LCSD Sample ID: **WLCSDW1-180712** Units: **mg/L** Analysis Date: **12-Jul-2018 19:35**
Client ID: Run ID: **TOC_02_319705** SeqNo: **4648333** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	10.39	1.00	10	0	104	80 - 120	10	3.83	20	

MS Sample ID: **HS18070351-01MS** Units: **mg/L** Analysis Date: **12-Jul-2018 20:45**
Client ID: Run ID: **TOC_02_319705** SeqNo: **4648338** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Organic Carbon, Total	14.8	1.00	10	4.918	98.8	80 - 120				

The following samples were analyzed in this batch: HS18070297-01

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Group Houston, Corp Date: 18-Jul-18

Client: Bhate Environmental Associates, Inc.
Project: Longhorn GW Treatment Plant
WorkOrder: **HS18070297**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

ALS Group Houston, Corp Date: 18-Jul-18

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
California	2919 2016-2018	31-Jul-2018
Oklahoma	2017-088	31-Aug-2018
North Carolina	624-2018	31-Dec-2018
Arkansas	88-0356	27-Mar-2019
Kansas	E-10352 2017-218	31-Jul-2018
Texas	T10470231-18-21	30-Apr-2019
North Dakota	R193 2018-2019	30-Apr-2019
Illinois	004438	29-Jun-2019
Louisiana	03087	30-Jun-2019
Dept of Defense	L2231 Rev 3-30-2018	22-Dec-2018
Kentucky	123043 - 2018	30-Apr-2019

Date: 18-Jul-18

Sample Receipt Checklist

Client Name: Bhate Environmental
Work Order: HS18070297
Date/Time Received: **07-Jul-2018 09:00**
Received by: **PJM**

Checklist completed by: *Pablo Marinez* eSignature — 7-Jul-2018 Date
Reviewed by: *Erica Howard* eSignature — 10-Jul-2018 Date

Matrices: **WATER**
Carrier name: **FedEx Priority Overnight**

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
TX1005 solids received in hermetically sealed vials?	Yes ☐	No ☐	N/A ☑
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	0.9C/0.3C UC/C	IR # 25	
Cooler(s)/Kit(s):	4323		
Date/Time sample(s) sent to storage:	7/7/2018 10:45		
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes: Quantity does not match, CoC = 3 bottles Rec'd = 5 bottles.
Running Perchloriate per client conversation. -EMH

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

HS18070297

CHAIN OF CUSTODY

Bhate Environmental Associates, Inc.
Longhorn GW Treatment Plant

Name Of Lab Shipping To: ALS 10450 Stancliff Rd. Suite 210 Houston, TX. 77099 (281) 530-5656 ATTN: SONIA WEST

Project: BHATE LONGHORN ARMY AMMN. PLANT (LHAAP) GROUNDWATER TREATMENT PLANT (GWTP) KARNACK, TEXAS	Project No. NWO1312.0150.0 16.0001
Job: **GROUNDWATER TREATMENT PLANT WEEKLY SAMPLES**	
Prepared By: Scott Beesinger	P.O. Number

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	No. OF CONTAINERS	Analyses: AMMONIA-N	TOTAL ORGANIC CARBON	ORTHO-PHOSPHATE	PERCHLORATE							Remarks (Preservatives, etc.)	Lab I.D.#
LH18/24-SP650_070618	Water	07/06/18 / 13:00		2	X	X									H2SO4	
LH18/24-SP650_070618	Water	07/06/18 / 13:00		1			X								NONE	

Additional Remarks: **Standard TAT on all parameters**

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
Scott Beesinger	07/06/18	14:30	PM	7.7.18	9:00						

For Lab Use Only

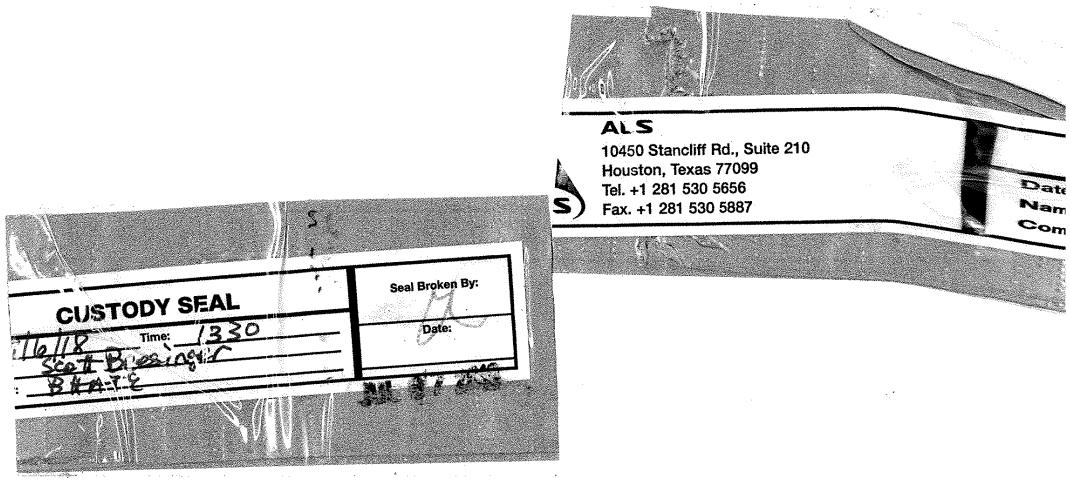
Received At Lab By:	Date	Time	Airbill No.	Opened By:	Date	Time	Temp of Container	Seal No.	Condition

Remarks:

4323 UC 0.9C IR 25 CF -0.6

(Word) S:\1-ces\Forms\Chain of Custody - BiWeekly

00912955


ALS
10450 Stancliff Rd., Suite 210
Houston, Texas 77099
Tel. +1 281 530 5656
Fax. +1 281 530 5887
CUSTODY SEAL
Time: 1330
Seal Broken By:
Date:
FedEx
TRK# 0221 7376 9751 2780
SATURDAY 12:00P
PRIORITY OVERNIGHT
77099
TX-US
IAH
XØ SGRA
FID 5090257 06JUL18 GGGA 546C2/0632/0CBA

00912956

ANALYTICAL REPORT

Report Date: July 16, 2018

RJ Modashia
ALS Environmental (Houston)
10450 Stancliff Road
Suite 210
Houston, TX 77099

Phone: 281 530-5656

E-mail: RJ.Modashia@ALSGlobal.com

Workorder: **34-1819285**
Project ID: HS18070297 070618
Purchase Order: HS18070297
Project Manager Kevin W. Griffiths

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
LH18/24-SP650_070618	1819285001	07/06/18	07/10/18	

ANALYTICAL REPORT

Workorder: 34-1819285
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

Analytical Results

Sample ID: **LH18/24-SP650_070618**	Sampling Site: NA	Collected: 07/06/2018
Lab ID: 1819285001	Media: 125 mL Nalgene	Received: 07/10/2018
Matrix: Water	Sampling Parameter: NA	

Analysis Method - EPA 6850, DoD QSM

Preparation: Not Applicable	**Analysis:** EPA 6850, DoD QSM Water	**Instrument ID:** LCMS04
	Batch: ELMS/2120 (HBN: 218949)	**Percent Solid:** NA
	Analyzed: 07/16/2018 10:40	**Report Basis:** Wet

Analyte	Result (ug/L)	DL (ug/L)	LOD (ug/L)	LOQ (ug/L)	Dilution	Qual
Perchlorate	**4.9**	1.0	2.0	4.0	1	

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA 6850, DoD QSM	/S/ Thomas Bosch 07/16/2018 12:52	/S/ Stephen Brose 07/16/2018 14:08

Laboratory Contact Information

ALS Environmental
960 W Levoy Drive
Salt Lake City, Utah 84123

Phone: (801) 266-7700
Email: alslt.lab@ALSGlobal.com
Web: www.alsslc.com

ANALYTICAL REPORT

Workorder: 34-1819285
Client: ALS Environmental (Houston)
Project Manager: Kevin W. Griffiths

General Lab Comments

The results provided in this report relate only to the items tested.
Samples were received in acceptable condition unless otherwise noted.
Samples have not been blank corrected unless otherwise noted.
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body	Certificate Number	Website
Environmental	PJLA (DoD ELAP)		
	Utah (TNI)		
	Nevada		
	Oklahoma		
	Iowa		

Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.
CRDL = Contract Required Detection Limit
Reg. Limit = Regulatory Limit.
ND = Not Detected, testing result not detected above the MDL or RL.
< This testing result is less than the numerical value.
** No result could be reported, see sample comments for details.

Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.
B = Qualifier indicates that the analyte was detected in the blank.
E = Qualifier indicates that the analyte result exceeds calibration range.
P = Qualifier indicates that the RPD between the two columns is greater than 40%.

Quality Control Sample
Batch Report

Analysis Information

Workorder: **1819285**

Limits:	Client SOW/Contract Specified	**Preparation:**	NA	**Analysis:**	EPA 6850, DoD QSM
Basis:	DoD QSM	**Batch:**	NA	**Batch:**	ELMS/2120 (HBN: 218949)
		Prepared By:	NA	**Analyzed By:**	Thomas Bosch

Blank

LMB: 610196
Analyzed: 07/16/2018 09:13
Units: ug/L

Analyte	Result	MDL	RL
Perchlorate	ND	1	2.00

Laboratory Control Sample

LCS: 610197
Analyzed: 07/16/2018 09:28
Dilution: 1
Units: ug/L

Analyte	Result	Target	% Rec	QC Limits	
Perchlorate	4.94	5.00	98.8	78.8	123.8

Matrix Spike - Matrix Spike Duplicate

Sample: 1819280001
Analyzed: 07/16/2018 09:43
Dilution: 1
Units: ug/L

MS: 610198
Analyzed: 07/16/2018 09:57
Dilution: 1
Units: ug/L

MSD: 610199
Analyzed: 07/16/2018 10:11
Dilution: 1
Units: ug/L

Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Perchlorate	ND	5.02	5	100	78.8	123.8	5.02	100	0.069	0.0	20.0

Continuing Calibration Verification

CCV: 610193
Analyzed: 07/16/2018 08:31
Units: ug/L
Criteria: ± 15%

CCV: 610200
Analyzed: 07/16/2018 10:57
Units: ug/L
Criteria: ± 15%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	24.7	25.0	98.8	25.7	25.0	103

Interference Check Sample

ICSA: 610195
Analyzed: 07/16/2018 08:59
Units: ug/L
Criteria: ± 30%

Analyte	Result	Target	% Rec.
Perchlorate	0.935	1.00	93.5

Limit of Detection Verification

LODV: 610194
Analyzed: 07/16/2018 08:45
Units: ug/L
Criteria: ± 50%

LODV: 610201
Analyzed: 07/16/2018 11:11
Units: ug/L
Criteria: ± 50%

Analyte	Result	Target	% Rec.	Result	Target	% Rec.
Perchlorate	0.975	1.00	97.5	0.995	1.00	99.5