LONGHORN ARMY AMMUNITION PLANT KARNACK, TEXAS

ADMINISTRATIVE RECORD

Volume 9

2023

Bate Stamp Numbers
01148035 – 01150035

Prepared for

Department of the Army
Longhorn Army Ammunition Plant

1976–2023

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

VOLUME 9

2023

A.	Title:	(Cont'd) Appendix F, File 3, Level IV DoD Labs to Report—Quarterly Evaluation Report, 3rd Quarter (July–September) 2022, Groundwater Treatment Plant, Longhorn Army Ammunition Plant, Karnack, Texas, January 2023
	Author(s):	Department of the Army
	Recipient:	Environmental Protection Agency and Texas Commission on Environmental Quality
	Date:	January 6, 2023
	Bate Stamp:	01148035 – 01149139
B.	Title:	Report—Final 2022 Update of the Comprehensive Land Use Control (LUC) Management Plan, Longhorn Army Ammunition Plant, Karnack, Texas, January 17, 2023
	Author(s):	Department of the Army
	Recipient:	Environmental Protection Agency and Texas Commission on Environmental Quality
	Date:	January 17, 2023
	Bate Stamp:	01149140 – 01149703
C.	Title:	Minutes—Final Minutes, Quarterly Restoration Advisory Board (RAB) Meeting, Longhorn Army Ammunition Plant, November 16, 2022
	Author(s):	Bhate Environmental Associates, Inc.
	Recipient:	All Parties
	Date:	January 21, 2023
	Bate Stamp:	01149704 – 01149755
D.	Title:	Report—Final Year 5 Long-Term Management Report for LHAAP-001-R-01 and LHAAP-003-R-01, Longhorn Army Ammunition Plant, Karnack Texas
	Author(s):	Department of the Army
	Recipient:	Environmental Protection Agency and Texas Commission on Environmental Quality
	Date:	January 23, 2023
	Bate Stamp:	01149756 – 01149791
E.	Title:	Report—Draft Final Year 7 Annual Remedial Action Operation Report (September 2020–August 2021), LHAAP-35A (58) Shops Area, Longhorn Army Ammunition Plant, Karnack, Texas, January 2022
	Author(s):	Department of the Army
	Recipient:	Environmental Protection Agency and Texas Commission on Environmental Quality
	Date:	January 25, 2023
	Bate Stamp:	01149792 – 01150035

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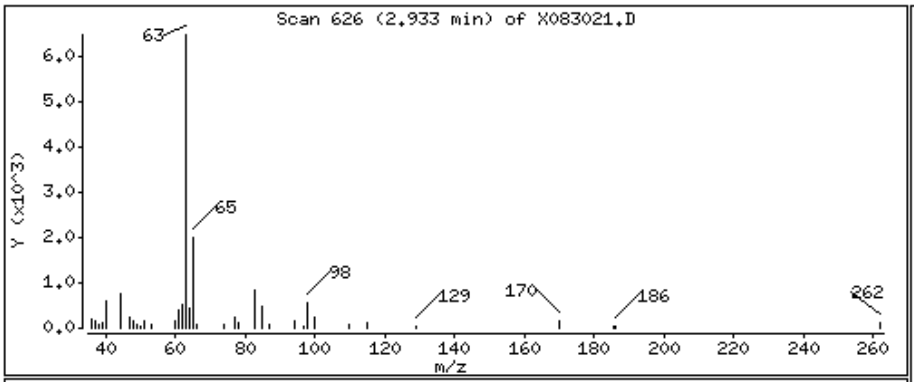
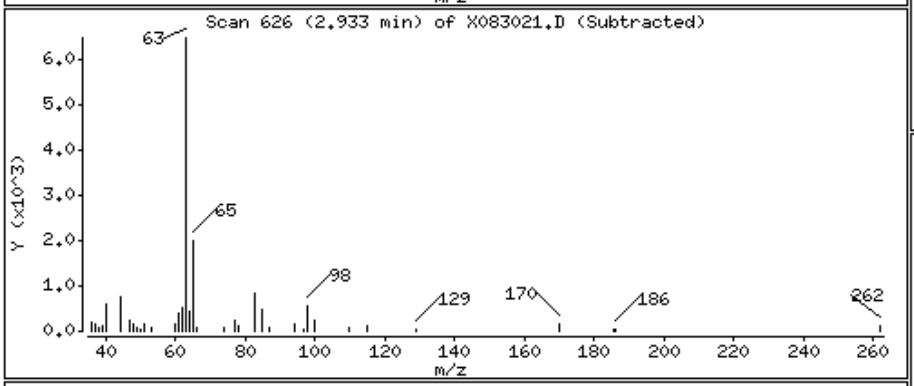
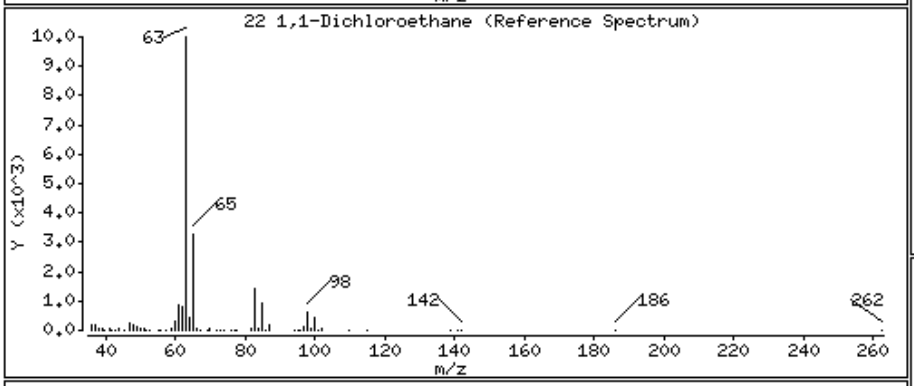
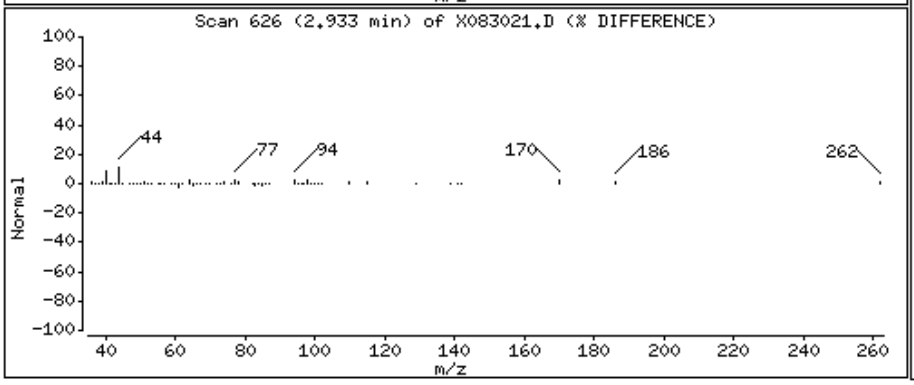
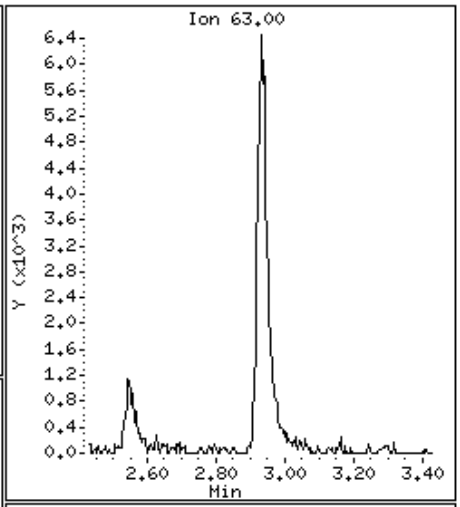
22 1,1-Dichloroethane Concentration: 1.65 ug/l

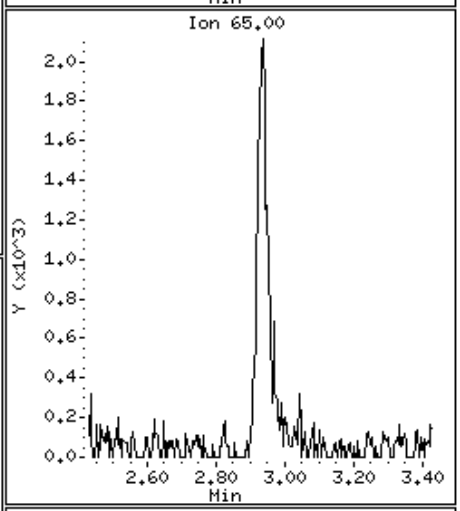


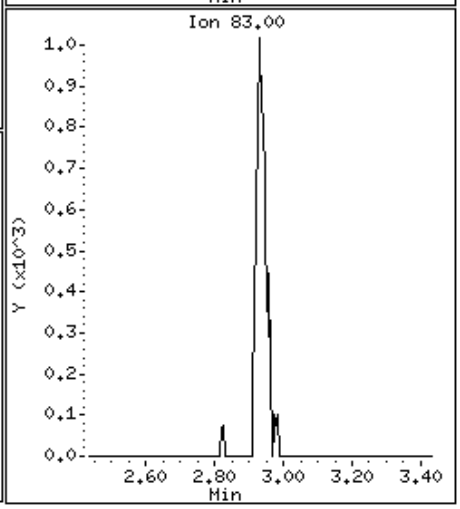












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Instrument: voa6.i

Sample Info: HS22081514-20;HS22081514-20;;;

Purge Volume: 5.0

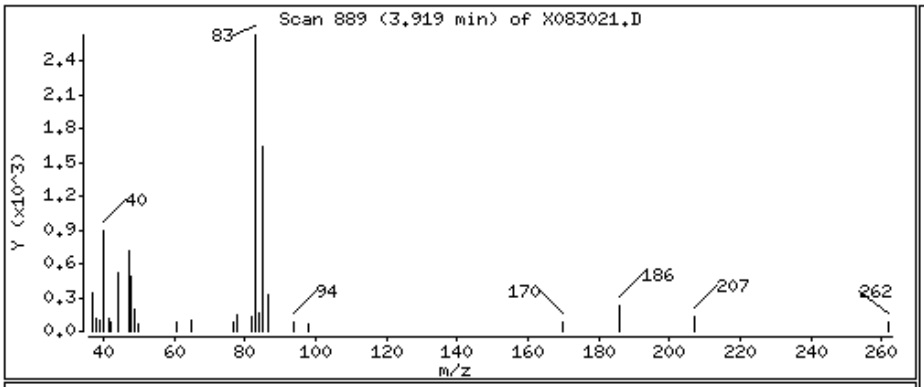
Operator: PC

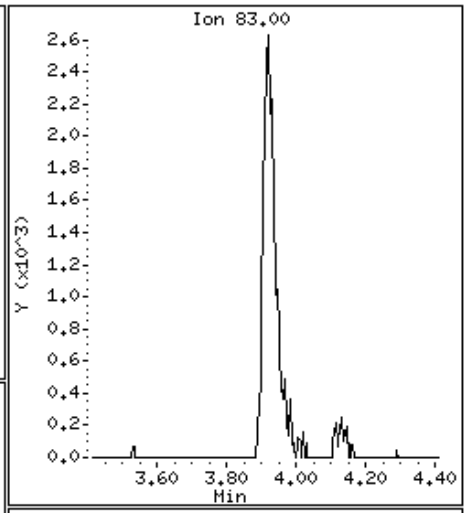
Column phase: DB624

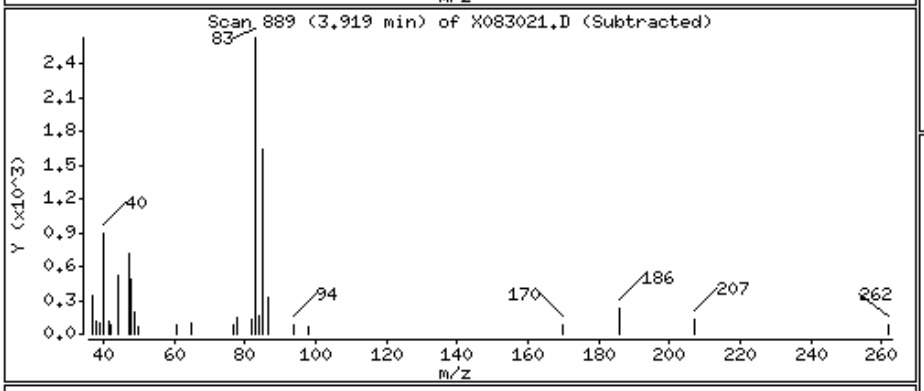
Column diameter: 0.18

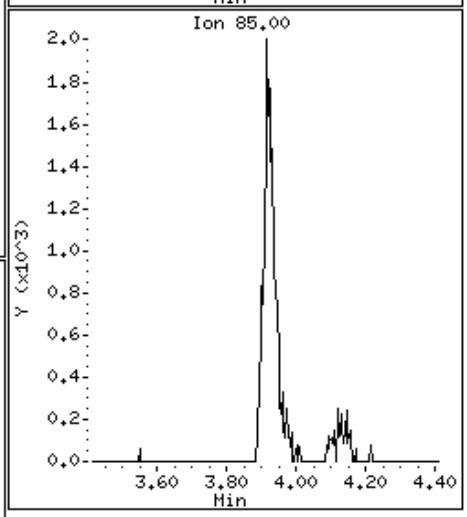
28 Chloroform

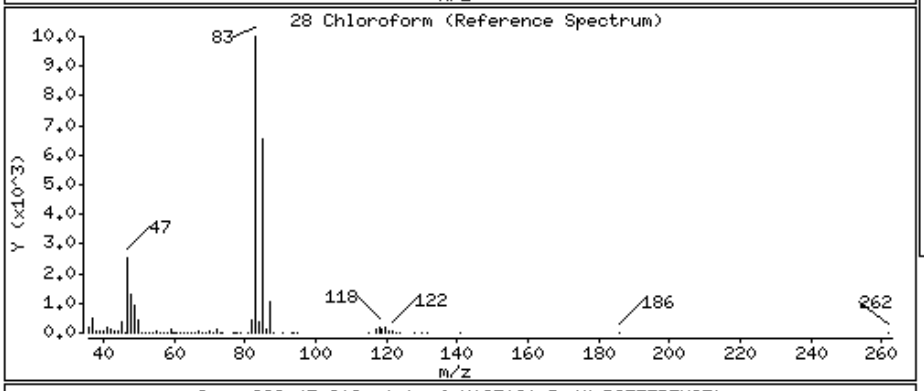
Concentration: 0.69 ug/l

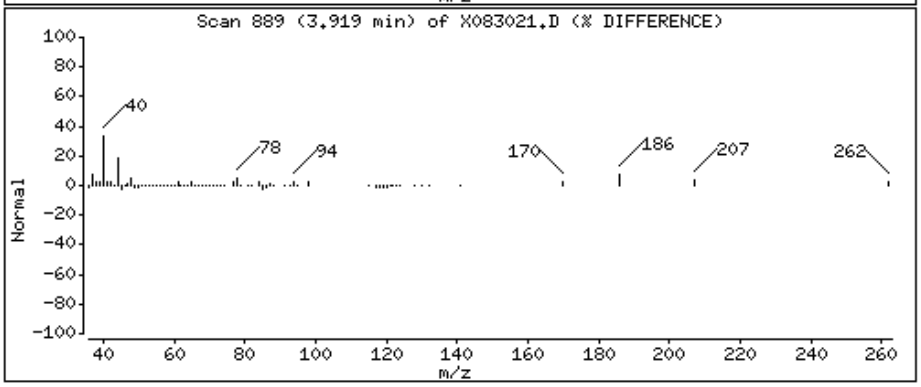












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Client ID: HS22081514-20

Instrument: voa6.i

Sample Info: HS22081514-20;HS22081514-20;;;

Purge Volume: 5.0

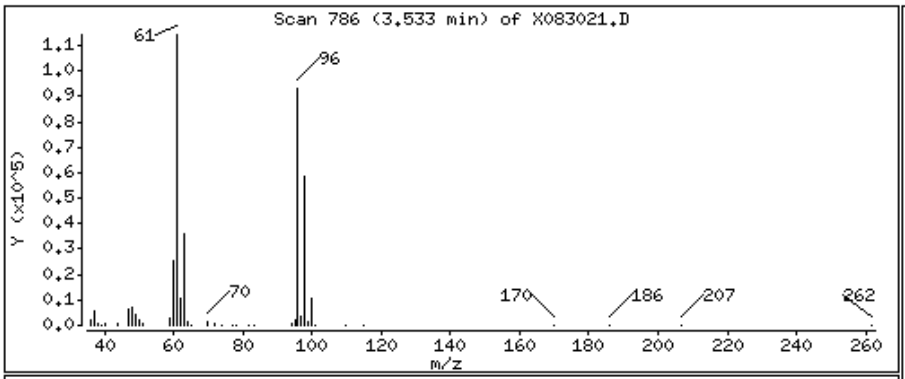
Operator: PC

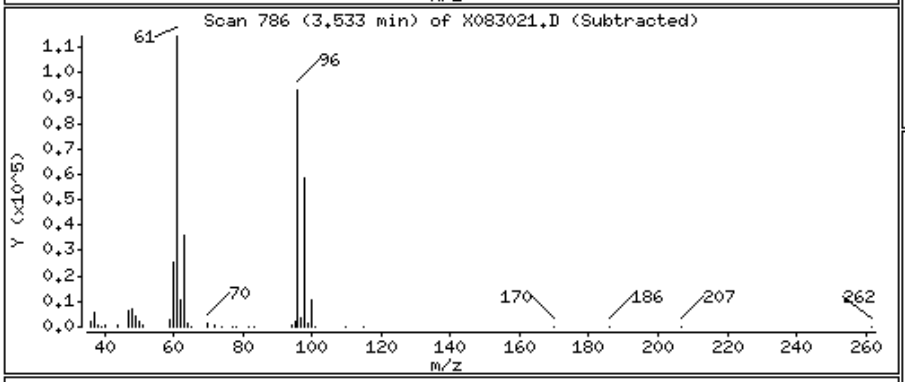
Column phase: DB624

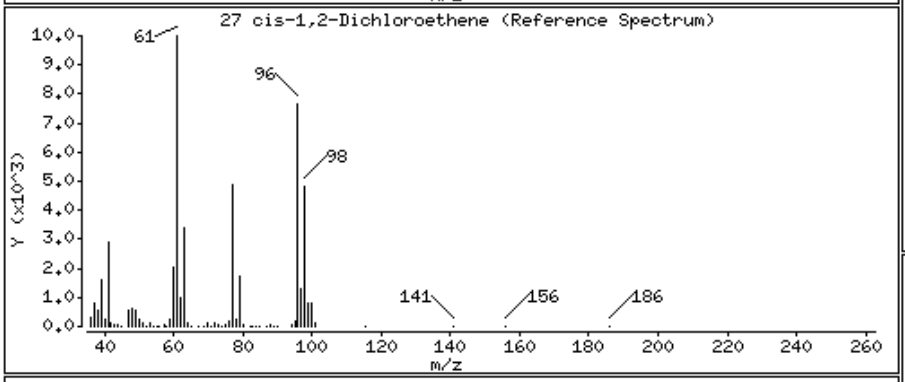
Column diameter: 0.18

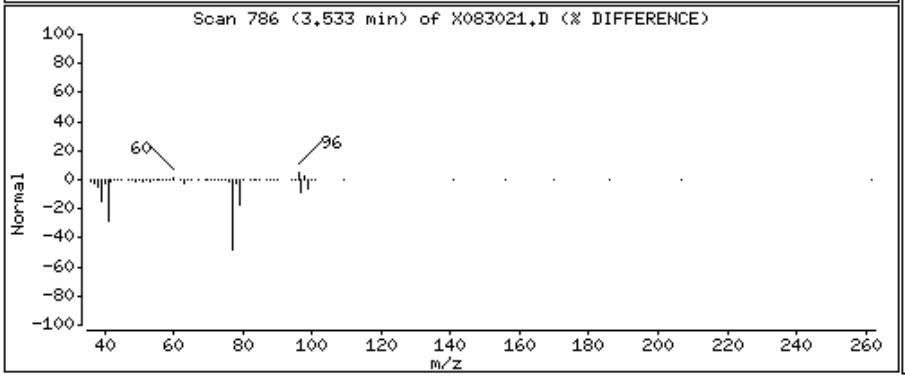
27 cis-1,2-Dichloroethene

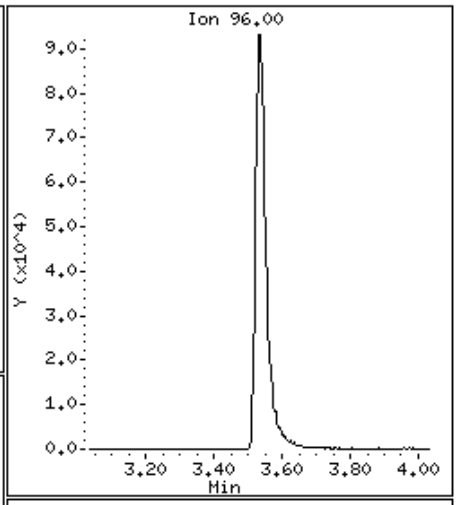
Concentration: 37.55 ug/l

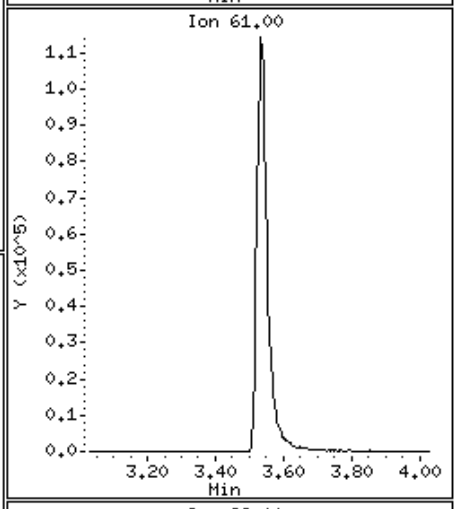


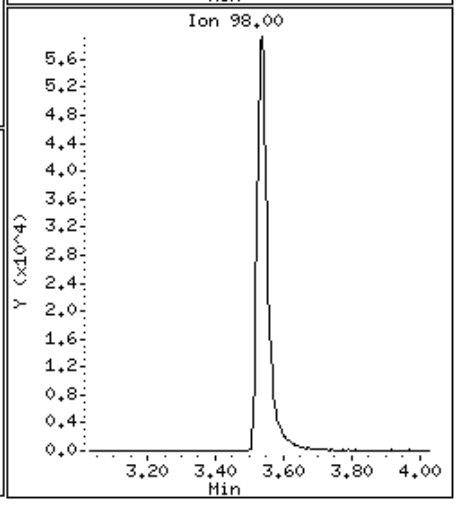












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Date : 30-AUG-2022 17:46

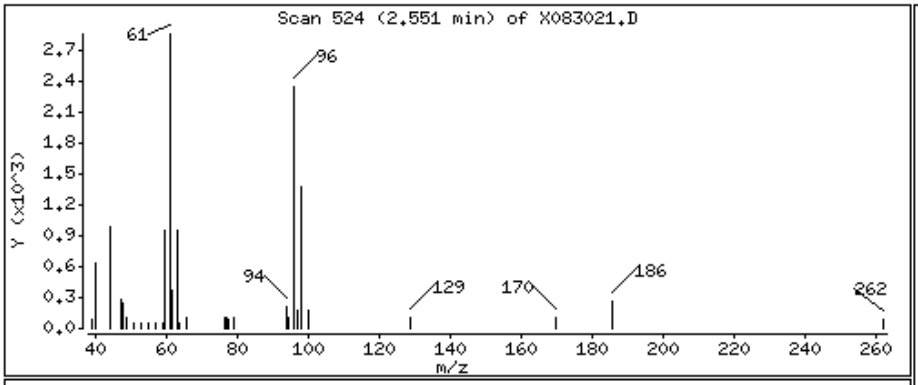
Client ID: HS22081514-20 Instrument: voa6.i

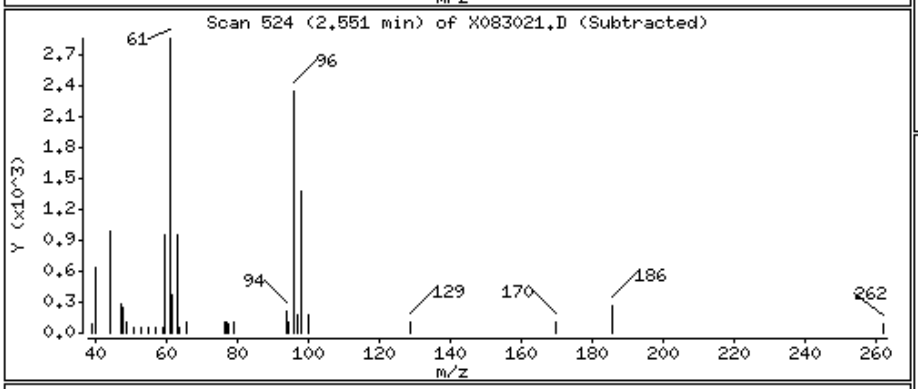
Sample Info: HS22081514-20;HS22081514-20;;;

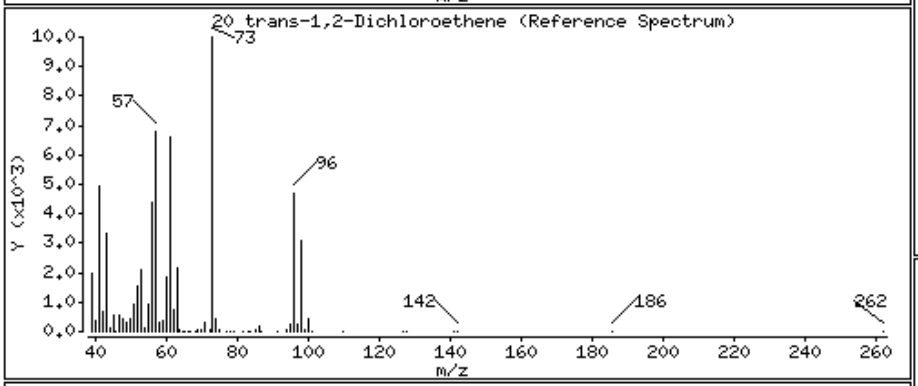
Purge Volume: 5.0 Operator: PC

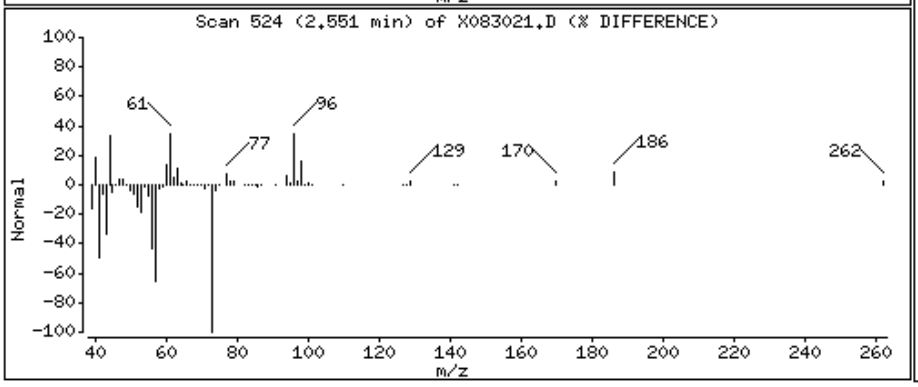
Column phase: DB624 Column diameter: 0.18

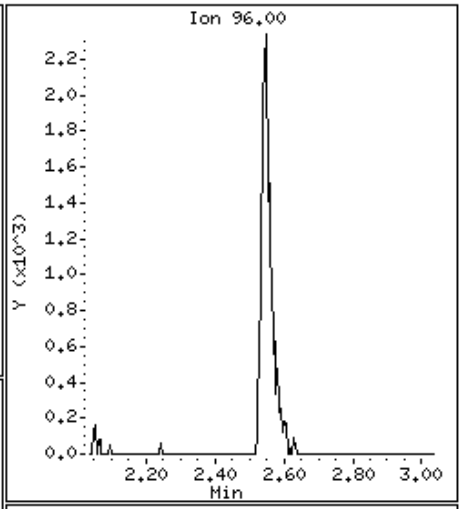
20 trans-1,2-Dichloroethene Concentration: 0.98 ug/l

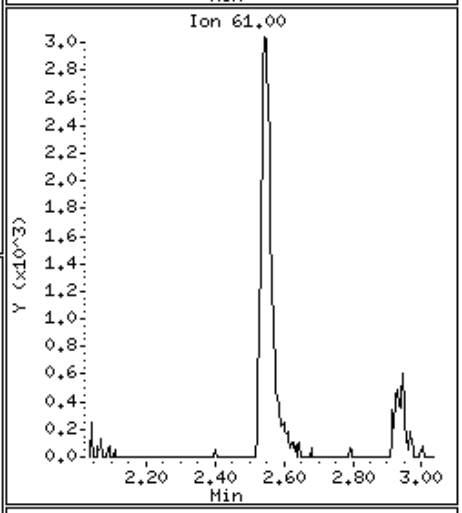


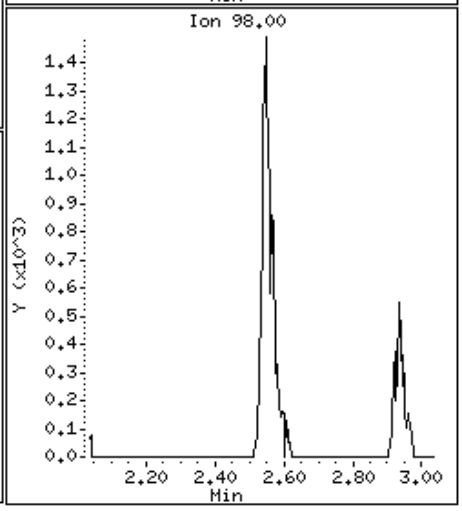












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Date : 30-AUG-2022 17:46

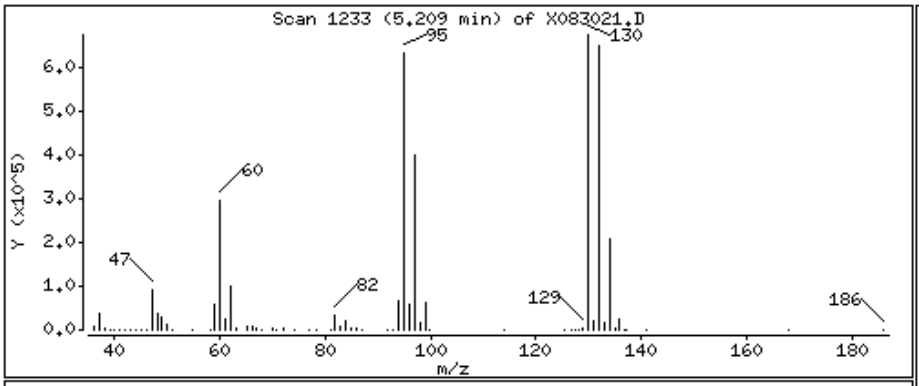
Client ID: HS22081514-20 Instrument: voa6.i

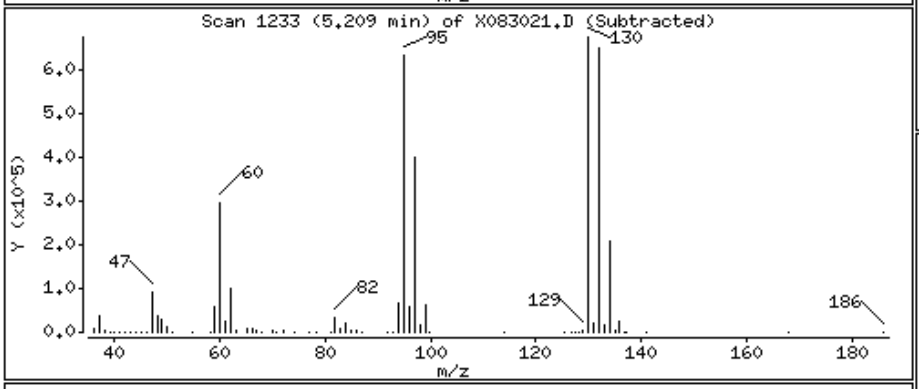
Sample Info: HS22081514-20;HS22081514-20;;;

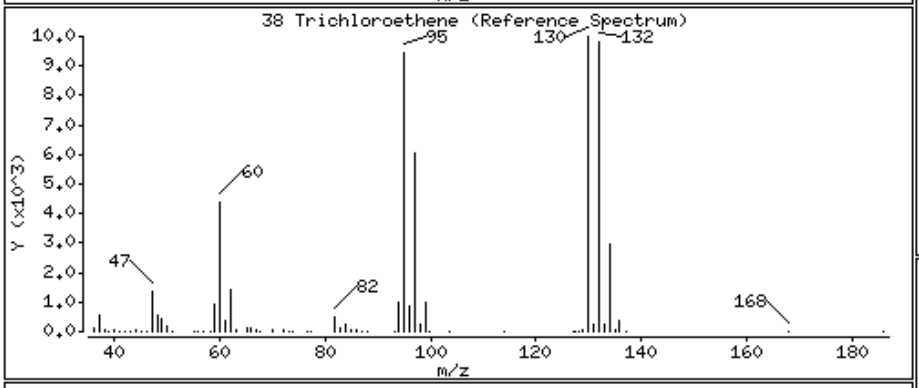
Purge Volume: 5.0 Operator: PC

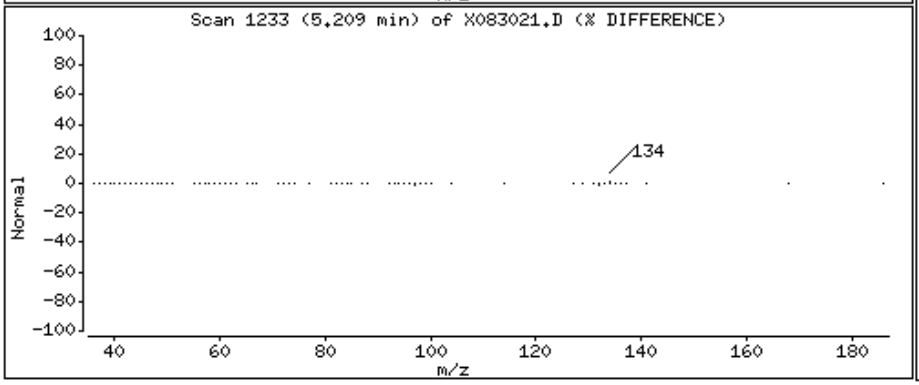
Column phase: DB624 Column diameter: 0.18

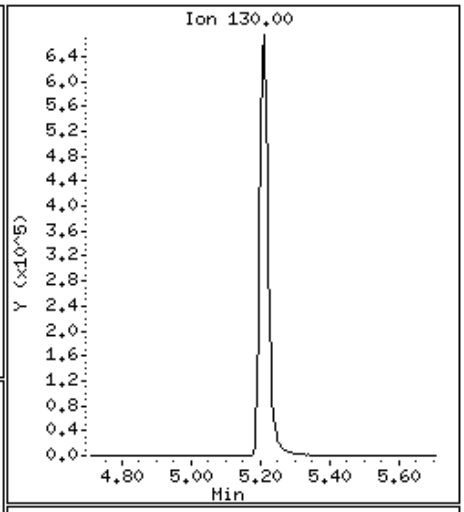
38 Trichloroethene Concentration: 213.57 ug/l

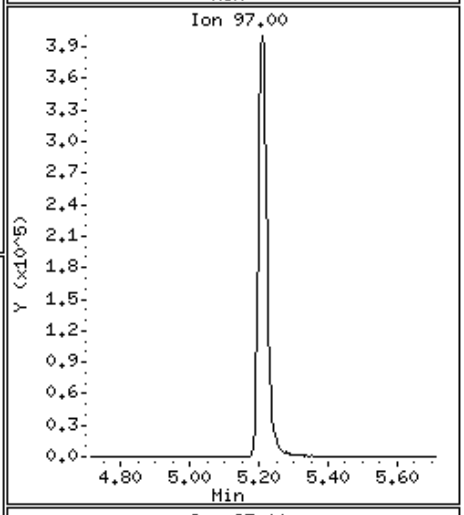


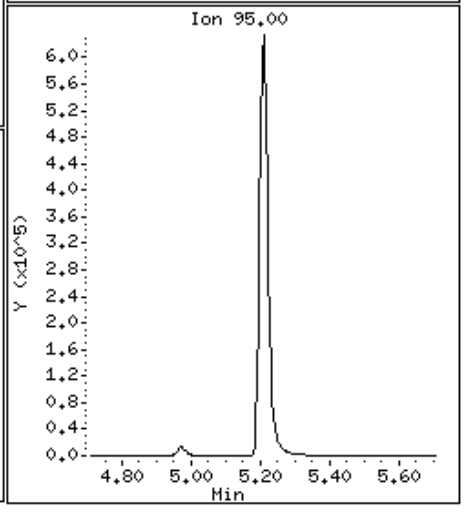












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Date : 30-AUG-2022 17:46

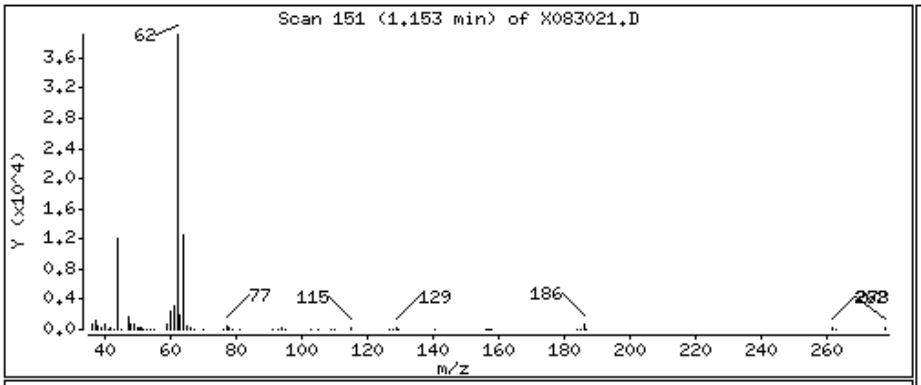
Client ID: HS22081514-20 Instrument: voa6.i

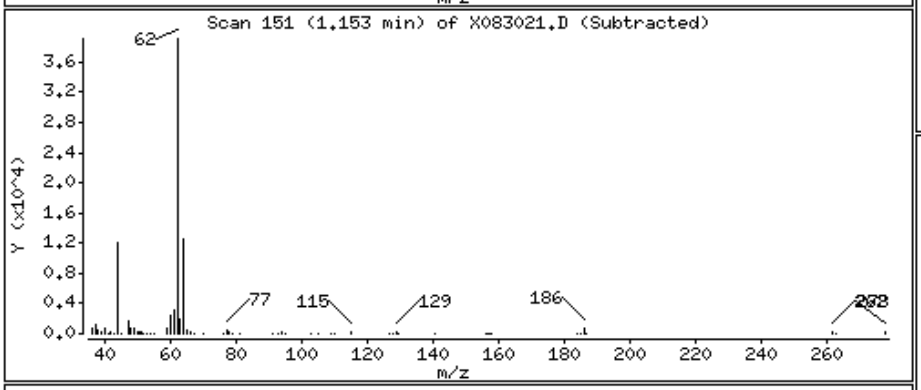
Sample Info: HS22081514-20;HS22081514-20;;;

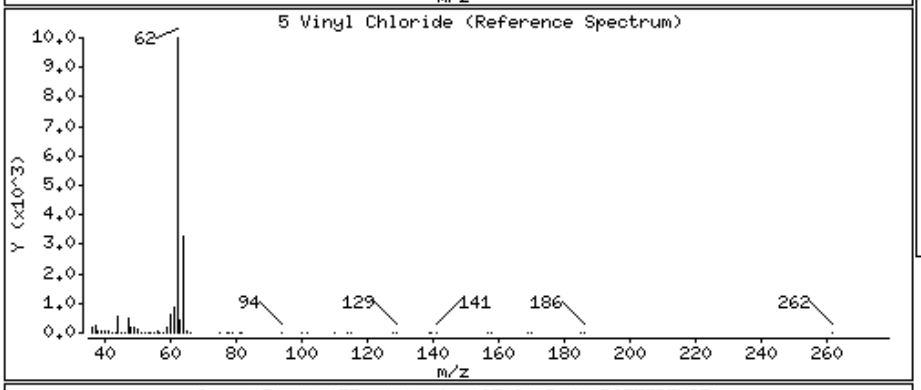
Purge Volume: 5.0 Operator: PC

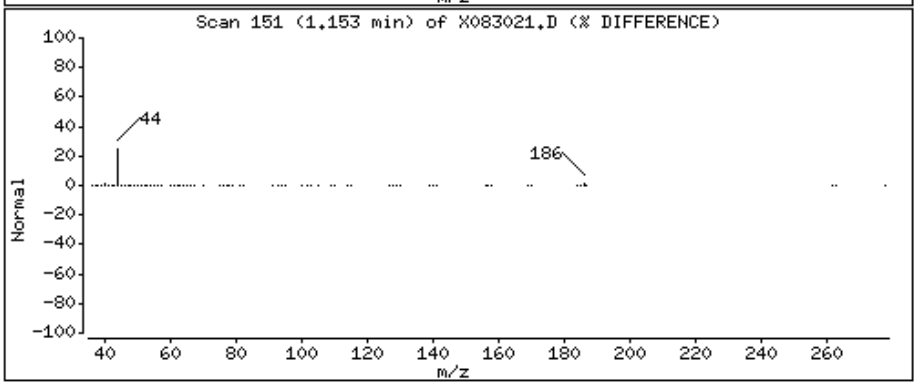
Column phase: DB624 Column diameter: 0.18

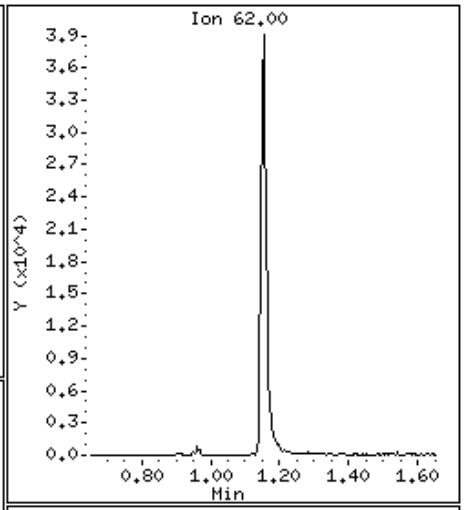
5 Vinyl Chloride Concentration: 7.65 ug/l

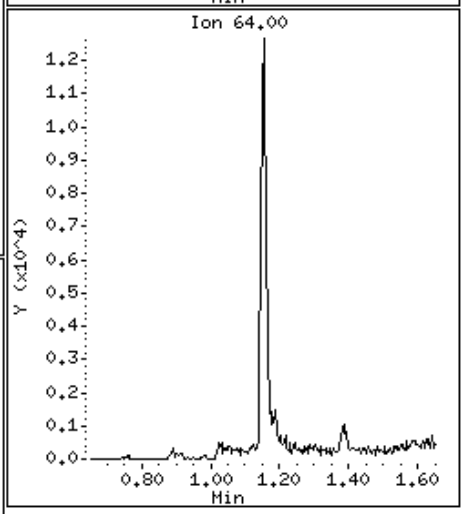












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InstruID : voa6.i
LabSampID : HS22081514-20

NO MANUAL INTEGRATIONS

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Report Date: 09-Sep-2022 11:19

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220830.b\X083022.D
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Inj Date : 30-AUG-2022 18:07
Operator : PC Inst ID: voa6.i
Smp Info : CCV-END;CCV-END;2;;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220830.b\8260W.m
Meth Date : 09-Sep-2022 11:19 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 21 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.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
Cpnd Variable		Local Compound Variable

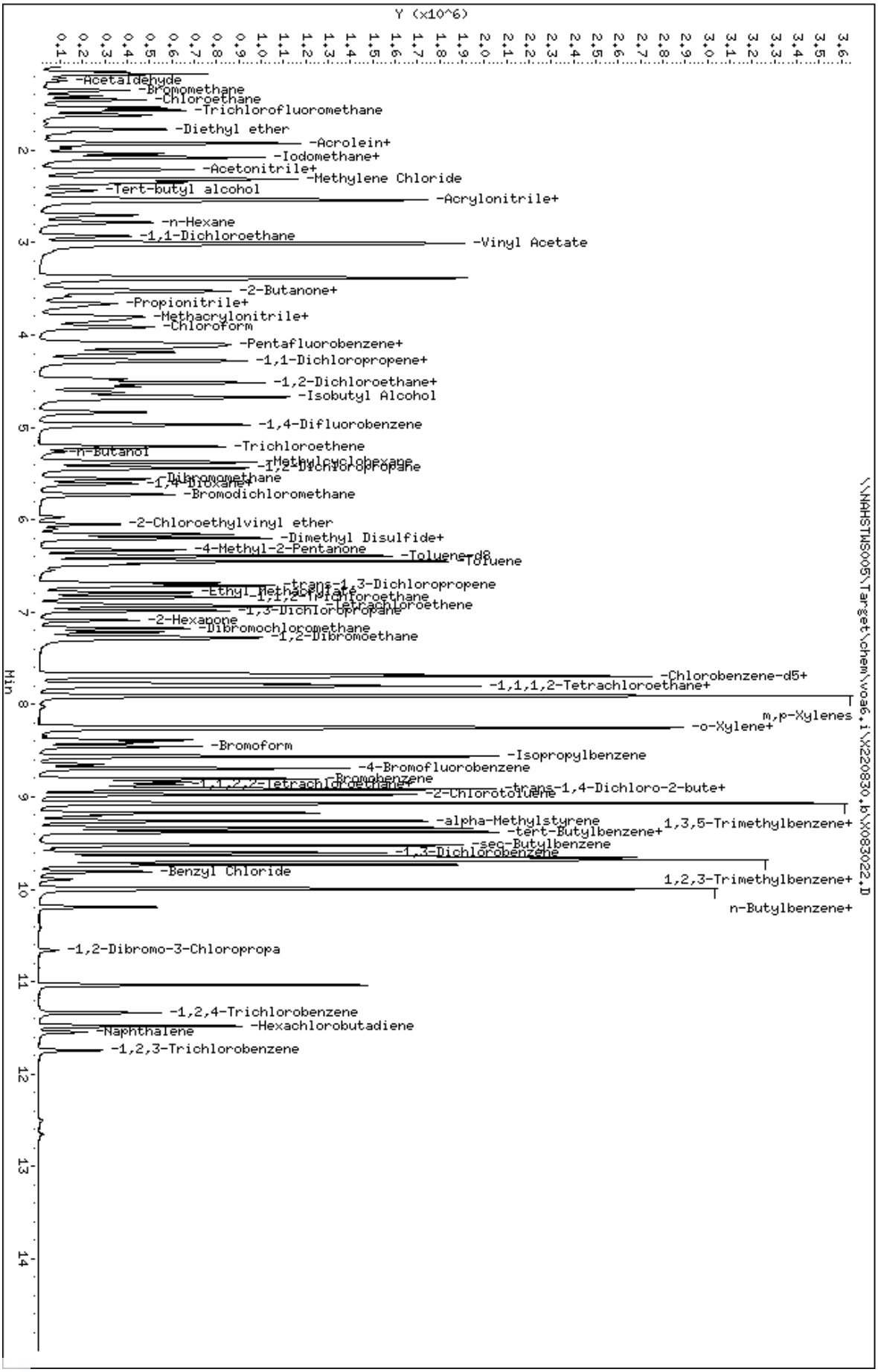
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.185	4.185	(1.000)	520886	50.0000	
* 36 1,4-Difluorobenzene	114	4.969	4.969	(1.000)	791221	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	746210	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	381369	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.980)	265984	50.0000	54.17
$ 35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.069)	288534	50.0000	53.62
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	933561	50.0000	50.14
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	347313	50.0000	52.19
60 1,1,1,2-Tetrachloroethane	131	7.776	7.776	(1.014)	269163	50.0000	51.34
31 1,1,1-Trichloroethane	97	4.091	4.091	(0.978)	378991	50.0000	51.28
68 1,1,2,2-Tetrachloroethane	83	8.841	8.841	(0.915)	256887	50.0000	47.96
53 1,1,2-Trichloroethane	83	6.839	6.839	(0.892)	189129	50.0000	49.29
22 1,1-Dichloroethane	63	2.929	2.929	(0.700)	410701	50.0000	51.21
11 1,1-Dichloroethene	96	1.925	1.925	(0.460)	206264	50.0000	47.43
32 1,1-Dichloropropene	75	4.286	4.286	(0.863)	324039	50.0000	50.74
93 1,2,3-Trichlorobenzene	180	11.742	11.742	(1.215)	86907	50.0000	43.83
71 1,2,3-Trichloropropane	75	8.863	8.863	(0.917)	204531	50.0000	49.52(M)
90 1,2,4-Trichlorobenzene	180	11.341	11.341	(1.174)	159490	50.0000	45.91
79 1,2,4-Trimethylbenzene	105	9.381	9.381	(0.971)	922239	50.0000	50.41
89 1,2-Dibromo-3-Chloropropane	155	10.659	10.659	(1.103)	19270	50.0000	47.80

57 1,2-Dibromoethane	107	7.263	7.263 (0.947)	241174	50.0000	49.57
88 1,2-Dichlorobenzene	146	9.992	9.992 (1.034)	472509	50.0000	49.51

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
33	1,2-Dichloroethane	62	4.560	4.560	(0.918)	344789	50.0000	49.68
42	1,2-Dichloropropane	63	5.437	5.437	(1.094)	243730	50.0000	50.04
75	1,3,5-Trimethylbenzene	105	9.070	9.070	(0.939)	924736	50.0000	49.91
83	1,3-Dichlorobenzene	146	9.606	9.606	(0.994)	522112	50.0000	49.34
54	1,3-Dichloropropane	76	6.982	6.982	(0.910)	387367	50.0000	49.63
84	1,4-Dichlorobenzene	146	9.684	9.684	(1.002)	546951	50.0000	48.68
26	2,2-Dichloropropane	77	3.514	3.514	(0.840)	352249	50.0000	49.45
24	2-Butanone	43	3.585	3.585	(0.857)	132966	100.000	101.75
76	2-Chlorotoluene	91	8.976	8.976	(0.929)	779422	50.0000	47.68
52	2-Hexanone	43	7.090	7.090	(0.924)	240316	100.000	102.41
77	4-Chlorotoluene	91	9.073	9.073	(0.939)	893597	50.0000	48.97
82	p-Isopropyltoluene	119	9.651	9.651	(0.999)	952750	50.0000	51.21
45	4-Methyl-2-Pentanone	43	6.326	6.326	(0.825)	376361	100.000	103.50
10	Acetone	43	1.981	1.981	(0.473)	105704	100.000	96.13
37	Benzene	78	4.515	4.515	(0.909)	928333	50.0000	49.51
74	Bromobenzene	156	8.807	8.807	(0.912)	318683	50.0000	48.93
29	Bromochloromethane	128	3.803	3.803	(0.909)	144348	50.0000	49.14
39	Bromodichloromethane	83	5.730	5.730	(1.153)	334617	50.0000	50.07
66	Bromoform	173	8.410	8.410	(1.096)	174399	50.0000	48.25
6	Bromomethane	94	1.347	1.347	(0.322)	182059	50.0000	51.19
19	Carbon Disulfide	76	2.078	2.078	(0.497)	1186816	100.000	103.09
34	Carbon Tetrachloride	117	4.271	4.271	(0.860)	327181	50.0000	47.93
59	Chlorobenzene	112	7.694	7.694	(1.003)	715635	50.0000	50.57
7	Chloroethane	64	1.411	1.411	(0.337)	162043	50.0000	48.50
28	Chloroform	83	3.911	3.911	(0.935)	448571	50.0000	51.05
3	Chloromethane	50	1.085	1.085	(0.259)	249578	50.0000	51.74
27	cis-1,2-Dichloroethene	96	3.533	3.533	(0.844)	268589	50.0000	51.86
46	cis-1,3-Dichloropropene	75	6.157	6.157	(1.239)	414009	50.0000	50.43
55	Dibromochloromethane	129	7.177	7.177	(0.936)	277688	50.0000	50.13
44	Dibromomethane	93	5.553	5.553	(1.118)	162287	50.0000	49.66
2	Dichlorodifluoromethane	85	0.980	0.980	(0.234)	240407	50.0000	48.44
61	Ethylbenzene	106	7.799	7.799	(1.017)	364408	50.0000	50.98
91	Hexachlorobutadiene	225	11.480	11.480	(1.188)	151608	50.0000	47.26
67	Isopropylbenzene	105	8.564	8.564	(1.116)	1130141	50.0000	52.57
62	m,p-Xylenes	106	7.908	7.908	(1.031)	929261	100.000	104.52
17	Methylene Chloride	84	2.311	2.311	(0.552)	250836	50.0000	52.41
87	n-Butylbenzene	91	9.996	9.996	(1.035)	809037	50.0000	52.34
73	n-Propylbenzene	91	8.912	8.912	(0.922)	1288993	50.0000	51.23
92	Naphthalene	128	11.547	11.547	(1.195)	161098	50.0000	41.45
63	o-Xylene	106	8.245	8.245	(1.075)	443146	50.0000	51.27
81	sec-Butylbenzene	105	9.523	9.523	(0.986)	1096859	50.0000	51.01
64	Styrene	104	8.260	8.260	(1.077)	744157	50.0000	52.28
78	tert-Butylbenzene	119	9.340	9.340	(0.967)	788983	50.0000	50.25
56	Tetrachloroethene	164	6.929	6.929	(0.903)	231408	50.0000	47.82
50	Toluene	91	6.449	6.449	(0.841)	1037015	50.0000	49.43
20	trans-1,2-Dichloroethene	96	2.536	2.536	(0.606)	230980	50.0000	50.40
51	trans-1,3-Dichloropropene	75	6.682	6.682	(1.345)	349909	50.0000	51.47
38	Trichloroethene	130	5.209	5.209	(1.048)	274566	50.0000	49.43
8	Trichlorofluoromethane	101	1.569	1.569	(0.375)	401821	50.0000	48.98
5	Vinyl Chloride	62	1.152	1.152	(0.275)	260200	50.0000	47.63

QC Flag Legend

M - Compound response manually integrated.



Data File: \\NAHSTWS005\Target\chem\voa6.i\X220830.b\X083022.D
Date : 30-AUG-2022 18:07
Client ID: CCV-END
Sample Info: CCV-END;CCV-END;2;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File : \\NAHSTWS005\Target\chem\voa6.i\X220830.b\X083022.D
Inj Date : 30-AUG-2022 18:07
InstruID : voa6.i
LabSampID : CCV-END

1,2,3-Trichloropropane (96-18-4)

Reason Code:

BEFORE

MASS
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893597
HEIGHT
663632
09-Sep-2022
11:18
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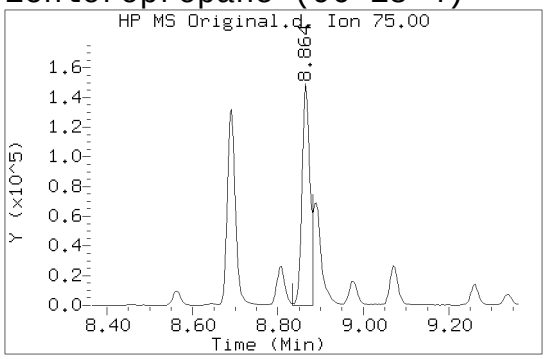
pham



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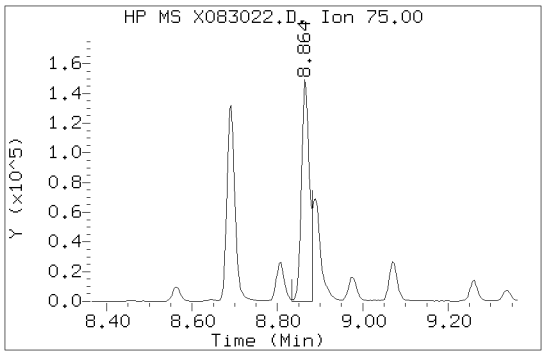

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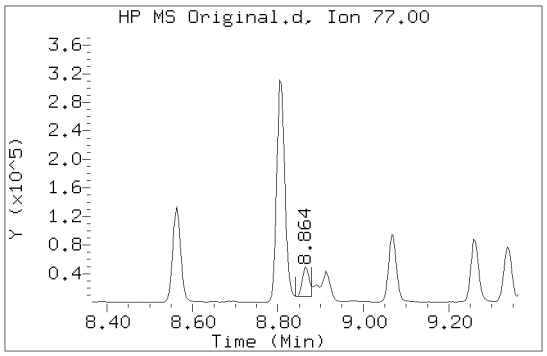

AFTER

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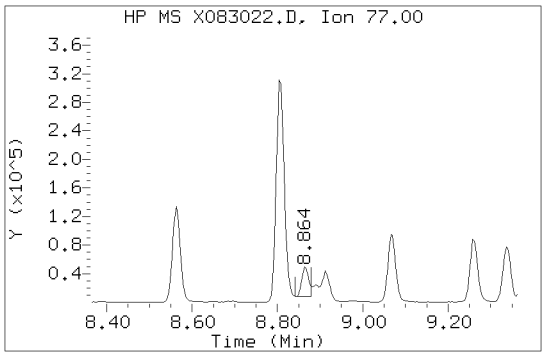


right solutions.
right partner.

Raw Data VOA6 416393

Workorder

HS22081514

Client

Bhate Environmental Associates, Inc.

Project

LHAAP ICT Wells

09/09/2022

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090101.D Page 1
Report Date: 01-Sep-2022 11:10

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090101.D
Lab Smp Id: BFB Client Smp ID: BFB
Inj Date : 01-SEP-2022 10:11
Operator : PC Inst ID: voa6.i
Smp Info : BFB;BFB;3;;BFB
Misc Info : HS22052000V6;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\bfb.m
Meth Date : 26-Jul-2022 15:17 Linh.Pham Quant Type: ISTD
Cal Date : Cal File:
Als bottle: 1 QC Sample: BFB
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.14 Sample Matrix: WATER
Processing Host: NAHSTW7051

Concentration Formula: Amt * DF * Uf * Vf * Vi * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vf	1.000	Volumetric correction factor
Vi	2.000	Injection Volume
Cpnd Variable		Local Compound Variable

					CONCENTRATIONS ON-COL (ug/L)	FINAL (ug/l)	TARGET RANGE	RATIO
RT	EXP RT	REL RT	MASS	RESPONSE				
1 bfb						CAS #: 460-00-4		
8.691	8.889	(0.000)	95	105432			0.00- 100.00	100.00
8.691	8.889	(0.000)	50	21648			15.00- 40.00	20.53
8.691	8.889	(0.000)	75	55424			30.00- 60.00	52.57
8.691	8.889	(0.000)	96	7316			5.00- 9.00	6.94
8.691	8.889	(0.000)	173	973			0.00- 2.00	1.03
8.691	8.889	(0.000)	174	94280			50.00- 0.00	89.42
8.691	8.889	(0.000)	175	6902			5.00- 9.00	7.32
8.691	8.889	(0.000)	176	90016			95.00- 101.00	95.48
8.691	8.889	(0.000)	177	6839			5.00- 9.00	7.60

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	20.53
75	30.00 - 60.00% of mass 95	52.57
96	5.00 - 9.00% of mass 95	6.94
173	Less than 2.00% of mass 174	0.92 (1.03)
174	Greater than 50.00% of mass 95	89.42
175	5.00 - 9.00% of mass 174	6.55 (7.32)
176	95.00 - 101.00% of mass 174	85.38 (95.48)
177	5.00 - 9.00% of mass 176	6.49 (7.60)

Data File: X090101.D
Spectrum: Scan 2160 (8.68)
Location of Maximum: 95.00
Number of points: 103

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	1126	62.00	5359	90.90	483	130.90	138
37.00	5704	63.00	3556	92.00	3083	134.90	304
38.00	6324	63.80	294	93.00	4809	136.80	161
39.10	2737	65.00	154	94.00	12826	141.00	1118
39.90	797	66.10	142	95.00	105432	142.00	116
40.90	648	67.10	400	96.00	7316	142.90	918
42.00	1022	68.00	10799	97.00	325	144.90	112
43.10	554	69.00	12342	97.90	859	146.00	109
44.00	1869	70.00	1375	102.70	119	147.70	186
44.90	770	71.10	145	103.90	767	149.70	126
46.00	201	71.90	547	105.00	480	152.90	149
47.10	1208	73.00	4892	105.90	686	155.00	450
48.00	703	74.00	17904	106.80	142	157.00	151
49.00	5035	75.00	55424	109.60	63	158.80	117
50.00	21648	76.00	4750	110.70	174	160.70	63
51.00	7129	77.00	829	113.00	78	169.70	113
51.90	384	77.70	430	115.10	163	170.10	95
52.90	198	78.20	403	115.90	430	173.10	973
54.10	245	78.90	4206	116.80	876	173.90	94280
55.10	1869	79.90	1228	117.80	547	174.90	6902
56.00	2393	80.90	4144	118.70	642	175.90	90016
57.00	3286	81.90	706	119.80	82	176.90	6839
57.90	234	82.80	234	123.70	145	177.90	308
58.90	71	85.70	107	127.90	351	184.80	89
59.90	1237	86.90	3894	129.00	118	186.00	313
61.00	5488	87.90	4532	129.90	308		

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090101.D

Date : 01-SEP-2022 10:11

Client ID: BFB

Instrument: voa6.i

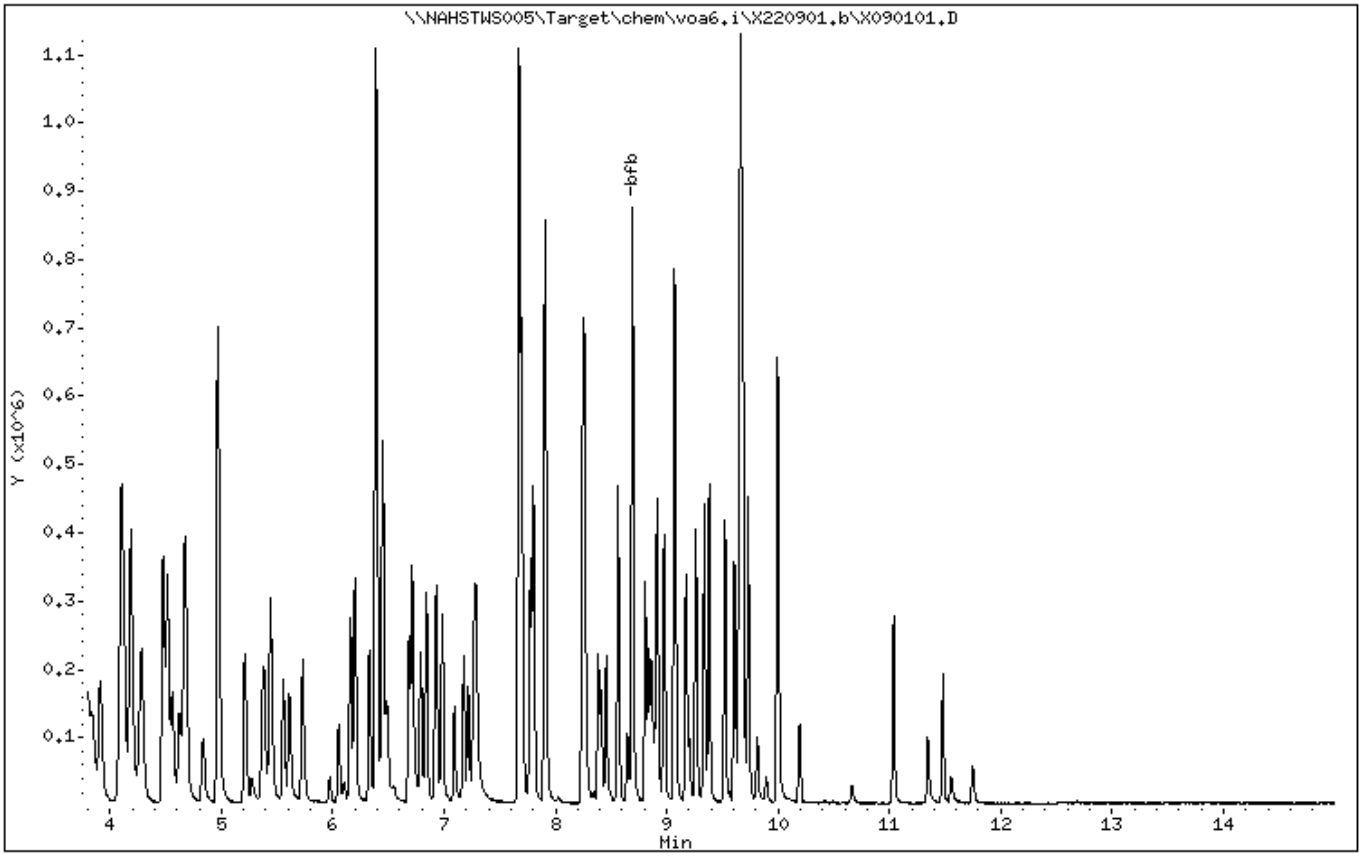
Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25



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Date : 01-SEP-2022 10:11

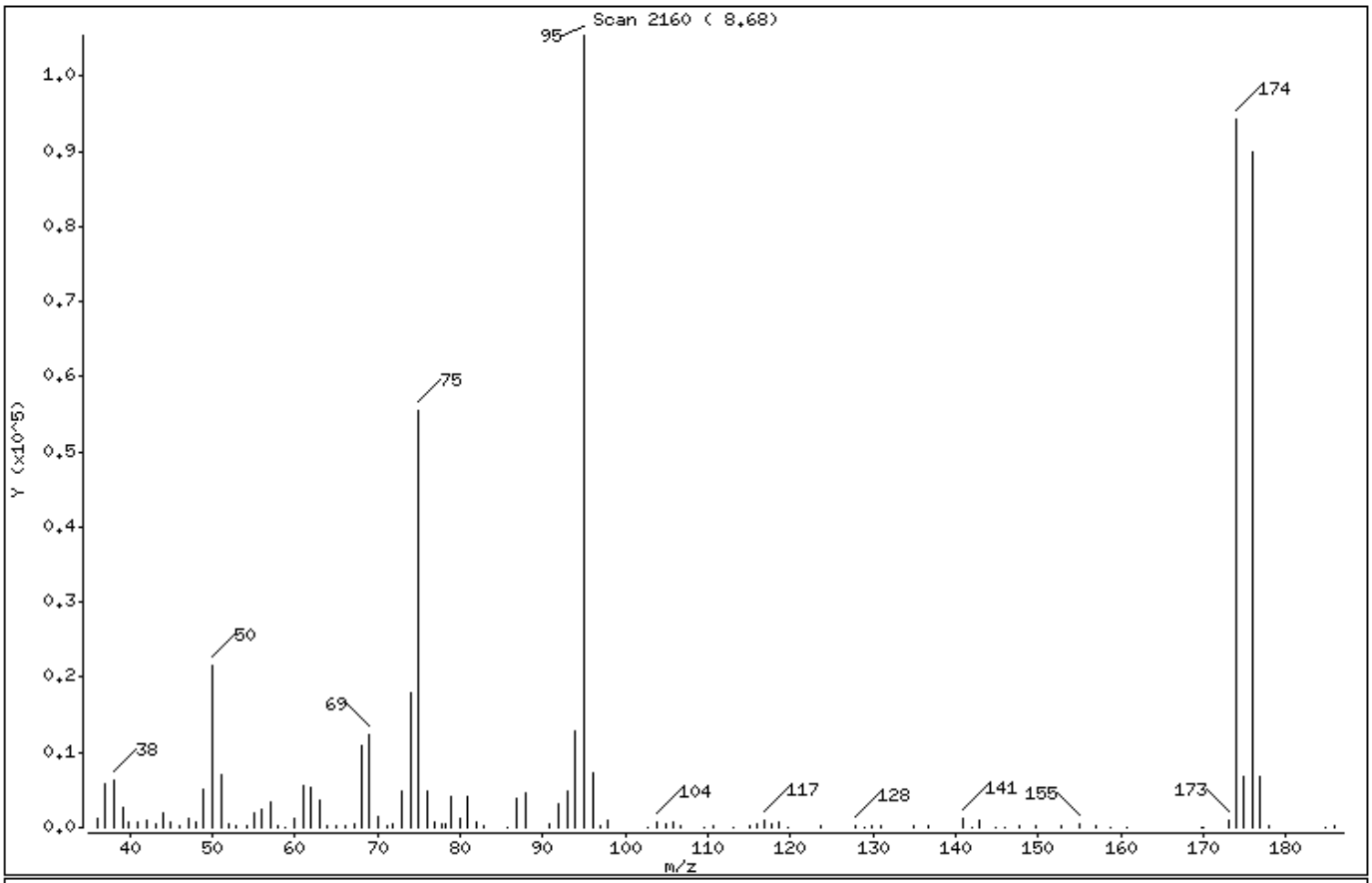
Client ID: BFB Instrument: voa6.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0 Operator: PC

Column phase: DB624 Column diameter: 0.25

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	20.53
75	30.00 - 60.00% of mass 95	52.57
96	5.00 - 9.00% of mass 95	6.94
173	Less than 2.00% of mass 174	0.92 (1.03)
174	Greater than 50.00% of mass 95	89.42
175	5.00 - 9.00% of mass 174	6.55 (7.32)
176	95.00 - 101.00% of mass 174	85.38 (95.48)
177	5.00 - 9.00% of mass 176	6.49 (7.60)

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090101.D

Date : 01-SEP-2022 10:11

Client ID: BFB Instrument: voa6.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0 Operator: PC

Column phase: DB624 Column diameter: 0.25

Data File: X090101.D
Spectrum: Scan 2160 (8.68)
Location of Maximum: 95.00
Number of points: 103

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	1126	62.00	5359	90.90	483	130.90	138
37.00	5704	63.00	3556	92.00	3083	134.90	304
38.00	6324	63.80	294	93.00	4809	136.80	161
39.10	2737	65.00	154	94.00	12826	141.00	1118
39.90	797	66.10	142	95.00	105432	142.00	116
40.90	648	67.10	400	96.00	7316	142.90	918
42.00	1022	68.00	10799	97.00	325	144.90	112
43.10	554	69.00	12342	97.90	859	146.00	109
44.00	1869	70.00	1375	102.70	119	147.70	186
44.90	770	71.10	145	103.90	767	149.70	126
46.00	201	71.90	547	105.00	480	152.90	149
47.10	1208	73.00	4892	105.90	686	155.00	450
48.00	703	74.00	17904	106.80	142	157.00	151
49.00	5035	75.00	55424	109.60	63	158.80	117
50.00	21648	76.00	4750	110.70	174	160.70	63
51.00	7129	77.00	829	113.00	78	169.70	113
51.90	384	77.70	430	115.10	163	170.10	95
52.90	198	78.20	403	115.90	430	173.10	973
54.10	245	78.90	4206	116.80	876	173.90	94280
55.10	1869	79.90	1228	117.80	547	174.90	6902
56.00	2393	80.90	4144	118.70	642	175.90	90016
57.00	3286	81.90	706	119.80	82	176.90	6839
57.90	234	82.80	234	123.70	145	177.90	308
58.90	71	85.70	107	127.90	351	184.80	89
59.90	1237	86.90	3894	129.00	118	186.00	313
61.00	5488	87.90	4532	129.90	308		

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090103.D Page 1
Report Date: 09-Sep-2022 16:51

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090103.D
Lab Smp Id: CCV Client Smp ID: CCV
Inj Date : 01-SEP-2022 10:53
Operator : PC Inst ID: voa6.i
Smp Info : CCV;CCV;2;;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\8260W.m
Meth Date : 09-Sep-2022 16:51 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 3 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.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
Cpnd Variable		Local Compound Variable

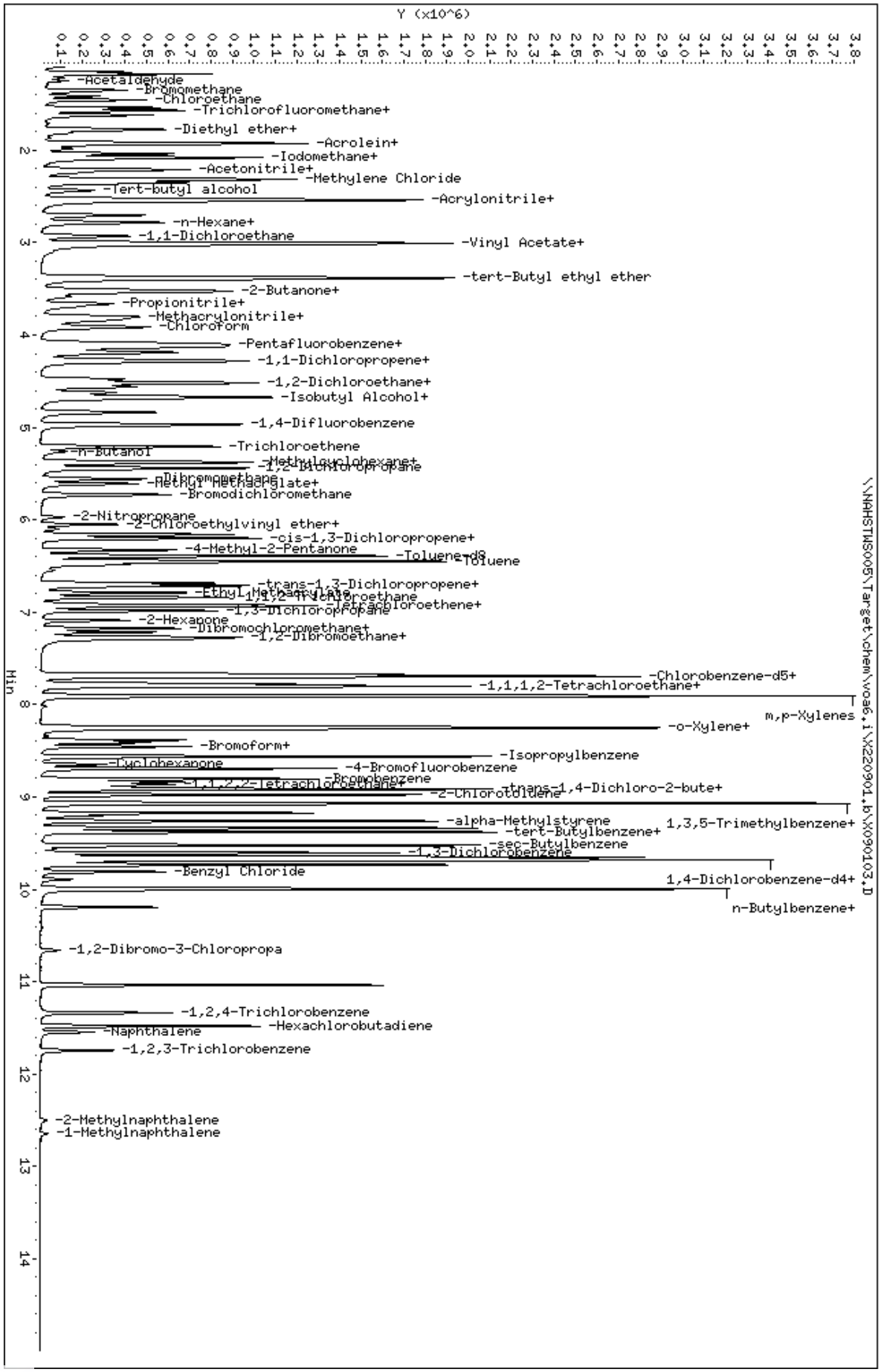
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.189	4.189	(1.000)	539761	50.0000	
* 36 1,4-Difluorobenzene	114	4.968	4.968	(1.000)	785618	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	733868	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.665	9.665	(1.000)	372663	50.0000	
$ 30 Dibromofluoromethane	113	4.106	4.106	(0.980)	267991	50.0000	52.65
$ 35 1,2-Dichloroethane-d4	65	4.477	4.477	(1.069)	289071	50.0000	51.83
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	952476	50.0000	52.01
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	348422	50.0000	53.25
60 1,1,1,2-Tetrachloroethane	131	7.776	7.776	(1.014)	269496	50.0000	52.26
31 1,1,1-Trichloroethane	97	4.087	4.087	(0.976)	393293	50.0000	51.36
68 1,1,2,2-Tetrachloroethane	83	8.841	8.841	(0.915)	253844	50.0000	48.49
53 1,1,2-Trichloroethane	83	6.839	6.839	(0.892)	187228	50.0000	49.62
22 1,1-Dichloroethane	63	2.929	2.929	(0.699)	414265	50.0000	49.85
11 1,1-Dichloroethene	96	1.924	1.924	(0.460)	213957	50.0000	47.48
32 1,1-Dichloropropene	75	4.286	4.286	(0.863)	336992	50.0000	53.14
93 1,2,3-Trichlorobenzene	180	11.742	11.742	(1.215)	98724	50.0000	50.95
71 1,2,3-Trichloropropane	75	8.863	8.863	(0.917)	201201	50.0000	49.85(M)
90 1,2,4-Trichlorobenzene	180	11.337	11.337	(1.173)	177988	50.0000	52.43
79 1,2,4-Trimethylbenzene	105	9.381	9.381	(0.971)	956808	50.0000	53.52
89 1,2-Dibromo-3-Chloropropane	155	10.659	10.659	(1.103)	20356	50.0000	51.46

57	1,2-Dibromoethane	107	7.263	7.263 (0.947)	243384	50.0000	50.87
88	1,2-Dichlorobenzene	146	9.995	9.995 (1.034)	488101	50.0000	52.34

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
33	1,2-Dichloroethane	62	4.560	4.560	(0.918)	350520	50.0000	50.87
42	1,2-Dichloropropane	63	5.441	5.441	(1.095)	246998	50.0000	51.07
75	1,3,5-Trimethylbenzene	105	9.066	9.066	(0.938)	965179	50.0000	53.31
83	1,3-Dichlorobenzene	146	9.605	9.605	(0.994)	551018	50.0000	53.29
54	1,3-Dichloropropane	76	6.985	6.985	(0.911)	385305	50.0000	50.20
84	1,4-Dichlorobenzene	146	9.684	9.684	(1.002)	570129	50.0000	51.93
26	2,2-Dichloropropane	77	3.514	3.514	(0.839)	386809	50.0000	52.42
24	2-Butanone	43	3.585	3.585	(0.856)	133248	100.000	98.40
76	2-Chlorotoluene	91	8.976	8.976	(0.929)	801260	50.0000	50.16
52	2-Hexanone	43	7.090	7.090	(0.924)	231602	100.000	100.36
77	4-Chlorotoluene	91	9.073	9.073	(0.939)	941842	50.0000	52.82
82	p-Isopropyltoluene	119	9.650	9.650	(0.998)	1012929	50.0000	55.72
45	4-Methyl-2-Pentanone	43	6.329	6.329	(0.825)	364960	100.000	102.06
10	Acetone	43	1.981	1.981	(0.473)	108005	100.000	94.71
37	Benzene	78	4.519	4.519	(0.909)	945593	50.0000	50.79
74	Bromobenzene	156	8.807	8.807	(0.911)	326050	50.0000	51.23
29	Bromochloromethane	128	3.803	3.803	(0.908)	144349	50.0000	47.43
39	Bromodichloromethane	83	5.726	5.726	(1.152)	339566	50.0000	51.17
66	Bromoform	173	8.413	8.413	(1.097)	172803	50.0000	48.60
6	Bromomethane	94	1.351	1.351	(0.323)	183437	50.0000	49.73
19	Carbon Disulfide	76	2.078	2.078	(0.496)	1219873	100.000	102.26
34	Carbon Tetrachloride	117	4.271	4.271	(0.860)	340547	50.0000	50.25
59	Chlorobenzene	112	7.694	7.694	(1.003)	723260	50.0000	51.97
7	Chloroethane	64	1.411	1.411	(0.337)	164187	50.0000	47.42
28	Chloroform	83	3.911	3.911	(0.934)	448882	50.0000	49.30
3	Chloromethane	50	1.089	1.089	(0.260)	254598	50.0000	50.94
27	cis-1,2-Dichloroethene	96	3.533	3.533	(0.843)	272190	50.0000	50.72
46	cis-1,3-Dichloropropene	75	6.157	6.157	(1.239)	426069	50.0000	52.27
55	Dibromochloromethane	129	7.176	7.176	(0.936)	272802	50.0000	50.08
44	Dibromomethane	93	5.557	5.557	(1.118)	162562	50.0000	50.10
2	Dichlorodifluoromethane	85	0.980	0.980	(0.234)	253066	50.0000	49.21
61	Ethylbenzene	106	7.802	7.802	(1.017)	375778	50.0000	53.45
91	Hexachlorobutadiene	225	11.480	11.480	(1.188)	165653	50.0000	52.84
67	Isopropylbenzene	105	8.563	8.563	(1.116)	1164771	50.0000	55.10
62	m,p-Xylenes	106	7.907	7.907	(1.031)	947547	100.000	108.37
17	Methylene Chloride	84	2.311	2.311	(0.552)	248880	50.0000	50.14
87	n-Butylbenzene	91	9.995	9.995	(1.034)	872760	50.0000	57.78
73	n-Propylbenzene	91	8.912	8.912	(0.922)	1361932	50.0000	55.39
92	Naphthalene	128	11.547	11.547	(1.195)	192224	50.0000	50.62
63	o-Xylene	106	8.245	8.245	(1.075)	449440	50.0000	52.87
81	sec-Butylbenzene	105	9.523	9.523	(0.985)	1152921	50.0000	54.87
64	Styrene	104	8.260	8.260	(1.077)	749727	50.0000	53.56
78	tert-Butylbenzene	119	9.339	9.339	(0.966)	818782	50.0000	53.36
56	Tetrachloroethene	164	6.929	6.929	(0.903)	246155	50.0000	51.72
50	Toluene	91	6.449	6.449	(0.841)	1066927	50.0000	51.71
20	trans-1,2-Dichloroethene	96	2.539	2.539	(0.606)	240582	50.0000	50.66
51	trans-1,3-Dichloropropene	75	6.685	6.685	(1.346)	359917	50.0000	53.32
38	Trichloroethene	130	5.208	5.208	(1.048)	279832	50.0000	50.74
8	Trichlorofluoromethane	101	1.572	1.572	(0.375)	418878	50.0000	49.28
5	Vinyl Chloride	62	1.152	1.152	(0.275)	265847	50.0000	46.97

QC Flag Legend

M - Compound response manually integrated.



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Client ID: CCV
Sample Info: CCV;CCV;2;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090103.D
Inj Date : 01-SEP-2022 10:53
InstruID : voa6.i
LabSampID : CCV

1,2,3-Trichloropropane (96-18-4)

Reason Code:

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09-Sep-2022
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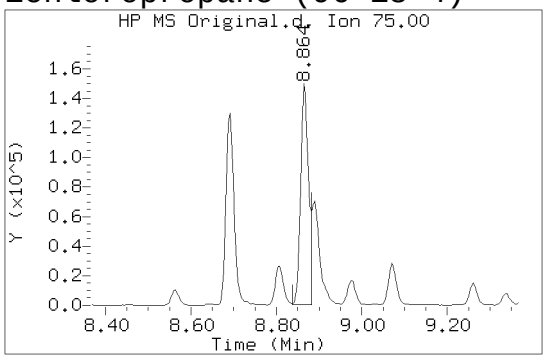

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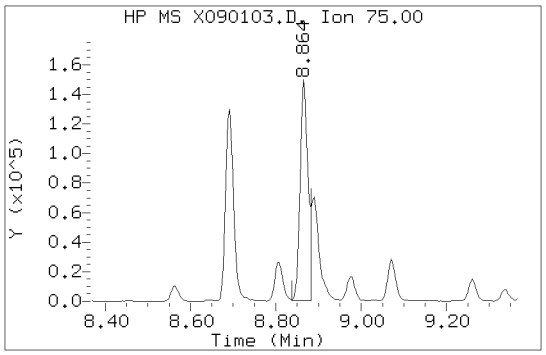

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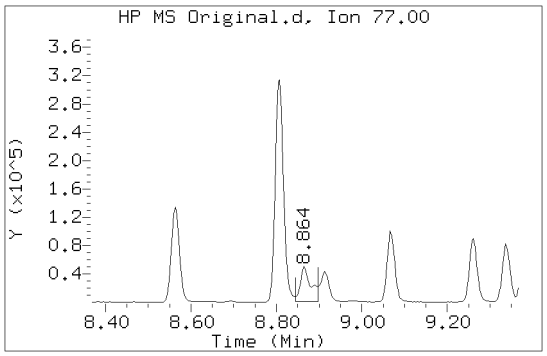

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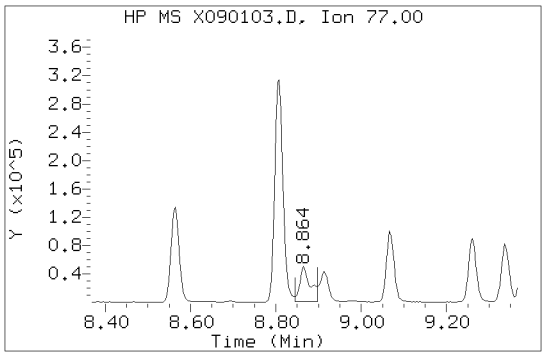

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090104.D Page 1
Report Date: 01-Sep-2022 11:44

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090104.D
Lab Smp Id: CCB Client Smp ID: CCB
Inj Date : 01-SEP-2022 11:14
Operator : PC Inst ID: voa6.i
Smp Info : CCB;CCB;;;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa6.i\X220901.b\8260W.m
Meth Date : 01-Sep-2022 11:44 pcabasca Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 4
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 8260_GB.sub
Target Version: 4.14
Processing Host: NAHSTW7051

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
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	4.185	4.189	(1.000)	590847	50.0000	
145 alpha-Methylstyrene	118	9.268	9.261	(0.959)	5934	0.90239	0.90(a)
166 1,2,3-Trimethylbenzene	105	9.737	9.733	(1.007)	15874	1.11332	1.11(a)
15 Iodomethane	142	2.045	2.037	(0.489)	2385	2.32849	2.32(a)
$ 30 Dibromofluoromethane	113	4.106	4.106	(0.981)	257726	46.1690	46.16
34 Carbon Tetrachloride	117	4.185	4.271	(0.842)	48724	6.94897	6.94
$ 35 1,2-Dichloroethane-d4	65	4.478	4.477	(1.070)	281310	46.0420	46.04
* 36 1,4-Difluorobenzene	114	4.969	4.968	(1.000)	812864	50.0000	
42 1,2-Dichloropropane	63	4.972	5.441	(1.001)	141160	28.2135	28.21
45 4-Methyl-2-Pentanone	43	6.393	6.329	(0.833)	3837	1.13880	1.13(a)
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	691485	50.0000	
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	946816	54.8793	54.87
58 1-Chlorohexane	55	7.671	7.697	(1.544)	7643	1.84308	1.84(a)
61 Ethylbenzene	106	7.926	7.802	(1.033)	4862	0.73407	0.73(a)
63 o-Xylene	106	7.926	8.245	(1.033)	4862	0.60708	0.60(a)
66 Bromoform	173	8.425	8.413	(1.098)	1160	1.57124	1.57(a)
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	291294	47.1604	47.16
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.665	(1.000)	297420	50.0000	
71 1,2,3-Trichloropropane	75	8.691	8.863	(0.899)	142626	44.2840	44.28
73 n-Propylbenzene	91	8.927	8.912	(0.924)	12465	0.63530	0.63(a)

74	Bromobenzene	156	8.815	8.807 (0.912)	3856	0.75917	0.75(a)
75	1,3,5-Trimethylbenzene	105	9.073	9.066 (0.939)	10392	0.71933	0.71(a)

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
76	2-Chlorotoluene	91	8.980	8.976	(0.929)	9686	0.75977	0.75(a)
77	4-Chlorotoluene	91	9.088	9.073	(0.940)	11896	0.83600	0.83(a)
78	tert-Butylbenzene	119	9.343	9.339	(0.967)	9736	0.79515	0.79(a)
79	1,2,4-Trimethylbenzene	105	9.388	9.381	(0.971)	12913	0.90513	0.90(a)
81	sec-Butylbenzene	105	9.527	9.523	(0.986)	14870	0.88689	0.88(a)
82	p-Isopropyltoluene	119	9.654	9.650	(0.999)	14225	0.98053	0.98(a)
83	1,3-Dichlorobenzene	146	9.613	9.605	(0.995)	12023	1.45697	1.45(a)
84	1,4-Dichlorobenzene	146	9.688	9.684	(1.002)	13553	1.54703	1.54(a)
86	Benzyl Chloride	91	9.827	9.812	(1.281)	9381	1.67724	1.67(a)
87	n-Butylbenzene	91	10.007	9.995	(1.035)	17580	1.45836	1.45(a)
88	1,2-Dichlorobenzene	146	10.003	9.995	(1.035)	14562	1.95672	1.95(a)
89	1,2-Dibromo-3-Chloropropane	155	10.674	10.659	(1.104)	1578	5.56009	5.56
90	1,2,4-Trichlorobenzene	180	11.349	11.337	(1.174)	20710	7.64515	7.64
92	Naphthalene	128	11.559	11.547	(1.196)	34955	11.5346	11.53
93	1,2,3-Trichlorobenzene	180	11.754	11.742	(1.216)	18859	12.1973	12.19
141	Cyclohexane	56	4.181	4.132	(0.999)	11120	1.60602	1.60(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090105.D Page 1
Report Date: 09-Sep-2022 16:51

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090105.D
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Inj Date : 01-SEP-2022 11:35
Operator : PC Inst ID: voa6.i
Smp Info : VLCSW-220901;VLCSW-220901;3;;LCS
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\8260W.m
Meth Date : 09-Sep-2022 16:51 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 5 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7056

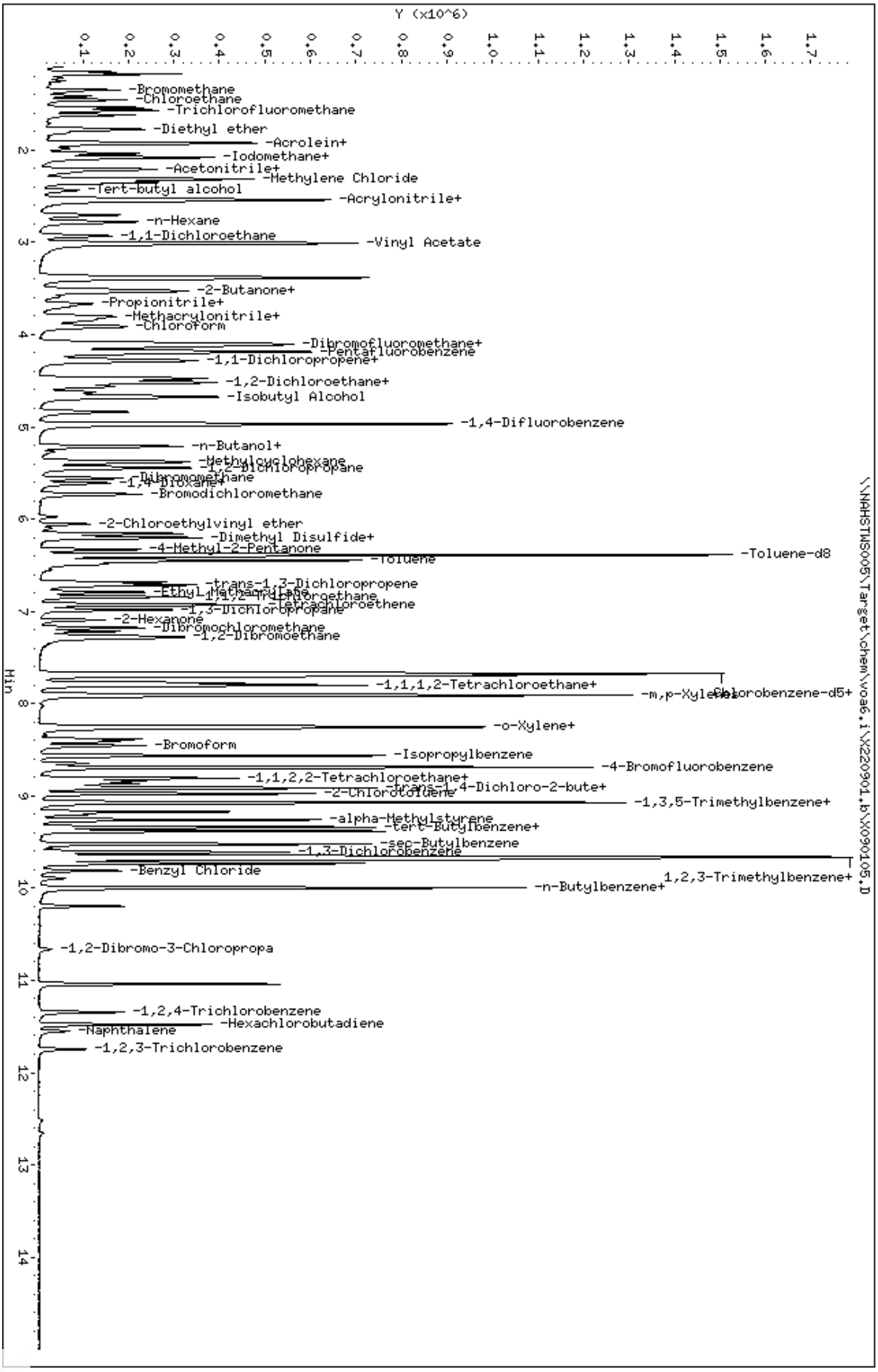
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
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	4.189	4.189	(1.000)	528931	50.0000	
* 36 1,4-Difluorobenzene	114	4.968	4.968	(1.000)	781300	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	706658	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.665	(1.000)	351088	50.0000	
$ 30 Dibromofluoromethane	113	4.106	4.106	(0.980)	257133	51.5382	51.53
$ 35 1,2-Dichloroethane-d4	65	4.477	4.477	(1.069)	285386	52.2206	52.22
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	922274	52.3090	52.30
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	321472	50.9946	50.99
60 1,1,1,2-Tetrachloroethane	131	7.776	7.776	(1.014)	97461	19.6308	19.63
31 1,1,1-Trichloroethane	97	4.087	4.087	(0.976)	146467	19.5199	19.51
68 1,1,2,2-Tetrachloroethane	83	8.841	8.841	(0.915)	88988	18.0469	18.04
53 1,1,2-Trichloroethane	83	6.843	6.839	(0.892)	68968	18.9822	18.98
22 1,1-Dichloroethane	63	2.929	2.929	(0.699)	153687	18.8737	18.87
11 1,1-Dichloroethene	96	1.925	1.924	(0.460)	82414	18.6655	18.66
32 1,1-Dichloropropene	75	4.286	4.286	(0.863)	126827	20.1133	20.11
93 1,2,3-Trichlorobenzene	180	11.746	11.742	(1.216)	34569	18.9403	18.94
71 1,2,3-Trichloropropane	75	8.863	8.863	(0.917)	66467	17.4827	17.48
90 1,2,4-Trichlorobenzene	180	11.345	11.337	(1.174)	60936	19.0561	19.05
79 1,2,4-Trimethylbenzene	105	9.381	9.381	(0.971)	339904	20.1835	20.18
89 1,2-Dibromo-3-Chloropropane	155	10.663	10.659	(1.104)	6039	16.9813	16.98

57	1,2-Dibromoethane	107	7.263	7.263 (0.947)	88619	19.2363	19.23
88	1,2-Dichlorobenzene	146	9.995	9.995 (1.035)	168707	19.2041	19.20

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
33	1,2-Dichloroethane	62	4.564	4.560	(0.919)	133122	19.4278	19.42
42	1,2-Dichloropropane	63	5.441	5.441	(1.095)	93769	19.4986	19.49
75	1,3,5-Trimethylbenzene	105	9.069	9.066	(0.939)	342080	20.0590	20.05
83	1,3-Dichlorobenzene	146	9.609	9.605	(0.995)	190916	19.5991	19.59
54	1,3-Dichloropropane	76	6.985	6.985	(0.911)	142657	19.3026	19.30
84	1,4-Dichlorobenzene	146	9.684	9.684	(1.002)	203672	19.6947	19.69
26	2,2-Dichloropropane	77	3.518	3.514	(0.840)	144461	19.8263	19.82
24	2-Butanone	43	3.593	3.585	(0.858)	46907	35.3505	35.35
76	2-Chlorotoluene	91	8.976	8.976	(0.929)	292066	19.4078	19.40
52	2-Hexanone	43	7.090	7.090	(0.924)	82303	37.0394	37.03
77	4-Chlorotoluene	91	9.073	9.073	(0.939)	332349	19.7859	19.78
82	p-Isopropyltoluene	119	9.650	9.650	(0.999)	356834	20.8368	20.83
45	4-Methyl-2-Pentanone	43	6.329	6.329	(0.825)	123448	35.8519	35.85
10	Acetone	43	1.984	1.981	(0.474)	45768	37.5503	37.55
37	Benzene	78	4.519	4.519	(0.909)	359995	19.4447	19.44
74	Bromobenzene	156	8.807	8.807	(0.912)	118013	19.6828	19.68
29	Bromochloromethane	128	3.803	3.803	(0.908)	54272	18.1983	18.19
39	Bromodichloromethane	83	5.729	5.726	(1.153)	128240	19.4351	19.43
66	Bromoform	173	8.413	8.413	(1.097)	59812	18.2623	18.26
6	Bromomethane	94	1.351	1.351	(0.323)	74094	19.6964	19.69
19	Carbon Disulfide	76	2.082	2.078	(0.497)	466485	39.9077	39.90
34	Carbon Tetrachloride	117	4.271	4.271	(0.860)	128608	19.0830	19.08
59	Chlorobenzene	112	7.697	7.694	(1.003)	269813	20.1368	20.13
7	Chloroethane	64	1.415	1.411	(0.338)	64257	18.9406	18.94
28	Chloroform	83	3.915	3.911	(0.935)	170417	19.1013	19.10
3	Chloromethane	50	1.089	1.089	(0.260)	96891	19.8168	19.81
27	cis-1,2-Dichloroethene	96	3.533	3.533	(0.843)	105089	19.9844	19.98
46	cis-1,3-Dichloropropene	75	6.160	6.157	(1.240)	156506	19.3094	19.30
55	Dibromochloromethane	129	7.176	7.176	(0.935)	100217	19.1074	19.10
44	Dibromomethane	93	5.557	5.557	(1.118)	61614	19.0958	19.09
2	Dichlorodifluoromethane	85	0.980	0.980	(0.234)	94707	18.6865	18.68
61	Ethylbenzene	106	7.802	7.802	(1.017)	138167	20.4127	20.41
91	Hexachlorobutadiene	225	11.480	11.480	(1.188)	61656	20.8777	20.87
67	Isopropylbenzene	105	8.563	8.563	(1.116)	420390	20.6534	20.65
62	m,p-Xylenes	106	7.907	7.907	(1.031)	345957	41.0918	41.09
17	Methylene Chloride	84	2.314	2.311	(0.553)	100238	20.0960	20.09
87	n-Butylbenzene	91	9.995	9.995	(1.035)	306046	21.5073	21.50
73	n-Propylbenzene	91	8.916	8.912	(0.923)	486502	21.0052	21.00
92	Naphthalene	128	11.551	11.547	(1.196)	60943	17.0361	17.03
63	o-Xylene	106	8.245	8.245	(1.075)	165284	20.1945	20.19
81	sec-Butylbenzene	105	9.523	9.523	(0.986)	415488	20.9928	20.99
64	Styrene	104	8.263	8.260	(1.077)	272561	20.2224	20.22
78	tert-Butylbenzene	119	9.339	9.339	(0.967)	300385	20.7826	20.78
56	Tetrachloroethene	164	6.929	6.929	(0.903)	91715	20.0149	20.01
50	Toluene	91	6.449	6.449	(0.841)	395476	19.9087	19.90
20	trans-1,2-Dichloroethene	96	2.536	2.539	(0.605)	89341	19.2004	19.20
51	trans-1,3-Dichloropropene	75	6.685	6.685	(1.346)	125221	18.6552	18.65
38	Trichloroethene	130	5.212	5.208	(1.049)	108396	19.7649	19.76
8	Trichlorofluoromethane	101	1.568	1.572	(0.375)	156832	18.8294	18.82
5	Vinyl Chloride	62	1.152	1.152	(0.275)	102105	18.4095	18.40



Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090105.D
Date : 01-SEP-2022 11:35
Client ID: VLCSW-220901
Sample Info: VLCSW-220901;VLCSW-220901;3;;LCS
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090105.D
Inj Date : 01-SEP-2022 11:35
InstruID : voa6.i
LabSampID : VLCSW-220901

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090107.D Page 1
Report Date: 09-Sep-2022 16:51

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090107.D
Lab Smp Id: VBLKW-220901 Client Smp ID: VBLKW-220901
Inj Date : 01-SEP-2022 12:17
Operator : PC Inst ID: voa6.i
Smp Info : VBLKW-220901;VBLKW-220901;3;;BLANK
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\8260W.m
Meth Date : 09-Sep-2022 16:51 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 7 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.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
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	4.185	4.189	(1.000)	575411	50.0000	
* 36 1,4-Difluorobenzene	114	4.972	4.968	(1.000)	794522	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	677244	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.665	9.665	(1.000)	282483	50.0000	
$ 30 Dibromofluoromethane	113	4.106	4.106	(0.981)	257937	47.4665	47.46
$ 35 1,2-Dichloroethane-d4	65	4.477	4.477	(1.070)	272438	45.7843	45.78
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	924441	54.7091	54.70
$ 69 4-Bromofluorobenzene	95	8.695	8.691	(1.133)	279324	46.1561	46.15

01148070

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090107.D

Page 1

Date : 01-SEP-2022 12:17

Client ID: VBLKW-220901

Instrument: voa6.i

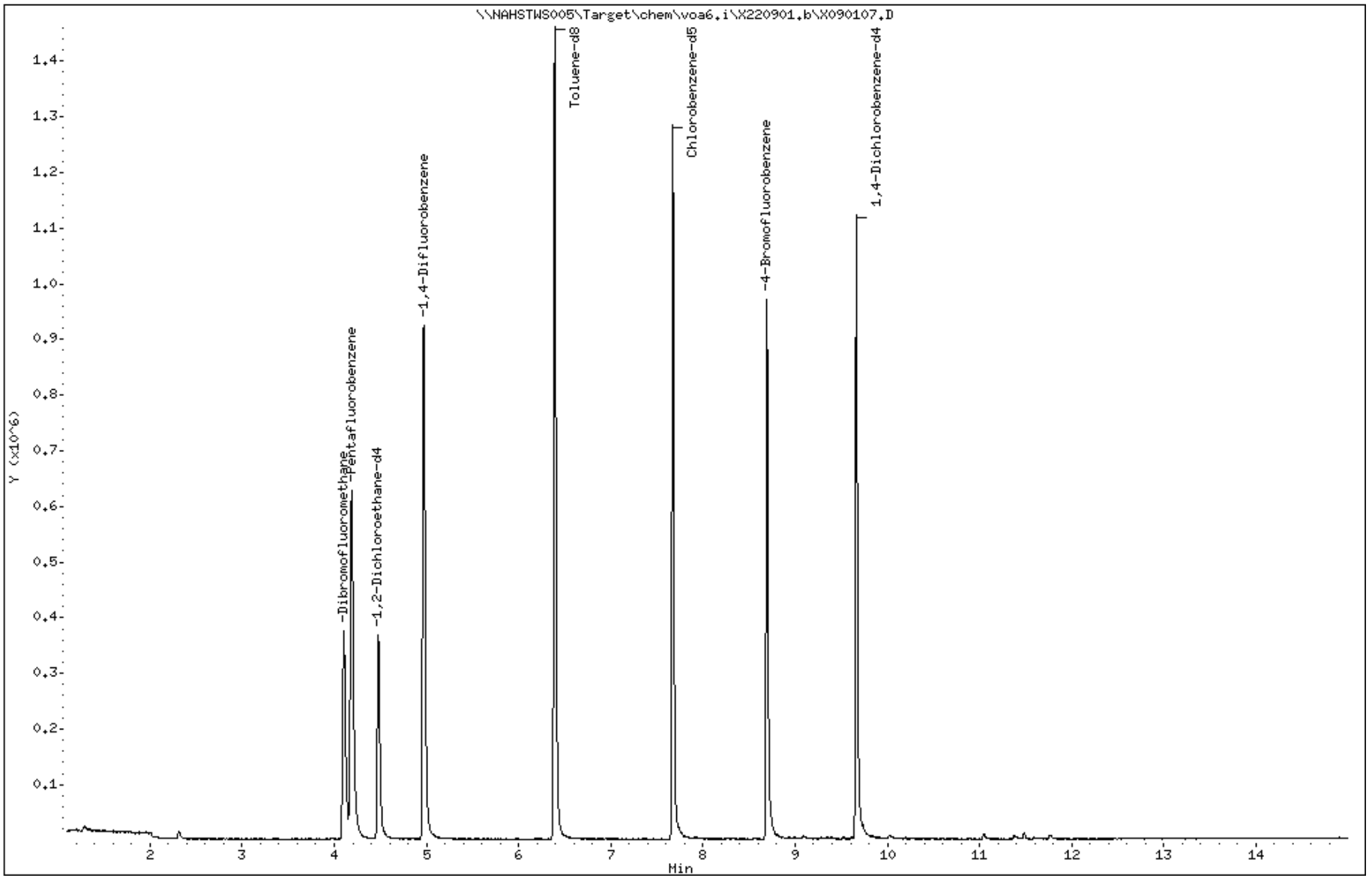
Sample Info: VBLKW-220901;VBLKW-220901;3;;BLANK

Purge Volume: 5.0

Operator: PC

Column phase: DB624

Column diameter: 0.18



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Inj Date : 01-SEP-2022 12:17
InstruID : voa6.i
LabSampID : VBLKW-220901

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090108.D Page 1
Report Date: 09-Sep-2022 16:51

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090108.D
Lab Smp Id: HS22081514-03 Client Smp ID: HS22081514-03
Inj Date : 01-SEP-2022 12:38
Operator : PC Inst ID: voa6.i
Smp Info : HS22081514-03;HS22081514-03;;;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\8260W.m
Meth Date : 09-Sep-2022 16:51 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 8
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.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
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	4.185	4.189	(1.000)	586680	50.0000	
* 36 1,4-Difluorobenzene	114	4.969	4.968	(1.000)	806364	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	689084	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.665	(1.000)	300015	50.0000	
$ 30 Dibromofluoromethane	113	4.106	4.106	(0.981)	258722	46.6847	46.68
$ 35 1,2-Dichloroethane-d4	65	4.477	4.477	(1.070)	272007	44.8270	44.82
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	935698	54.4238	54.42
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	282712	45.9089	45.90
38 Trichloroethene	130	5.220	5.208	(1.051)	4134	0.73036	0.73(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).

01148073

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090108.D

Date : 01-SEP-2022 12:38

Client ID: HS22081514-03

Instrument: voa6.i

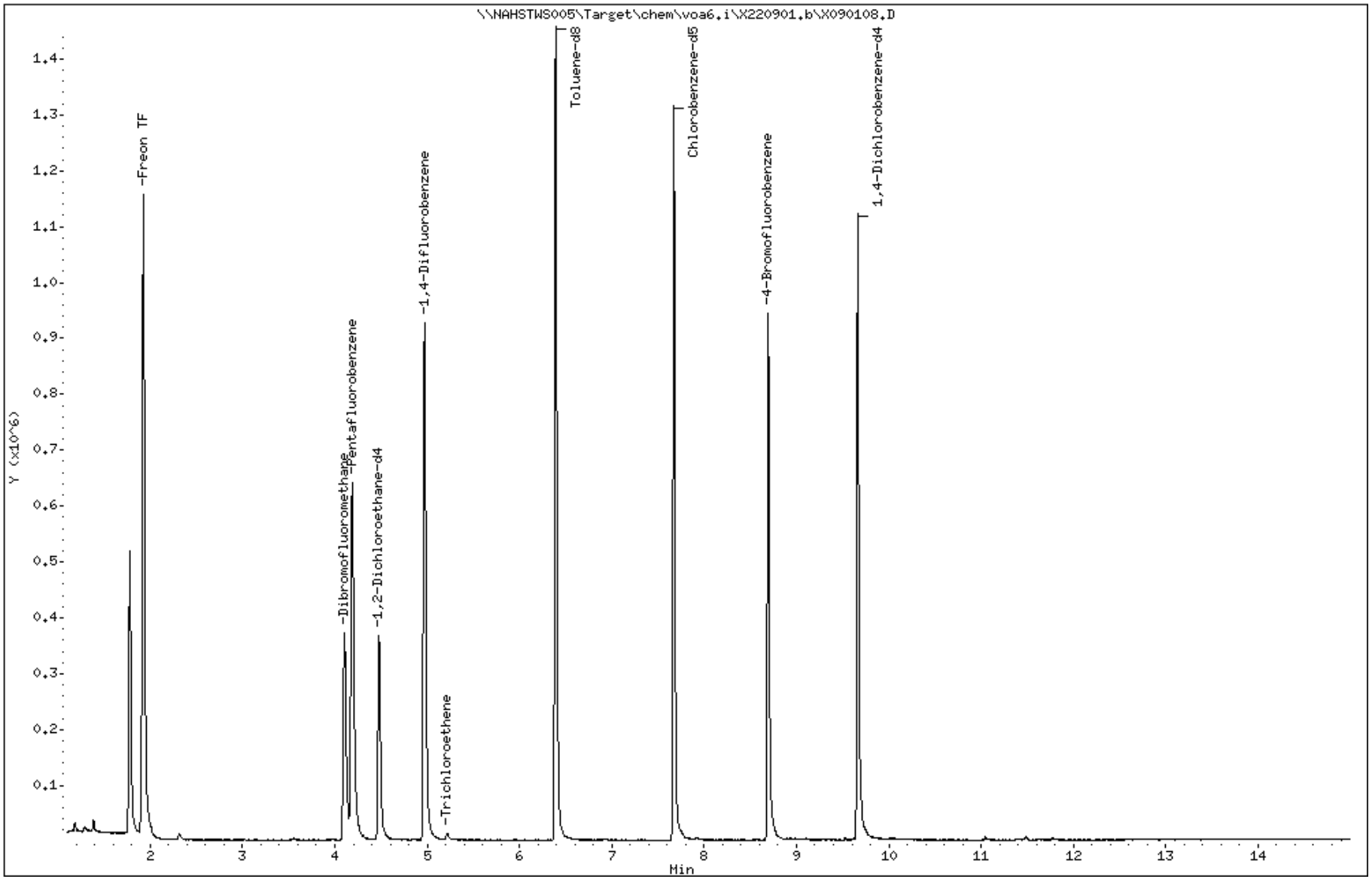
Sample Info: HS22081514-03;HS22081514-03;;;

Purge Volume: 5.0

Operator: PC

Column phase: DB624

Column diameter: 0.18



Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090108.D Page 2

Date : 01-SEP-2022 12:38

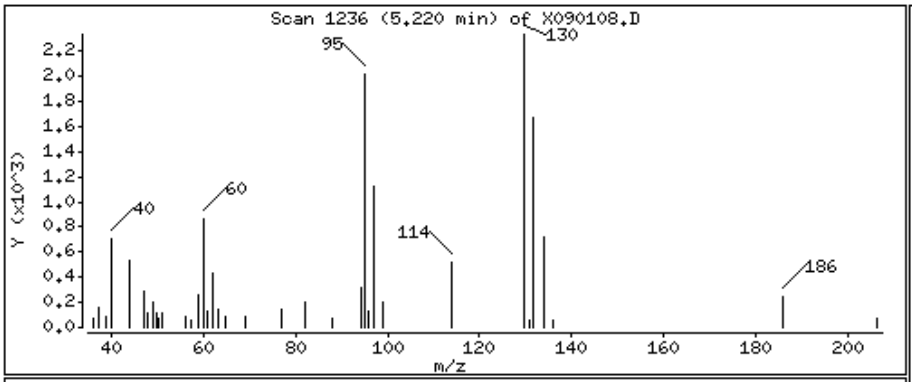
Client ID: HS22081514-03 Instrument: voa6.i

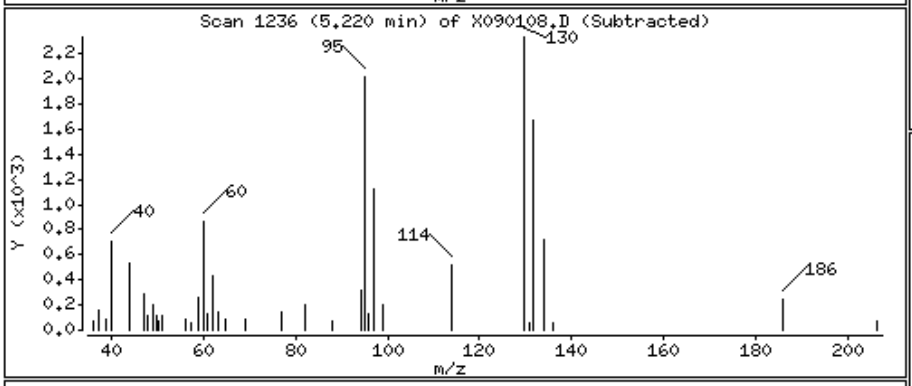
Sample Info: HS22081514-03;HS22081514-03;;;

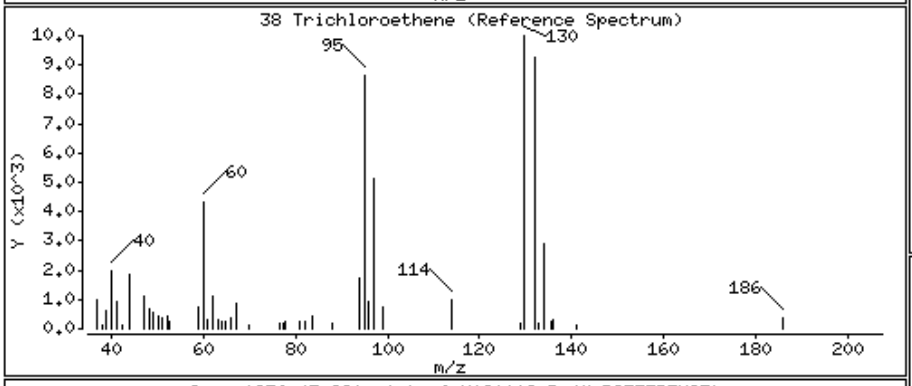
Purge Volume: 5.0 Operator: PC

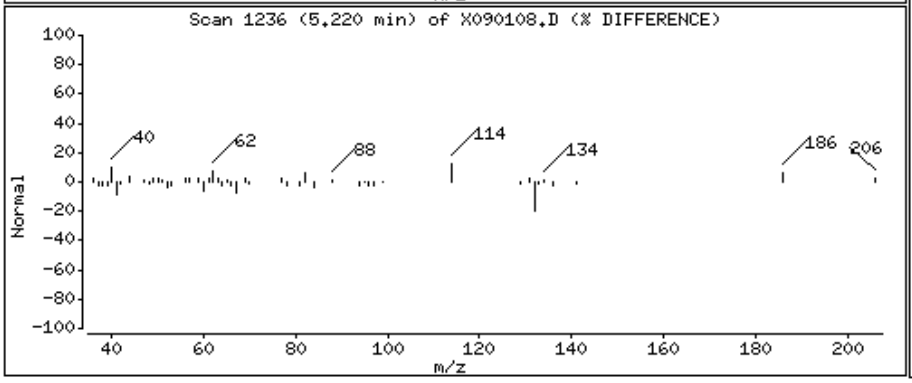
Column phase: DB624 Column diameter: 0.18

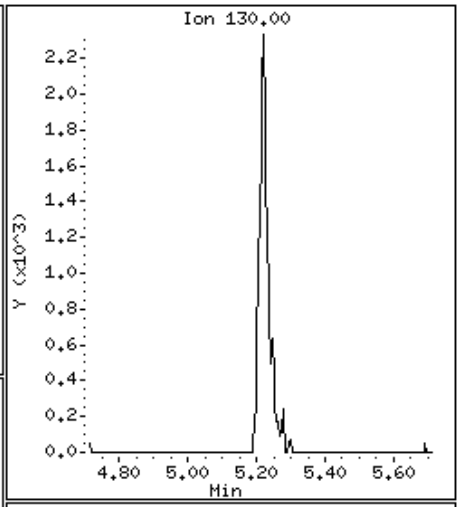
38 Trichloroethene Concentration: 0.73 ug/l

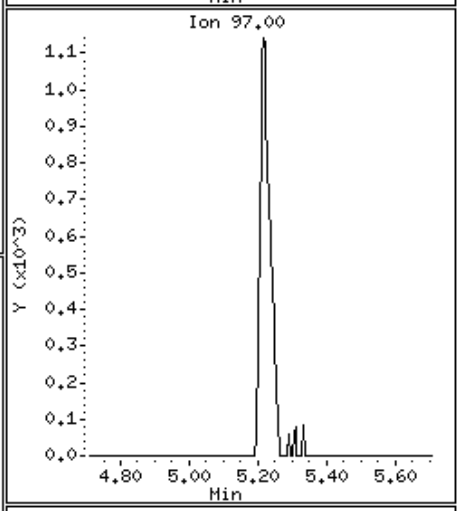


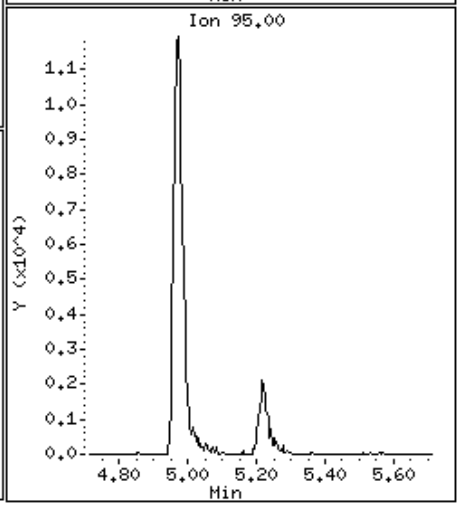












Data File : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090108.D
Inj Date : 01-SEP-2022 12:38
InstruID : voa6.i
LabSampID : HS22081514-03

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090109.D Page 1
Report Date: 09-Sep-2022 16:51

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090109.D
Lab Smp Id: HS22081514-01 Client Smp ID: HS22081514-01
Inj Date : 01-SEP-2022 12:59
Operator : PC Inst ID: voa6.i
Smp Info : HS22081514-01;HS22081514-01;;;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\8260W.m
Meth Date : 09-Sep-2022 16:51 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 9
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.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
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	4.189	4.189	(1.000)	588511	50.0000	
* 36 1,4-Difluorobenzene	114	4.968	4.968	(1.000)	805249	50.0000	
* 47 Chlorobenzene-d5	117	7.675	7.671	(1.000)	692017	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.665	9.665	(1.000)	298308	50.0000	
$ 30 Dibromofluoromethane	113	4.106	4.106	(0.980)	256349	46.1036	46.10
$ 35 1,2-Dichloroethane-d4	65	4.477	4.477	(1.069)	274930	45.1702	45.17
$ 48 Toluene-d8	98	6.389	6.389	(0.832)	926010	53.6321	53.63
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.132)	283940	45.9130	45.91
11 1,1-Dichloroethene	96	1.921	1.924	(0.459)	6912	1.40698	1.40(a)
33 1,2-Dichloroethane	62	4.563	4.560	(0.919)	172032	24.3596	24.35
27 cis-1,2-Dichloroethene	96	3.533	3.533	(0.843)	417457	71.3493	71.34
20 trans-1,2-Dichloroethene	96	2.543	2.539	(0.607)	6714	1.29684	1.29(a)
38 Trichloroethene	130	5.208	5.208	(1.048)	2855151	505.124	505.12(A)
5 Vinyl Chloride	62	1.152	1.152	(0.275)	12040	1.95104	1.95(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.

01148078

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090109.D

Date : 01-SEP-2022 12:59

Client ID: HS22081514-01

Instrument: voa6.i

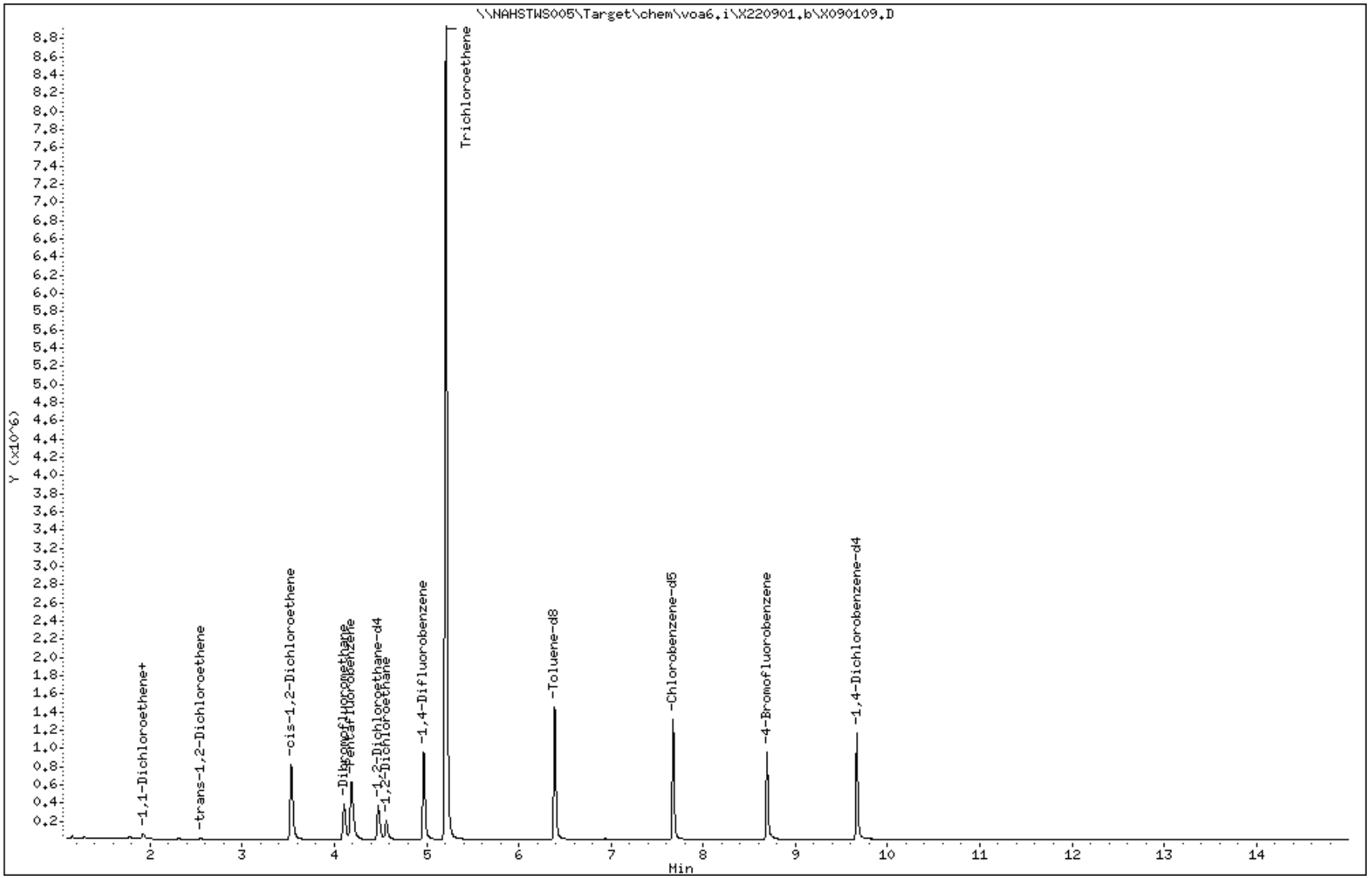
Sample Info: HS22081514-01;HS22081514-01;;;

Purge Volume: 5.0

Operator: PC

Column phase: DB624

Column diameter: 0.18



Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090109.D Page 2

Date : 01-SEP-2022 12:59

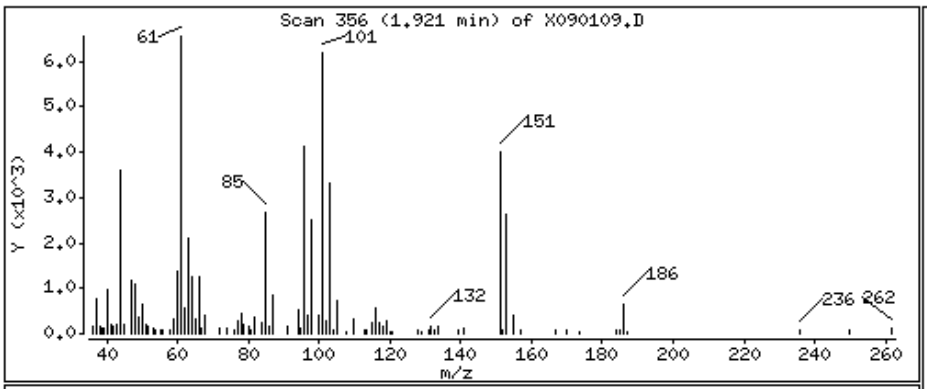
Client ID: HS22081514-01 Instrument: voa6.i

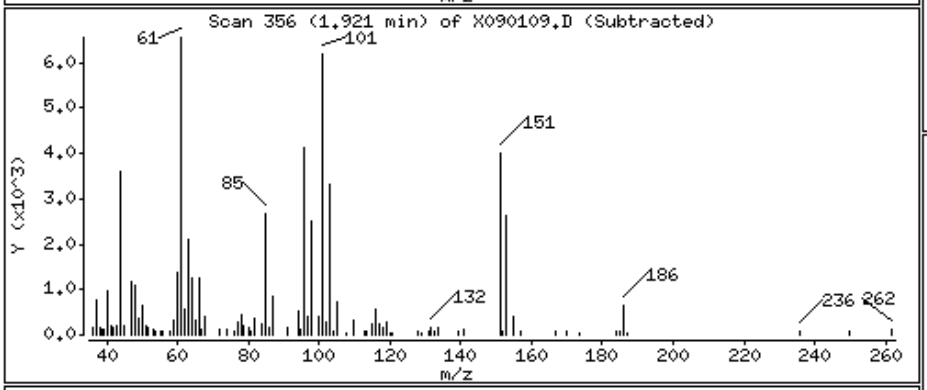
Sample Info: HS22081514-01;HS22081514-01;;;

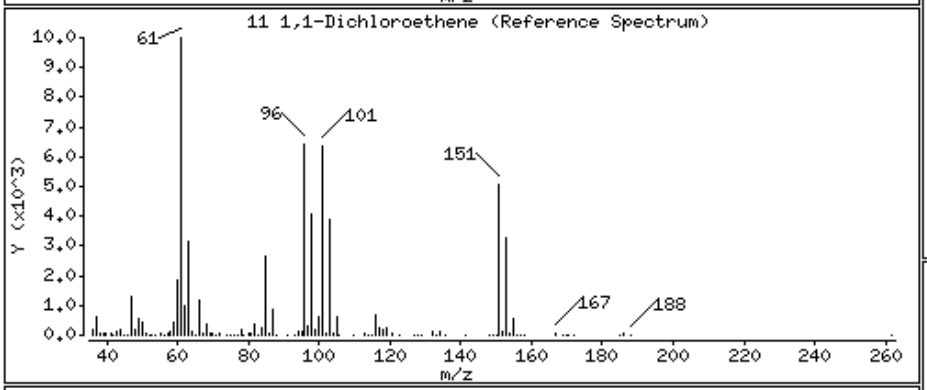
Purge Volume: 5.0 Operator: PC

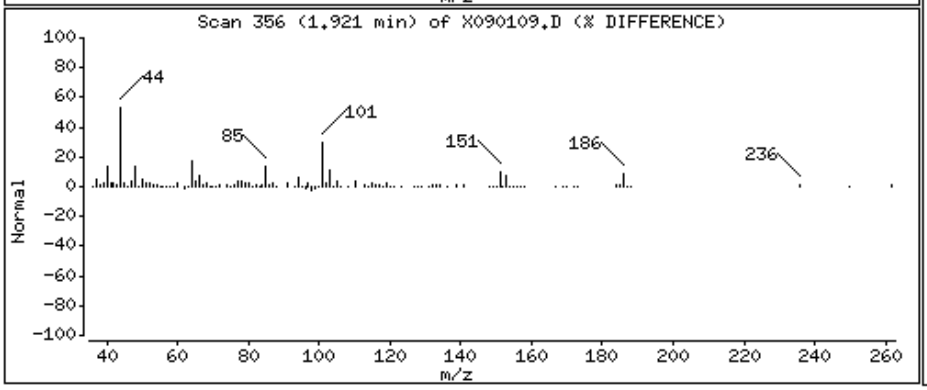
Column phase: DB624 Column diameter: 0.18

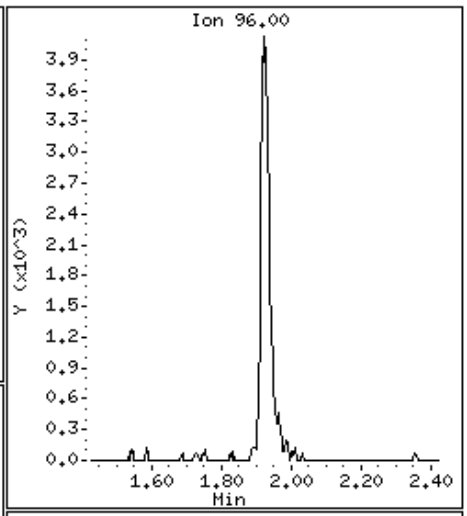
11 1,1-Dichloroethene Concentration: 1.40 ug/l

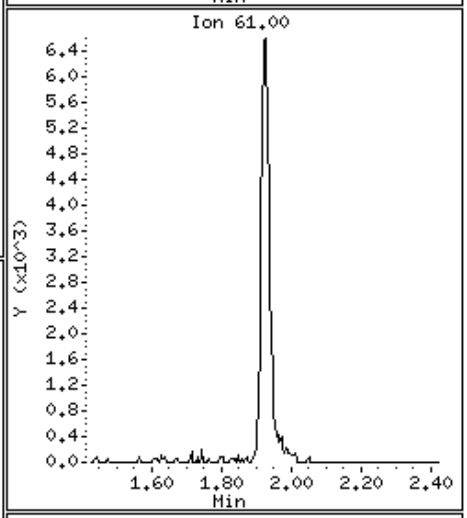


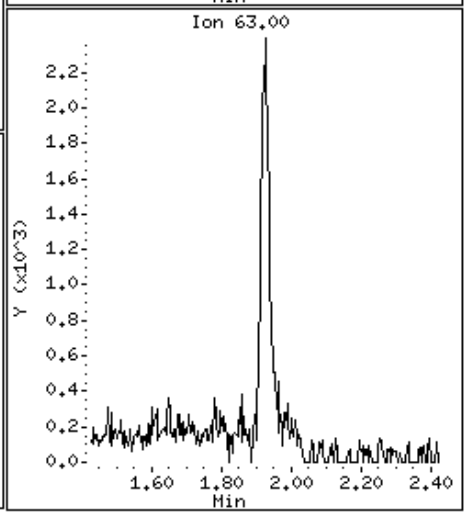












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090109.D

Date : 01-SEP-2022 12:59

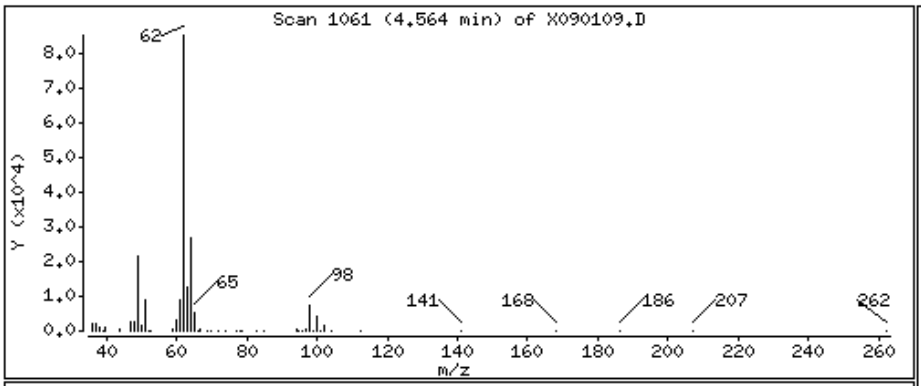
Client ID: HS22081514-01 Instrument: voa6.i

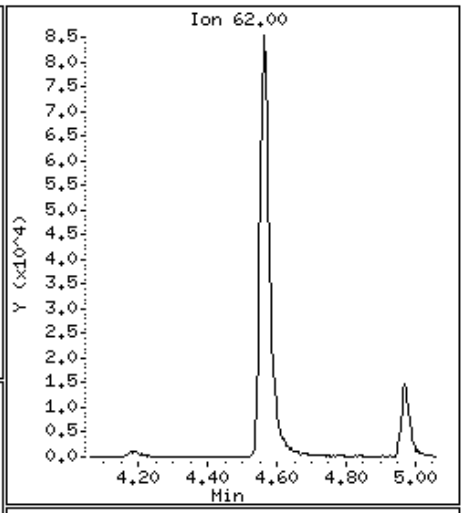
Sample Info: HS22081514-01;HS22081514-01;;;

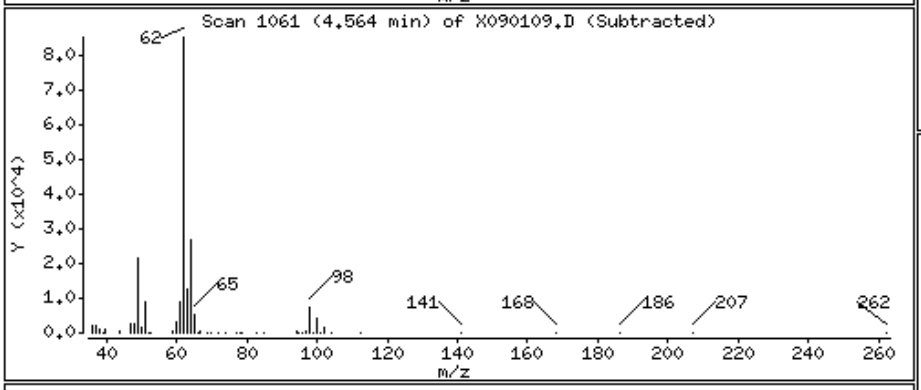
Purge Volume: 5.0 Operator: PC

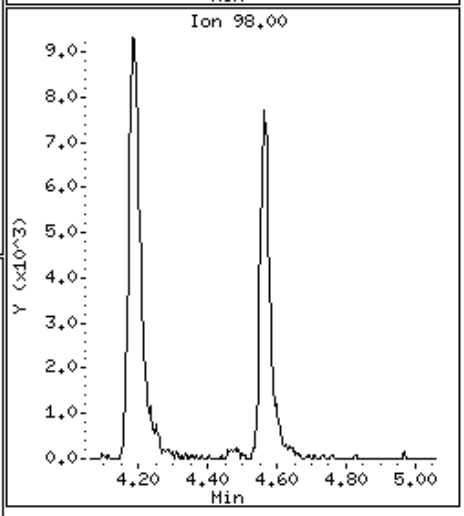
Column phase: DB624 Column diameter: 0.18

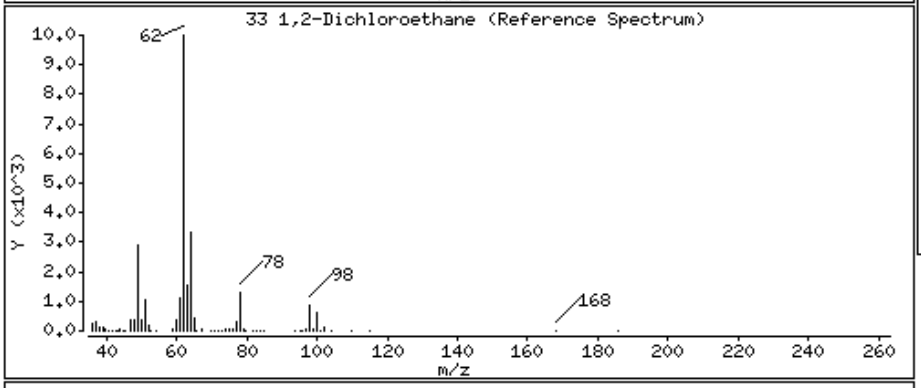
33 1,2-Dichloroethane Concentration: 24.35 ug/l

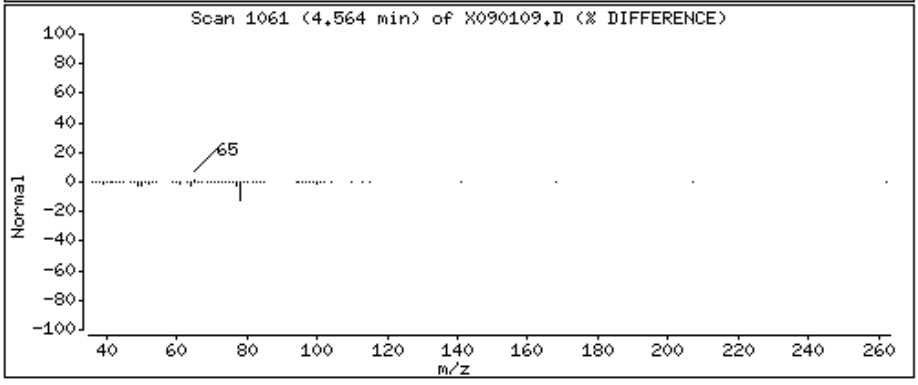












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090109.D

Date : 01-SEP-2022 12:59

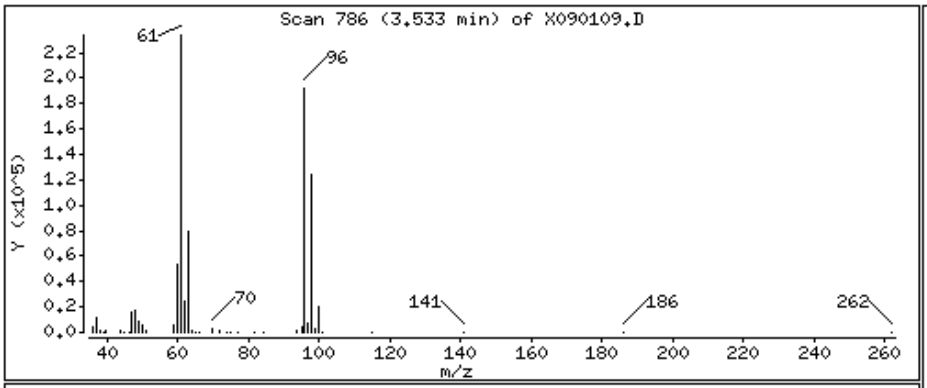
Client ID: HS22081514-01 Instrument: voa6.i

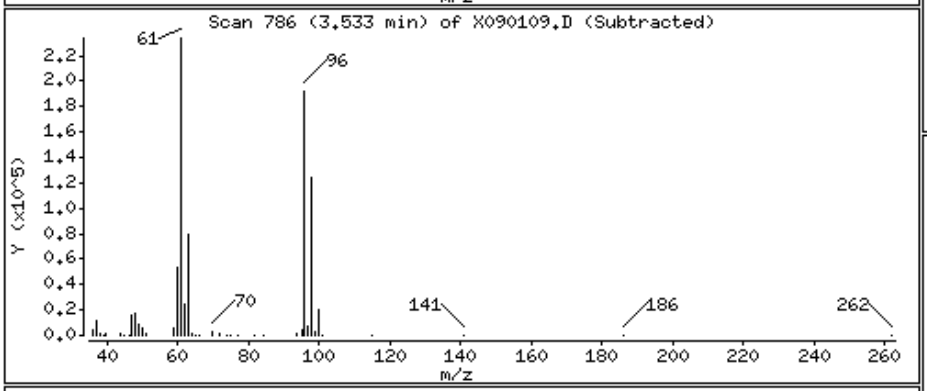
Sample Info: HS22081514-01;HS22081514-01;;;

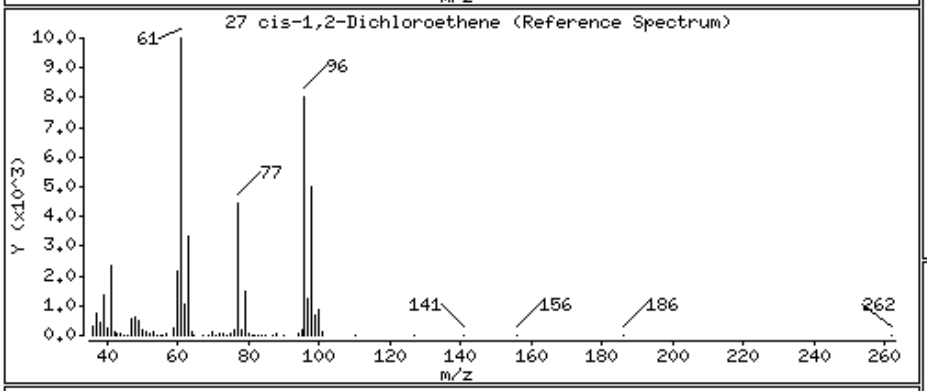
Purge Volume: 5.0 Operator: PC

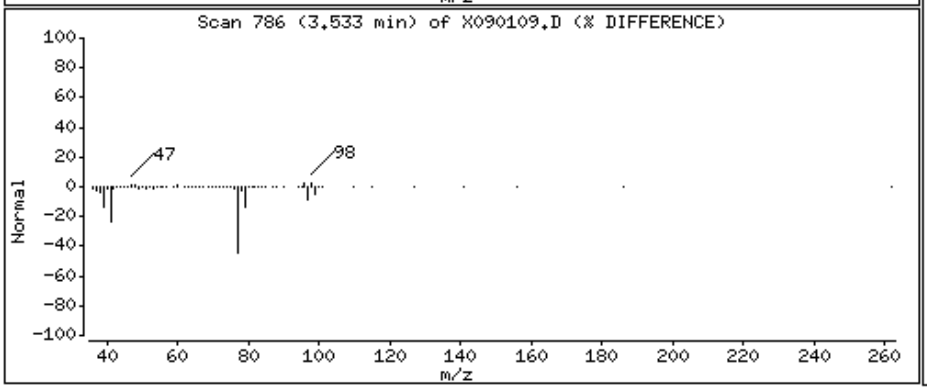
Column phase: DB624 Column diameter: 0.18

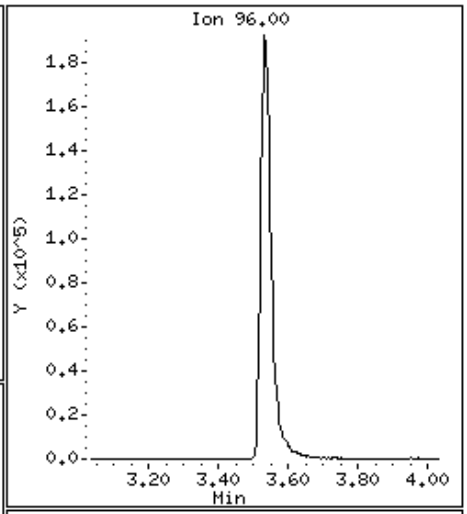
27 cis-1,2-Dichloroethene Concentration: 71.34 ug/l

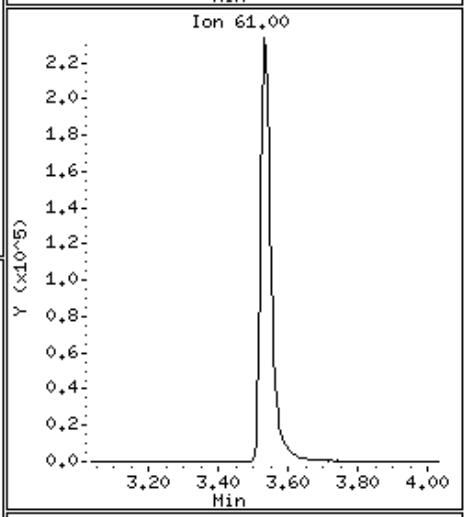


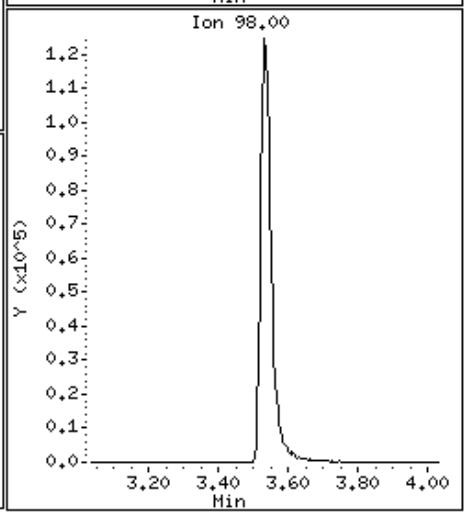












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090109.D Page 5

Date : 01-SEP-2022 12:59

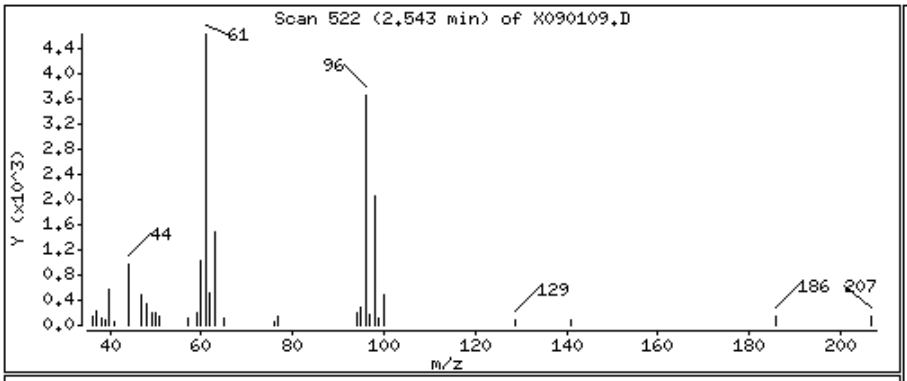
Client ID: HS22081514-01 Instrument: voa6.i

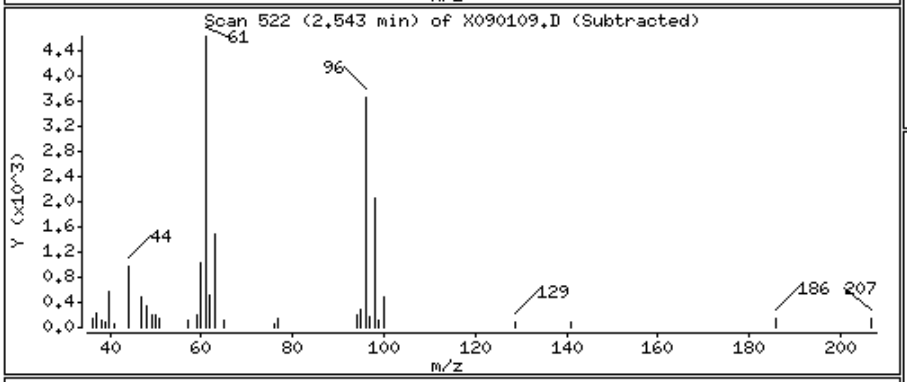
Sample Info: HS22081514-01;HS22081514-01;;;

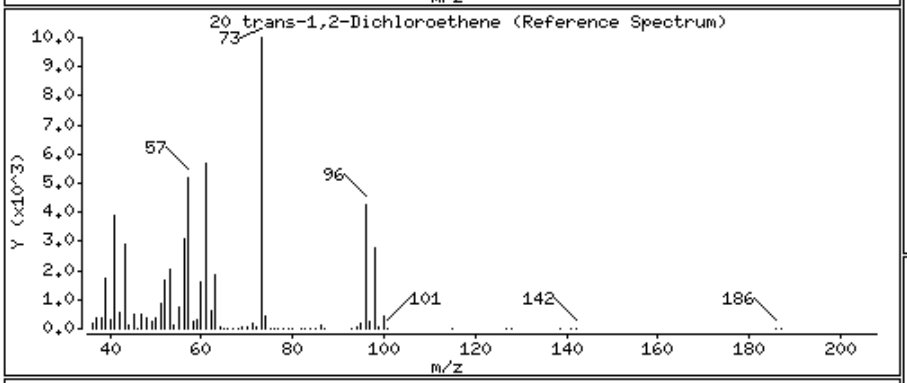
Purge Volume: 5.0 Operator: PC

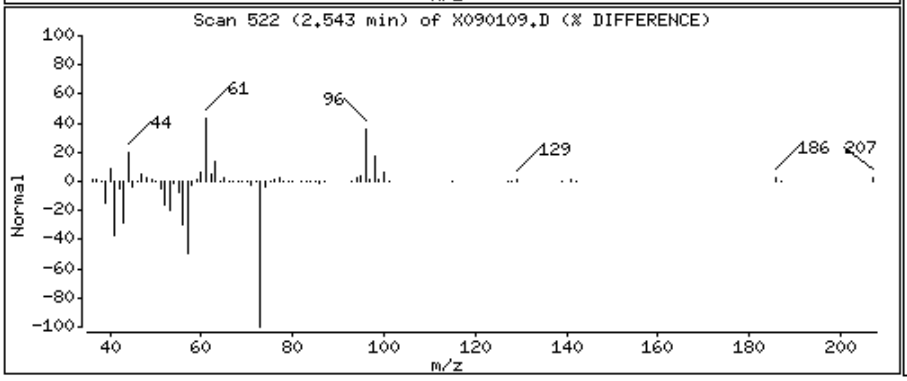
Column phase: DB624 Column diameter: 0.18

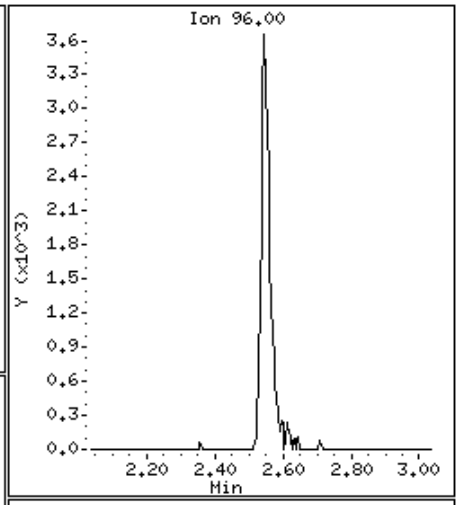
20 trans-1,2-Dichloroethene Concentration: 1.29 ug/l

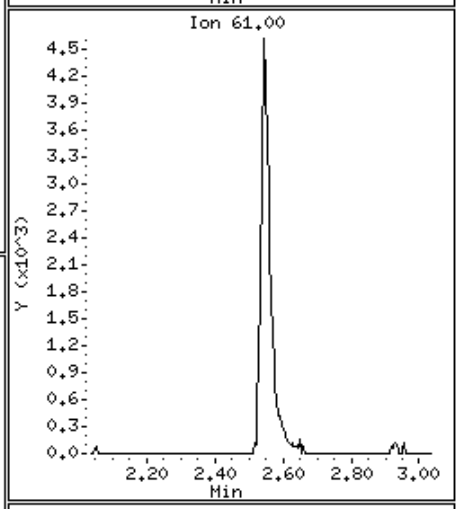


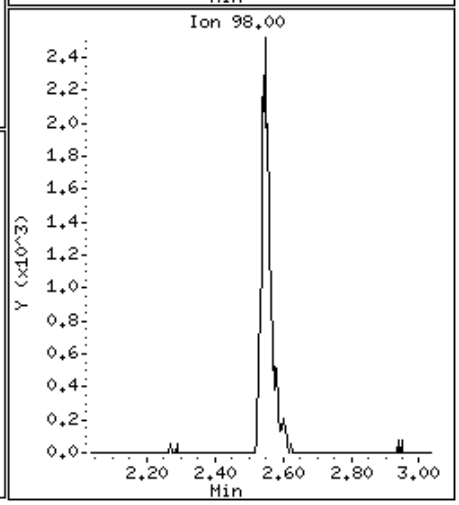












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090109.D Page 6

Date : 01-SEP-2022 12:59

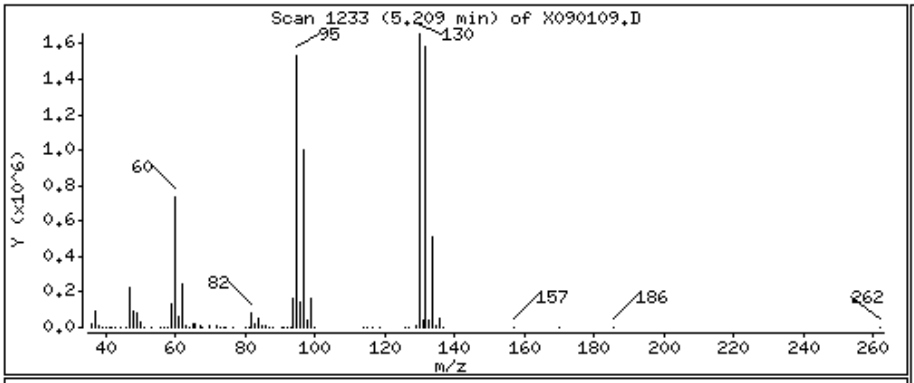
Client ID: HS22081514-01 Instrument: voa6.i

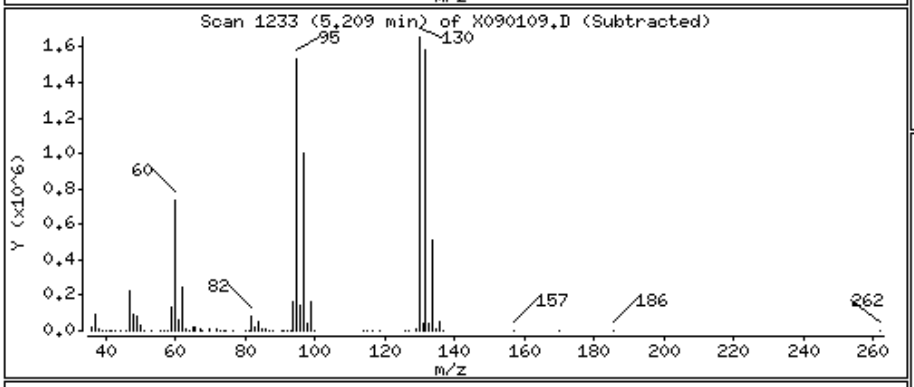
Sample Info: HS22081514-01;HS22081514-01;;;

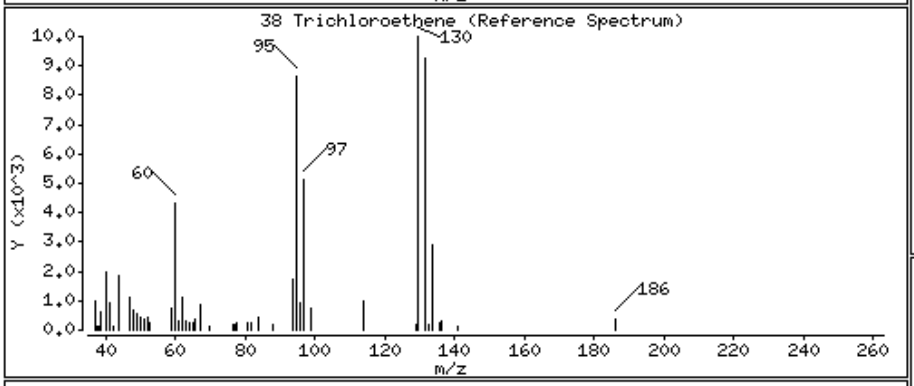
Purge Volume: 5.0 Operator: PC

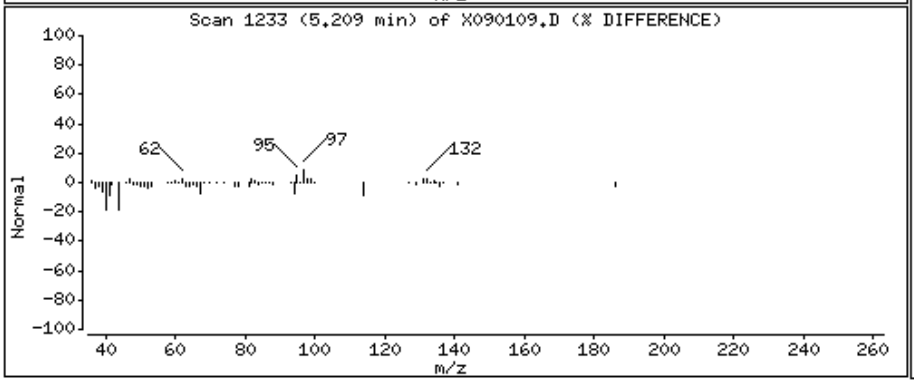
Column phase: DB624 Column diameter: 0.18

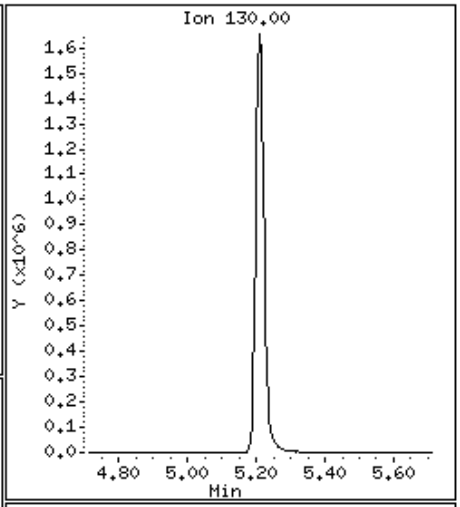
38 Trichloroethene Concentration: 505.12 ug/l

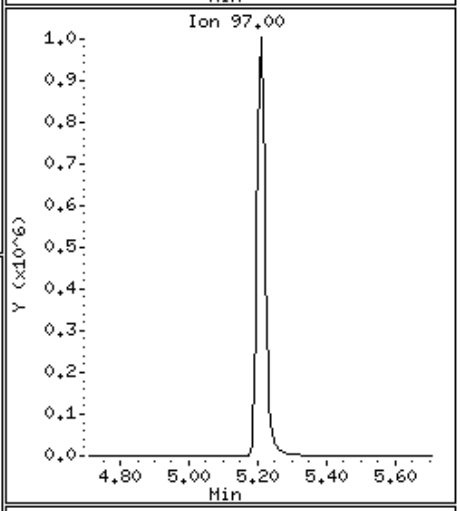


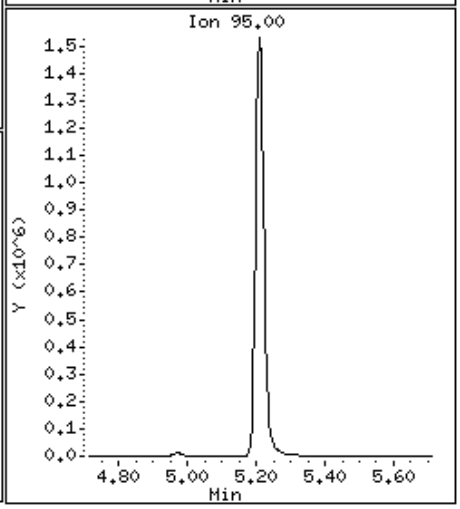












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090109.D

Date : 01-SEP-2022 12:59

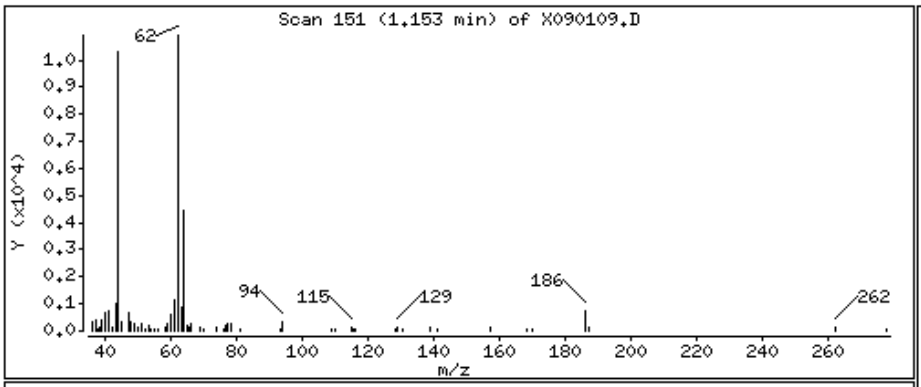
Client ID: HS22081514-01 Instrument: voa6.i

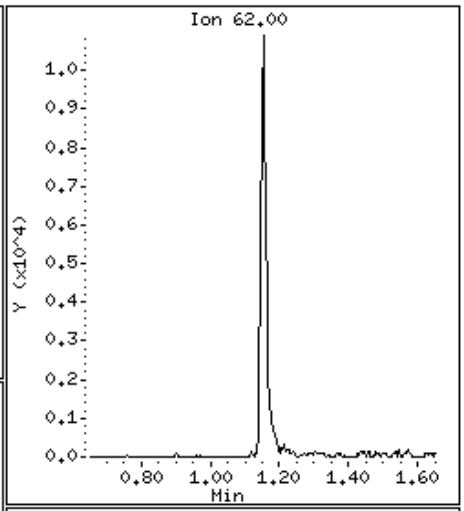
Sample Info: HS22081514-01;HS22081514-01;;;

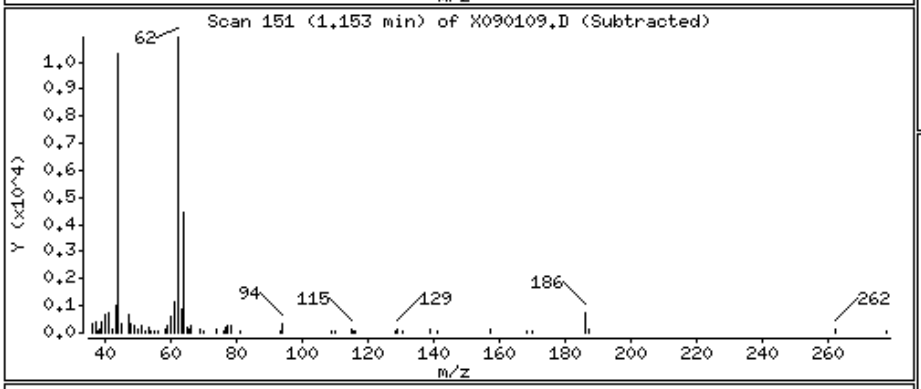
Purge Volume: 5.0 Operator: PC

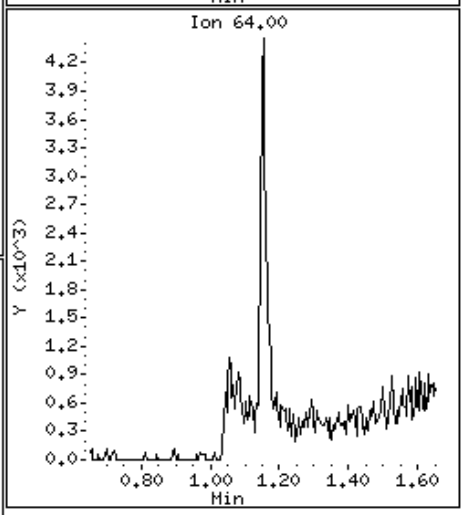
Column phase: DB624 Column diameter: 0.18

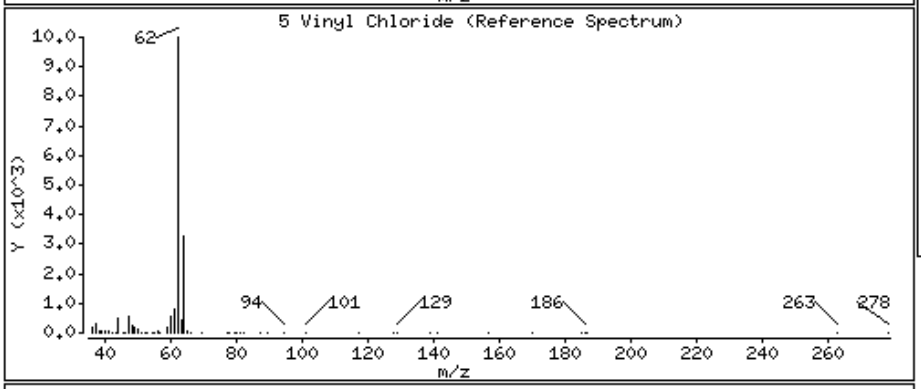
5 Vinyl Chloride Concentration: 1.95 ug/l

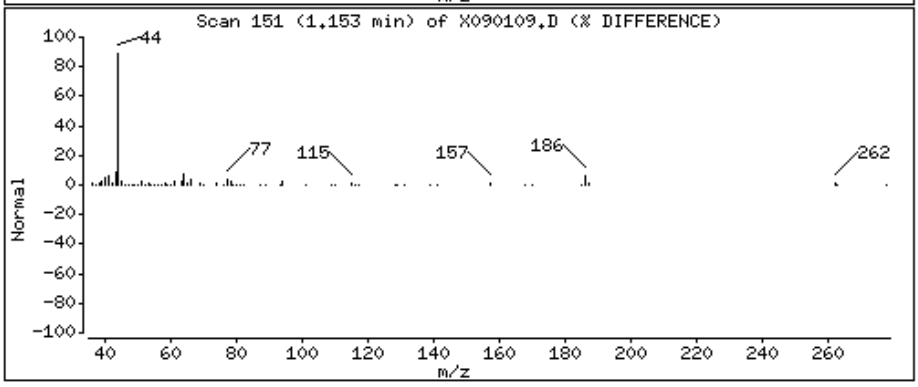












Data File : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090109.D
Inj Date : 01-SEP-2022 12:59
InstruID : voa6.i
LabSampID : HS22081514-01

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090110.D Page 1
Report Date: 09-Sep-2022 16:51

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090110.D
Lab Smp Id: HS22081514-22 Client Smp ID: HS22081514-22
Inj Date : 01-SEP-2022 13:20
Operator : PC Inst ID: voa6.i
Smp Info : HS22081514-22;HS22081514-22;;;
Misc Info : HS22052000V6;WATER;0;25;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\8260W.m
Meth Date : 09-Sep-2022 16:51 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 10
Dil Factor: 25.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	25.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
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	4.185	4.189	(1.000)	576046	50.0000	
* 36 1,4-Difluorobenzene	114	4.972	4.968	(1.000)	800025	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	686656	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.665	9.665	(1.000)	313975	50.0000	
$ 30 Dibromofluoromethane	113	4.106	4.106	(0.981)	252993	46.4907	46.49
$ 35 1,2-Dichloroethane-d4	65	4.477	4.477	(1.070)	270288	45.3700	45.36
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	923988	53.9328	53.93
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	287561	46.8786	46.87
22 1,1-Dichloroethane	63	2.937	2.929	(0.702)	11327	1.27725	31.93(a)
33 1,2-Dichloroethane	62	4.571	4.560	(0.919)	5816	0.82892	20.72(a)
28 Chloroform	83	3.923	3.911	(0.937)	6366	0.65518	16.37(a)
27 cis-1,2-Dichloroethene	96	3.533	3.533	(0.844)	3678781	642.361	16059.02(A)
17 Methylene Chloride	84	2.311	2.311	(0.552)	2084657	399.576	9989.39(A)
56 Tetrachloroethene	164	6.933	6.929	(0.904)	3111	0.69869	17.46(a)
20 trans-1,2-Dichloroethene	96	2.543	2.539	(0.608)	11886	2.34551	58.63(a)
38 Trichloroethene	130	5.208	5.208	(1.047)	522207	92.9904	2324.76
5 Vinyl Chloride	62	1.152	1.152	(0.275)	1103043	182.612	4565.30

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).

QC Flag Legend

A - Target compound detected but, quantitated amount
exceeded maximum amount.

01148089

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090110.D

Date : 01-SEP-2022 13:20

Client ID: HS22081514-22

Instrument: voa6.i

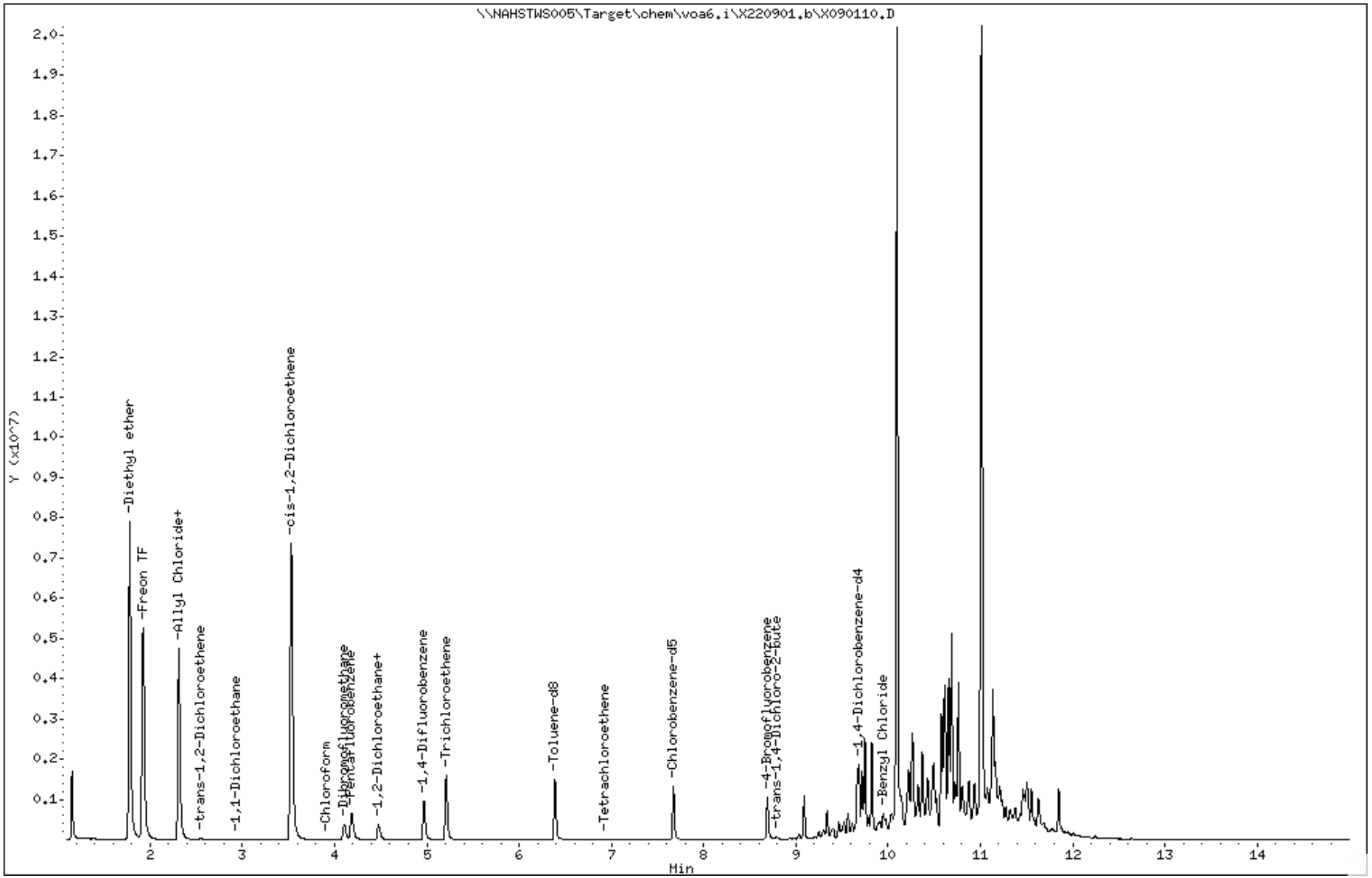
Sample Info: HS22081514-22;HS22081514-22;;;

Purge Volume: 5.0

Operator: PC

Column phase: DB624

Column diameter: 0.18



Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090110.D

Date : 01-SEP-2022 13:20

Client ID: HS22081514-22

Instrument: voa6.i

Sample Info: HS22081514-22;HS22081514-22;;;

Purge Volume: 5.0

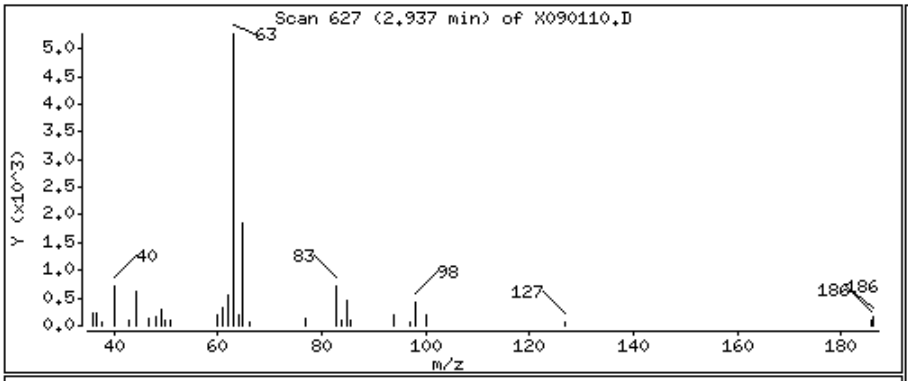
Operator: PC

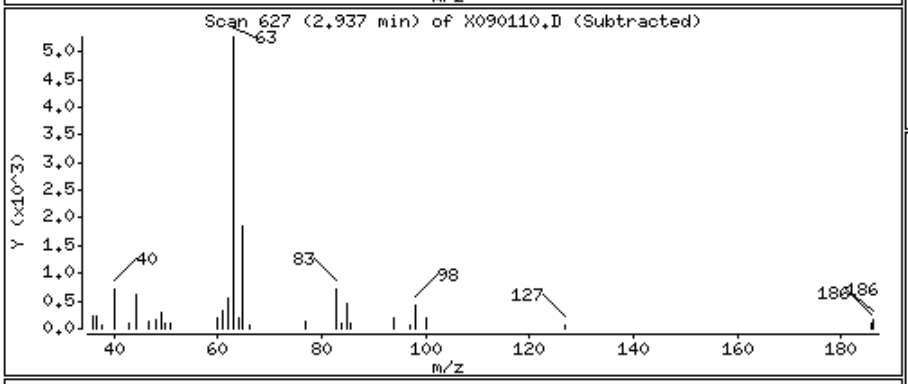
Column phase: DB624

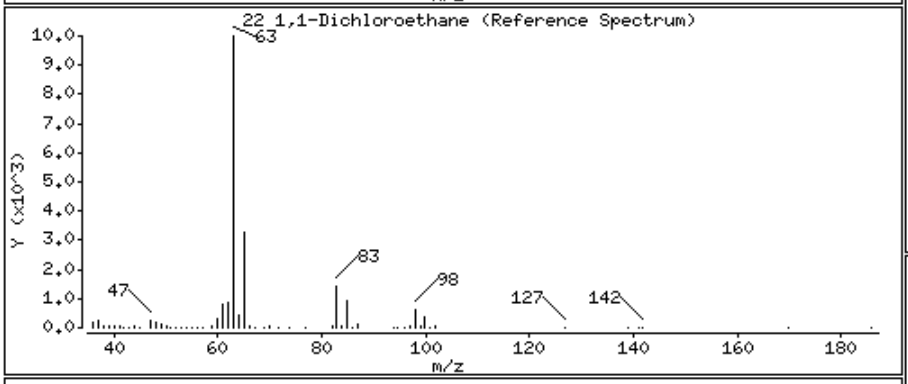
Column diameter: 0.18

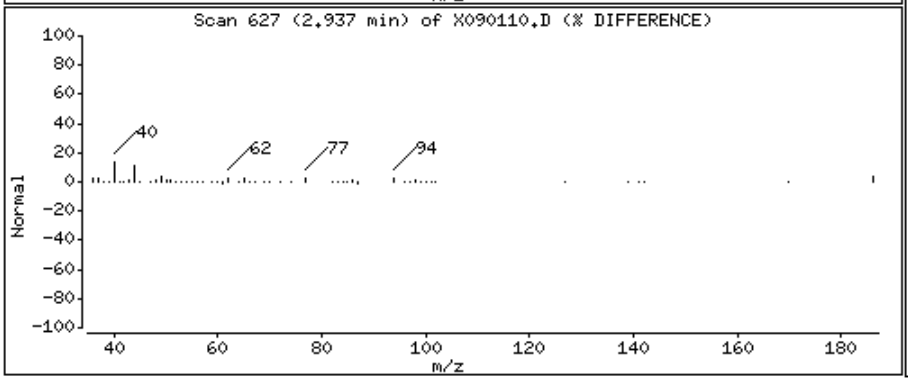
22 1,1-Dichloroethane

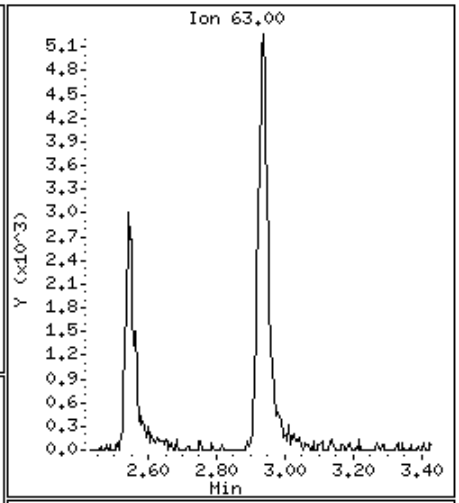
Concentration: 31.93 ug/l

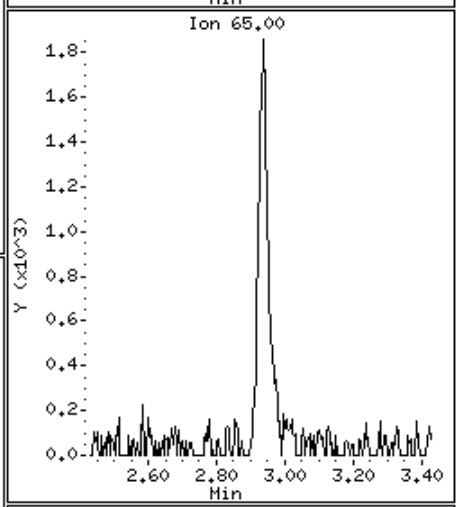


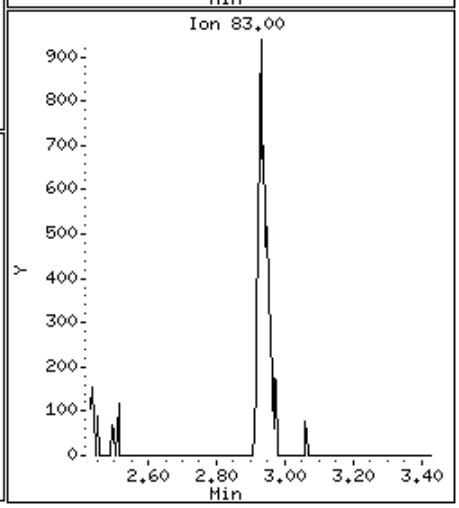












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090110.D

Date : 01-SEP-2022 13:20

Client ID: HS22081514-22

Instrument: voa6.i

Sample Info: HS22081514-22;HS22081514-22;;;

Purge Volume: 5.0

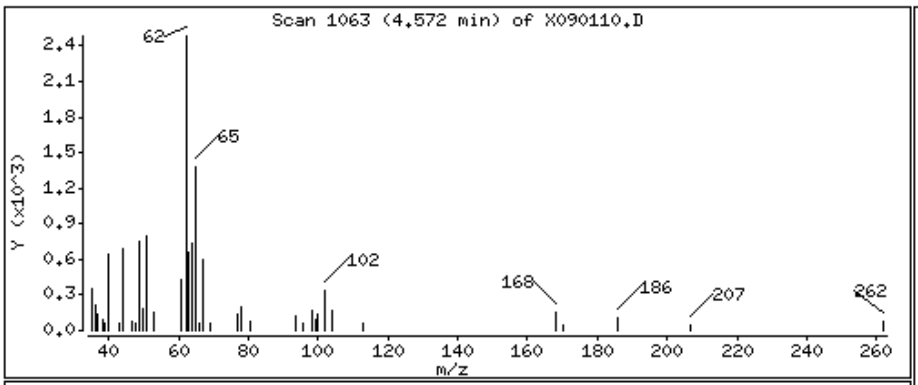
Operator: PC

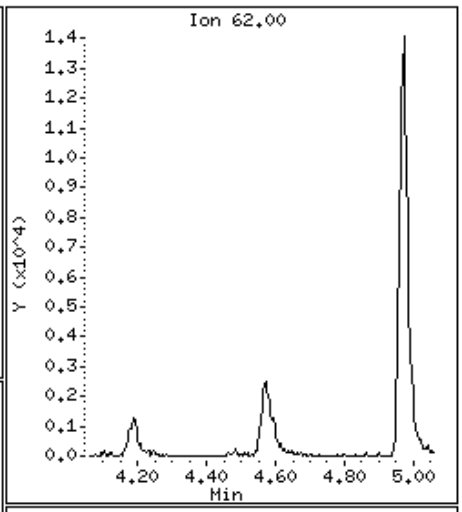
Column phase: DB624

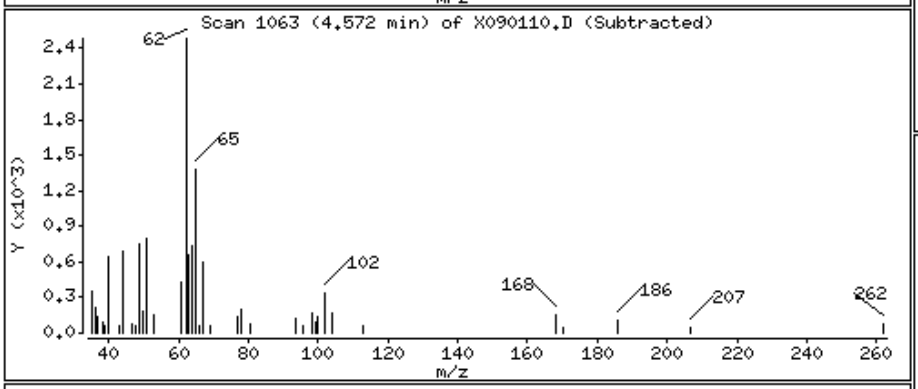
Column diameter: 0.18

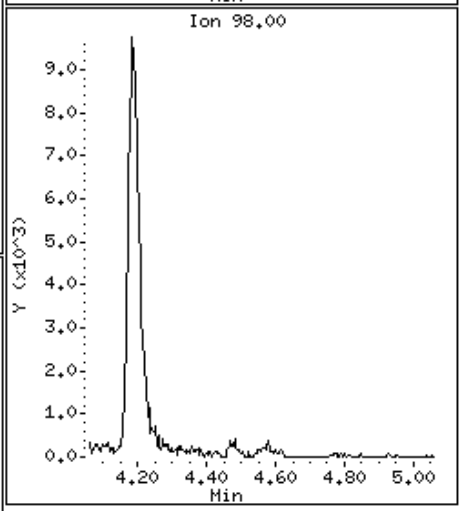
33 1,2-Dichloroethane

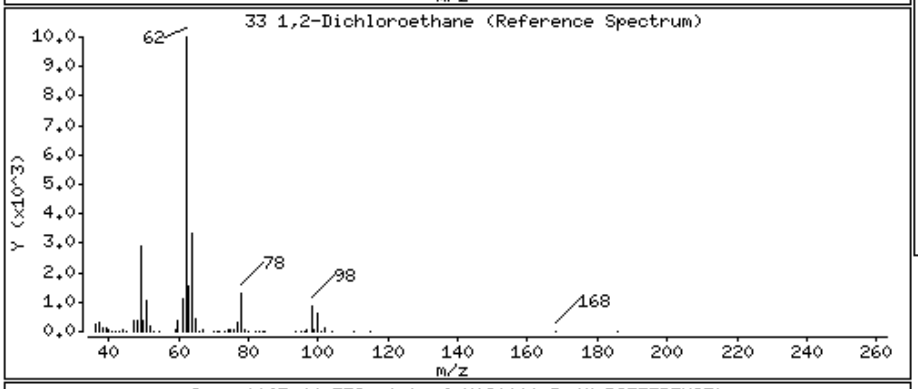
Concentration: 20.72 ug/l

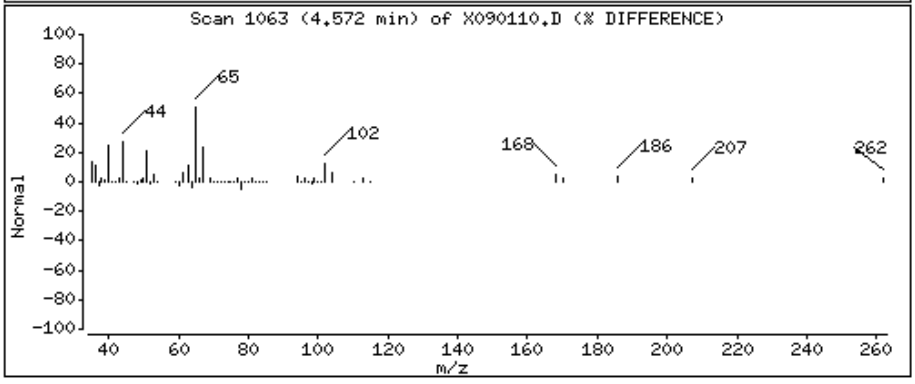












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090110.D

Date : 01-SEP-2022 13:20

Client ID: HS22081514-22

Instrument: voa6.i

Sample Info: HS22081514-22;HS22081514-22;;;

Purge Volume: 5.0

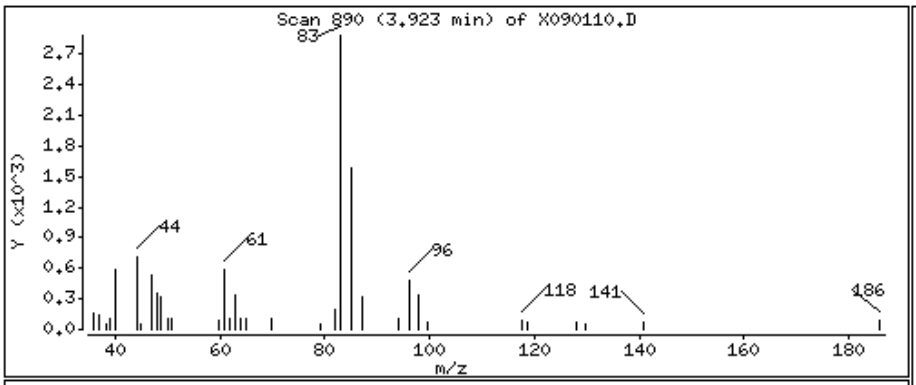
Operator: PC

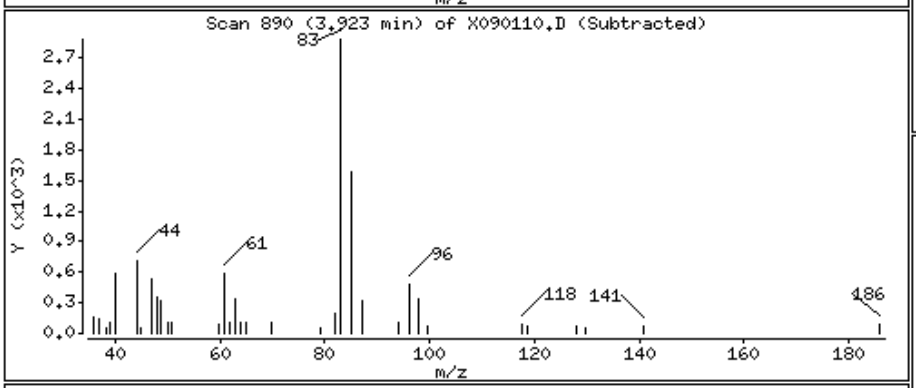
Column phase: DB624

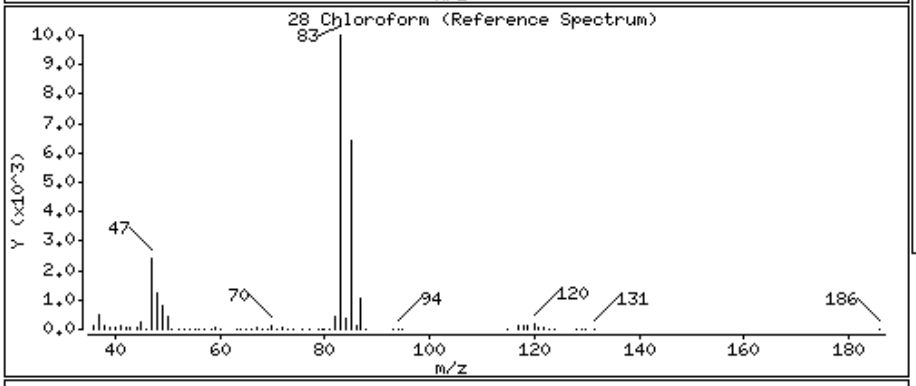
Column diameter: 0.18

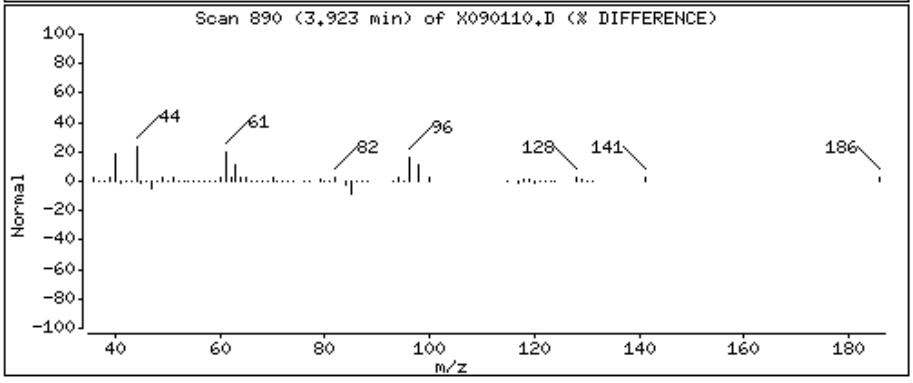
28 Chloroform

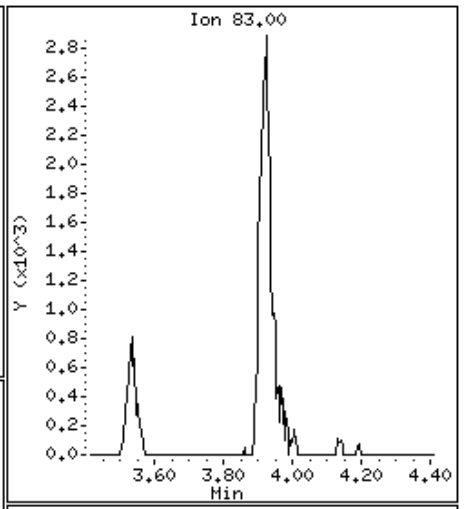
Concentration: 16.37 ug/l

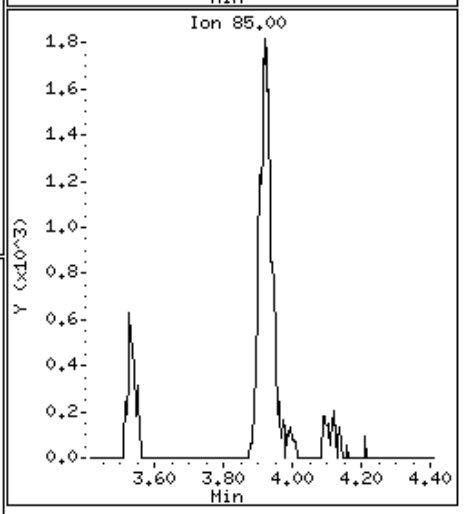












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090110.D Page 5

Date : 01-SEP-2022 13:20

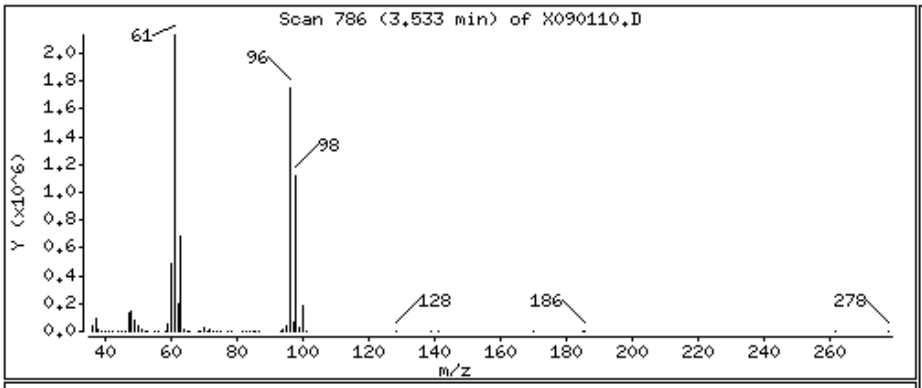
Client ID: HS22081514-22 Instrument: voa6.i

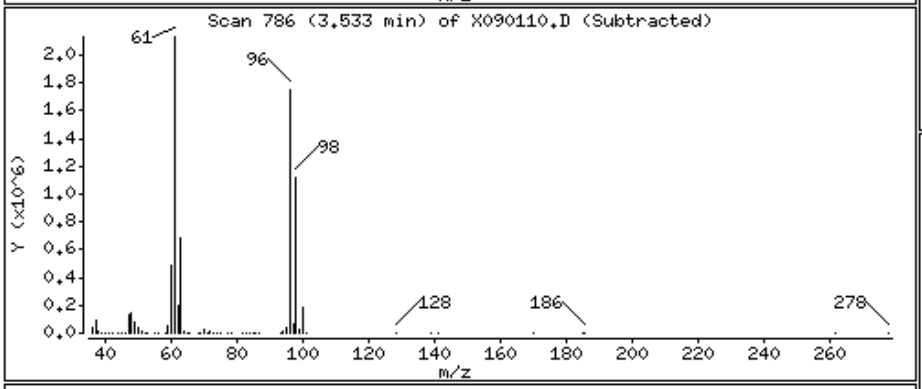
Sample Info: HS22081514-22;HS22081514-22;;;

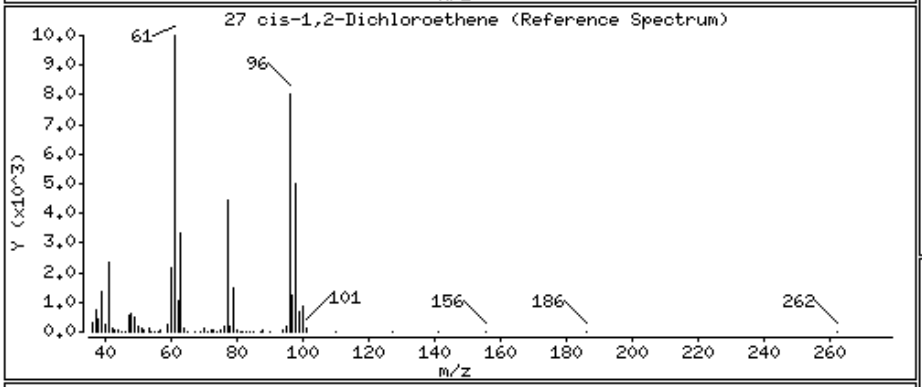
Purge Volume: 5.0 Operator: PC

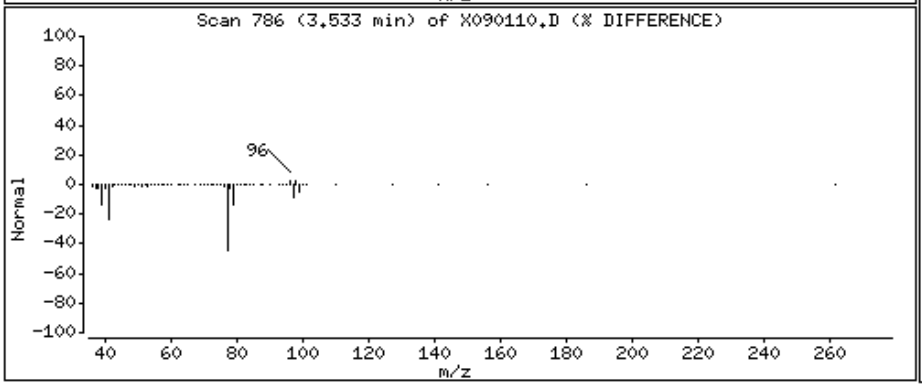
Column phase: DB624 Column diameter: 0.18

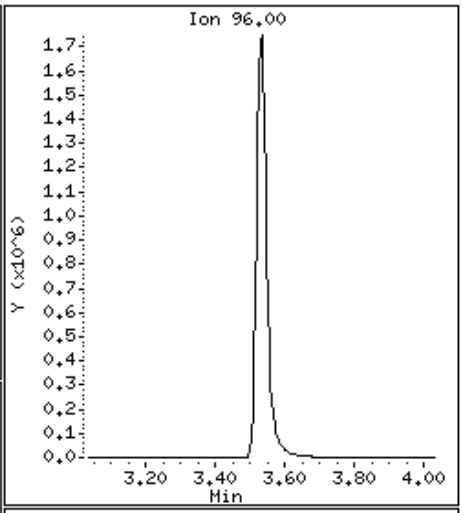
27 cis-1,2-Dichloroethene Concentration: 16059.02 ug/l

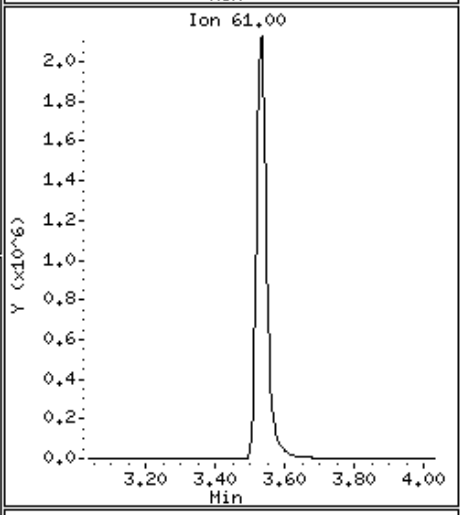


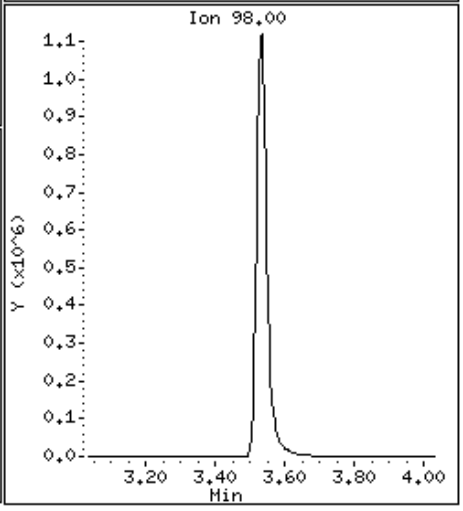












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Date : 01-SEP-2022 13:20

Client ID: HS22081514-22

Instrument: voa6.i

Sample Info: HS22081514-22;HS22081514-22;;;

Purge Volume: 5.0

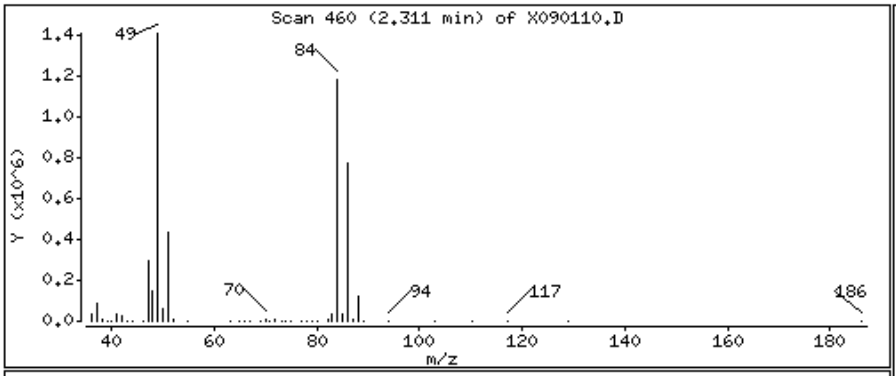
Operator: PC

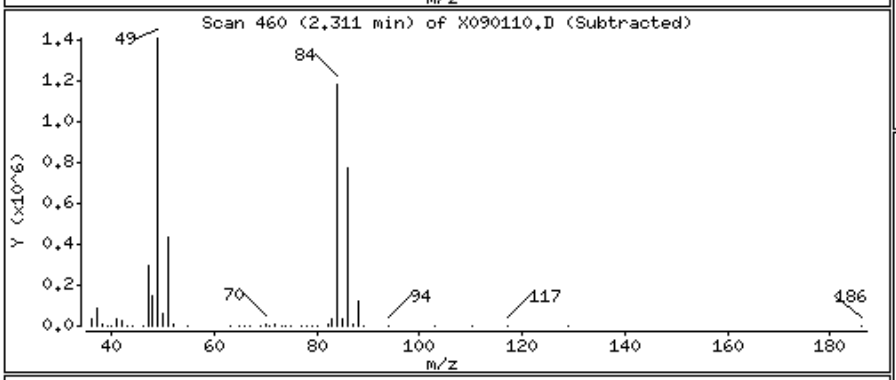
Column phase: DB624

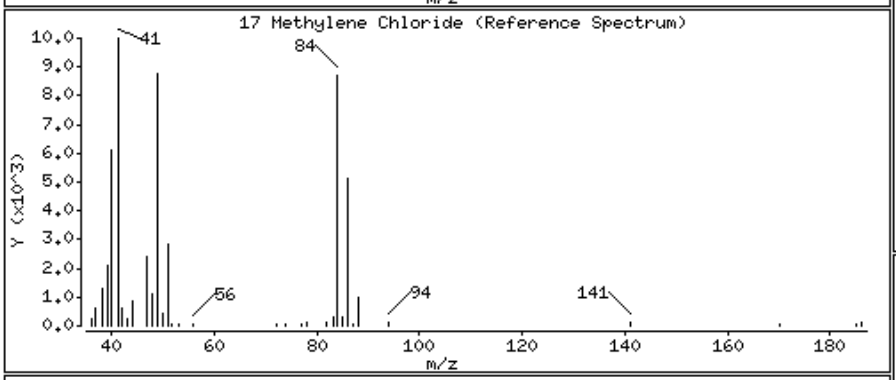
Column diameter: 0.18

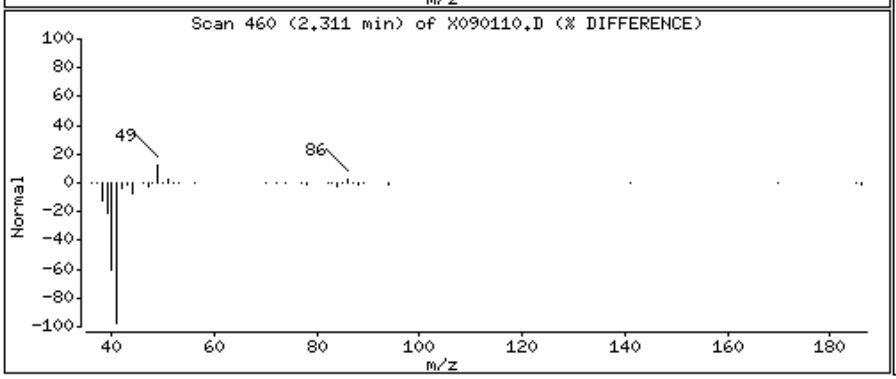
17 Methylene Chloride

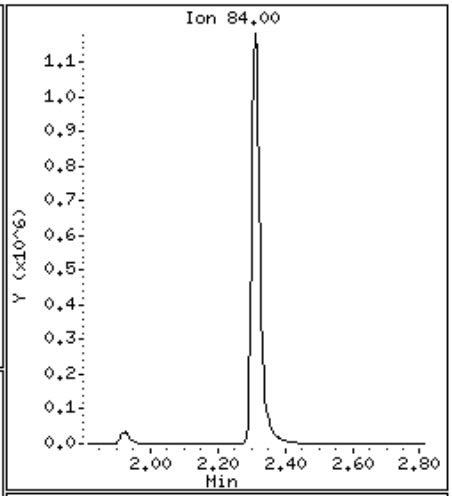
Concentration: 9989.39 ug/l

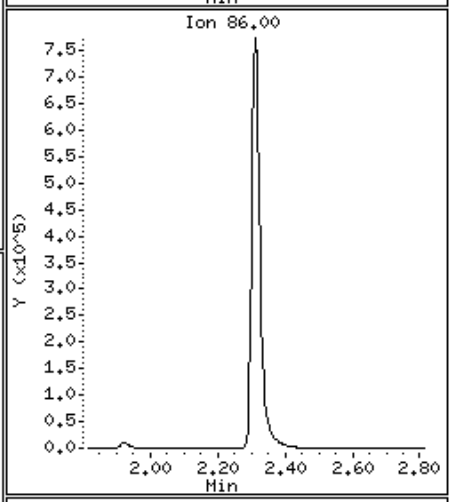


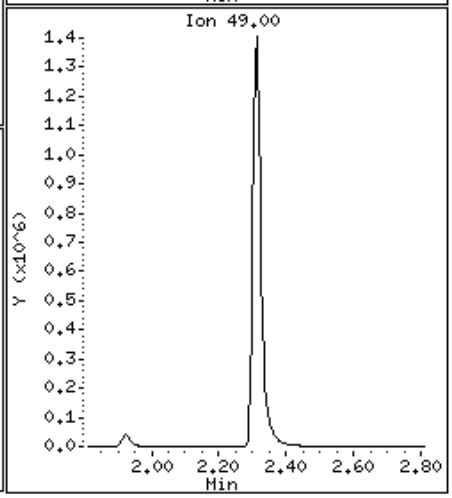












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Date : 01-SEP-2022 13:20

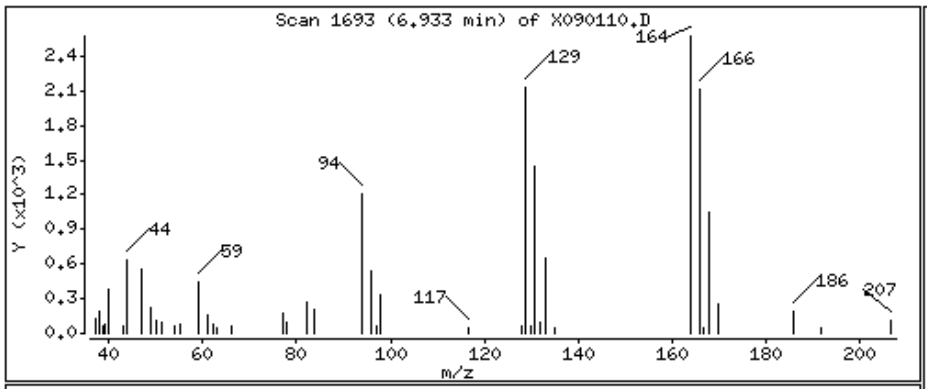
Client ID: HS22081514-22 Instrument: voa6.i

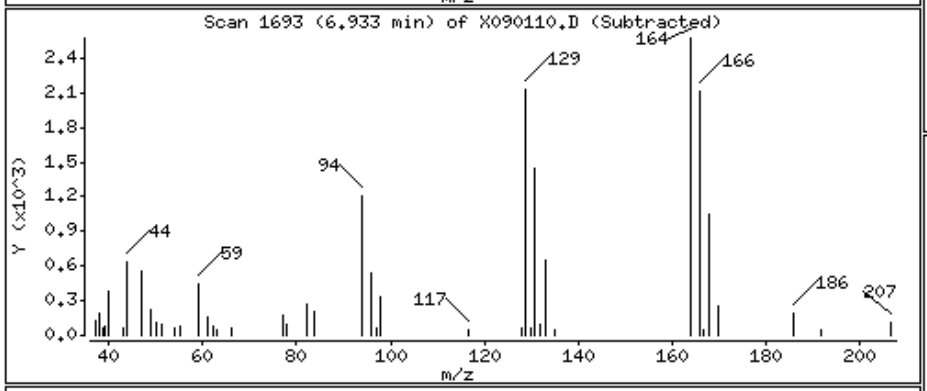
Sample Info: HS22081514-22;HS22081514-22;;;

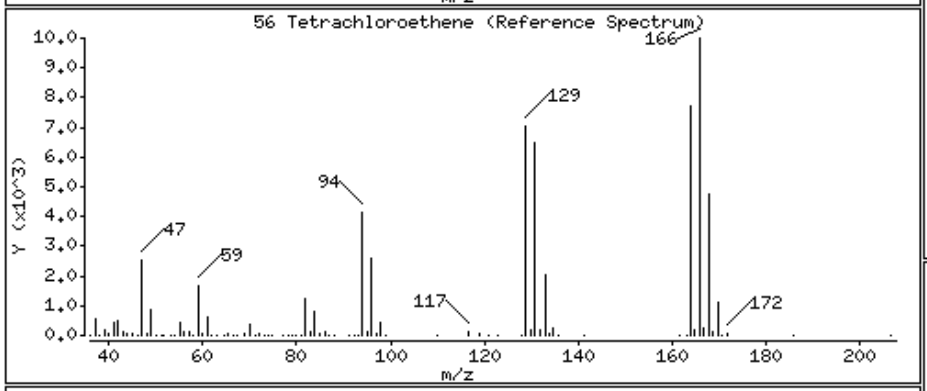
Purge Volume: 5.0 Operator: PC

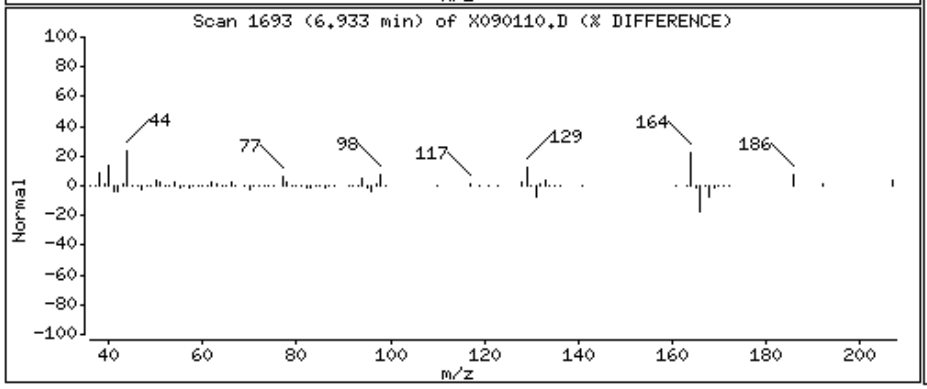
Column phase: DB624 Column diameter: 0.18

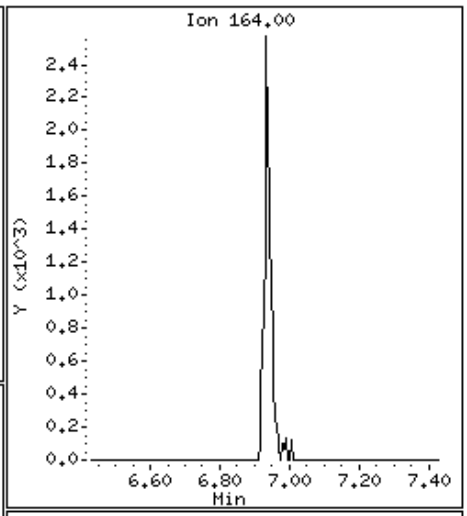
56 Tetrachloroethene Concentration: 17.46 ug/l

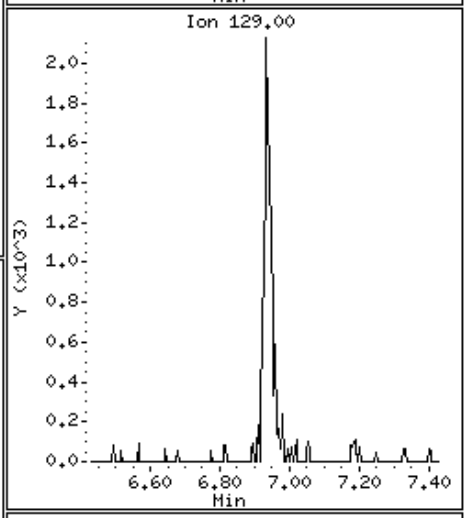


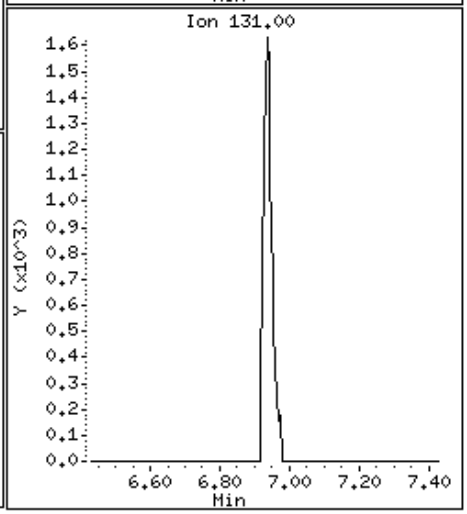












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Date : 01-SEP-2022 13:20

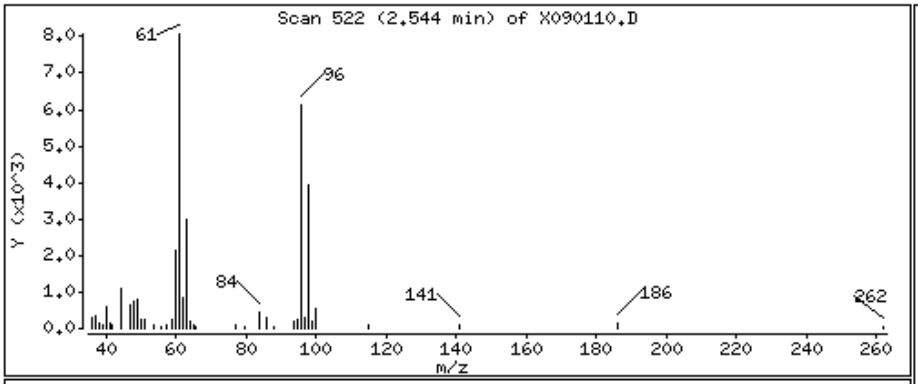
Client ID: HS22081514-22 Instrument: voa6.i

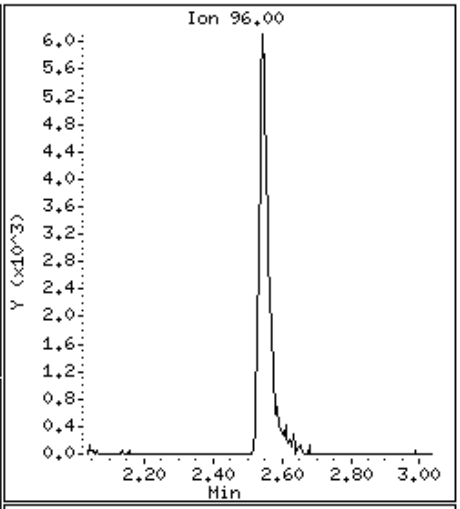
Sample Info: HS22081514-22;HS22081514-22;;;

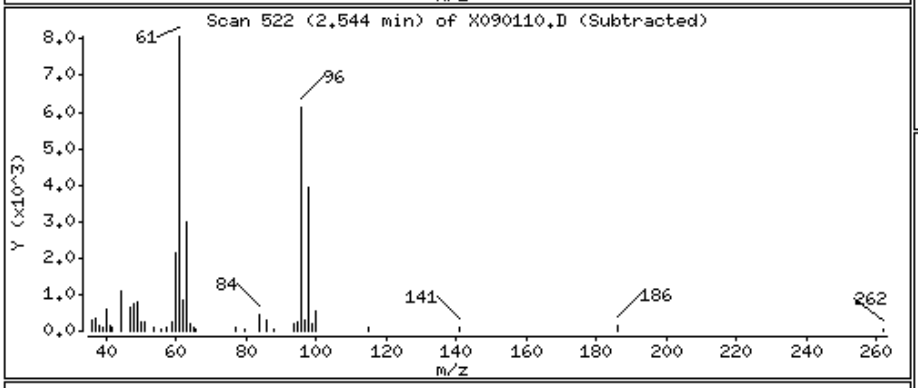
Purge Volume: 5.0 Operator: PC

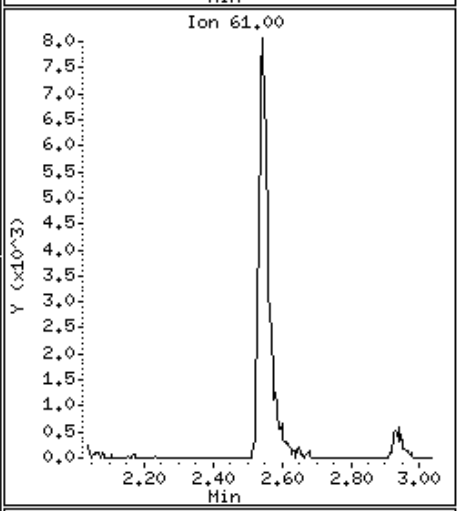
Column phase: DB624 Column diameter: 0.18

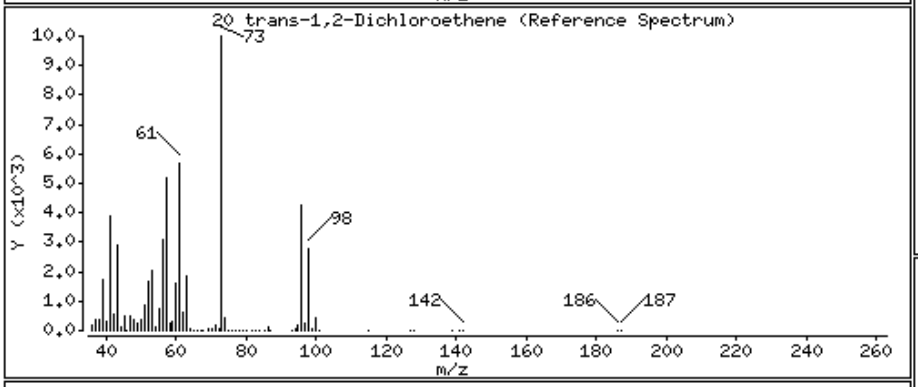
20 trans-1,2-Dichloroethene Concentration: 58.63 ug/l

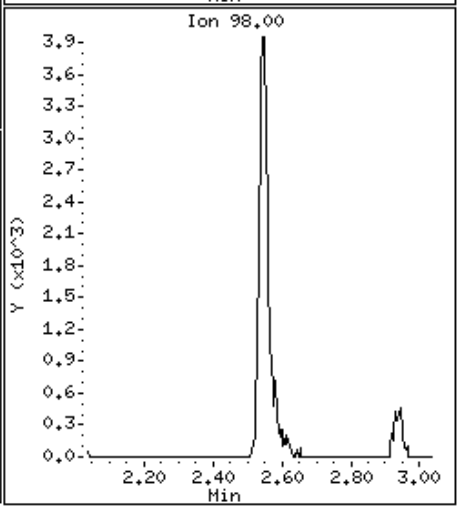


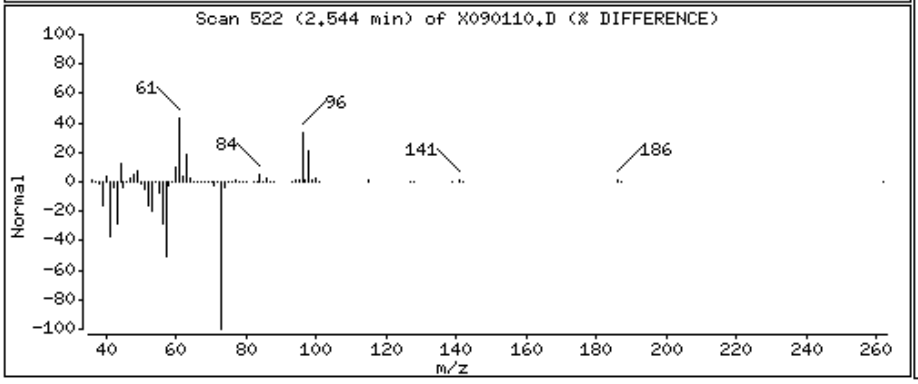












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Date : 01-SEP-2022 13:20

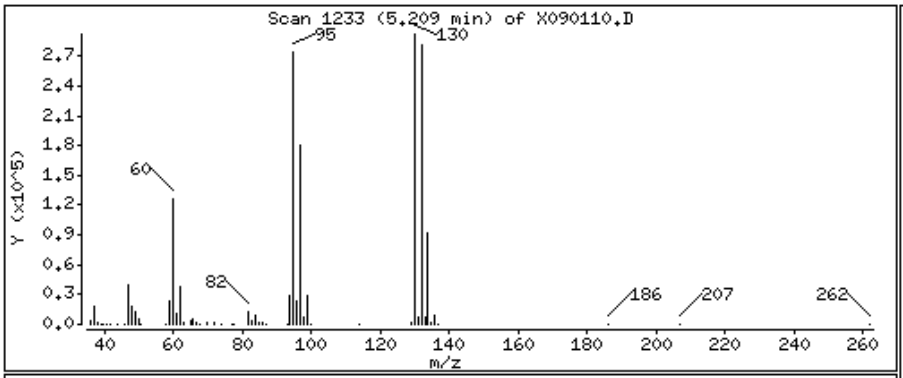
Client ID: HS22081514-22 Instrument: voa6.i

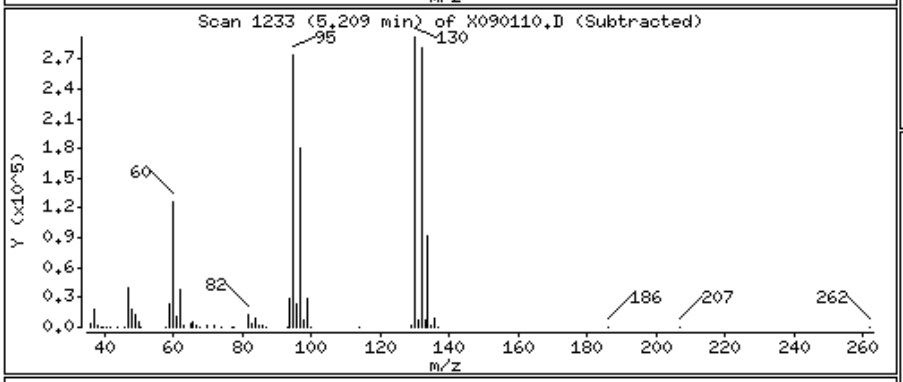
Sample Info: HS22081514-22;HS22081514-22;;;

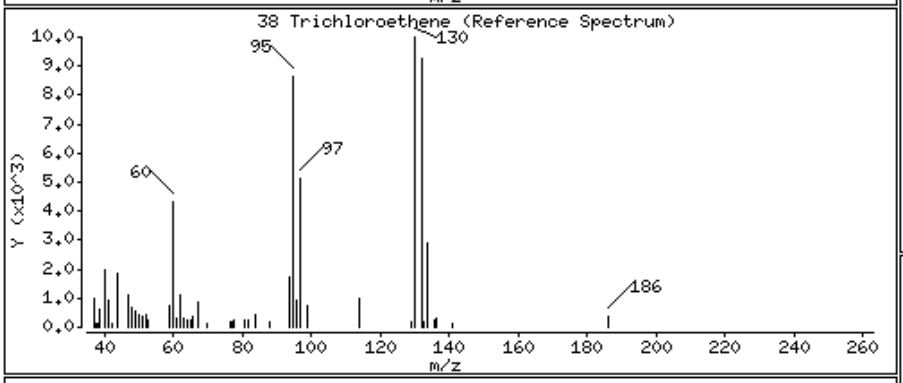
Purge Volume: 5.0 Operator: PC

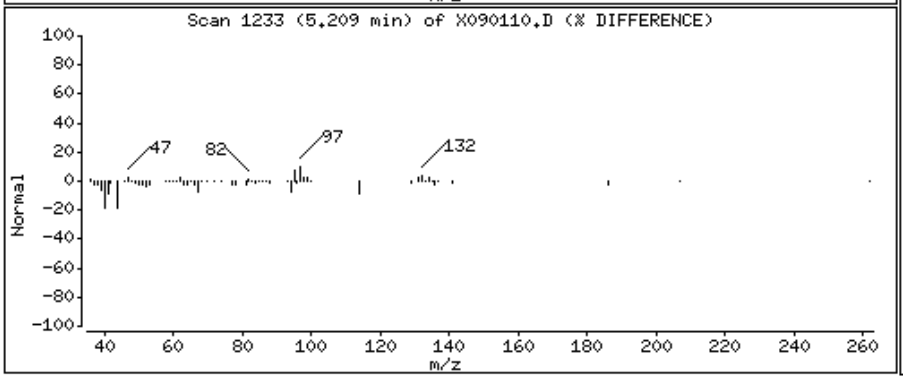
Column phase: DB624 Column diameter: 0.18

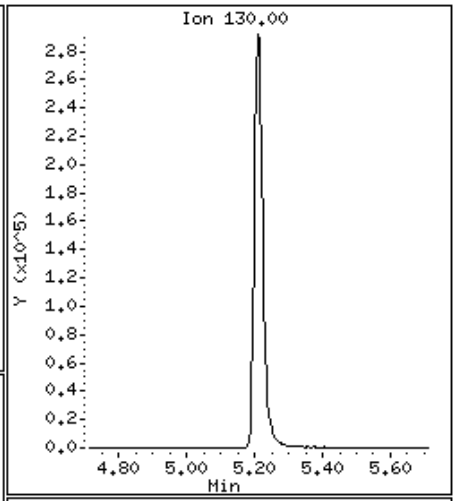
38 Trichloroethene Concentration: 2324.76 ug/l

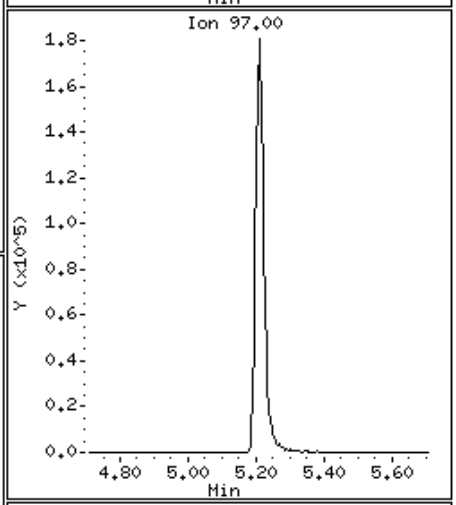


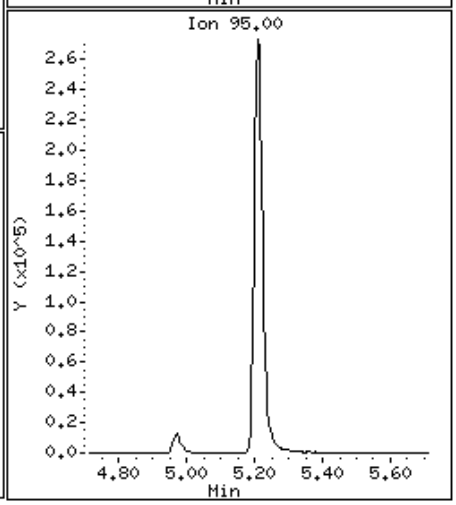












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Date : 01-SEP-2022 13:20

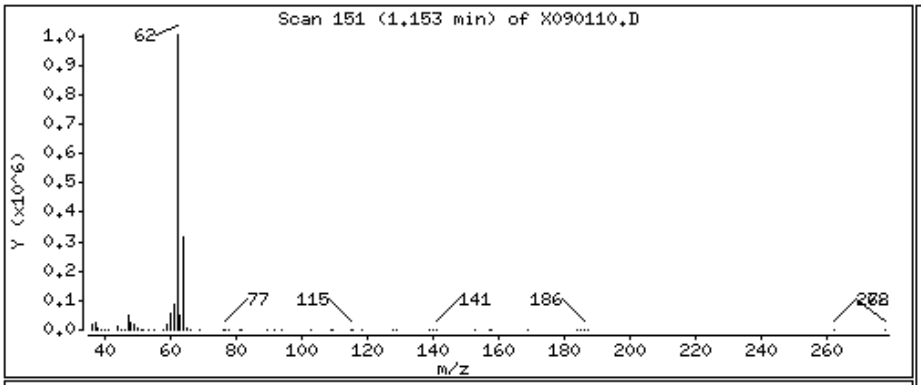
Client ID: HS22081514-22 Instrument: voa6.i

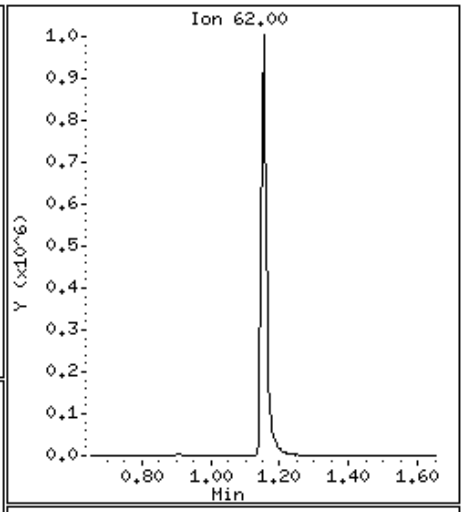
Sample Info: HS22081514-22;HS22081514-22;;;

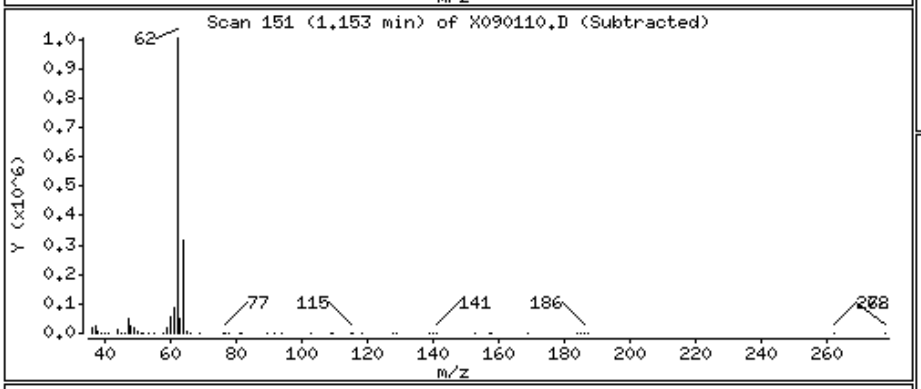
Purge Volume: 5.0 Operator: PC

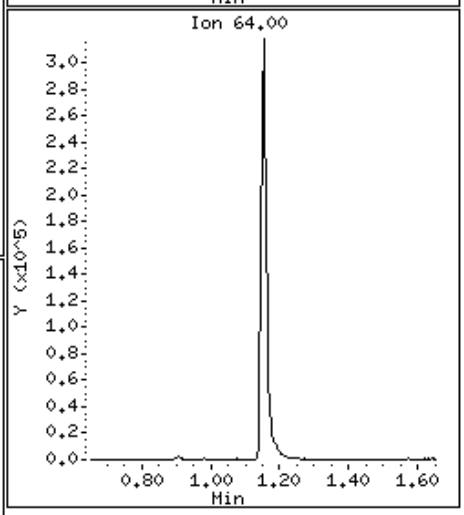
Column phase: DB624 Column diameter: 0.18

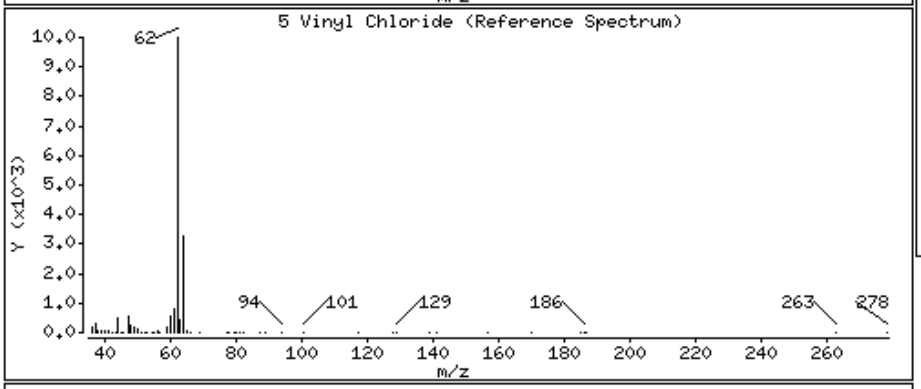
5 Vinyl Chloride Concentration: 4565.30 ug/l

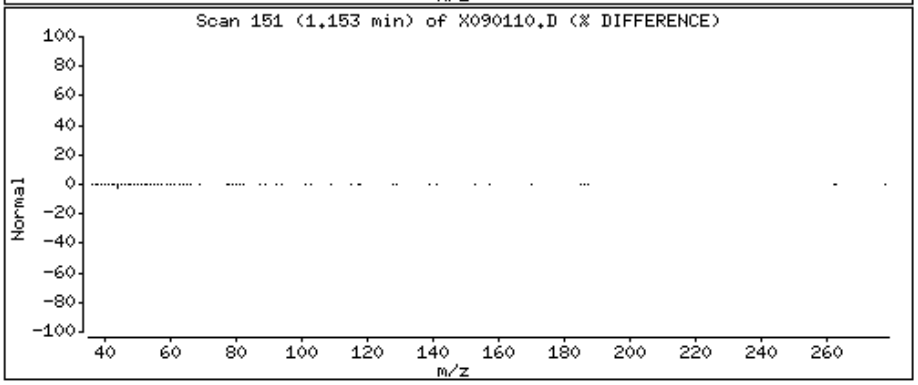












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Inj Date : 01-SEP-2022 13:20
InstruID : voa6.i
LabSampID : HS22081514-22

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090111.D Page 1
Report Date: 09-Sep-2022 16:51

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090111.D
Lab Smp Id: HS22081514-22 Client Smp ID: HS22081514-22
Inj Date : 01-SEP-2022 13:41
Operator : PC Inst ID: voa6.i
Smp Info : HS22081514-22;HS22081514-22;;;
Misc Info : HS22052000V6;WATER;0;250;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\8260W.m
Meth Date : 09-Sep-2022 16:51 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 11
Dil Factor: 250.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	250.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
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	4.185	4.189	(1.000)	588645	50.0000	
* 36 1,4-Difluorobenzene	114	4.969	4.968	(1.000)	816590	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	686639	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.665	(1.000)	288031	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.106	(0.980)	260145	46.7863	46.78
$ 35 1,2-Dichloroethane-d4	65	4.478	4.477	(1.070)	279901	45.9824	45.98
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	944616	55.1382	55.13
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	279060	45.4695	45.46
27 cis-1,2-Dichloroethene	96	3.533	3.533	(0.844)	387263	66.1736	16543.40
17 Methylene Chloride	84	2.315	2.311	(0.553)	233230	42.9689	10742.23
38 Trichloroethene	130	5.212	5.208	(1.049)	54509	9.50962	2377.40
5 Vinyl Chloride	62	1.152	1.152	(0.275)	115892	18.7756	4693.90

01148101

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090111.D

Date : 01-SEP-2022 13:41

Client ID: HS22081514-22

Instrument: voa6.i

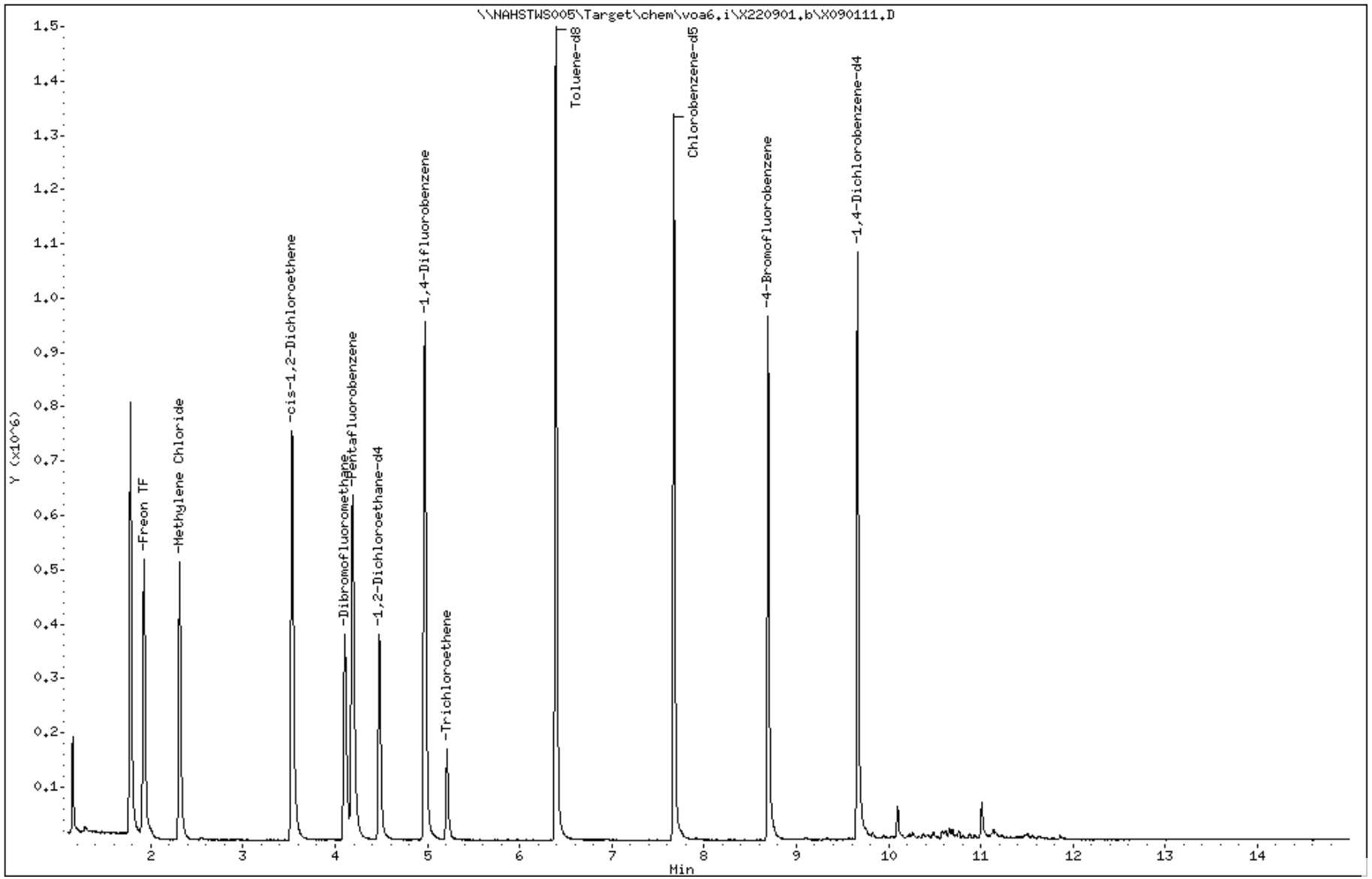
Sample Info: HS22081514-22;HS22081514-22;;;

Purge Volume: 5.0

Operator: PC

Column phase: DB624

Column diameter: 0.18



Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090111.D

Date : 01-SEP-2022 13:41

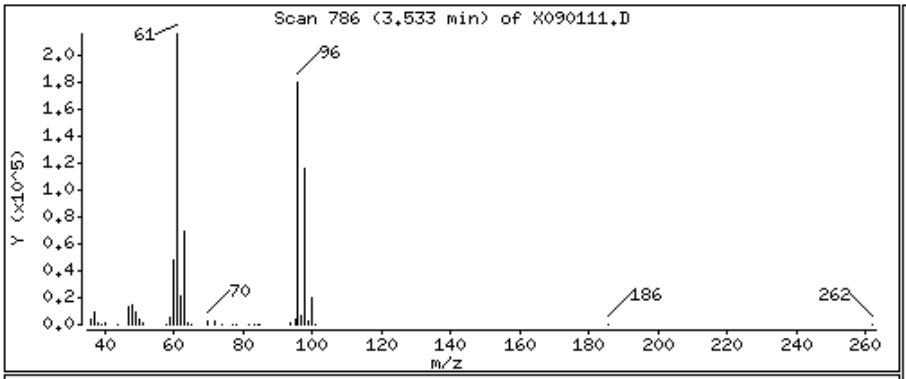
Client ID: HS22081514-22 Instrument: voa6.i

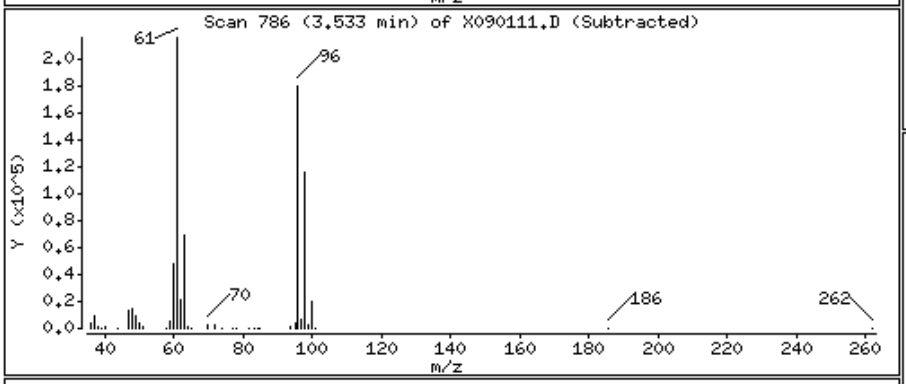
Sample Info: HS22081514-22;HS22081514-22;;;

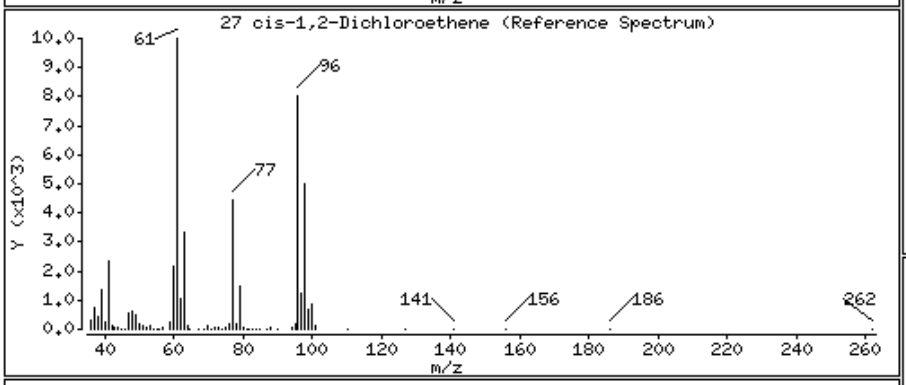
Purge Volume: 5.0 Operator: PC

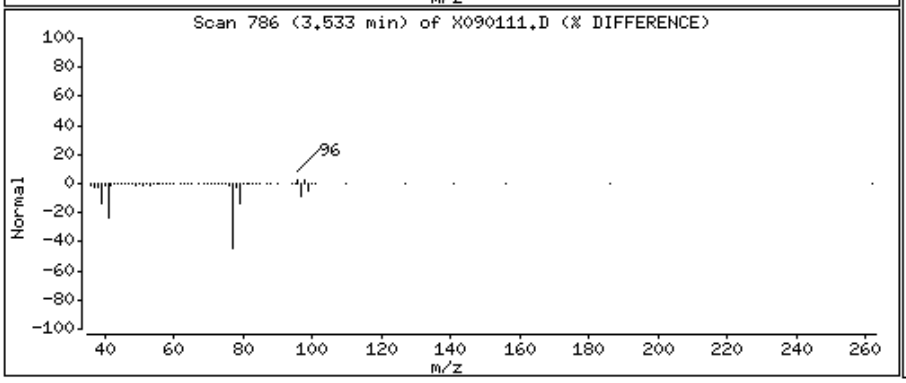
Column phase: DB624 Column diameter: 0.18

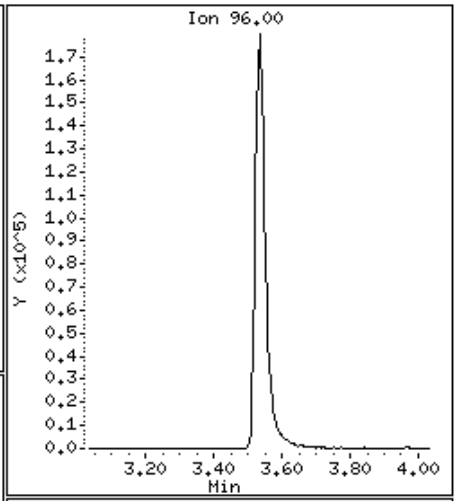
27 cis-1,2-Dichloroethene Concentration: 16543.40 ug/l

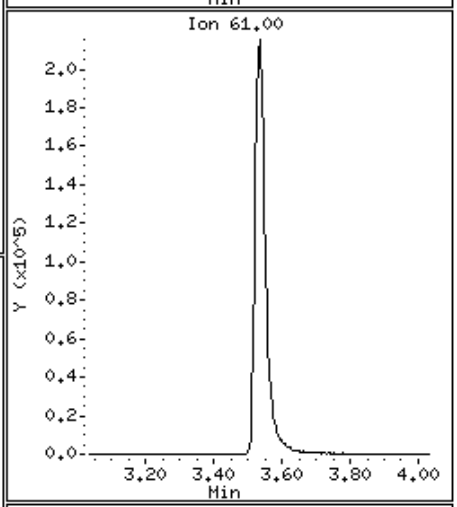


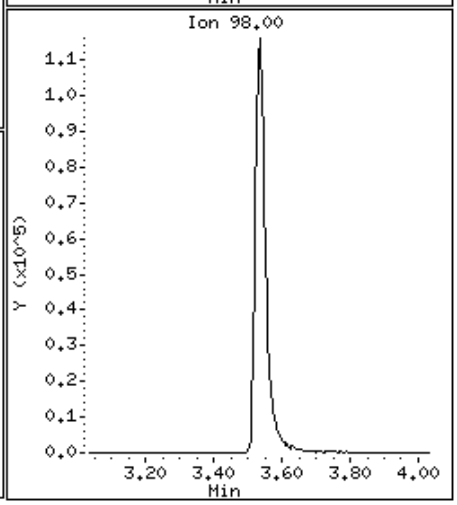












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090111.D

Date : 01-SEP-2022 13:41

Client ID: HS22081514-22

Instrument: voa6.i

Sample Info: HS22081514-22;HS22081514-22;;;

Purge Volume: 5.0

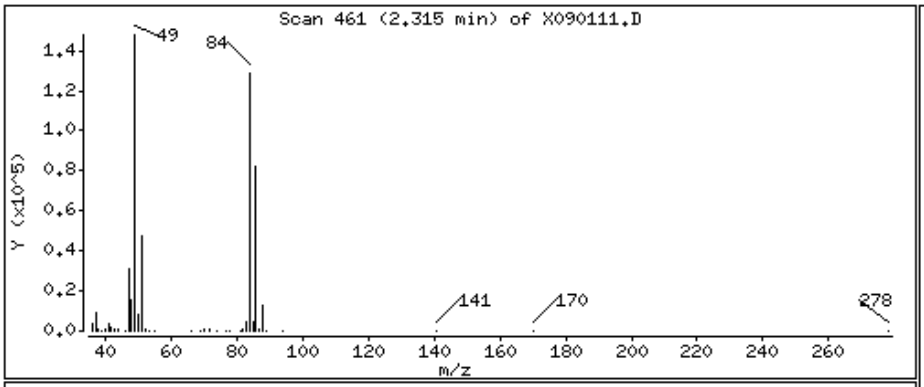
Operator: PC

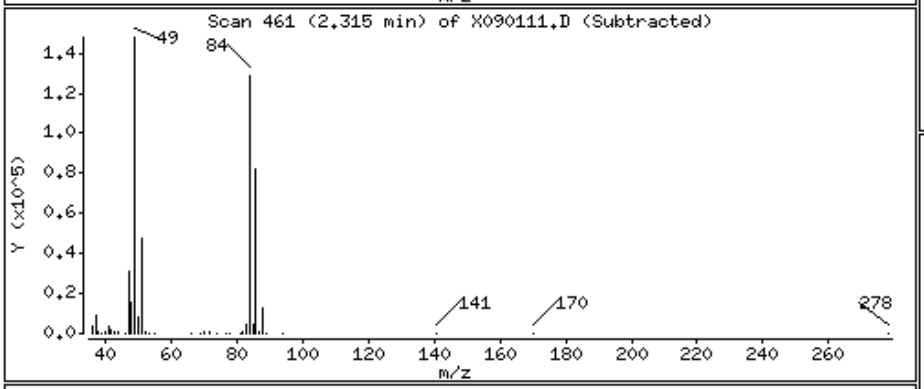
Column phase: DB624

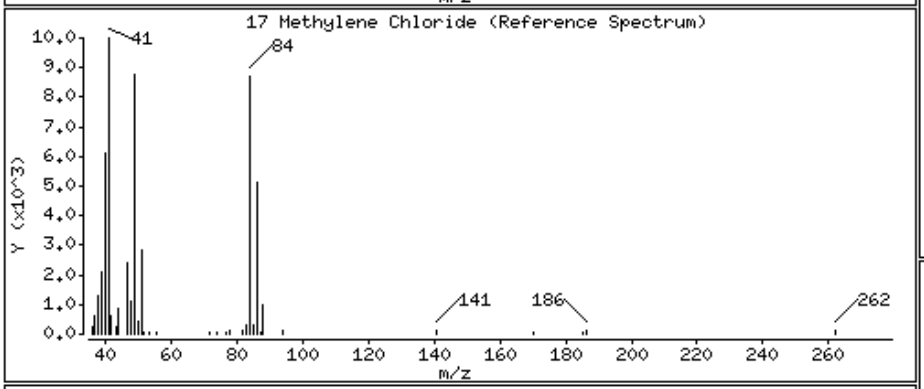
Column diameter: 0.18

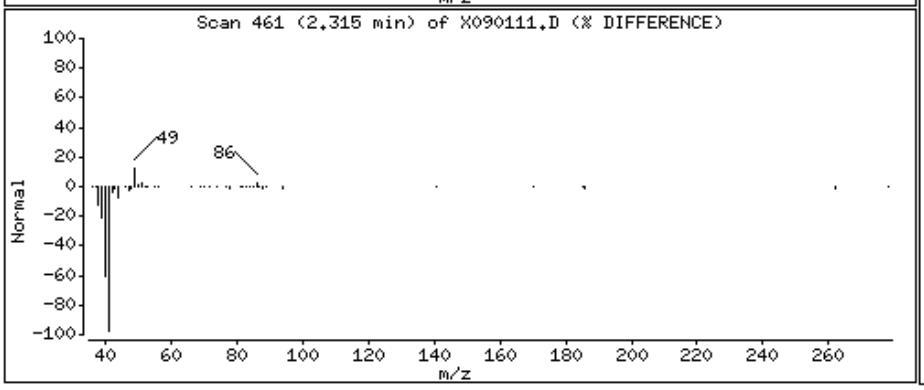
17 Methylene Chloride

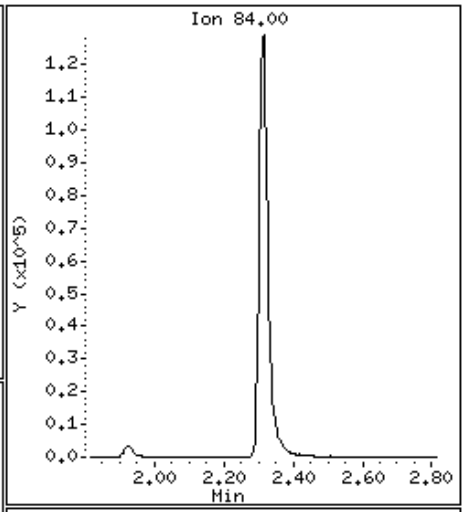
Concentration: 10742.23 ug/l

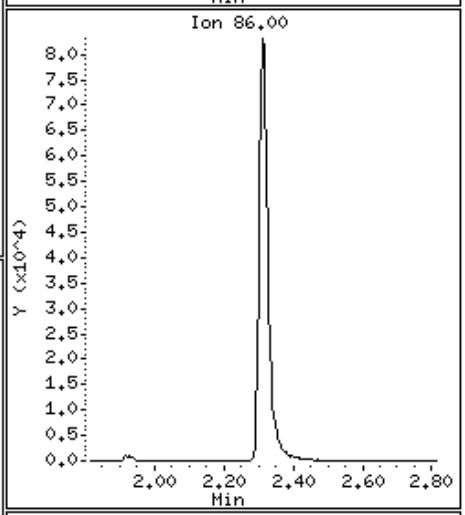


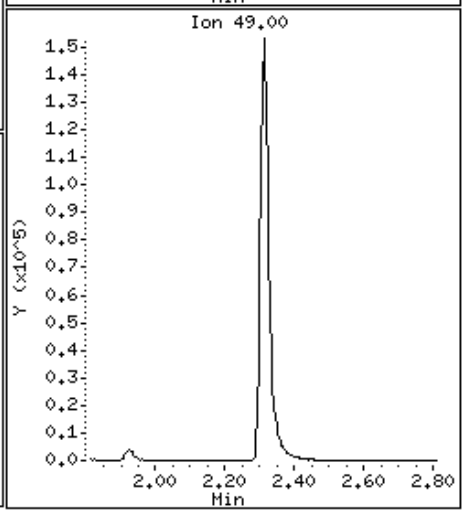












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090111.D

Date : 01-SEP-2022 13:41

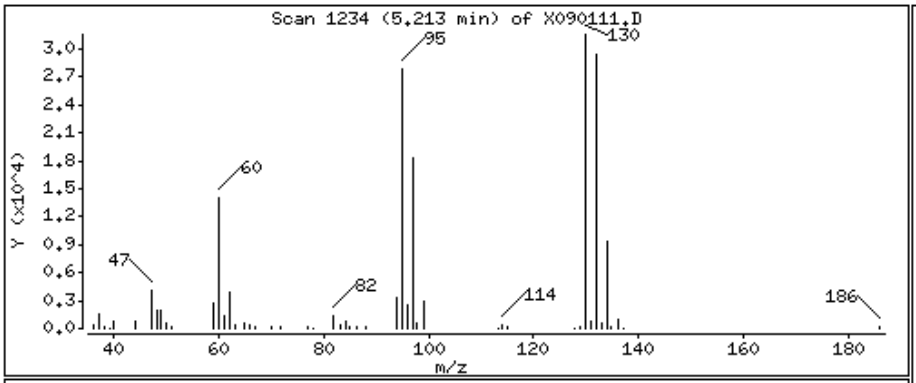
Client ID: HS22081514-22 Instrument: voa6.i

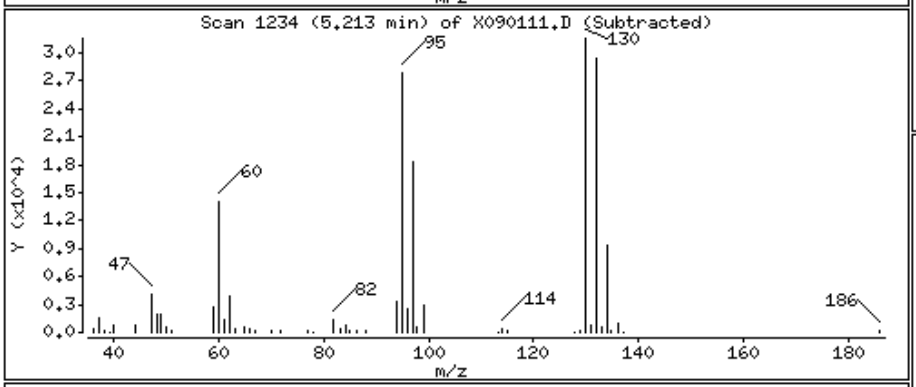
Sample Info: HS22081514-22;HS22081514-22;;;

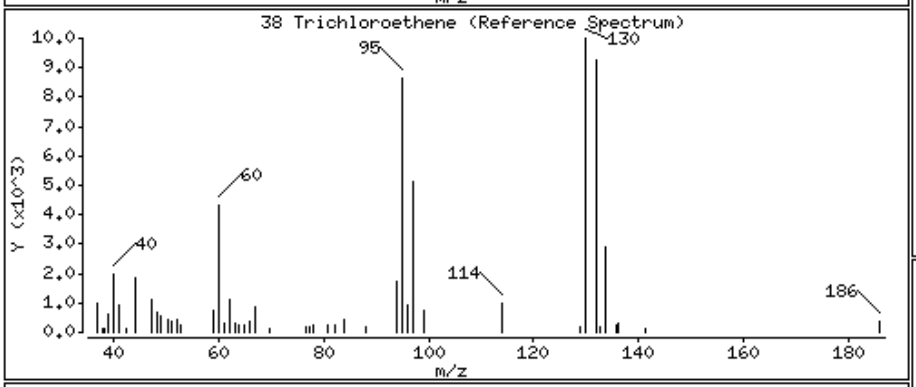
Purge Volume: 5.0 Operator: PC

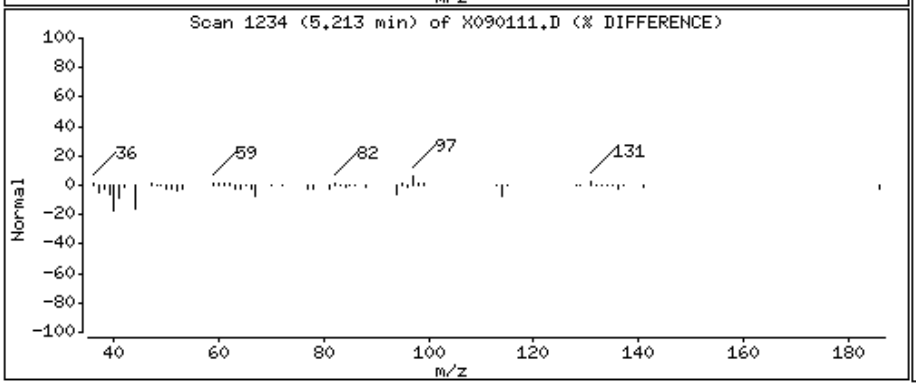
Column phase: DB624 Column diameter: 0.18

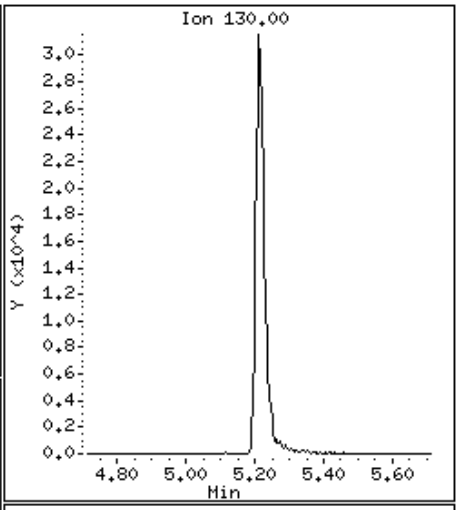
38 Trichloroethene Concentration: 2377.40 ug/l

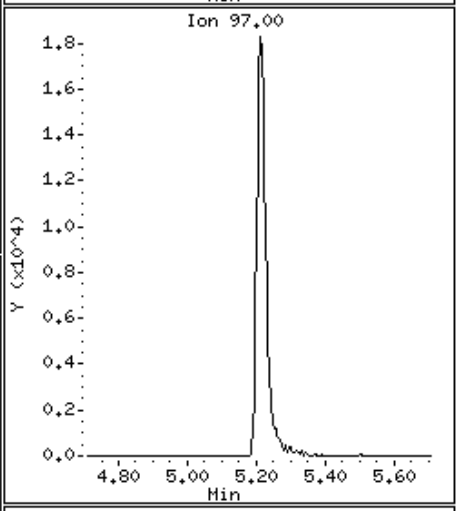


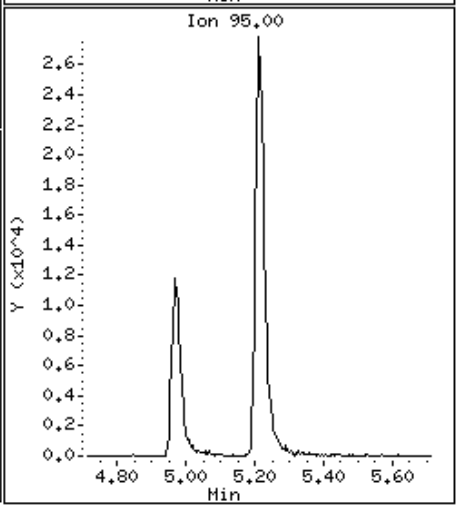












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090111.D Page 5

Date : 01-SEP-2022 13:41

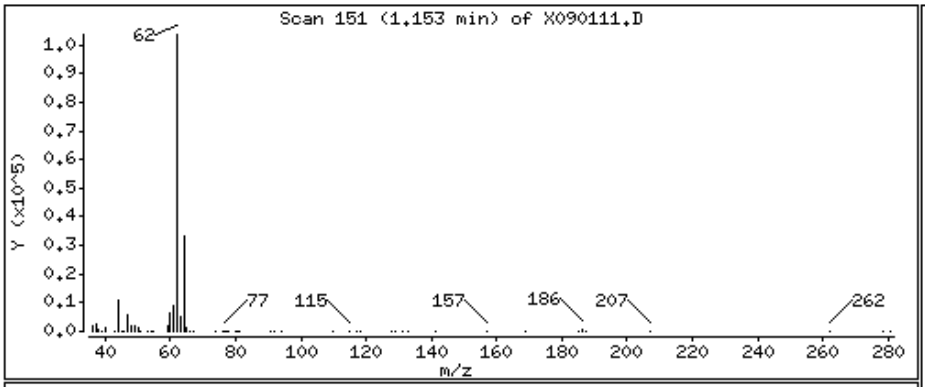
Client ID: HS22081514-22 Instrument: voa6.i

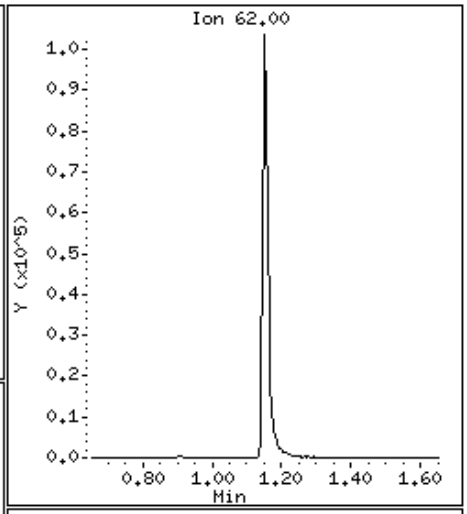
Sample Info: HS22081514-22;HS22081514-22;;;

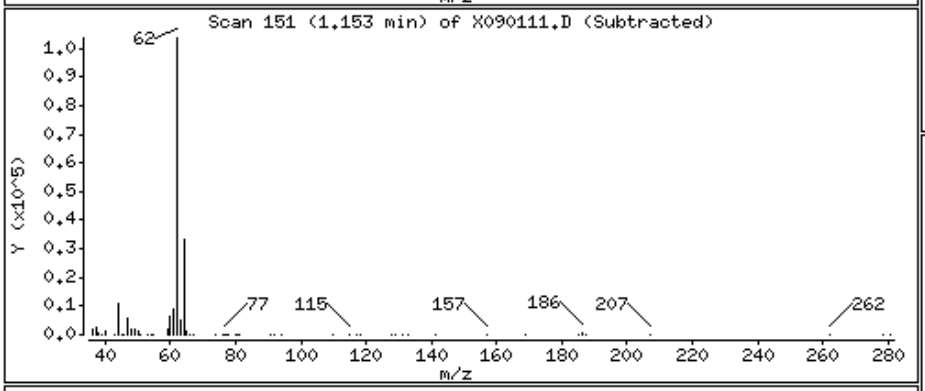
Purge Volume: 5.0 Operator: PC

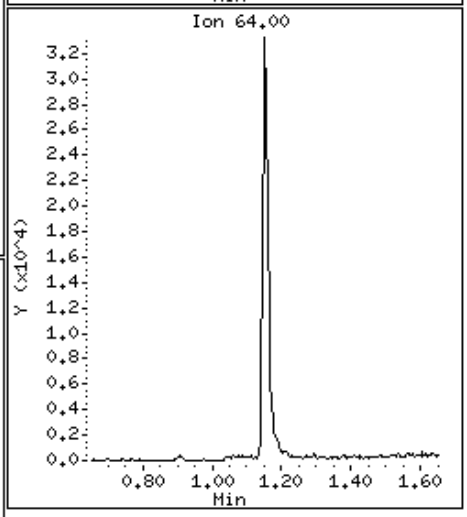
Column phase: DB624 Column diameter: 0.18

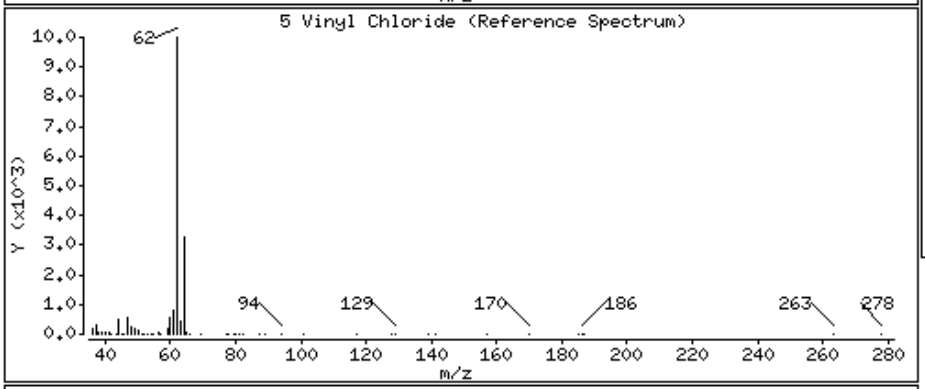
5 Vinyl Chloride Concentration: 4693.90 ug/l

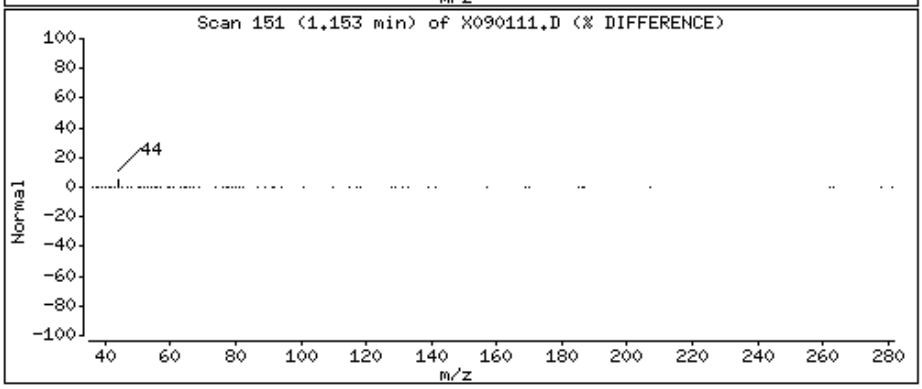












Data File : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090111.D
Inj Date : 01-SEP-2022 13:41
InstruID : voa6.i
LabSampID : HS22081514-22

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090112.D Page 1
Report Date: 09-Sep-2022 16:51

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090112.D
Lab Smp Id: HS22081514-05 Client Smp ID: HS22081514-05
Inj Date : 01-SEP-2022 14:02
Operator : PC Inst ID: voa6.i
Smp Info : HS22081514-05;HS22081514-05;;;
Misc Info : HS22052000V6;WATER;0;10;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\8260W.m
Meth Date : 09-Sep-2022 16:51 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 12
Dil Factor: 10.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7056

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
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	4.185	4.189	(1.000)	591445	50.0000	
* 36 1,4-Difluorobenzene	114	4.972	4.968	(1.000)	822260	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	691309	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.665	9.665	(1.000)	303143	50.0000	
$ 30 Dibromofluoromethane	113	4.106	4.106	(0.981)	259293	46.4065	46.40
$ 35 1,2-Dichloroethane-d4	65	4.477	4.477	(1.070)	279684	45.7274	45.72
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	949845	55.0689	55.06
$ 69 4-Bromofluorobenzene	95	8.695	8.691	(1.133)	287668	46.5751	46.57
33 1,2-Dichloroethane	62	4.579	4.560	(0.921)	4995	0.69266	6.92(a)
27 cis-1,2-Dichloroethene	96	3.536	3.533	(0.845)	151325	25.7353	257.35
38 Trichloroethene	130	5.208	5.208	(1.047)	988482	171.261	1712.61

QC Flag Legend

a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).

01148108

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090112.D

Date : 01-SEP-2022 14:02

Client ID: HS22081514-05

Instrument: voa6.i

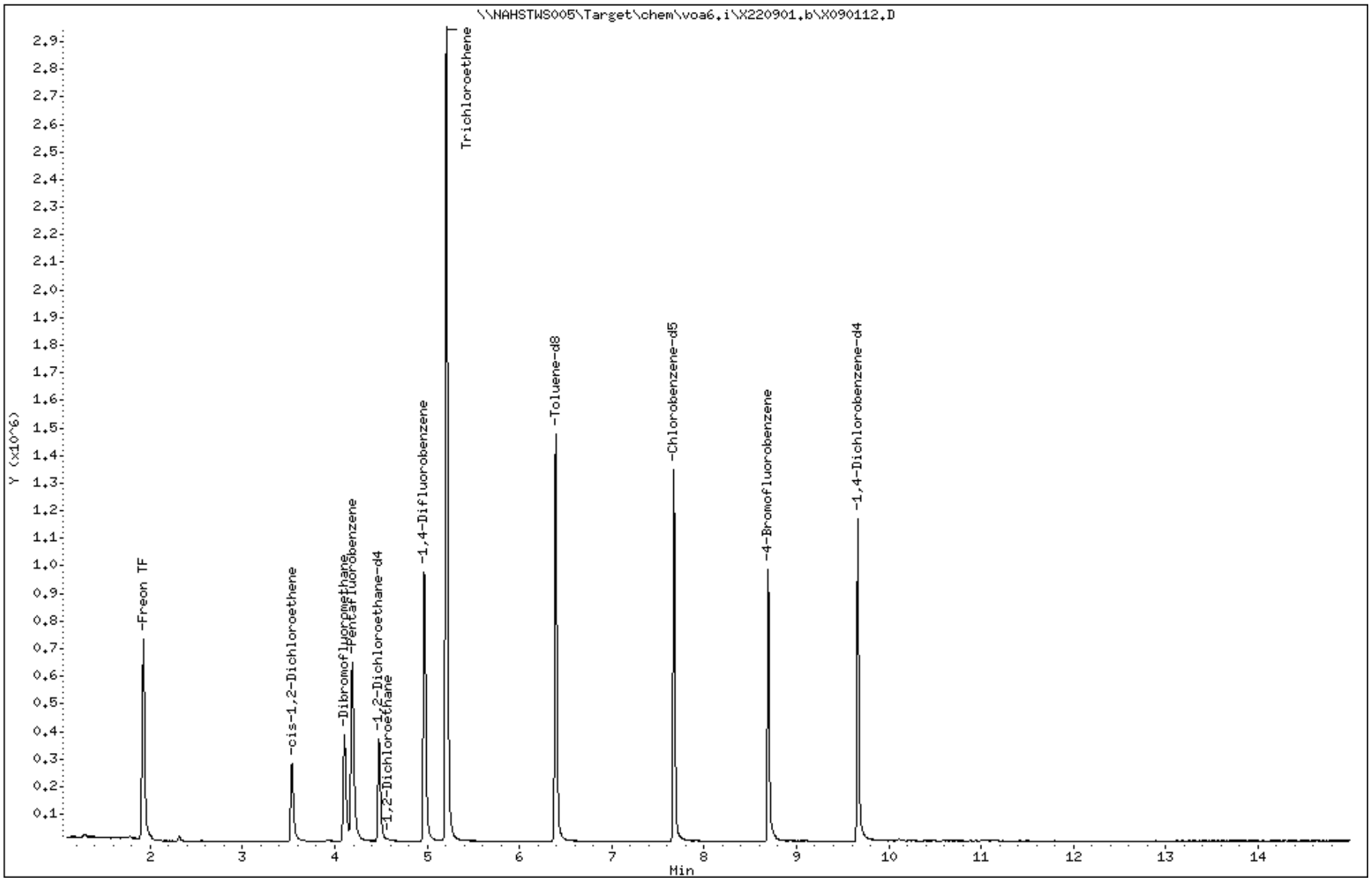
Sample Info: HS22081514-05;HS22081514-05;;;

Purge Volume: 5.0

Operator: PC

Column phase: DB624

Column diameter: 0.18



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Date : 01-SEP-2022 14:02

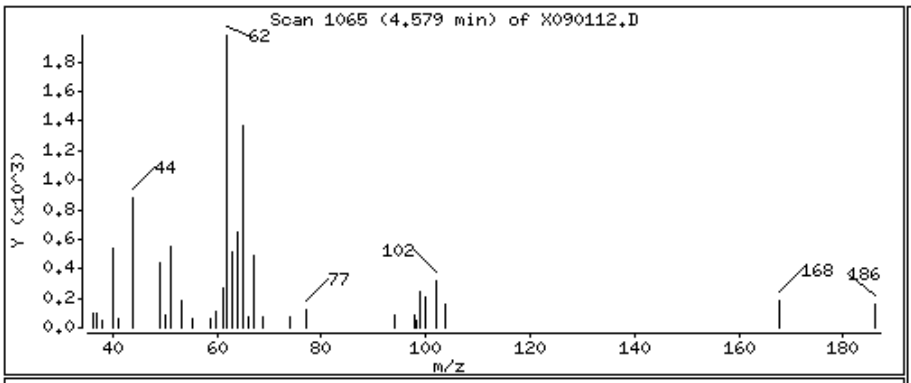
Client ID: HS22081514-05 Instrument: voa6.i

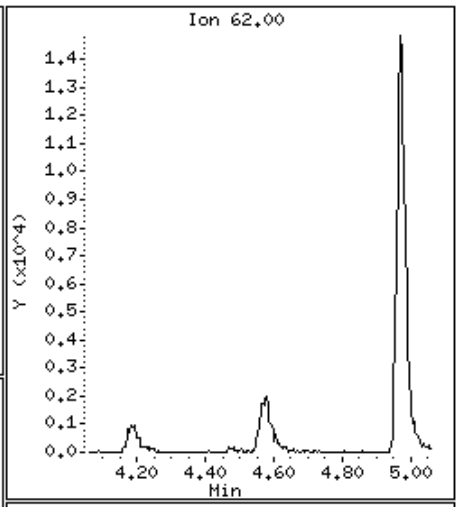
Sample Info: HS22081514-05;HS22081514-05;;;

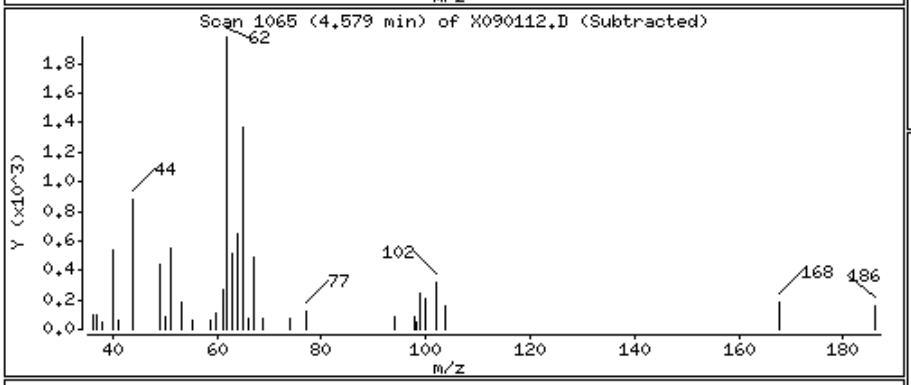
Purge Volume: 5.0 Operator: PC

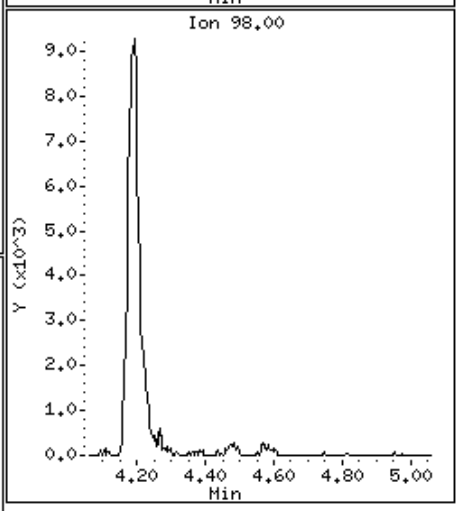
Column phase: DB624 Column diameter: 0.18

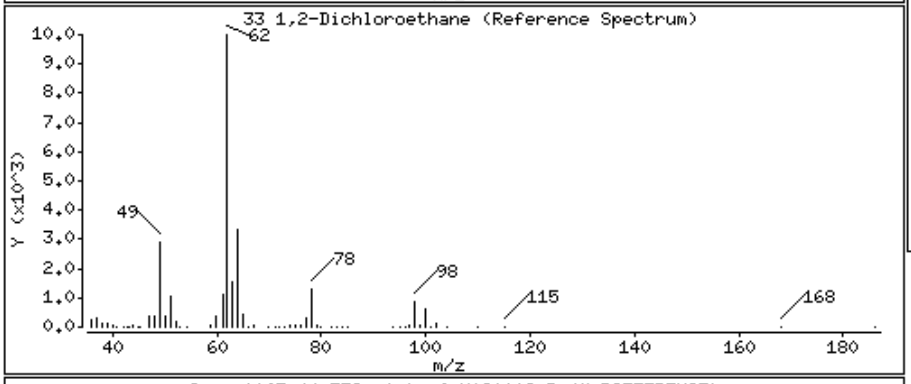
33 1,2-Dichloroethane Concentration: 6.92 ug/l

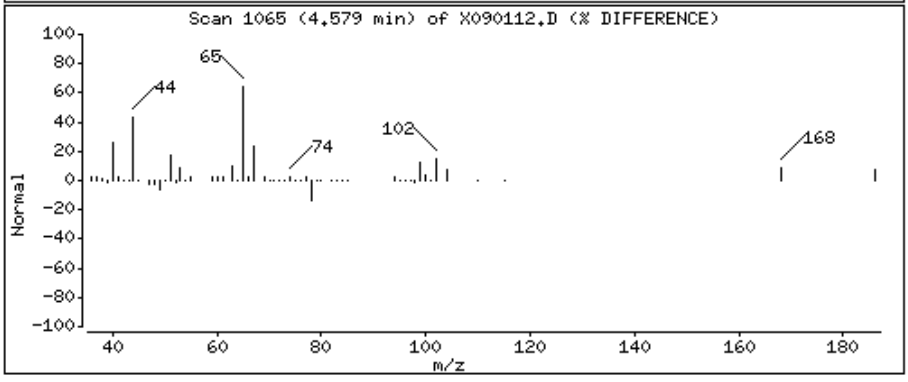












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090112.D

Date : 01-SEP-2022 14:02

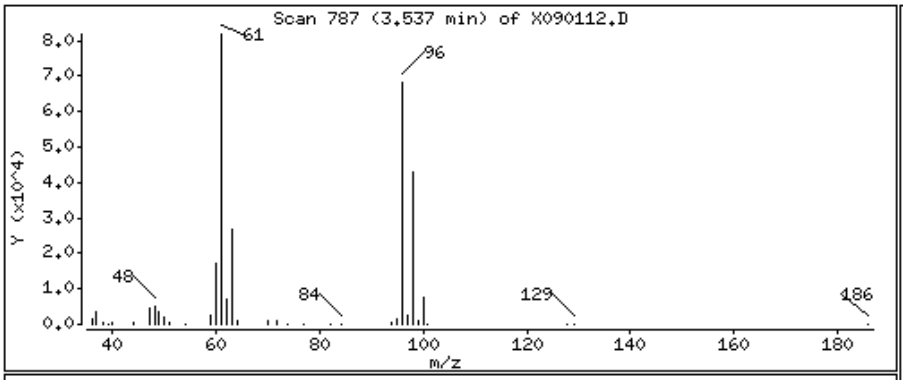
Client ID: HS22081514-05 Instrument: voa6.i

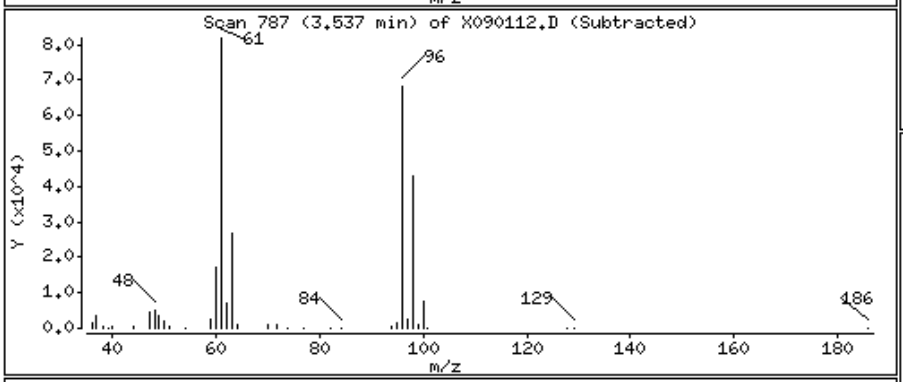
Sample Info: HS22081514-05;HS22081514-05;;;

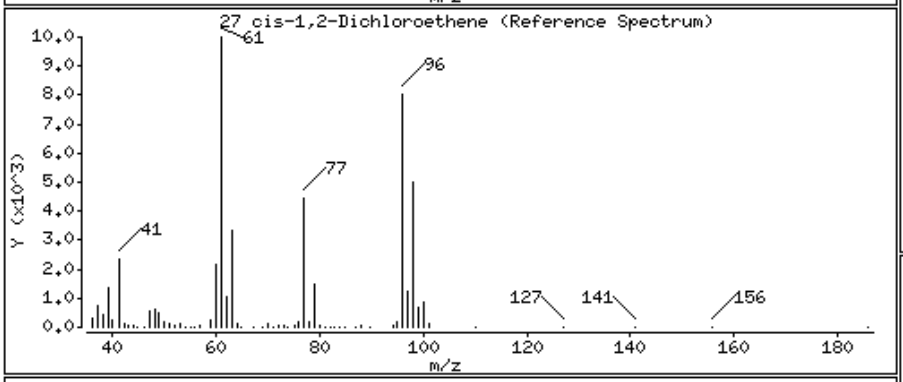
Purge Volume: 5.0 Operator: PC

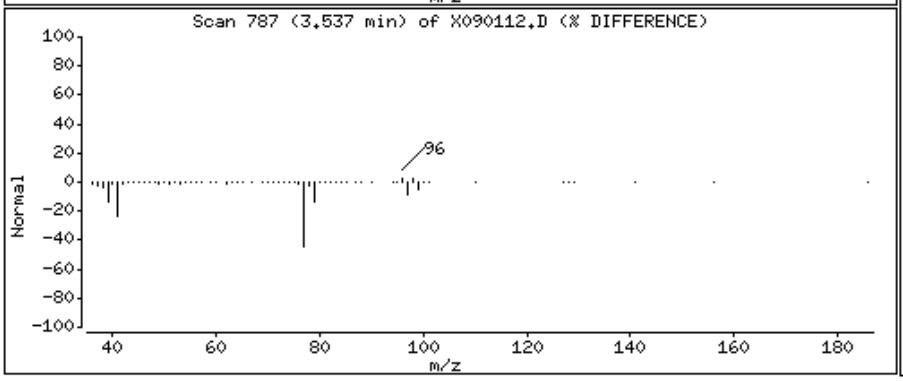
Column phase: DB624 Column diameter: 0.18

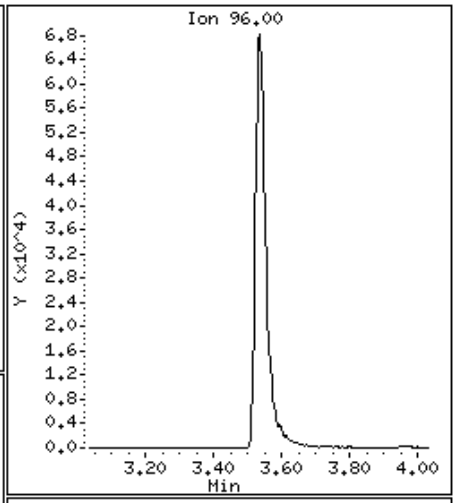
27 cis-1,2-Dichloroethene Concentration: 257.35 ug/l

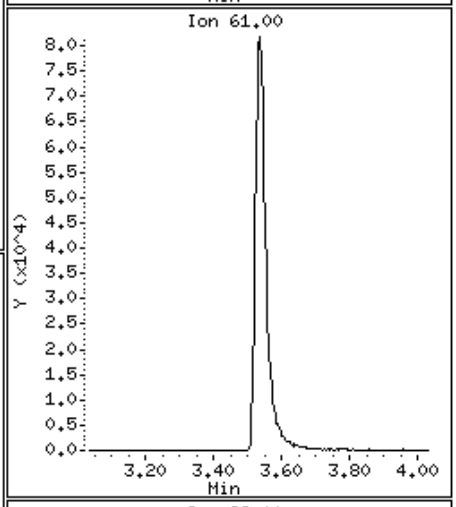


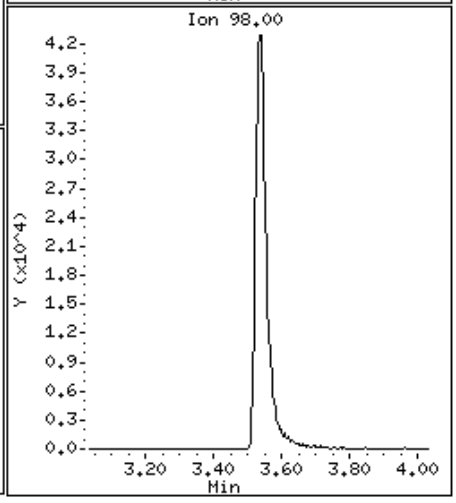












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090112.D Page 4

Date : 01-SEP-2022 14:02

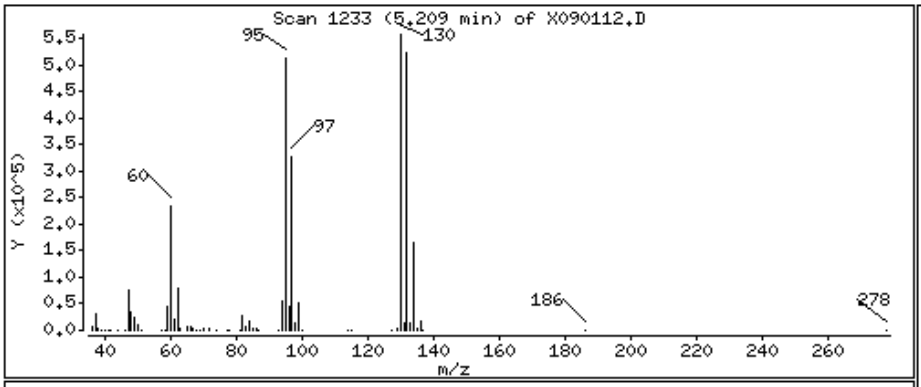
Client ID: HS22081514-05 Instrument: voa6.i

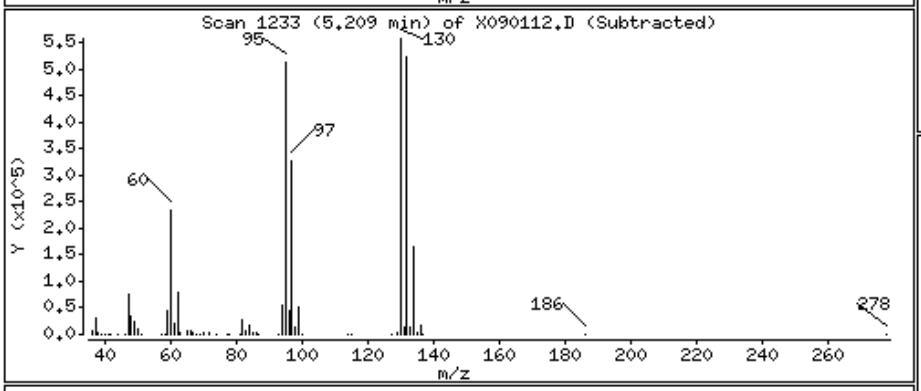
Sample Info: HS22081514-05;HS22081514-05;;;

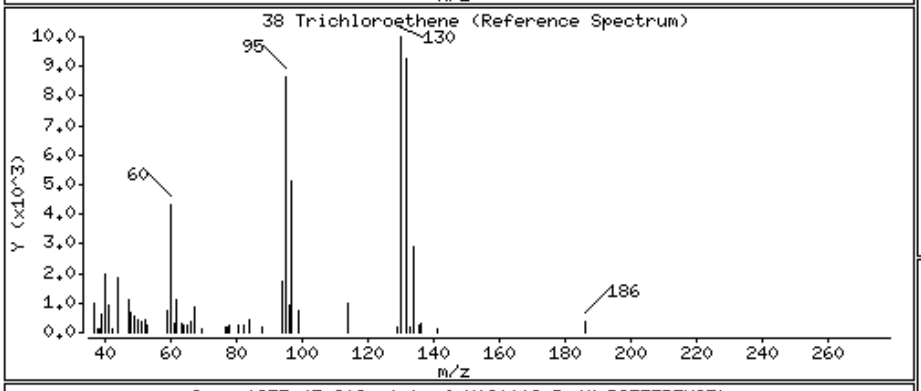
Purge Volume: 5.0 Operator: PC

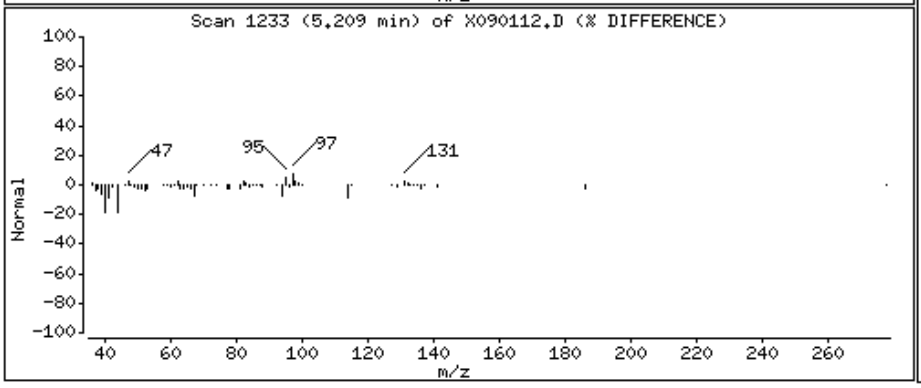
Column phase: DB624 Column diameter: 0.18

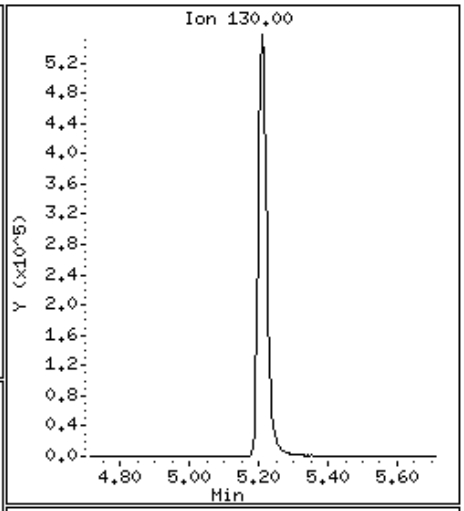
38 Trichloroethene Concentration: 1712.61 ug/l

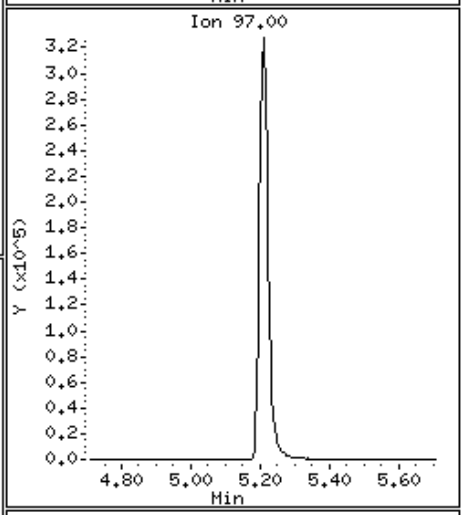


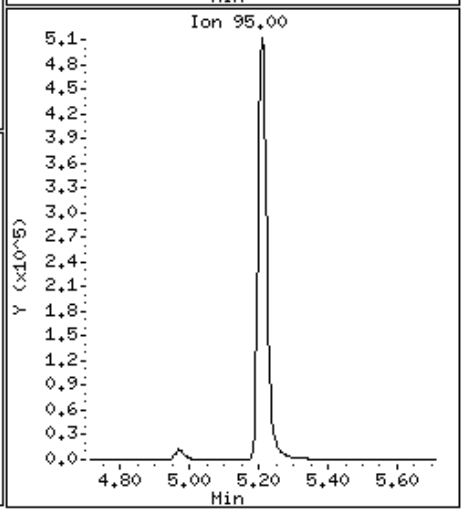












Data File : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090112.D
Inj Date : 01-SEP-2022 14:02
InstruID : voa6.i
LabSampID : HS22081514-05

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090113.D Page 1
Report Date: 09-Sep-2022 16:52

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090113.D
Lab Smp Id: HS22081514-06 Client Smp ID: HS22081514-06
Inj Date : 01-SEP-2022 14:23
Operator : PC Inst ID: voa6.i
Smp Info : HS22081514-06;HS22081514-06;;;
Misc Info : HS22052000V6;WATER;0;10;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\8260W.m
Meth Date : 09-Sep-2022 16:51 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 13
Dil Factor: 10.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7056

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
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	4.185	4.189	(1.000)	582901	50.0000	
* 36 1,4-Difluorobenzene	114	4.972	4.968	(1.000)	813997	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	677137	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.665	9.665	(1.000)	304748	50.0000	
$ 30 Dibromofluoromethane	113	4.106	4.106	(0.981)	256937	46.6628	46.66
$ 35 1,2-Dichloroethane-d4	65	4.477	4.477	(1.070)	273240	45.3258	45.32
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	936529	55.4332	55.43
$ 69 4-Bromofluorobenzene	95	8.695	8.691	(1.133)	281210	46.4808	46.48
33 1,2-Dichloroethane	62	4.567	4.560	(0.919)	4942	0.69226	6.92(a)
27 cis-1,2-Dichloroethene	96	3.536	3.533	(0.845)	145579	25.1210	251.20
38 Trichloroethene	130	5.208	5.208	(1.047)	983713	172.165	1721.64

QC Flag Legend

a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).

01148114

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090113.D

Page 1

Date : 01-SEP-2022 14:23

Client ID: HS22081514-06

Instrument: voa6.i

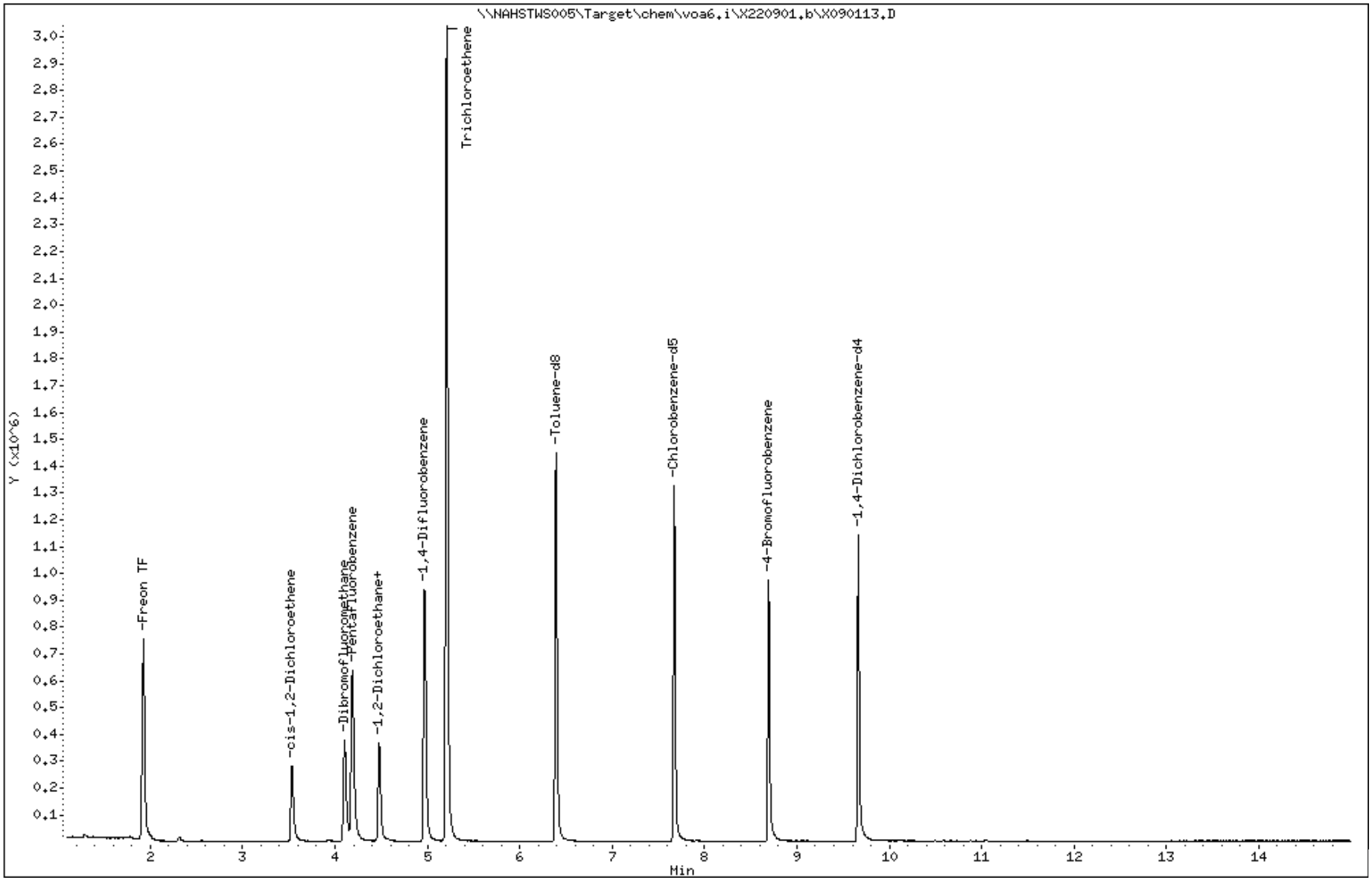
Sample Info: HS22081514-06;HS22081514-06;;;

Purge Volume: 5.0

Operator: PC

Column phase: DB624

Column diameter: 0.18



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Date : 01-SEP-2022 14:23

Client ID: HS22081514-06

Instrument: voa6.i

Sample Info: HS22081514-06;HS22081514-06;;;

Purge Volume: 5.0

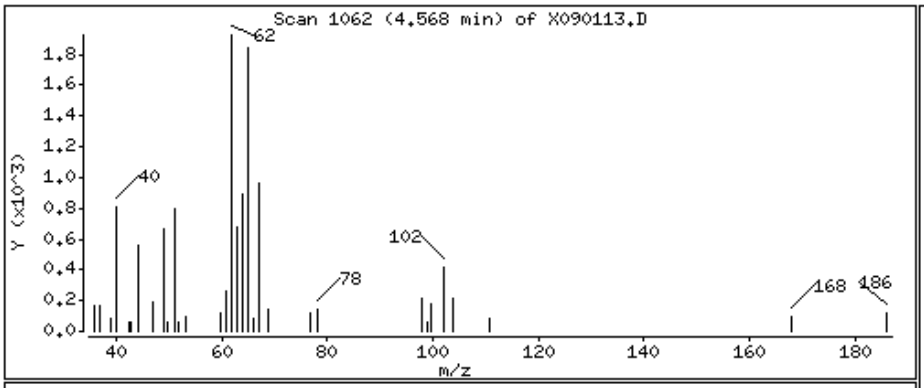
Operator: PC

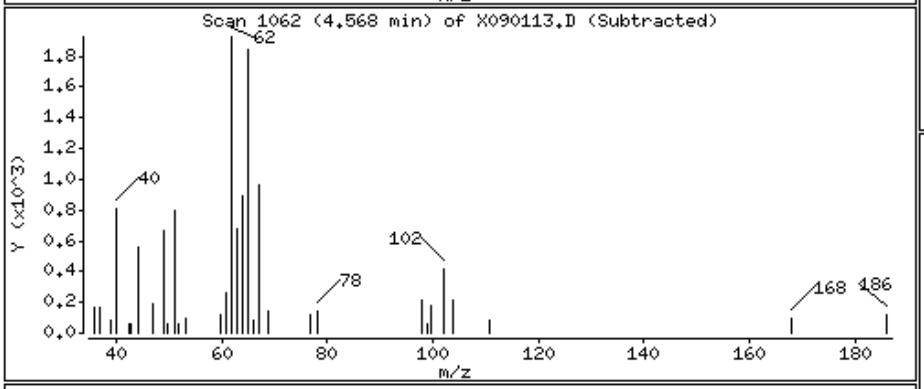
Column phase: DB624

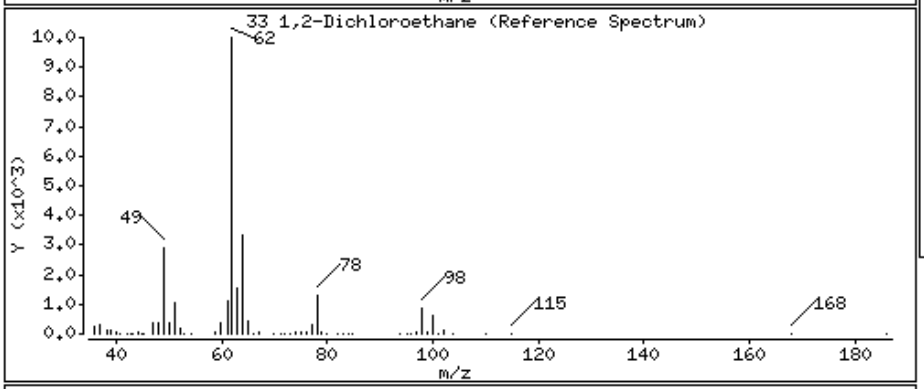
Column diameter: 0.18

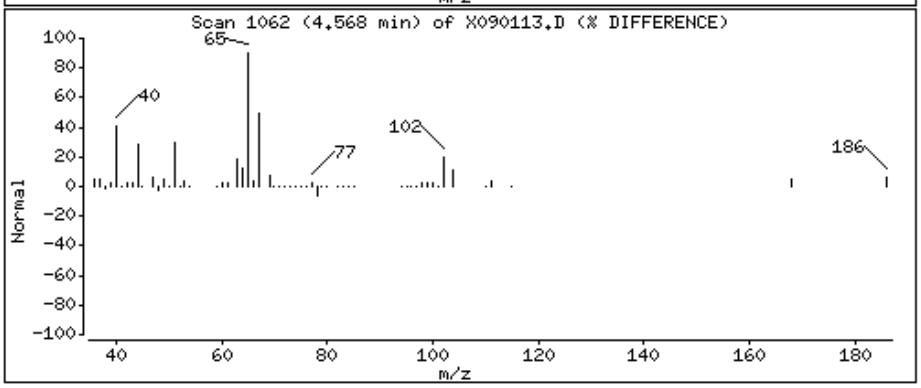
33 1,2-Dichloroethane

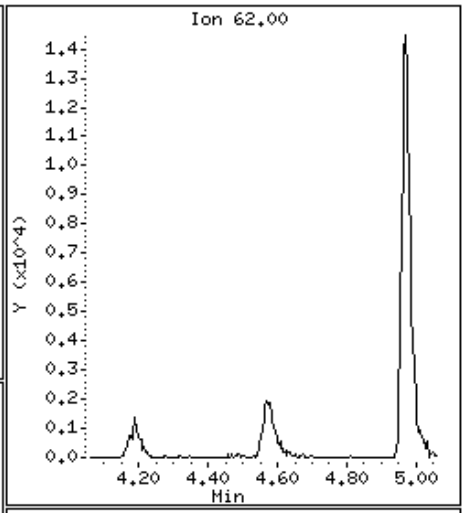
Concentration: 6.92 ug/l

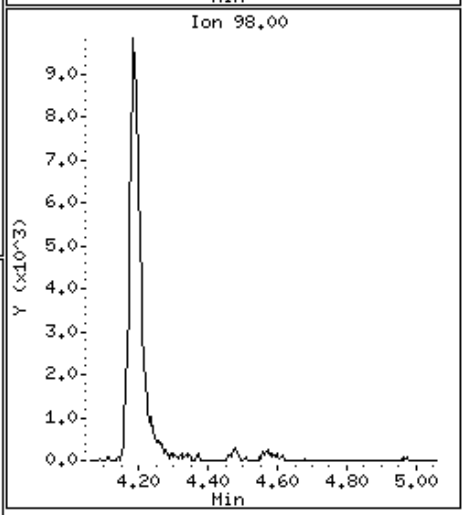












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090113.D Page 3

Date : 01-SEP-2022 14:23

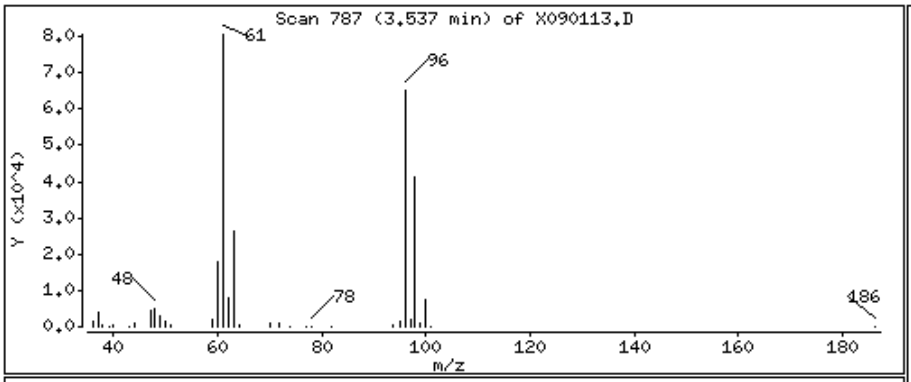
Client ID: HS22081514-06 Instrument: voa6.i

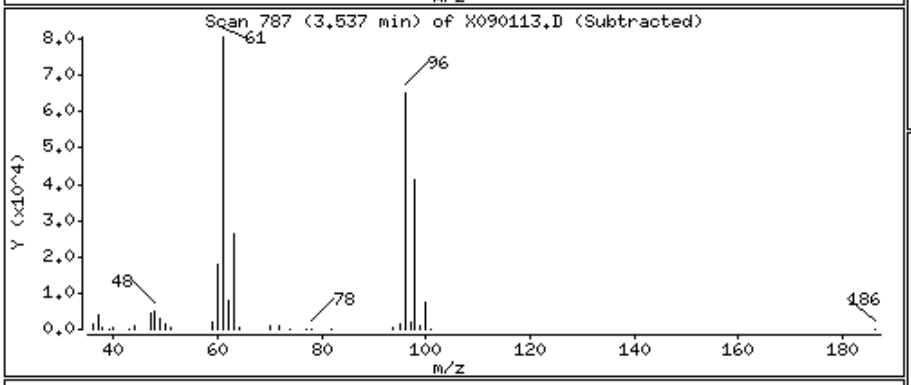
Sample Info: HS22081514-06;HS22081514-06;;;

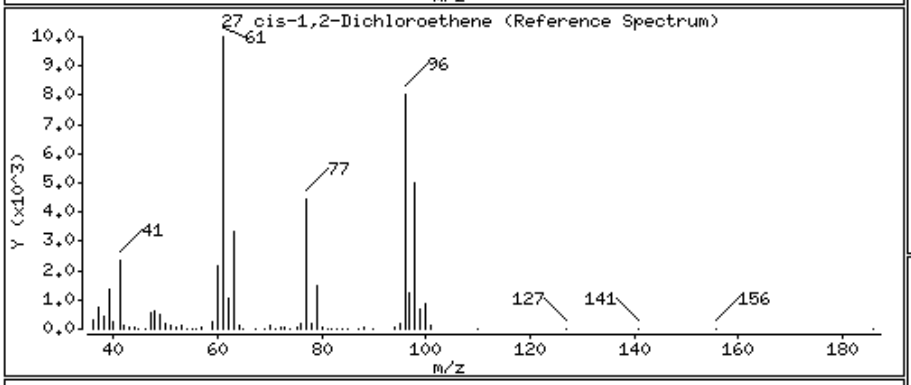
Purge Volume: 5.0 Operator: PC

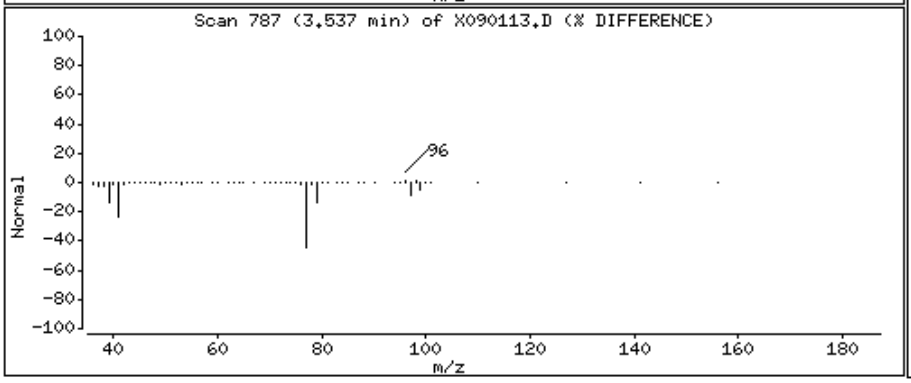
Column phase: DB624 Column diameter: 0.18

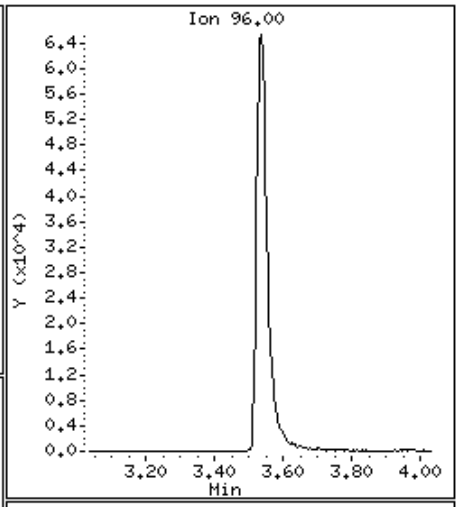
27 cis-1,2-Dichloroethene Concentration: 251.20 ug/l

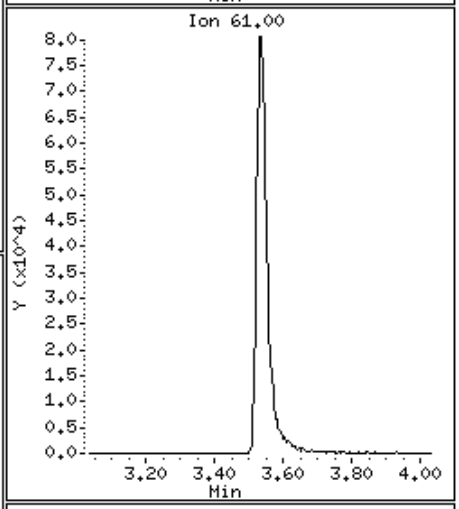


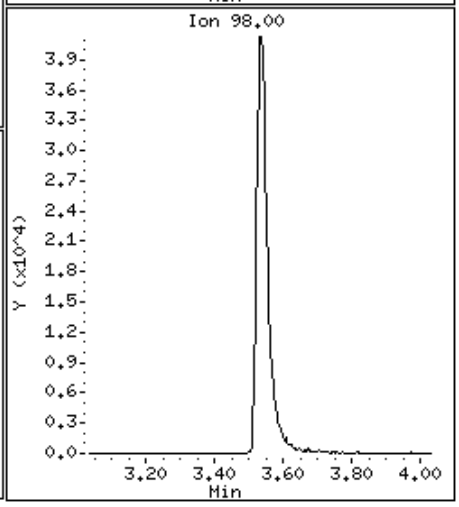












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090113.D Page 4

Date : 01-SEP-2022 14:23

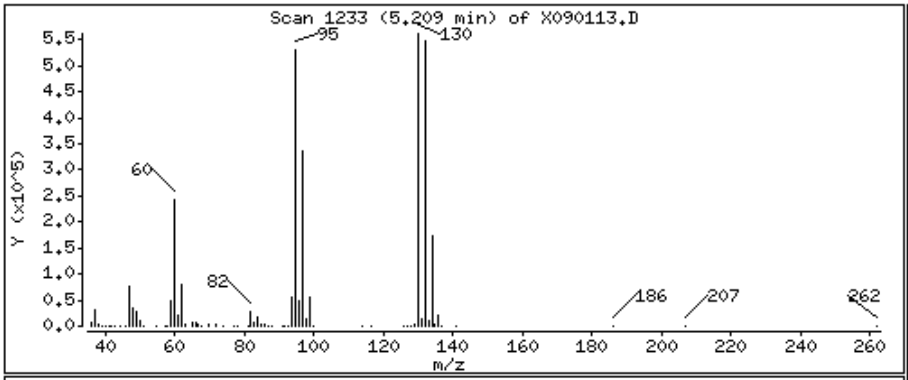
Client ID: HS22081514-06 Instrument: voa6.i

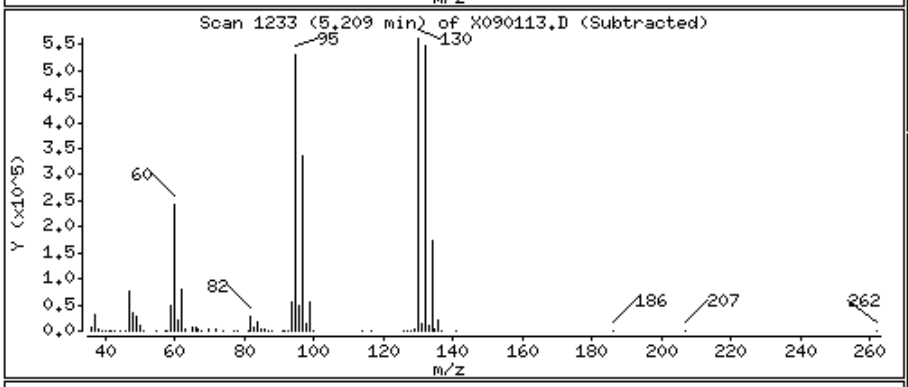
Sample Info: HS22081514-06;HS22081514-06;;;

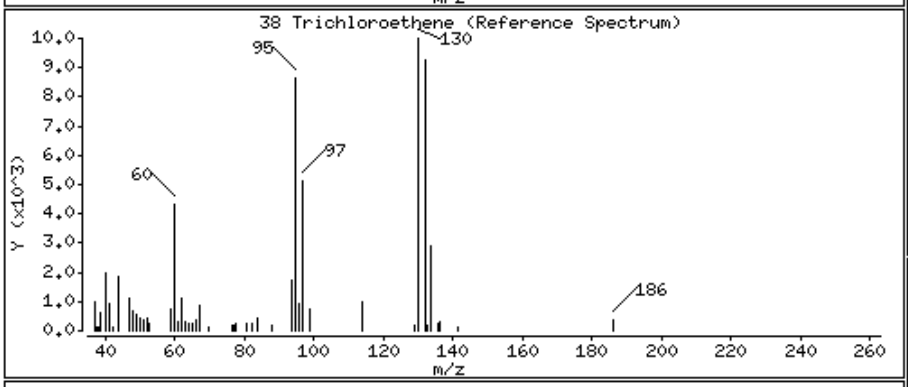
Purge Volume: 5.0 Operator: PC

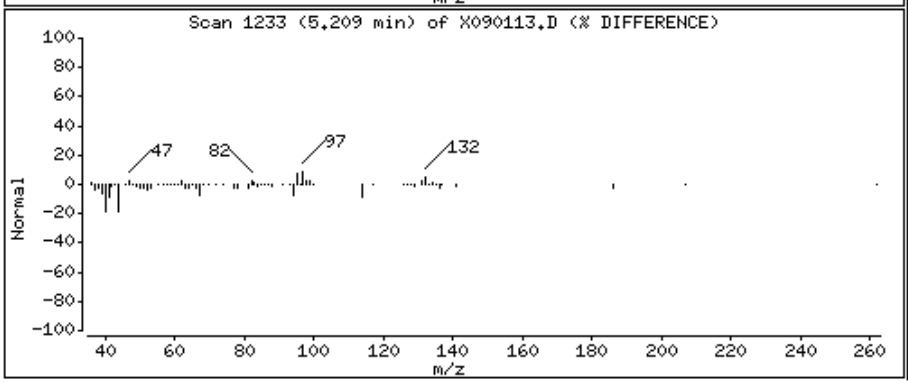
Column phase: DB624 Column diameter: 0.18

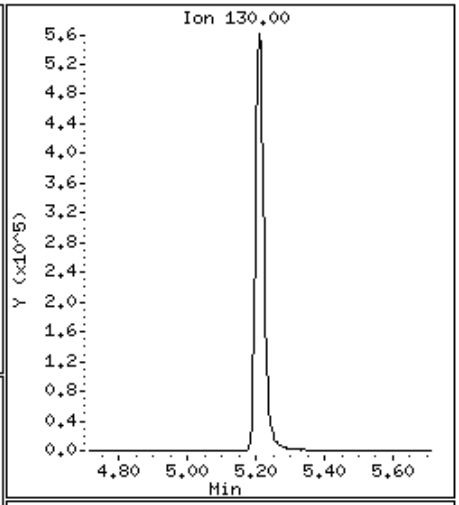
38 Trichloroethene Concentration: 1721.64 ug/l

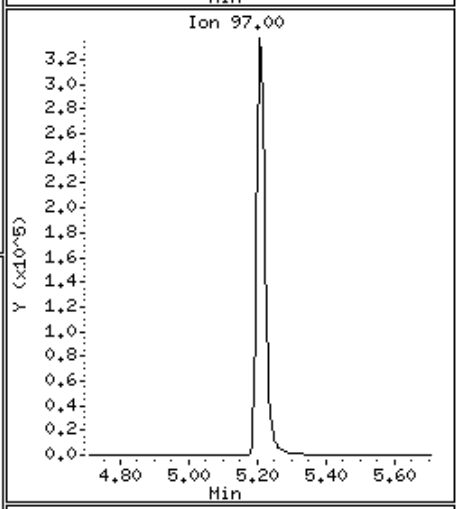


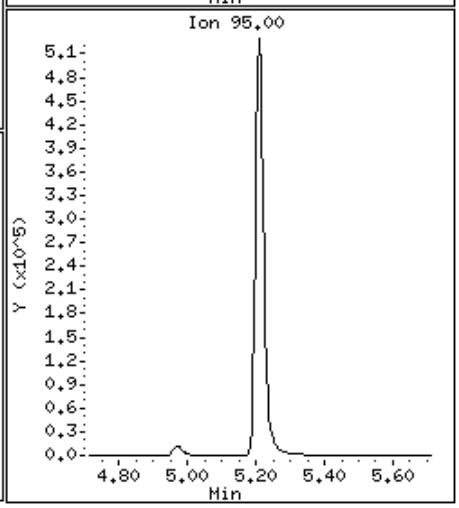












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Inj Date : 01-SEP-2022 14:23
InstruID : voa6.i
LabSampID : HS22081514-06

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090114.D Page 1
Report Date: 09-Sep-2022 16:52

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090114.D
Lab Smp Id: HS22081514-10 Client Smp ID: HS22081514-10
Inj Date : 01-SEP-2022 14:44
Operator : PC Inst ID: voa6.i
Smp Info : HS22081514-10;HS22081514-10;;;
Misc Info : HS22052000V6;WATER;0;25;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\8260W.m
Meth Date : 09-Sep-2022 16:51 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 14
Dil Factor: 25.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	25.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
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	4.185	4.189	(1.000)	560185	50.0000	
* 36 1,4-Difluorobenzene	114	4.968	4.968	(1.000)	784584	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	653823	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.665	9.665	(1.000)	284195	50.0000	
$ 30 Dibromofluoromethane	113	4.102	4.106	(0.980)	251315	47.5055	47.50
$ 35 1,2-Dichloroethane-d4	65	4.477	4.477	(1.070)	277577	47.9311	47.93
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	899737	55.1545	55.15
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	272204	46.5986	46.59
22 1,1-Dichloroethane	63	2.933	2.929	(0.701)	12016	1.39331	34.83(a)
33 1,2-Dichloroethane	62	4.564	4.560	(0.919)	113358	16.4742	411.85
28 Chloroform	83	3.923	3.911	(0.937)	9528	1.00837	25.20(a)
27 cis-1,2-Dichloroethene	96	3.533	3.533	(0.844)	8476227	1521.96	38049.01(A)
61 Ethylbenzene	106	7.810	7.802	(1.018)	5977	0.95440	23.85(a)
17 Methylene Chloride	84	2.311	2.311	(0.552)	420837	82.2549	2056.37
56 Tetrachloroethene	164	6.936	6.929	(0.904)	3297	0.77765	19.44(a)
50 Toluene	91	6.453	6.449	(0.841)	13637	0.74198	18.54(a)
20 trans-1,2-Dichloroethene	96	2.539	2.539	(0.607)	4913	0.99695	24.92(a)
38 Trichloroethene	130	5.208	5.208	(1.048)	3895271	707.290	17682.23(A)
5 Vinyl Chloride	62	1.152	1.152	(0.275)	218808	37.2500	931.24

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.

01148122

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090114.D

Page 1

Date : 01-SEP-2022 14:44

Client ID: HS22081514-10

Instrument: voa6.i

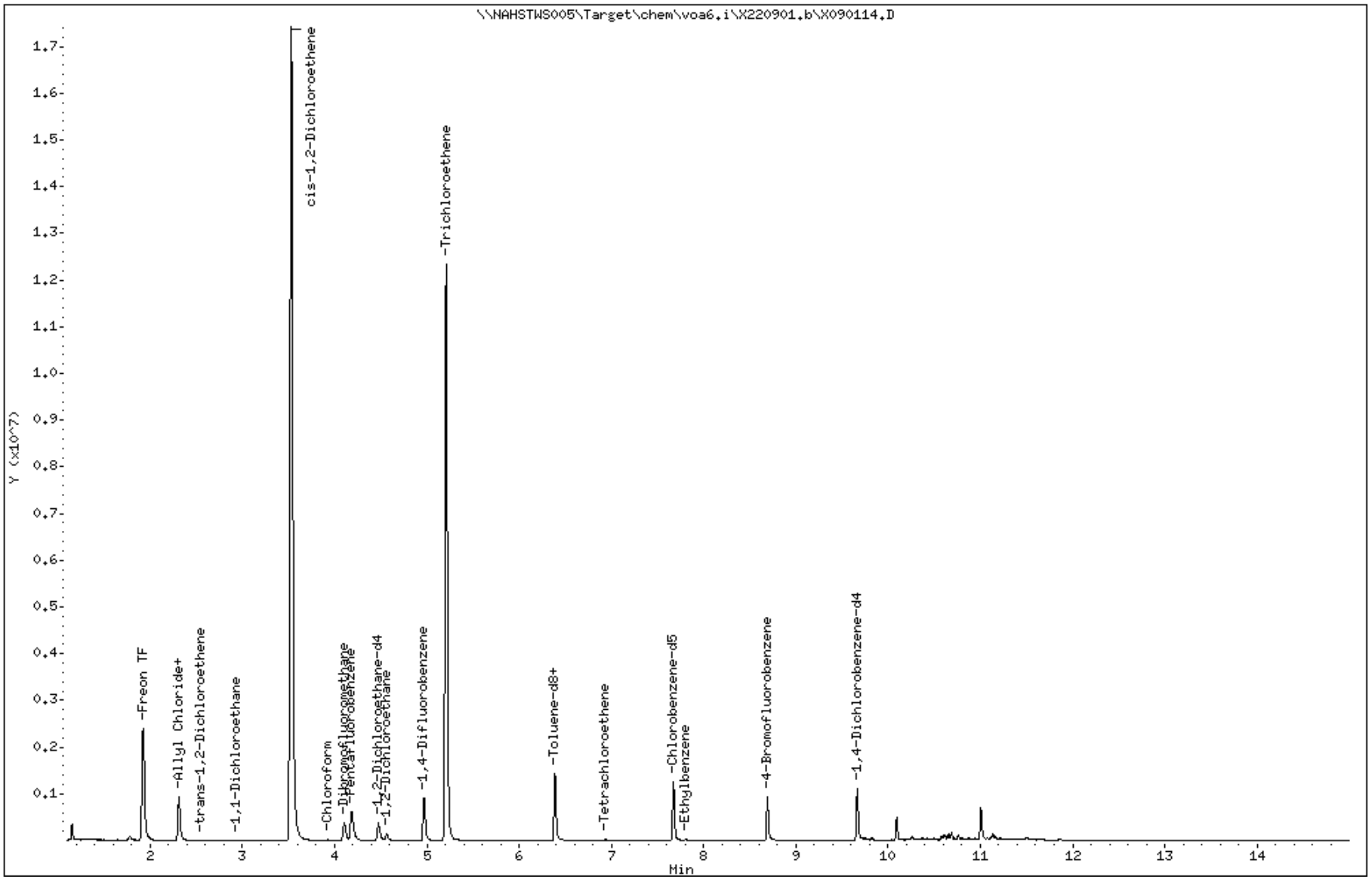
Sample Info: HS22081514-10;HS22081514-10;;;

Purge Volume: 5.0

Operator: PC

Column phase: DB624

Column diameter: 0.18



Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090114.D Page 2

Date : 01-SEP-2022 14:44

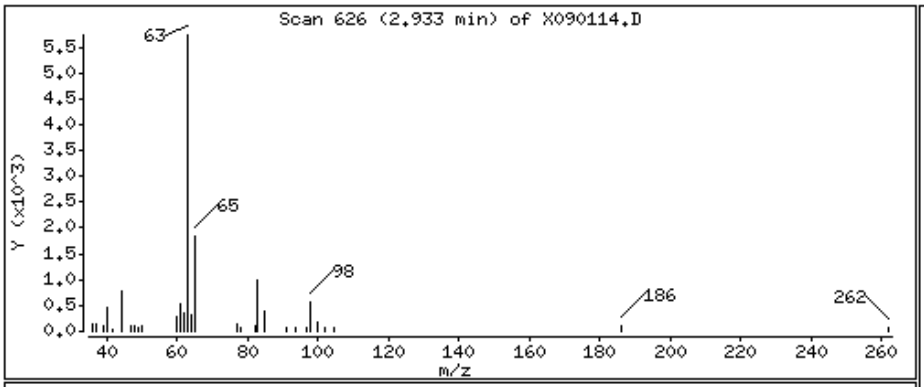
Client ID: HS22081514-10 Instrument: voa6.i

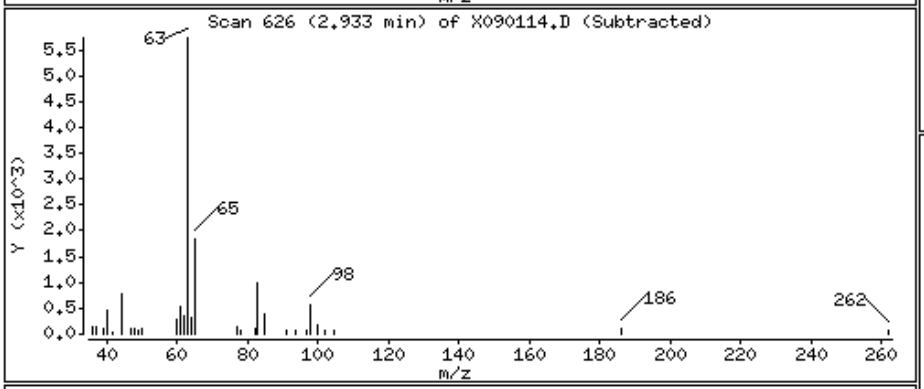
Sample Info: HS22081514-10;HS22081514-10;;;

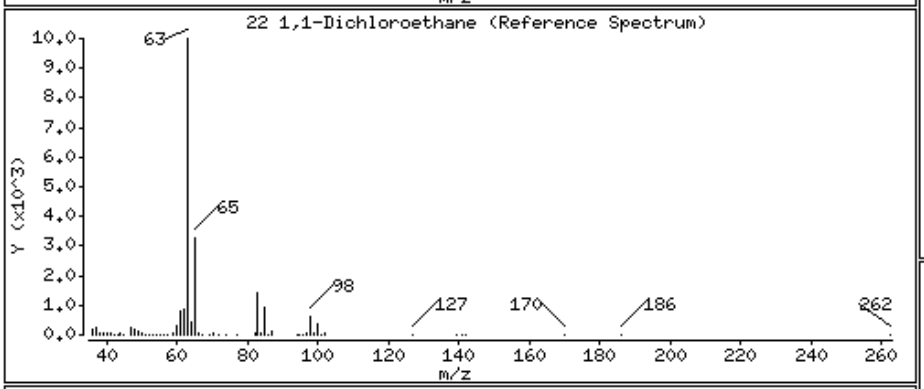
Purge Volume: 5.0 Operator: PC

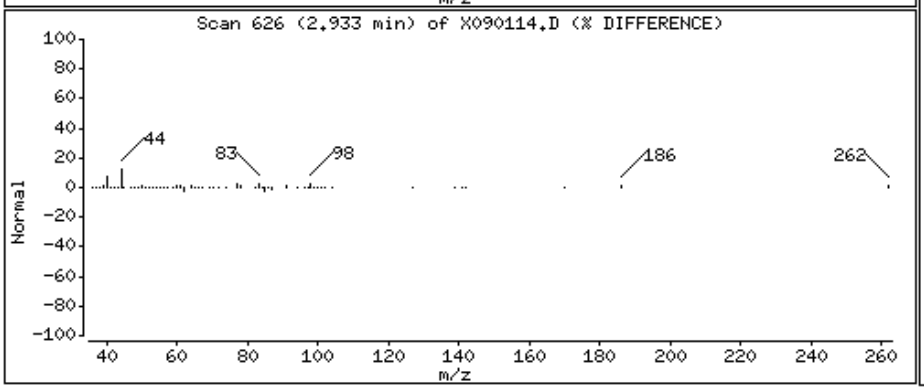
Column phase: DB624 Column diameter: 0.18

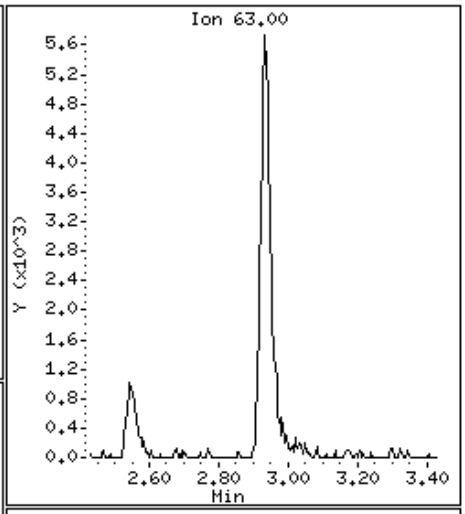
22 1,1-Dichloroethane Concentration: 34.83 ug/l

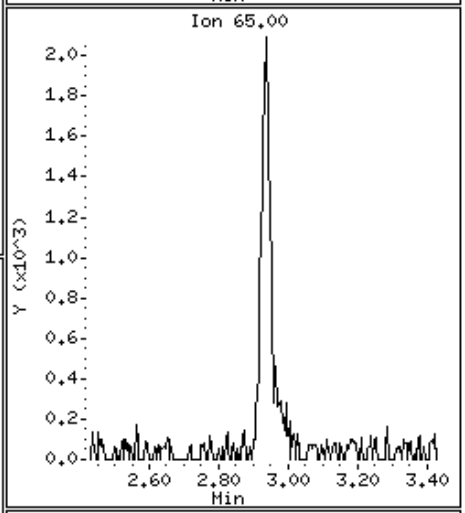


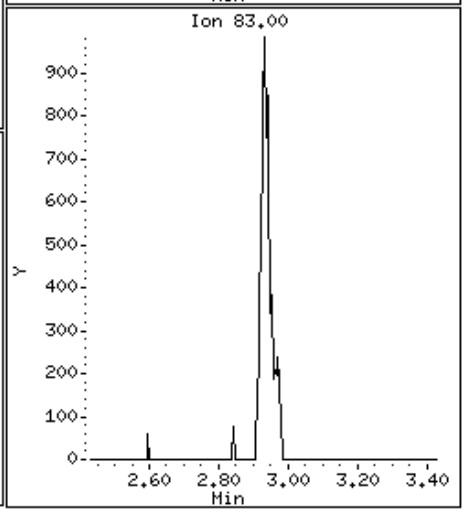












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090114.D

Date : 01-SEP-2022 14:44

Client ID: HS22081514-10

Instrument: voa6.i

Sample Info: HS22081514-10;HS22081514-10;;;

Purge Volume: 5.0

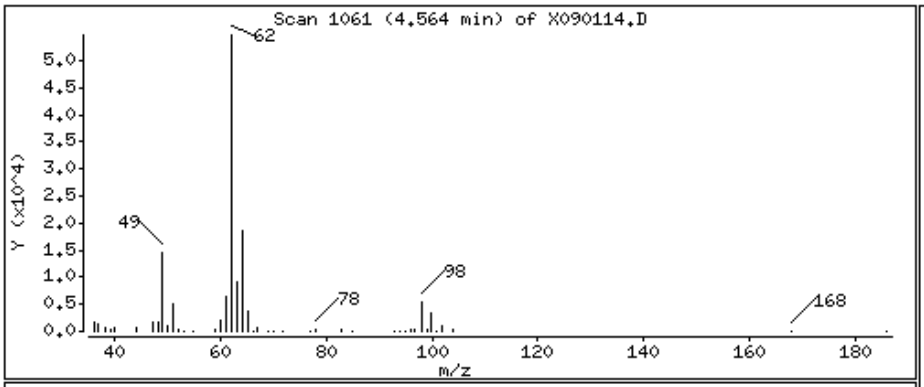
Operator: PC

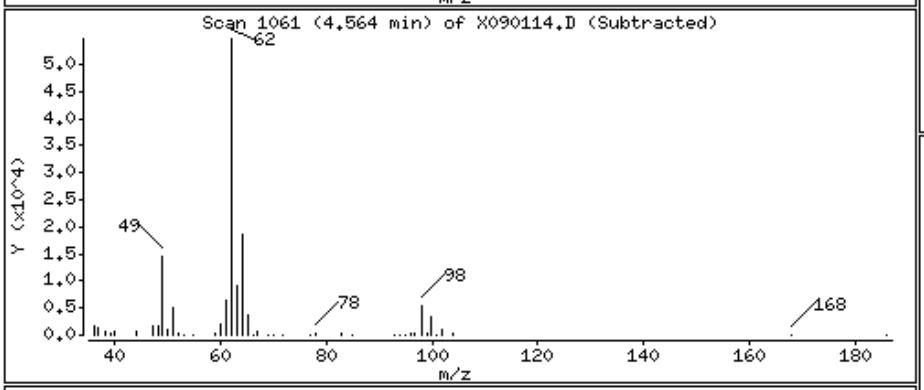
Column phase: DB624

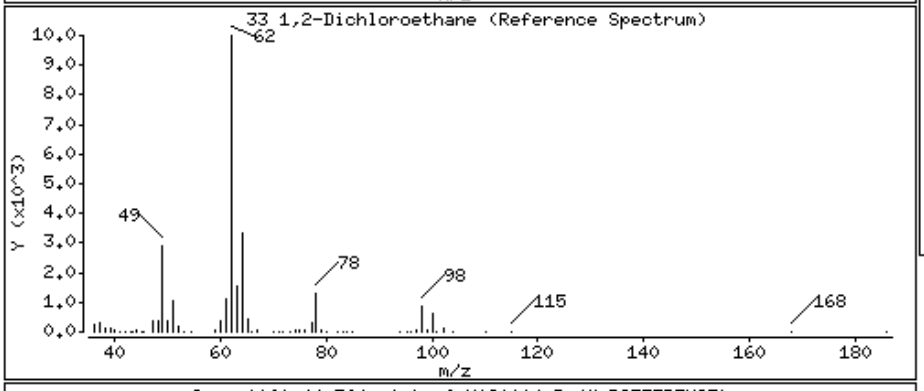
Column diameter: 0.18

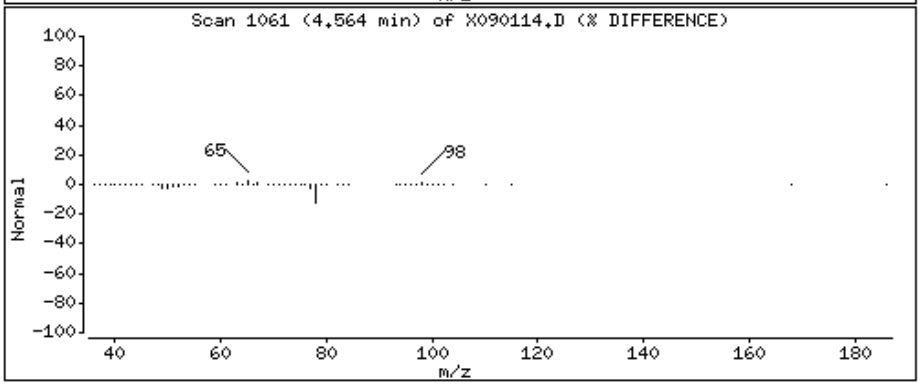
33 1,2-Dichloroethane

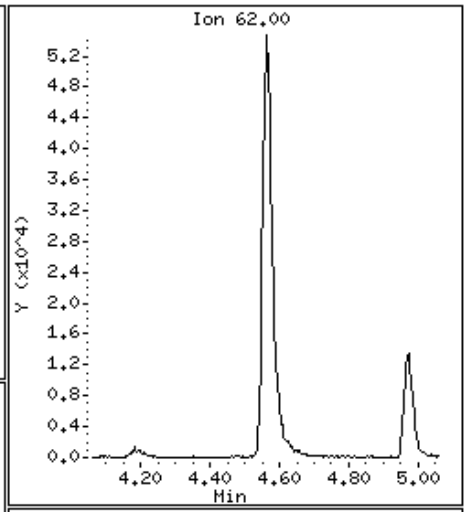
Concentration: 411.85 ug/l

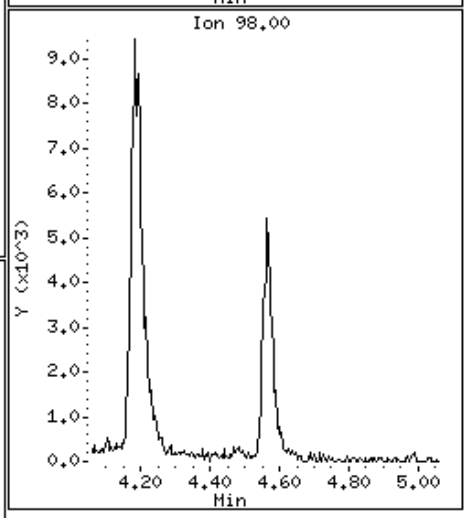












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090114.D

Date : 01-SEP-2022 14:44

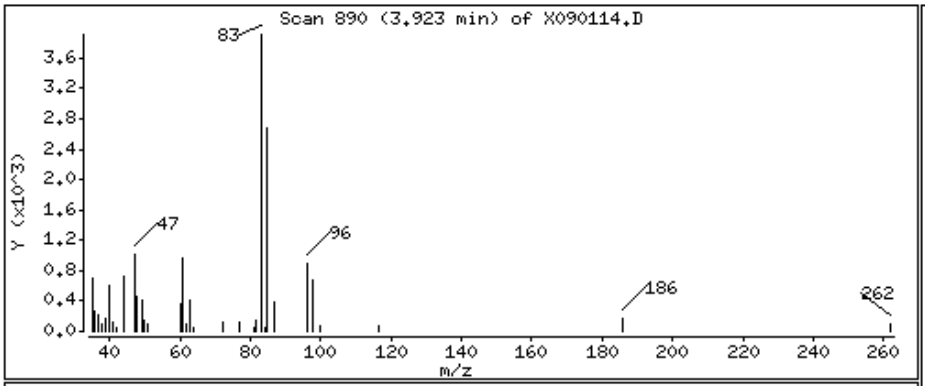
Client ID: HS22081514-10 Instrument: voa6.i

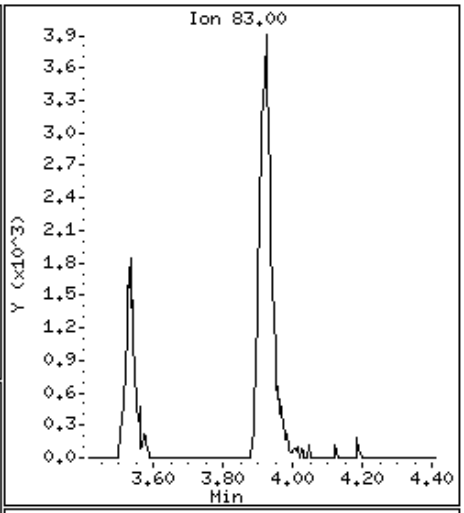
Sample Info: HS22081514-10;HS22081514-10;;;

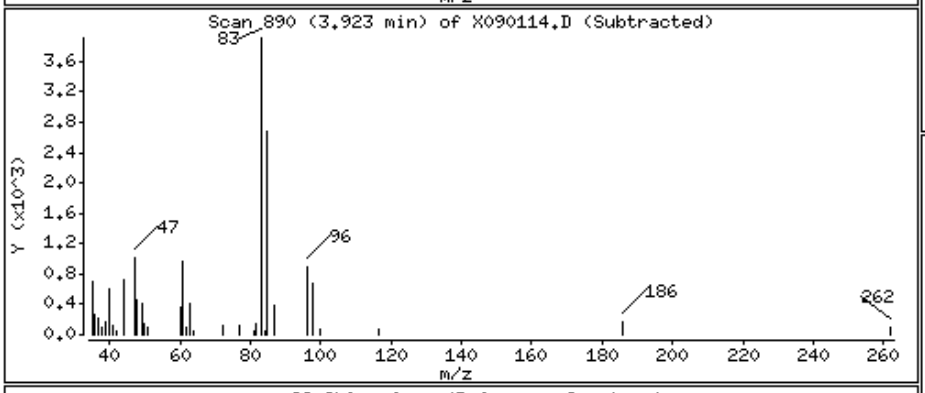
Purge Volume: 5.0 Operator: PC

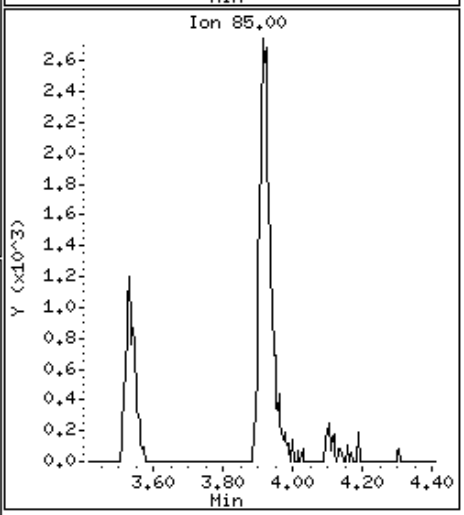
Column phase: DB624 Column diameter: 0.18

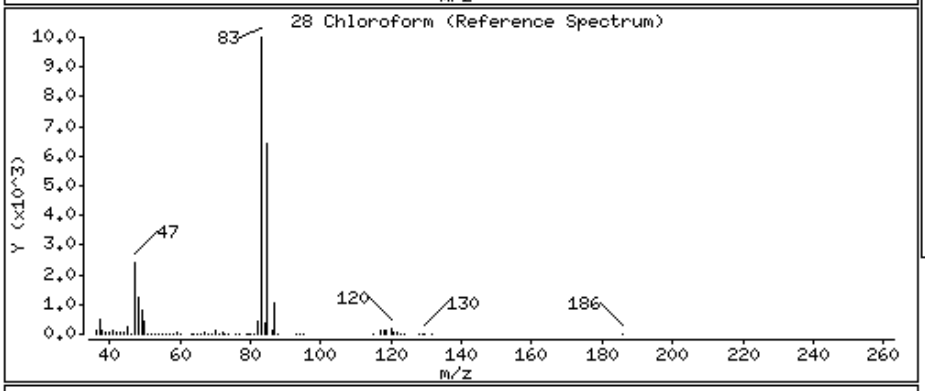
28 Chloroform Concentration: 25.20 ug/l

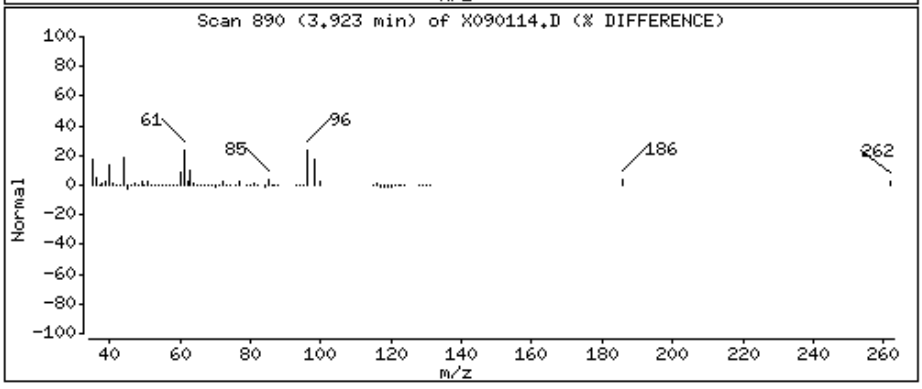












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090114.D Page 5

Date : 01-SEP-2022 14:44

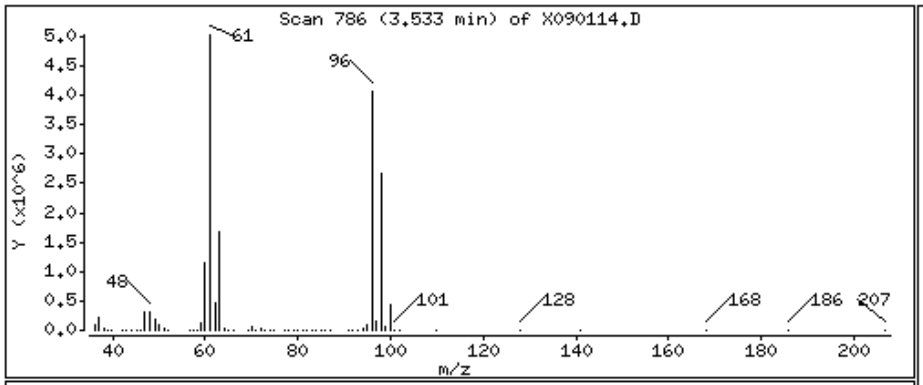
Client ID: HS22081514-10 Instrument: voa6.i

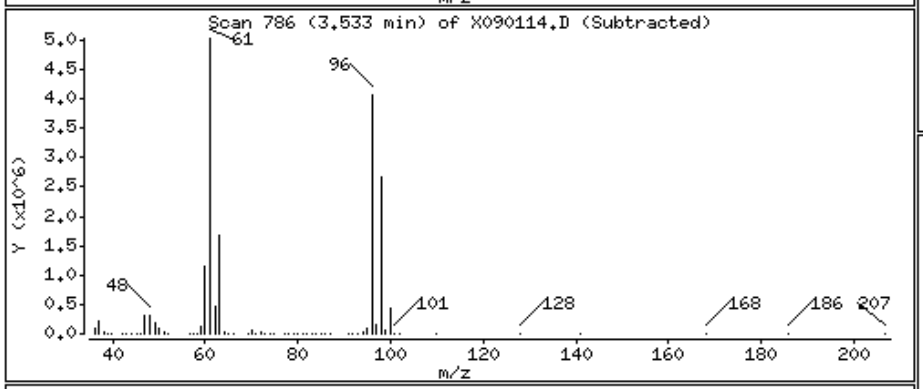
Sample Info: HS22081514-10;HS22081514-10;;;

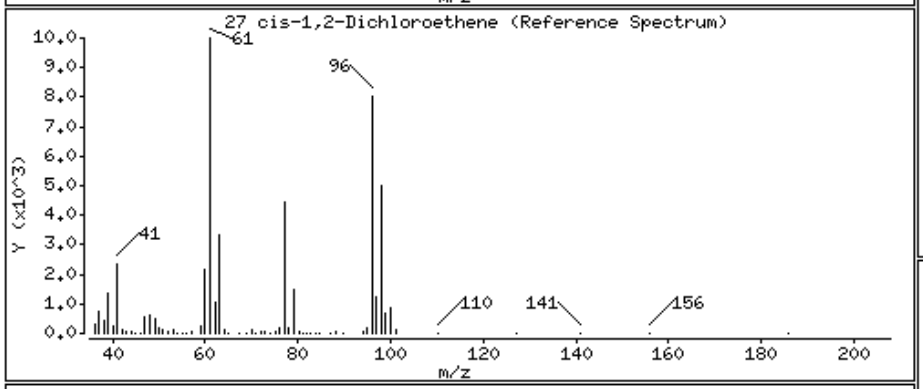
Purge Volume: 5.0 Operator: PC

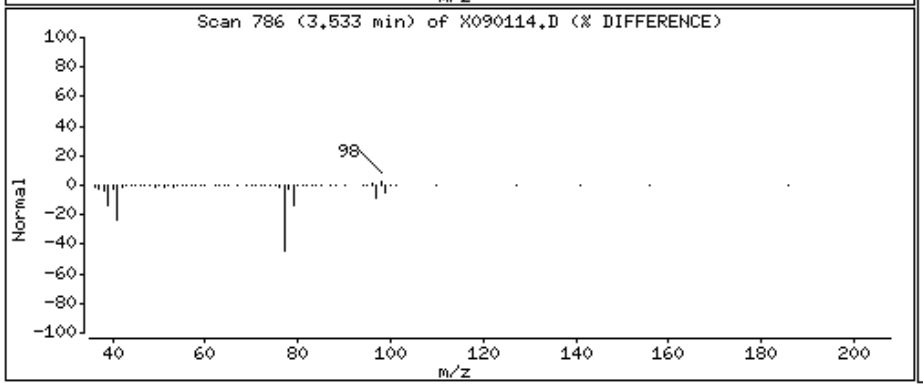
Column phase: DB624 Column diameter: 0.18

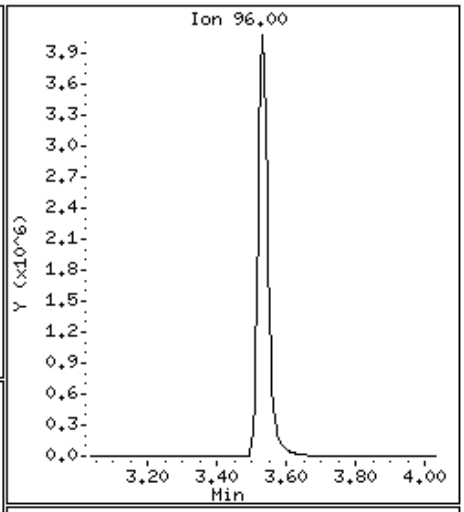
27 cis-1,2-Dichloroethene Concentration: 38049.01 ug/l

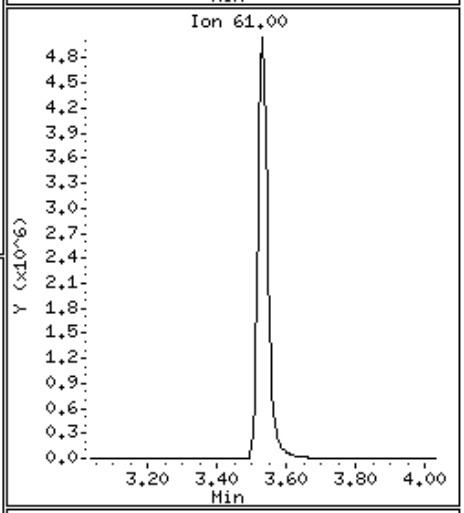


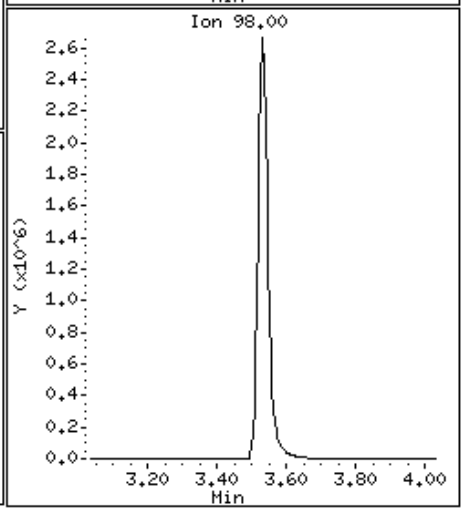












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090114.D

Date : 01-SEP-2022 14:44

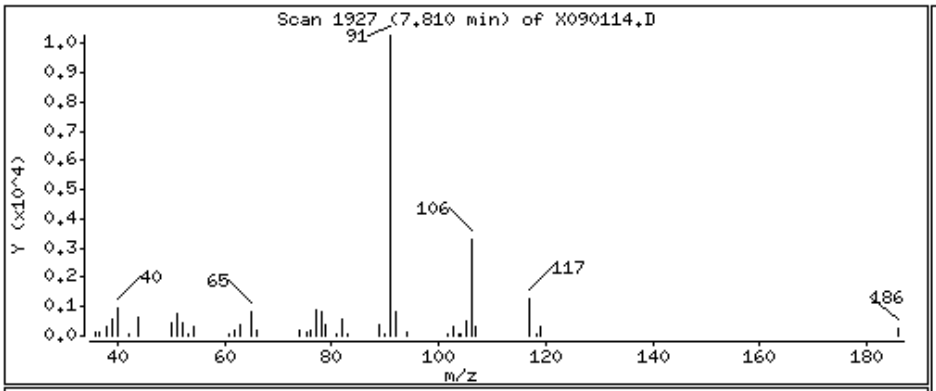
Client ID: HS22081514-10 Instrument: voa6.i

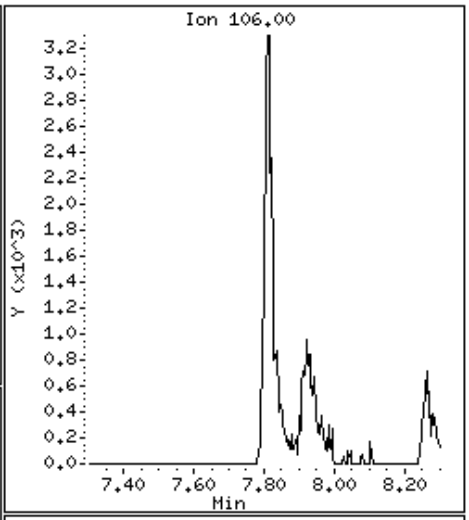
Sample Info: HS22081514-10;HS22081514-10;;;

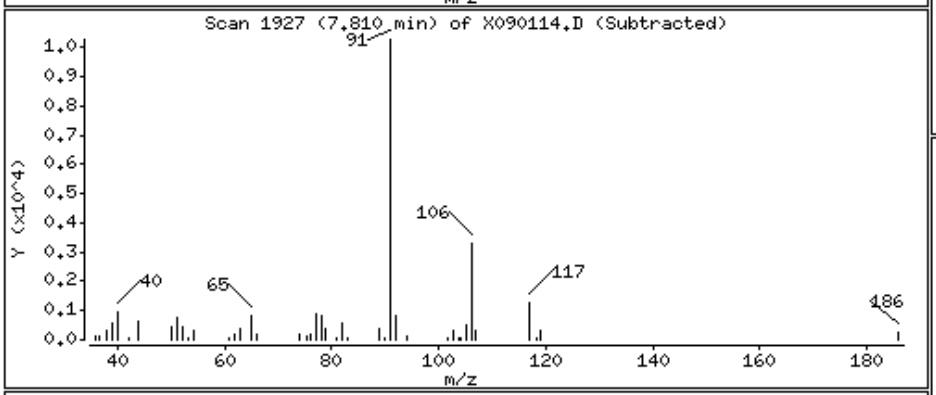
Purge Volume: 5.0 Operator: PC

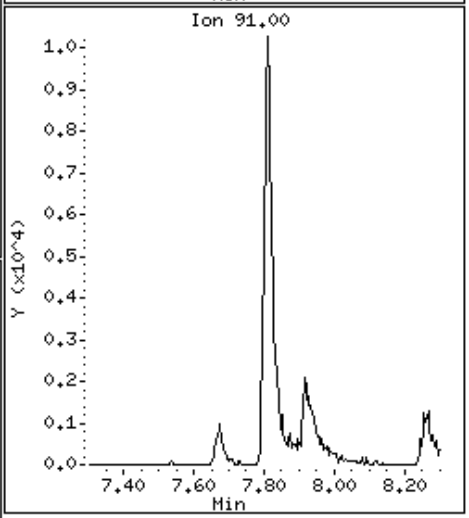
Column phase: DB624 Column diameter: 0.18

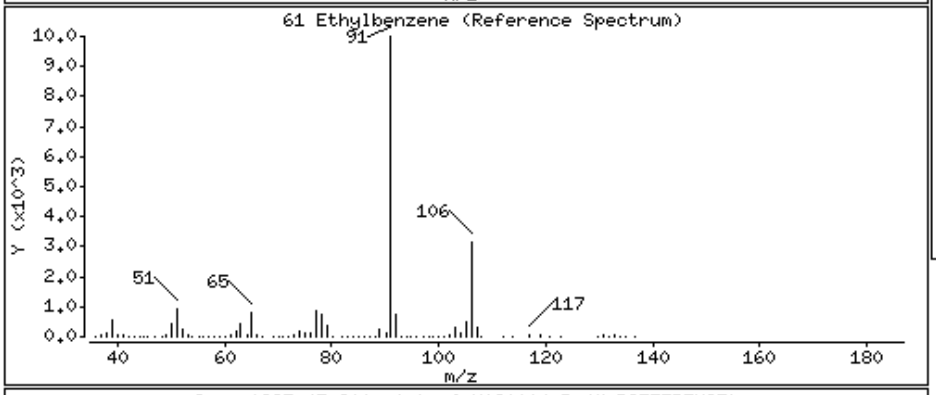
61 Ethylbenzene Concentration: 23.85 ug/l

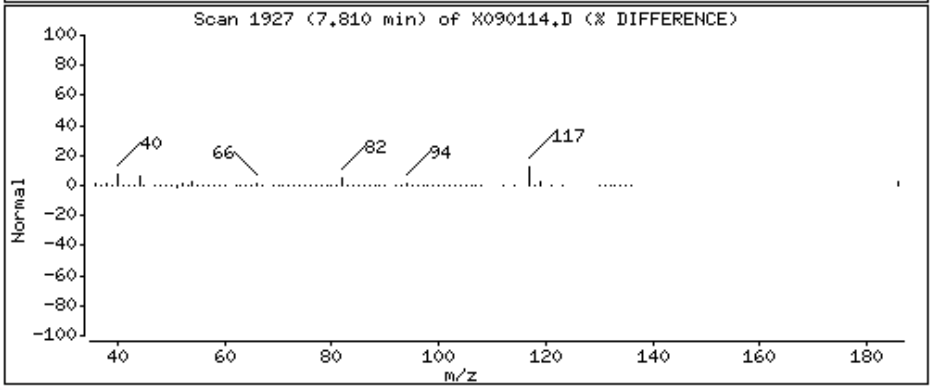












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090114.D

Date : 01-SEP-2022 14:44

Client ID: HS22081514-10

Instrument: voa6.i

Sample Info: HS22081514-10;HS22081514-10;;;

Purge Volume: 5.0

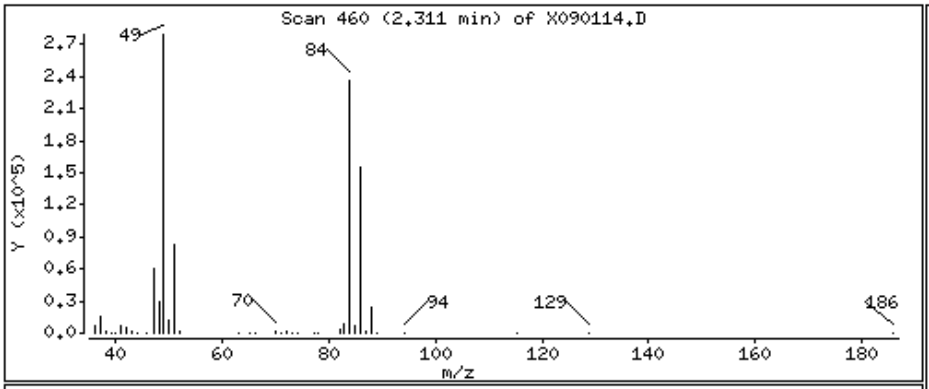
Operator: PC

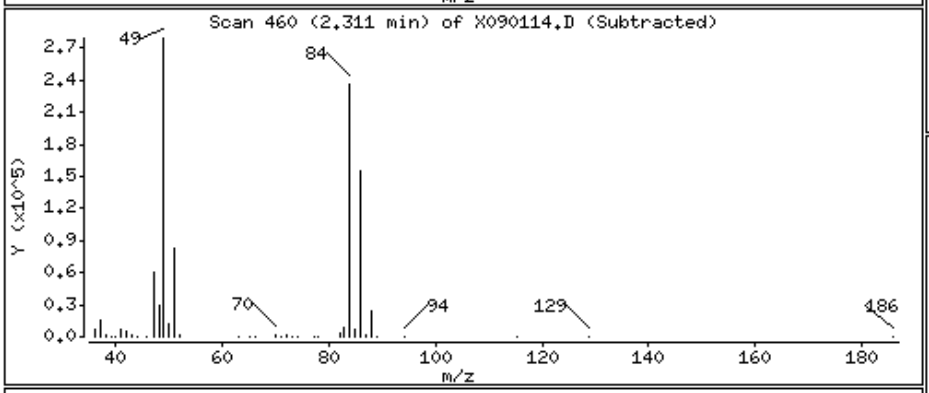
Column phase: DB624

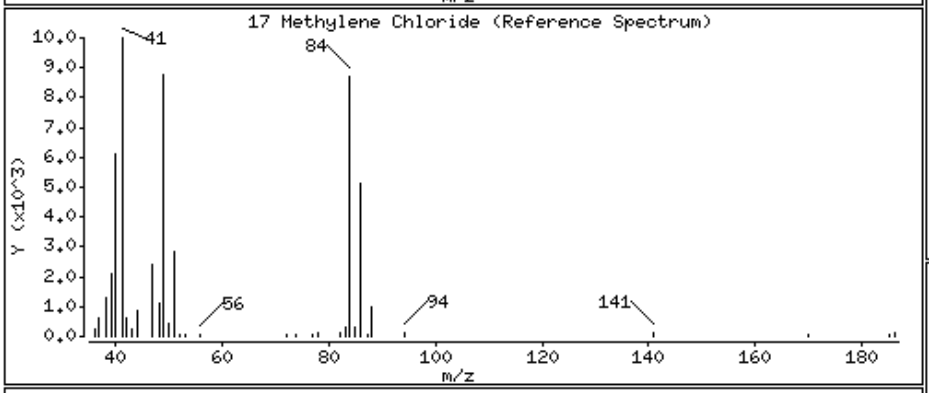
Column diameter: 0.18

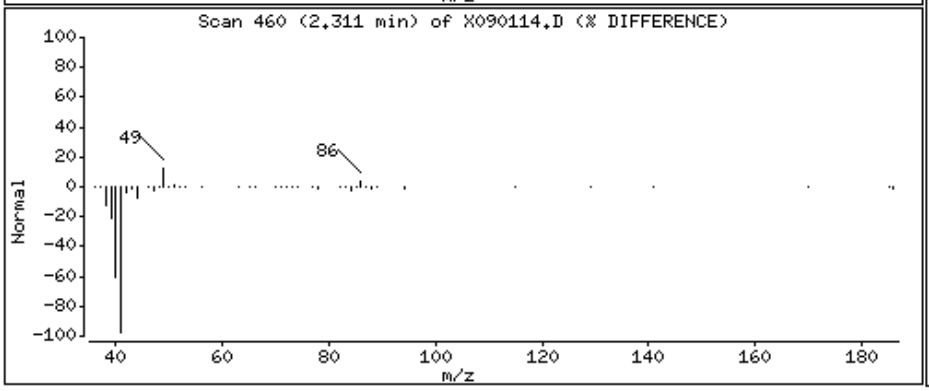
17 Methylene Chloride

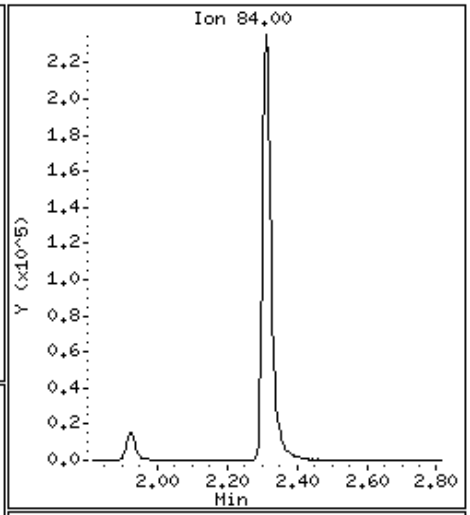
Concentration: 2056.37 ug/l

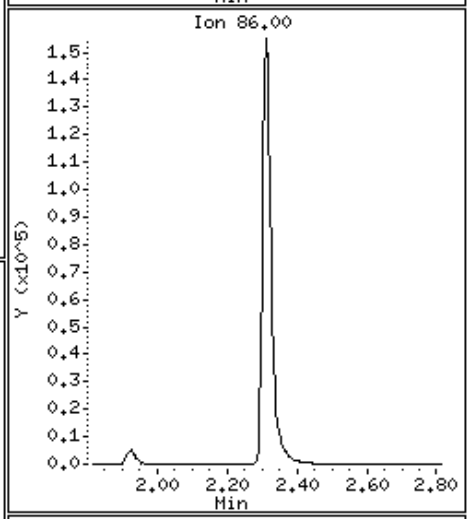


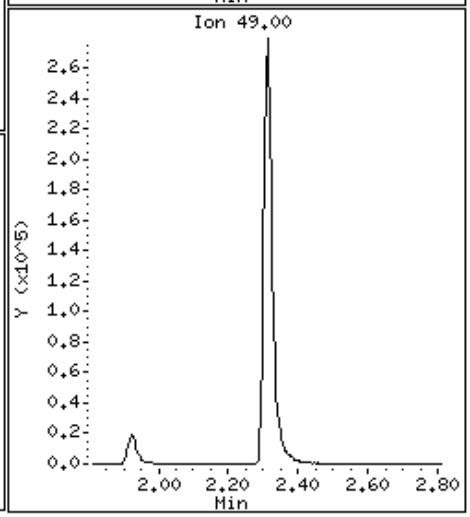












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090114.D Page 8

Date : 01-SEP-2022 14:44

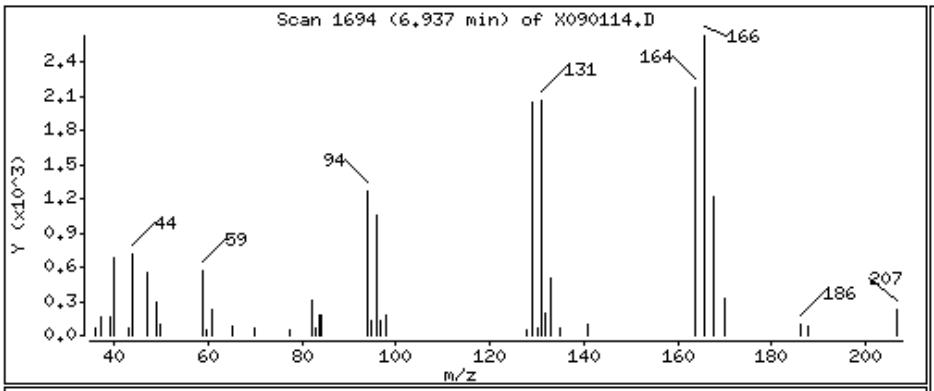
Client ID: HS22081514-10 Instrument: voa6.i

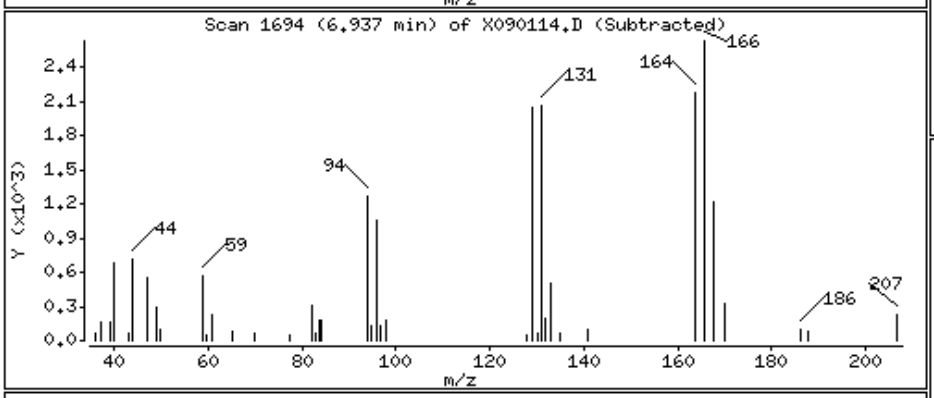
Sample Info: HS22081514-10;HS22081514-10;;;

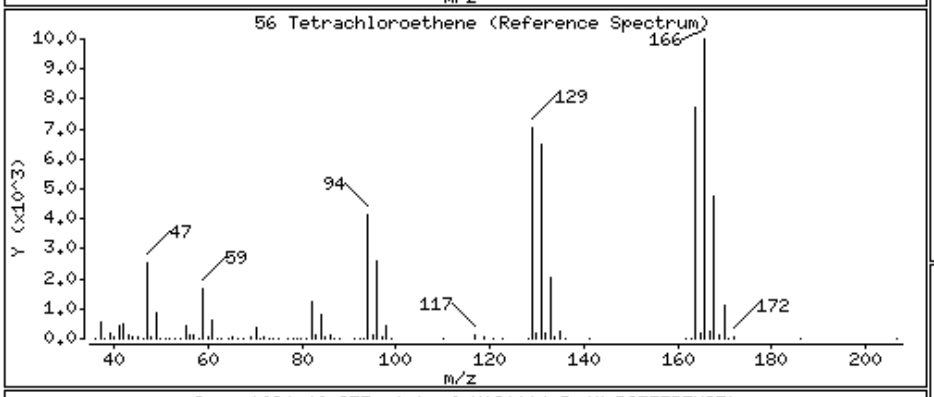
Purge Volume: 5.0 Operator: PC

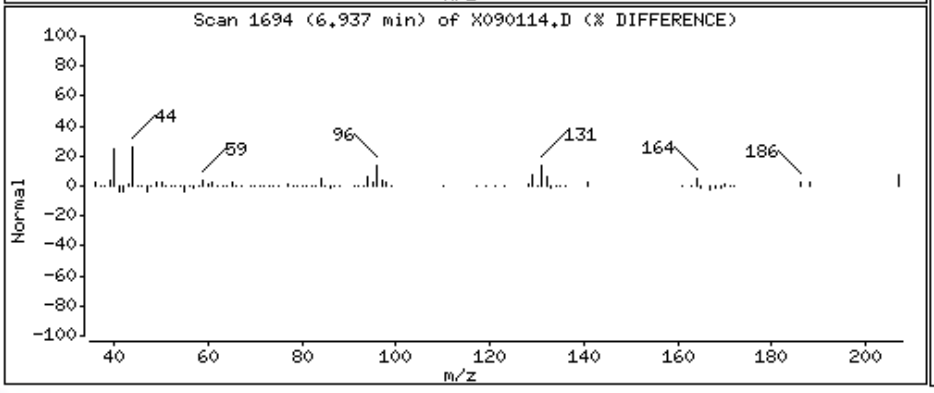
Column phase: DB624 Column diameter: 0.18

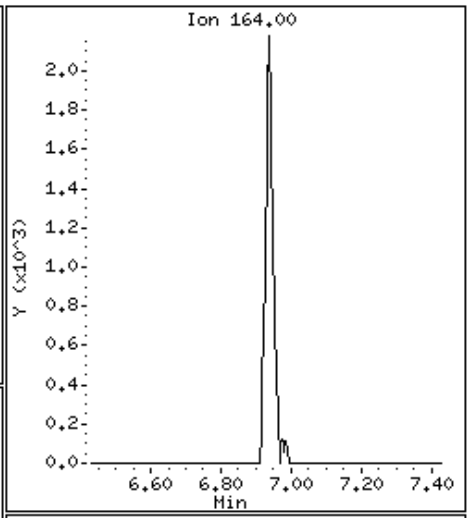
56 Tetrachloroethene Concentration: 19.44 ug/l

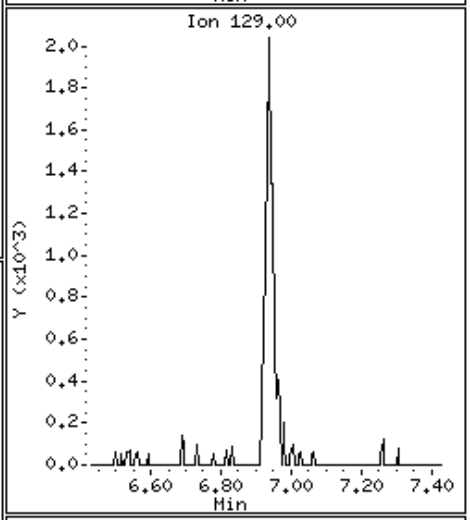


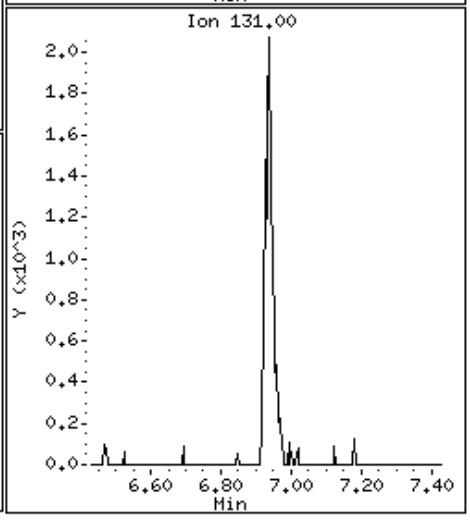












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Date : 01-SEP-2022 14:44

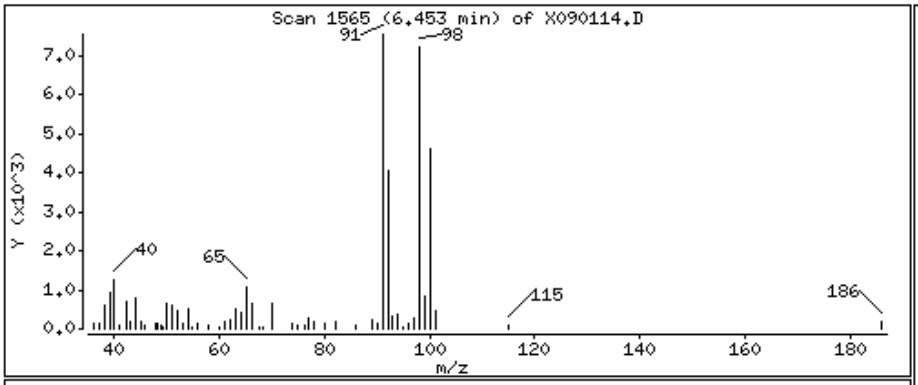
Client ID: HS22081514-10 Instrument: voa6.i

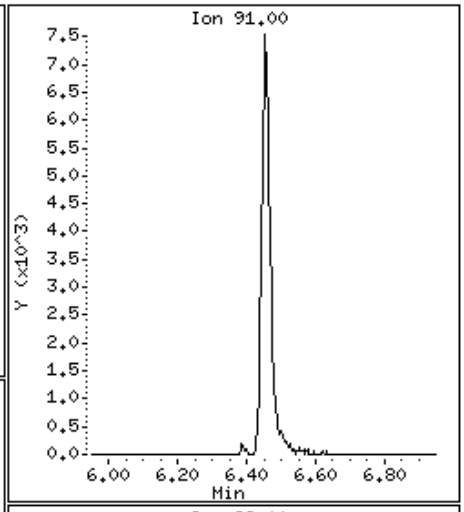
Sample Info: HS22081514-10;HS22081514-10;;;

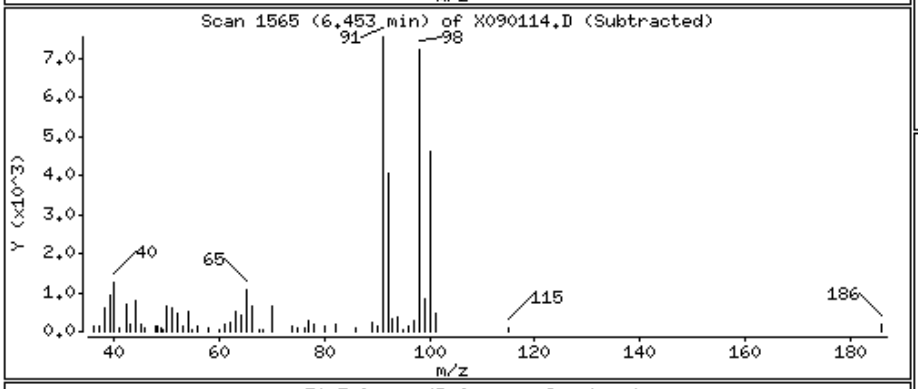
Purge Volume: 5.0 Operator: PC

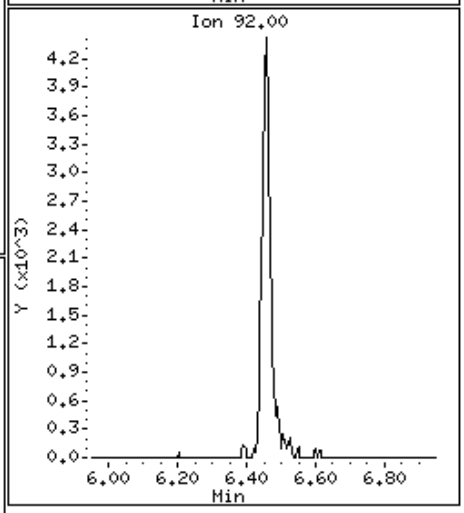
Column phase: DB624 Column diameter: 0.18

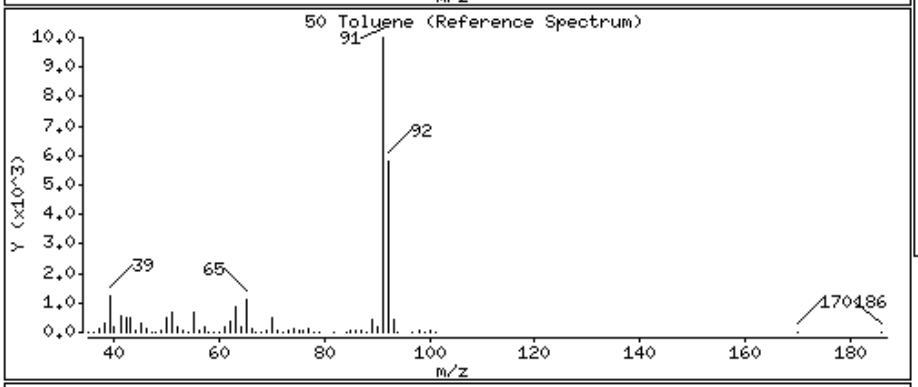
50 Toluene Concentration: 18.54 ug/l

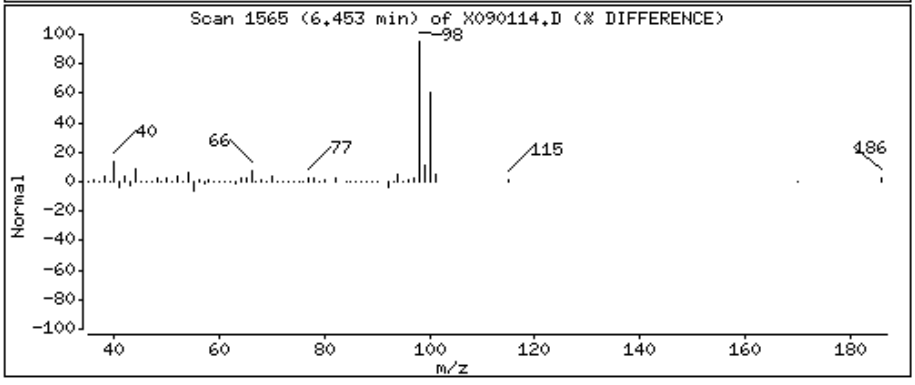












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090114.D Page 10

Date : 01-SEP-2022 14:44

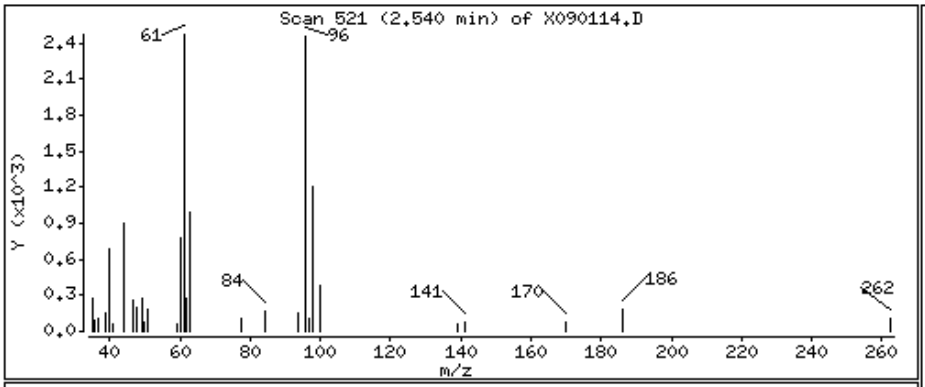
Client ID: HS22081514-10 Instrument: voa6.i

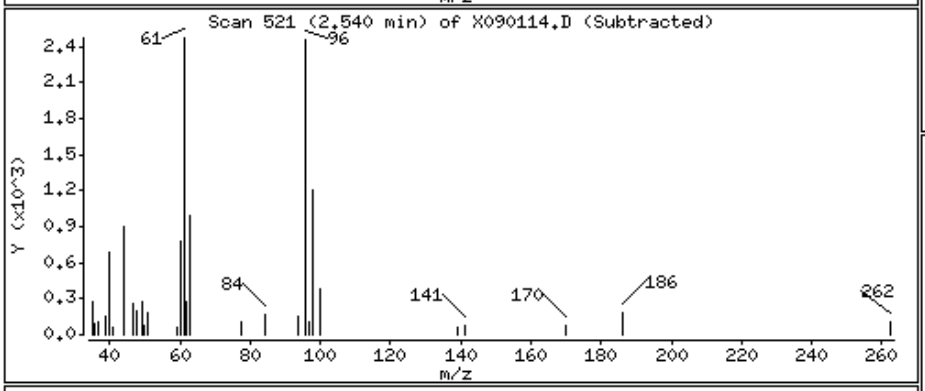
Sample Info: HS22081514-10;HS22081514-10;;;

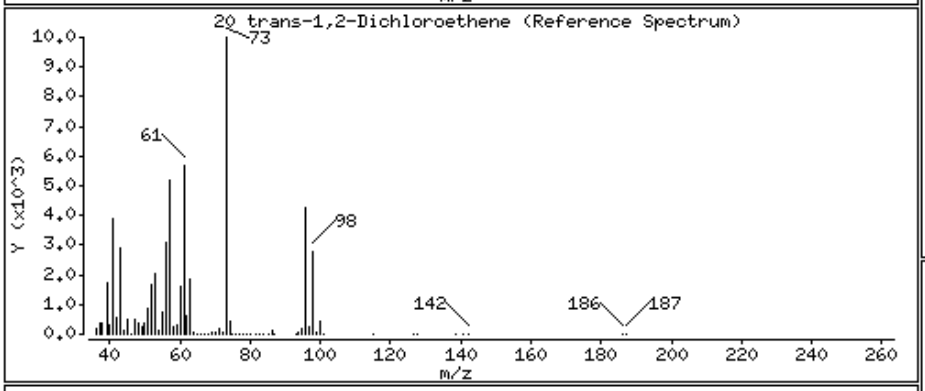
Purge Volume: 5.0 Operator: PC

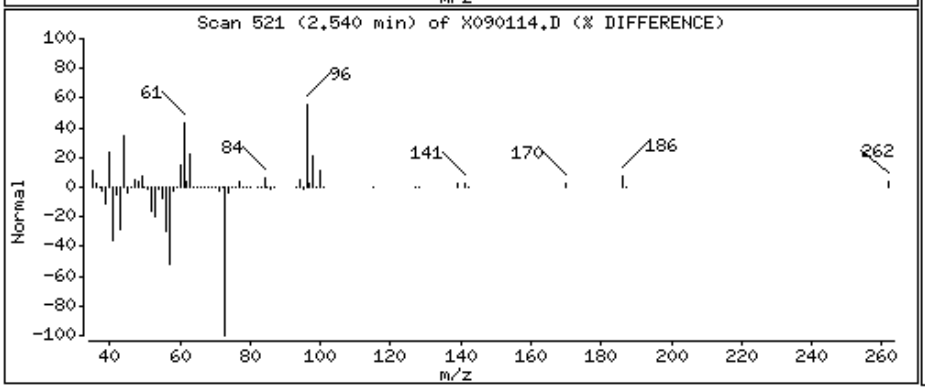
Column phase: DB624 Column diameter: 0.18

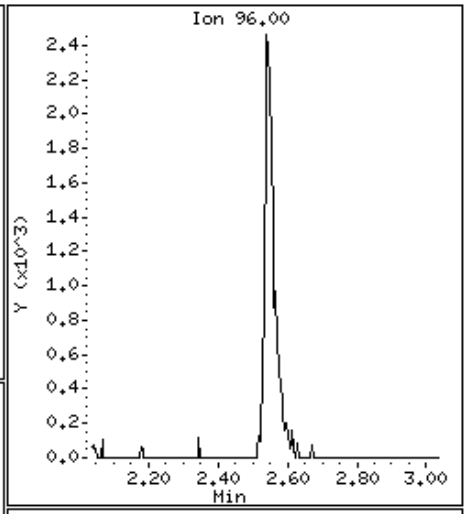
20 trans-1,2-Dichloroethene Concentration: 24.92 ug/l

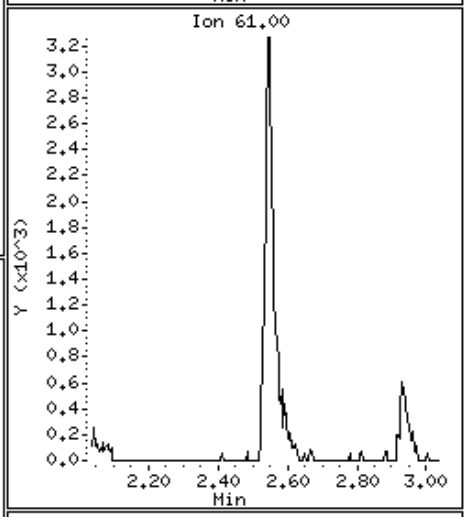


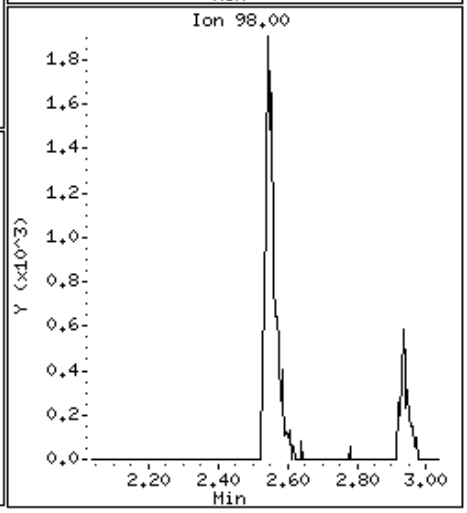












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090114.D

Date : 01-SEP-2022 14:44

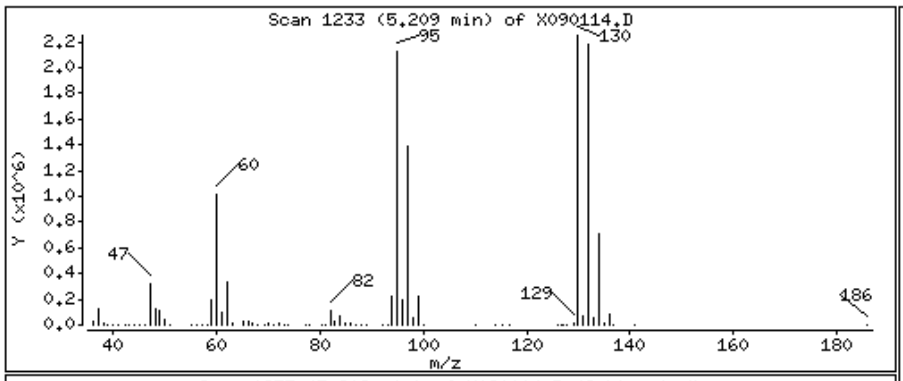
Client ID: HS22081514-10 Instrument: voa6.i

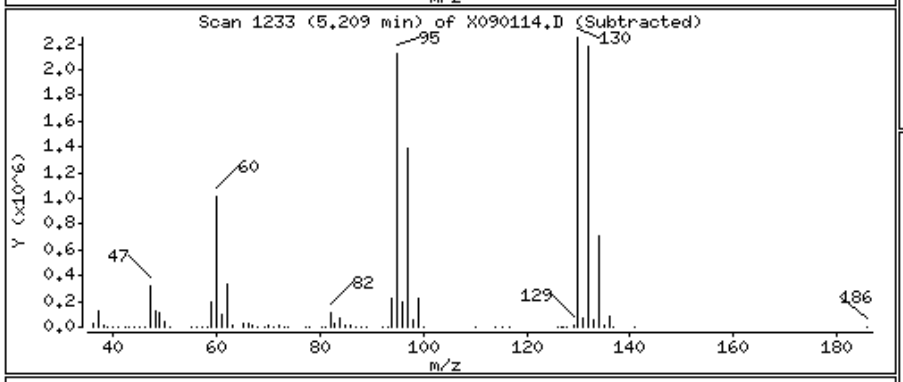
Sample Info: HS22081514-10;HS22081514-10;;;

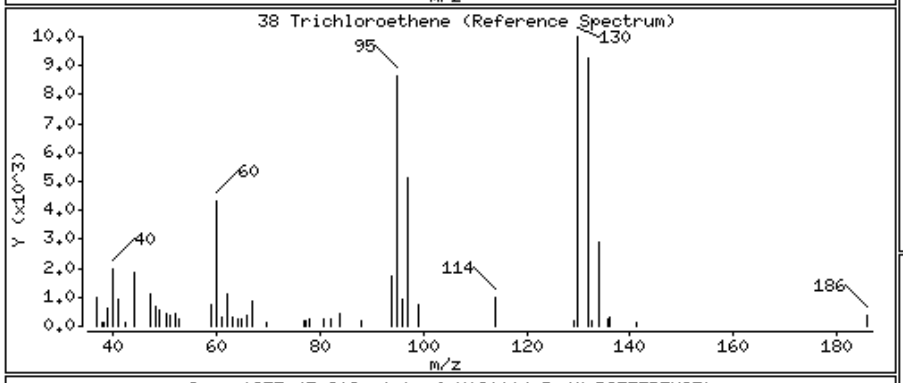
Purge Volume: 5.0 Operator: PC

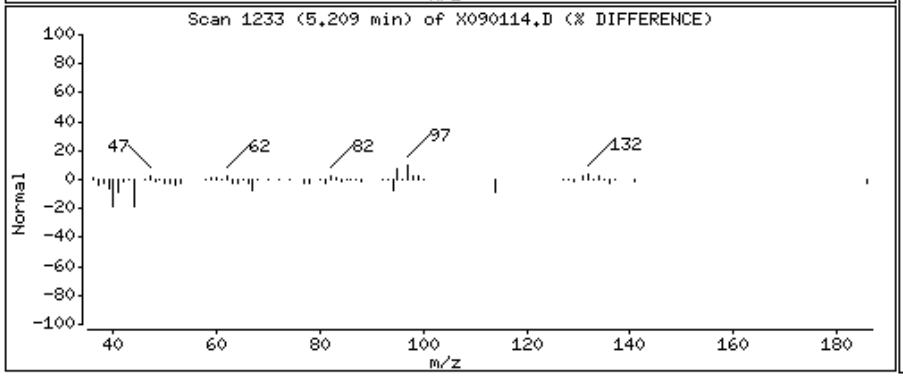
Column phase: DB624 Column diameter: 0.18

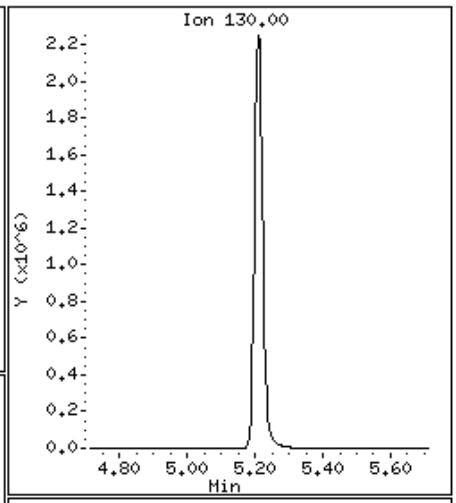
38 Trichloroethene Concentration: 17682.23 ug/l

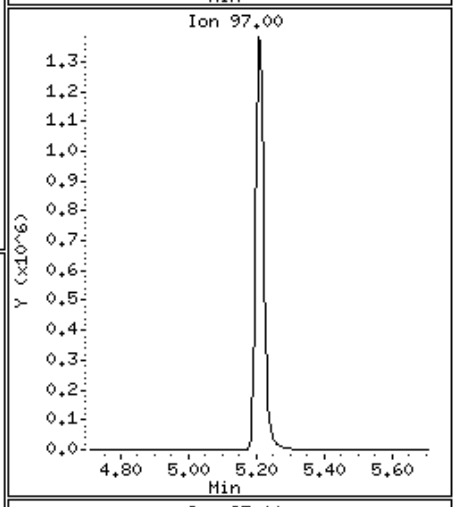


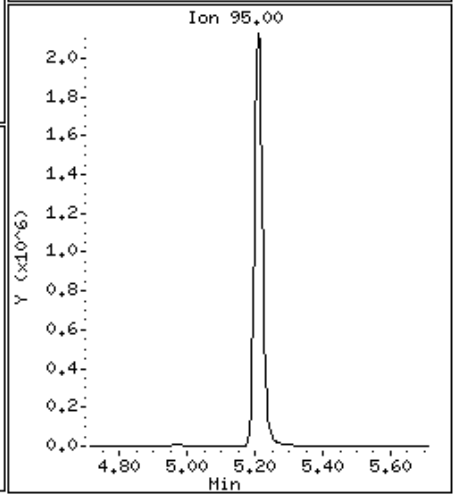












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090114.D

Date : 01-SEP-2022 14:44

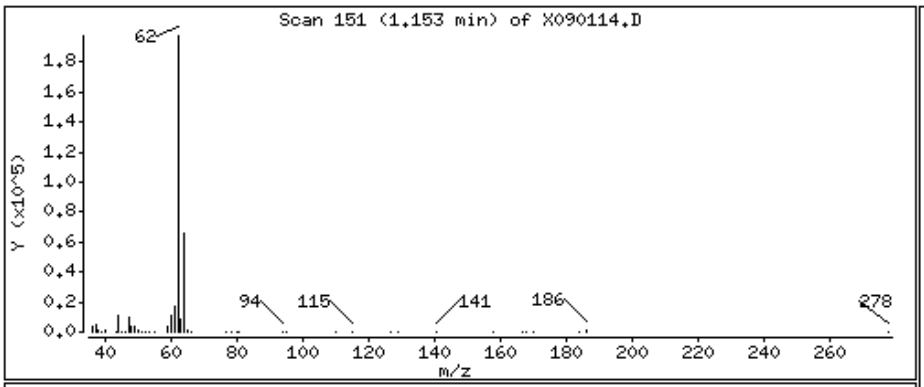
Client ID: HS22081514-10 Instrument: voa6.i

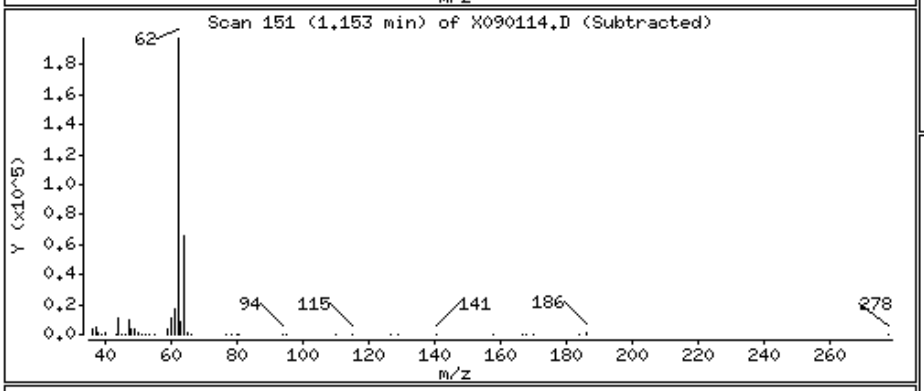
Sample Info: HS22081514-10;HS22081514-10;;;

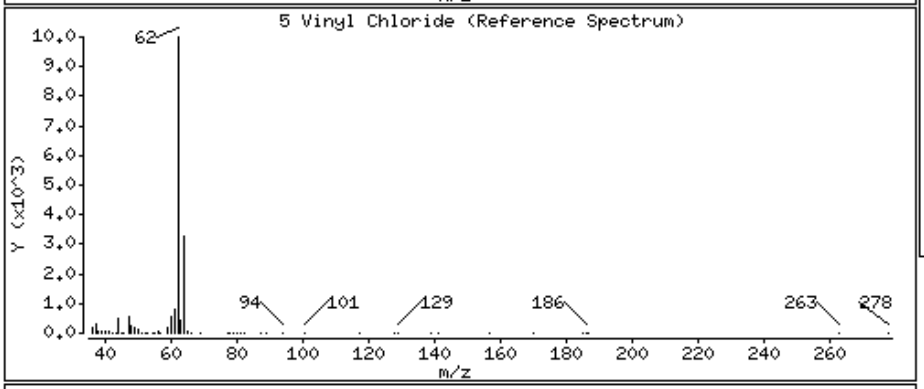
Purge Volume: 5.0 Operator: PC

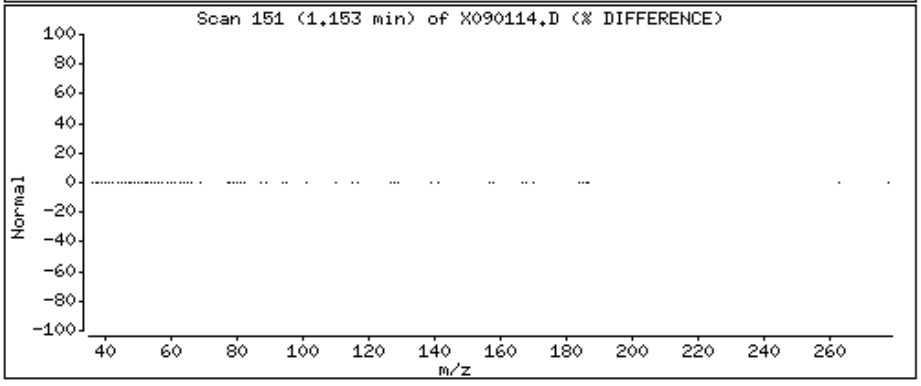
Column phase: DB624 Column diameter: 0.18

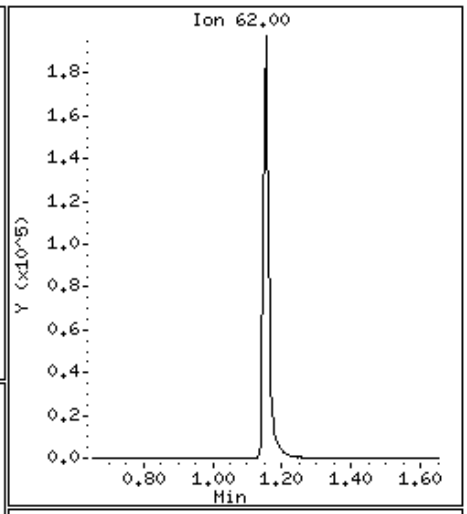
5 Vinyl Chloride Concentration: 931.24 ug/l

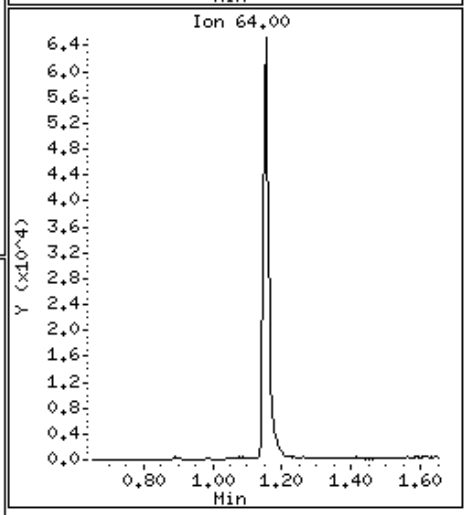












Data File : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090114.D
Inj Date : 01-SEP-2022 14:44
InstruID : voa6.i
LabSampID : HS22081514-10

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090115.D Page 1
Report Date: 09-Sep-2022 16:52

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090115.D
Lab Smp Id: HS22081514-11 Client Smp ID: HS22081514-11
Inj Date : 01-SEP-2022 15:05
Operator : PC Inst ID: voa6.i
Smp Info : HS22081514-11;HS22081514-11;;;
Misc Info : HS22052000V6;WATER;0;25;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\8260W.m
Meth Date : 09-Sep-2022 16:51 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 15
Dil Factor: 25.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	25.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
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	4.185	4.189	(1.000)	581912	50.0000	
* 36 1,4-Difluorobenzene	114	4.968	4.968	(1.000)	812397	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	686095	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.665	9.665	(1.000)	304733	50.0000	
$ 30 Dibromofluoromethane	113	4.106	4.106	(0.981)	254627	46.3166	46.31
$ 35 1,2-Dichloroethane-d4	65	4.477	4.477	(1.070)	277550	46.1247	46.12
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	929910	54.3228	54.32
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	287822	46.9609	46.96
22 1,1-Dichloroethane	63	2.933	2.929	(0.701)	10300	1.14974	28.74(a)
33 1,2-Dichloroethane	62	4.564	4.560	(0.919)	83137	11.6686	291.71
27 cis-1,2-Dichloroethene	96	3.533	3.533	(0.844)	5070593	876.463	21911.58(A)
17 Methylene Chloride	84	2.314	2.311	(0.553)	136398	25.0629	626.57
56 Tetrachloroethene	164	6.936	6.929	(0.904)	2889	0.64936	16.23(a)
20 trans-1,2-Dichloroethene	96	2.547	2.539	(0.609)	3774	0.73723	18.43(a)
38 Trichloroethene	130	5.208	5.208	(1.048)	3407988	597.625	14940.62(A)
5 Vinyl Chloride	62	1.152	1.152	(0.275)	119927	19.6541	491.35

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.

01148137

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090115.D

Date : 01-SEP-2022 15:05

Client ID: HS22081514-11

Instrument: voa6.i

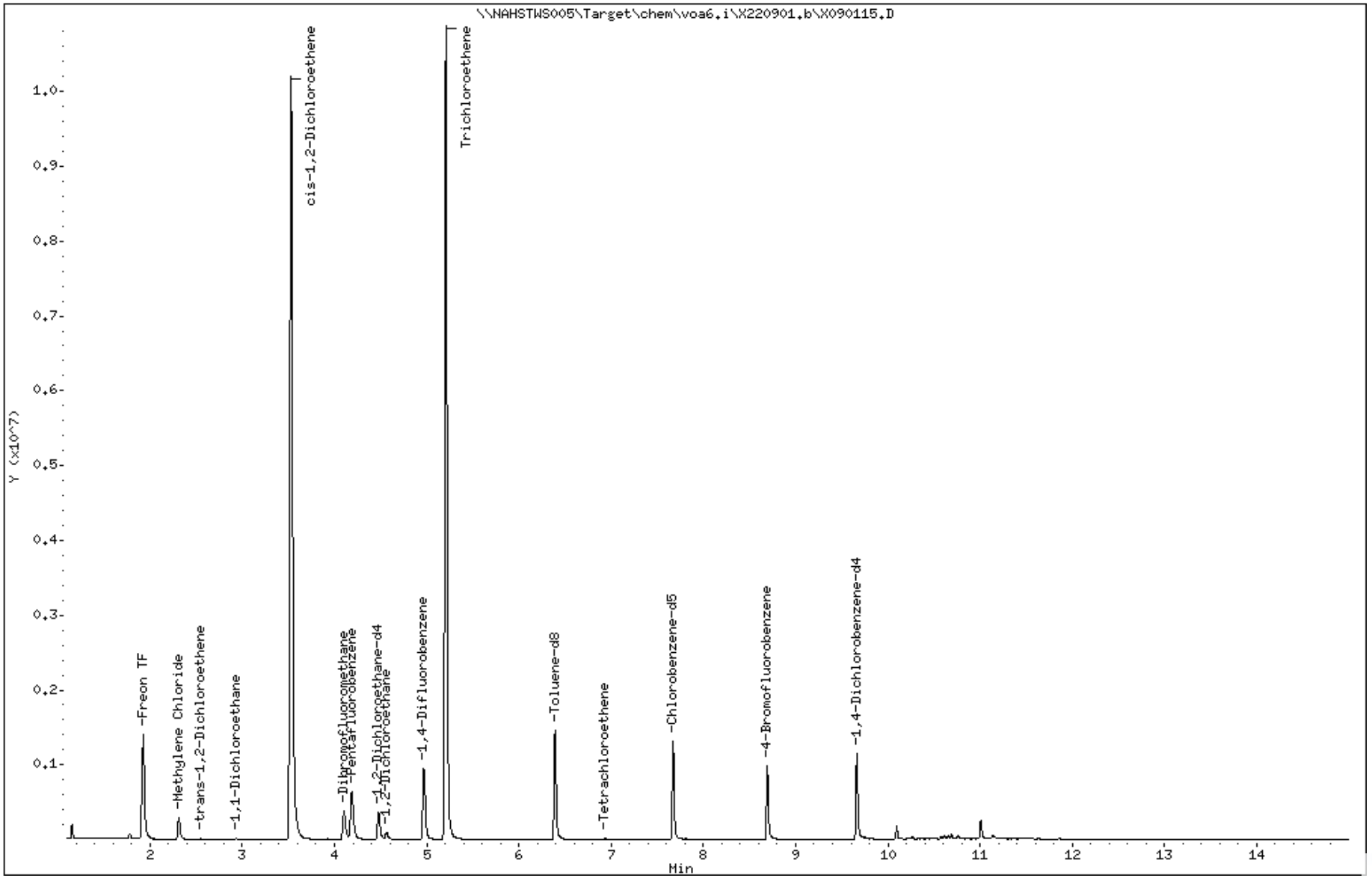
Sample Info: HS22081514-11;HS22081514-11;;;

Purge Volume: 5.0

Operator: PC

Column phase: DB624

Column diameter: 0.18



Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090115.D Page 2

Date : 01-SEP-2022 15:05

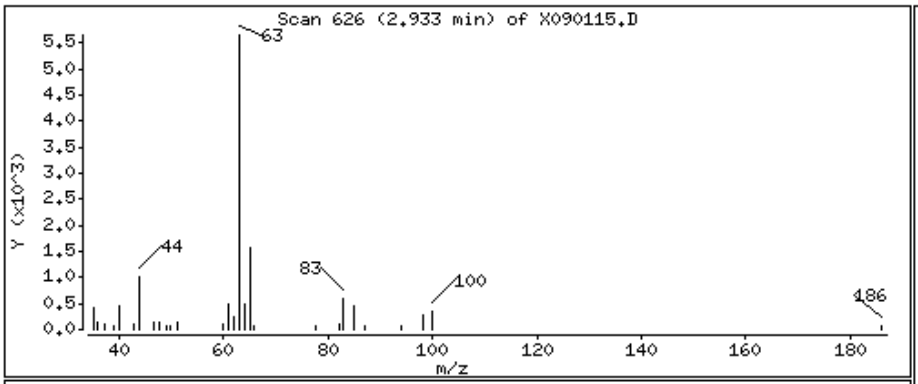
Client ID: HS22081514-11 Instrument: voa6.i

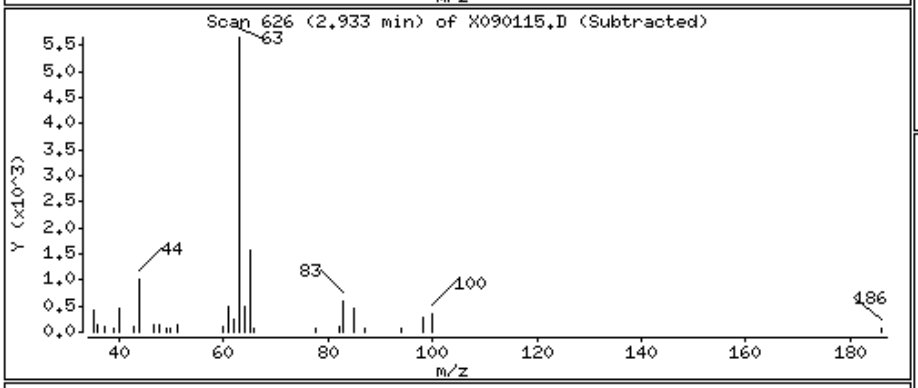
Sample Info: HS22081514-11;HS22081514-11;;;

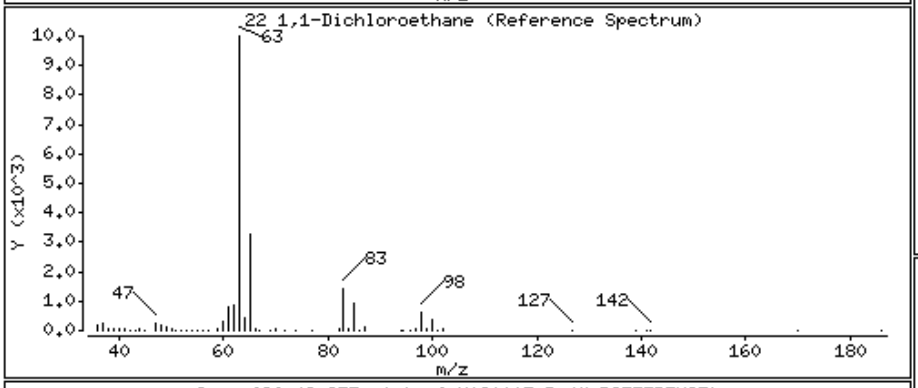
Purge Volume: 5.0 Operator: PC

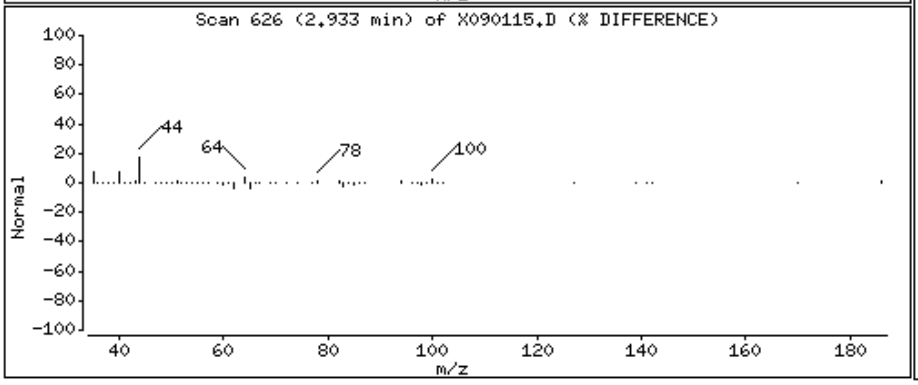
Column phase: DB624 Column diameter: 0.18

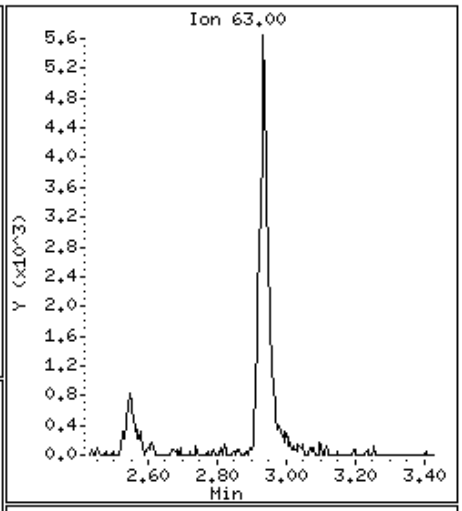
22 1,1-Dichloroethane Concentration: 28.74 ug/l

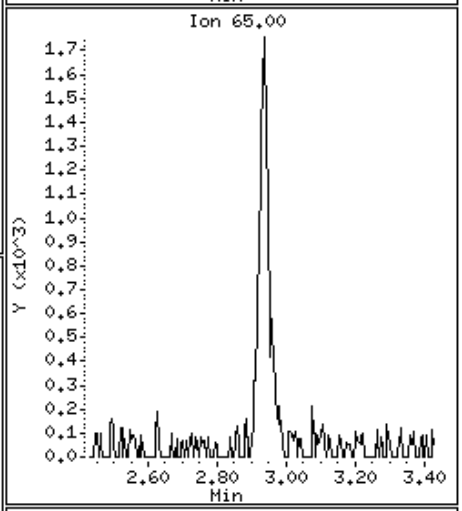


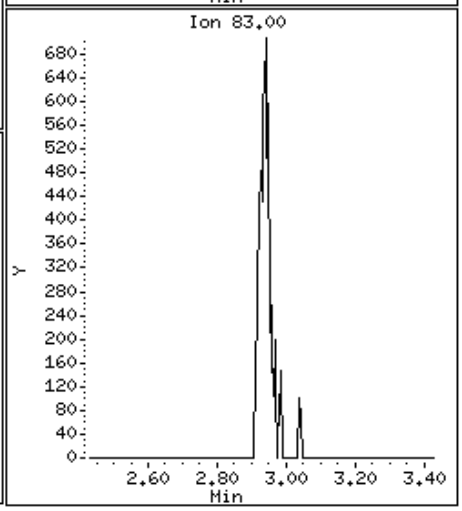












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Date : 01-SEP-2022 15:05

Client ID: HS22081514-11

Instrument: voa6.i

Sample Info: HS22081514-11;HS22081514-11;;;

Purge Volume: 5.0

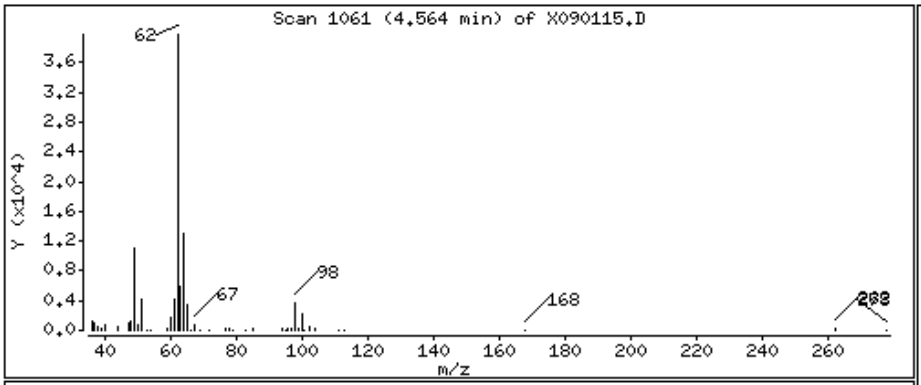
Operator: PC

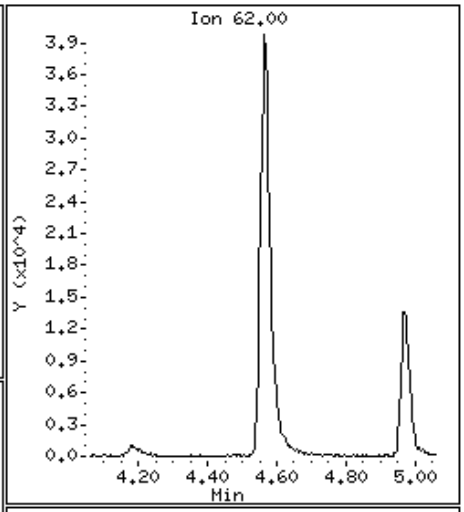
Column phase: DB624

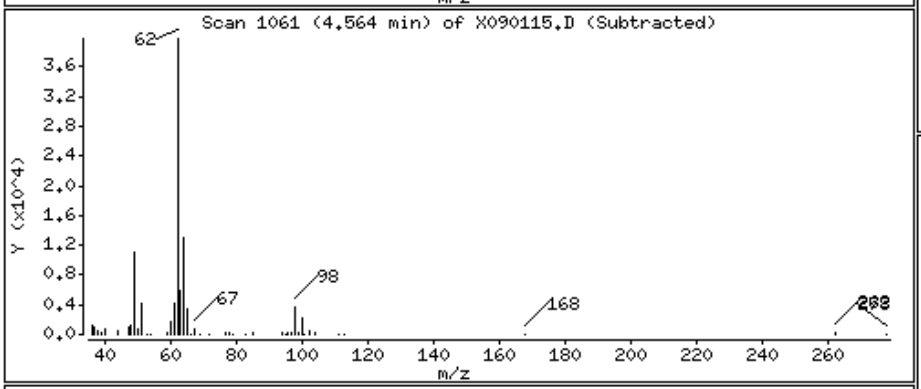
Column diameter: 0.18

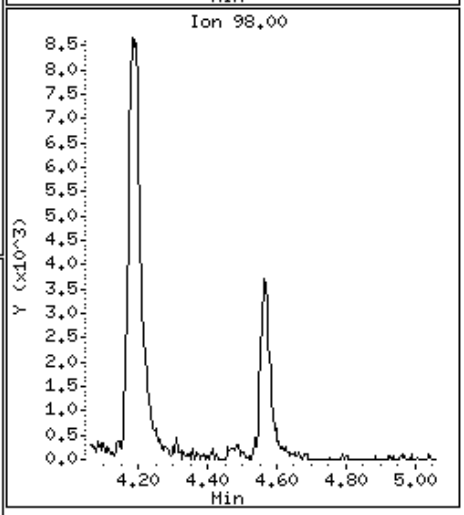
33 1,2-Dichloroethane

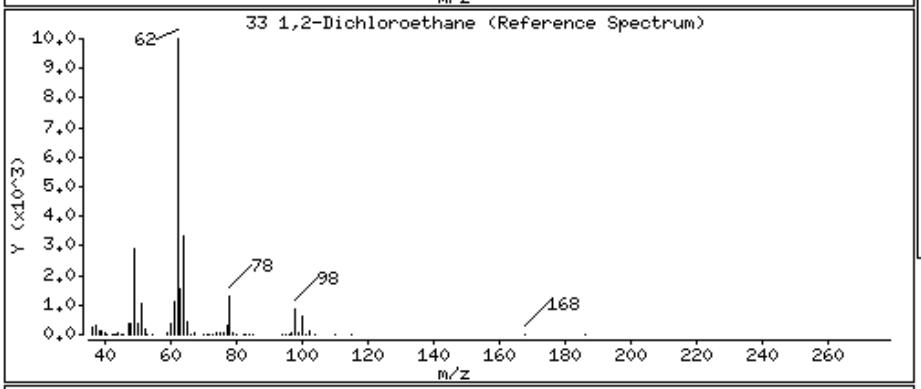
Concentration: 291.71 ug/l

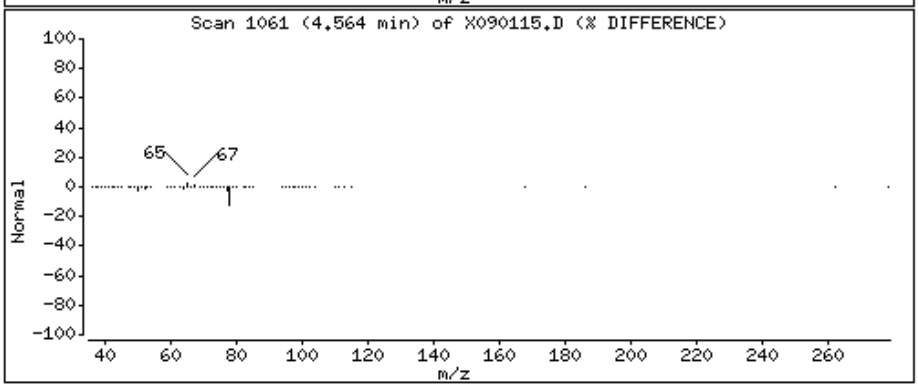












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090115.D Page 4

Date : 01-SEP-2022 15:05

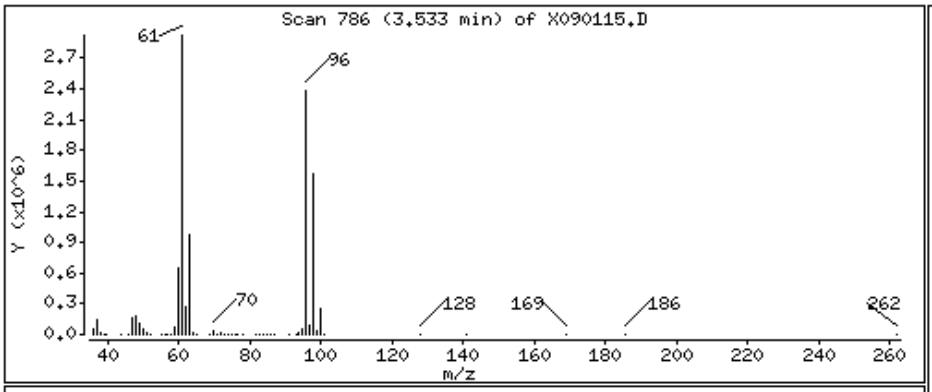
Client ID: HS22081514-11 Instrument: voa6.i

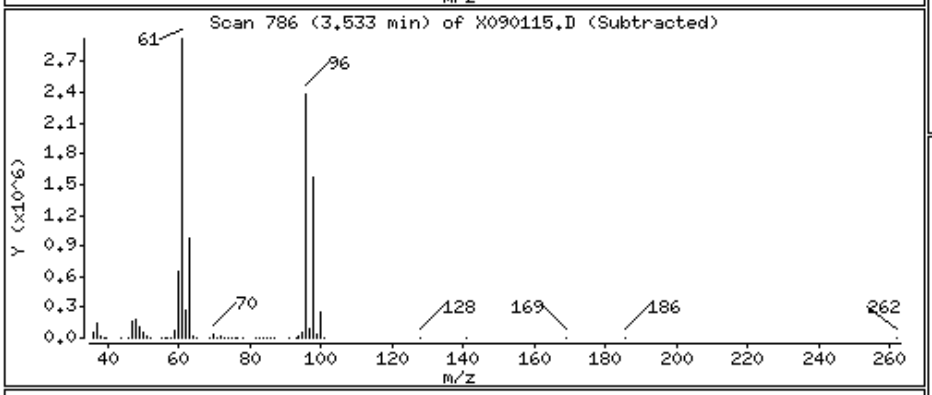
Sample Info: HS22081514-11;HS22081514-11;;;

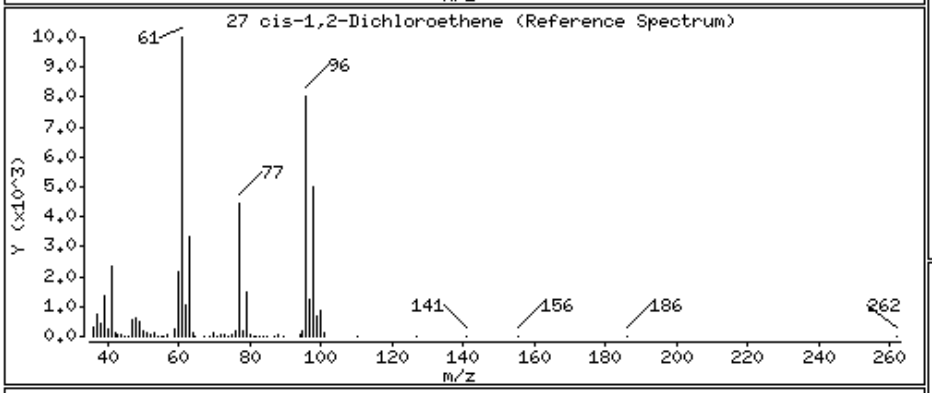
Purge Volume: 5.0 Operator: PC

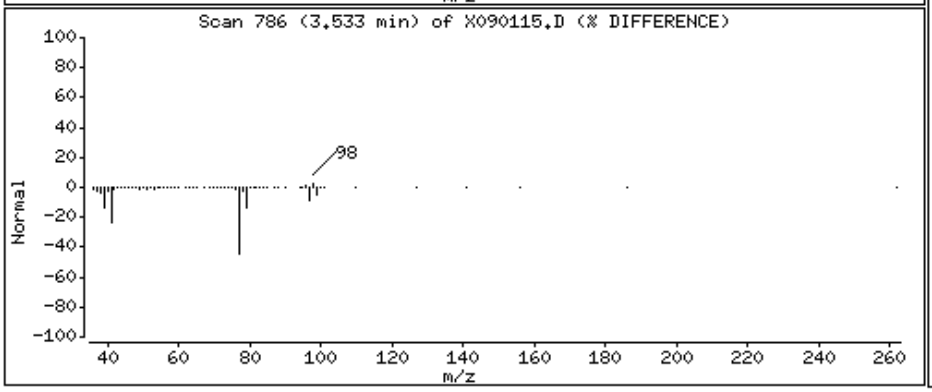
Column phase: DB624 Column diameter: 0.18

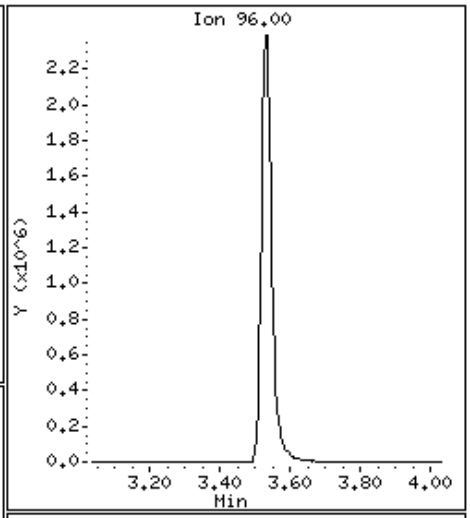
27 cis-1,2-Dichloroethene Concentration: 21911.58 ug/l

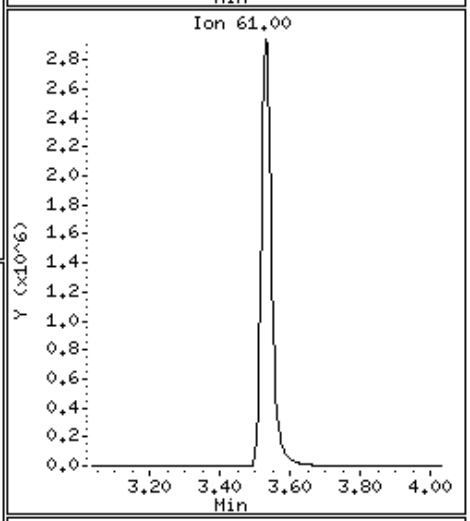


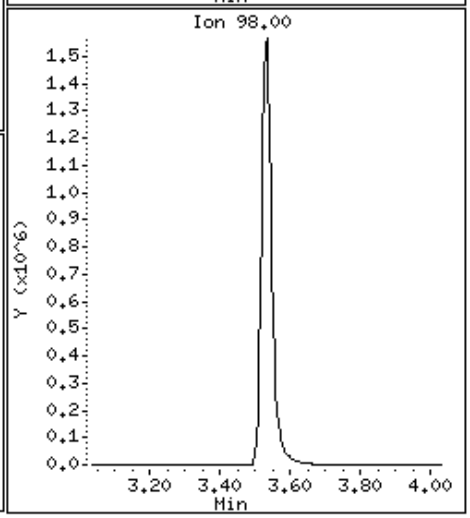












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090115.D Page 5

Date : 01-SEP-2022 15:05

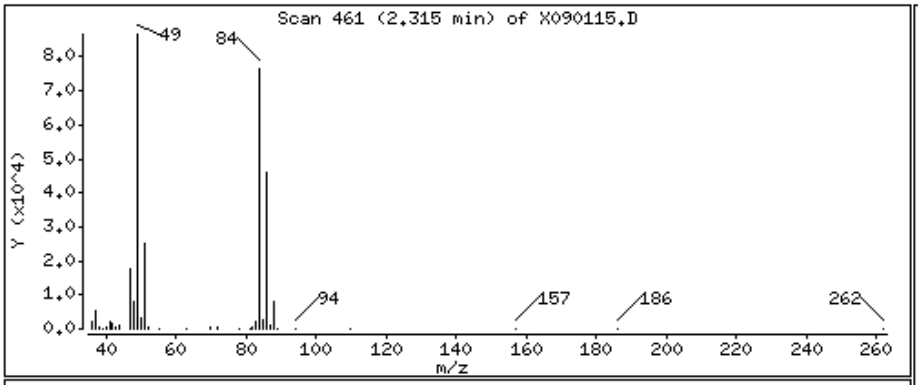
Client ID: HS22081514-11 Instrument: voa6.i

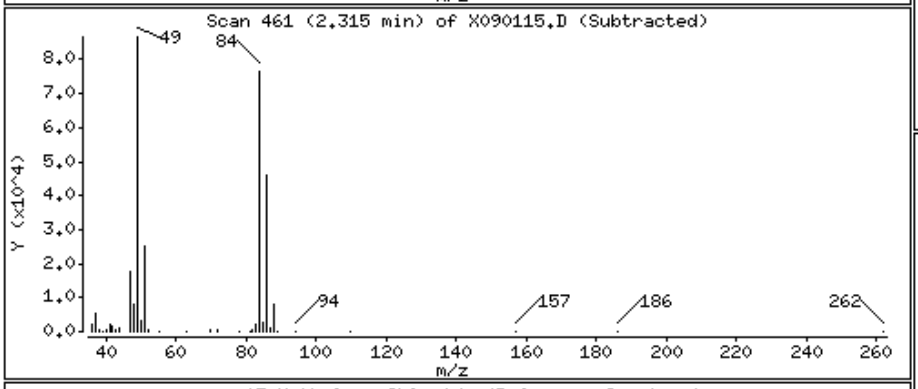
Sample Info: HS22081514-11;HS22081514-11;;;

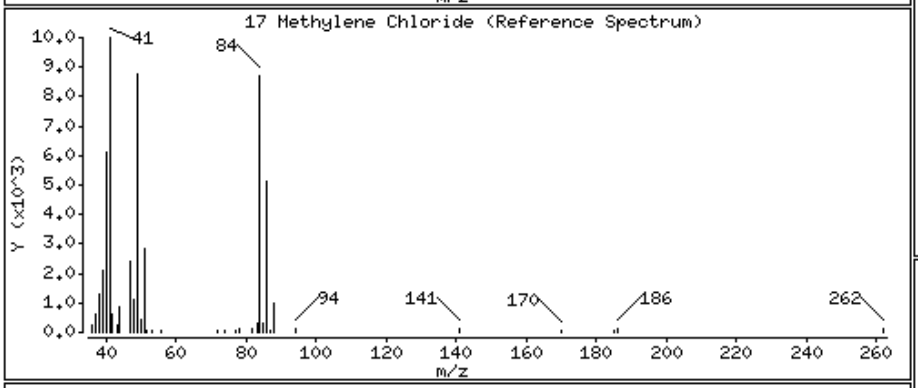
Purge Volume: 5.0 Operator: PC

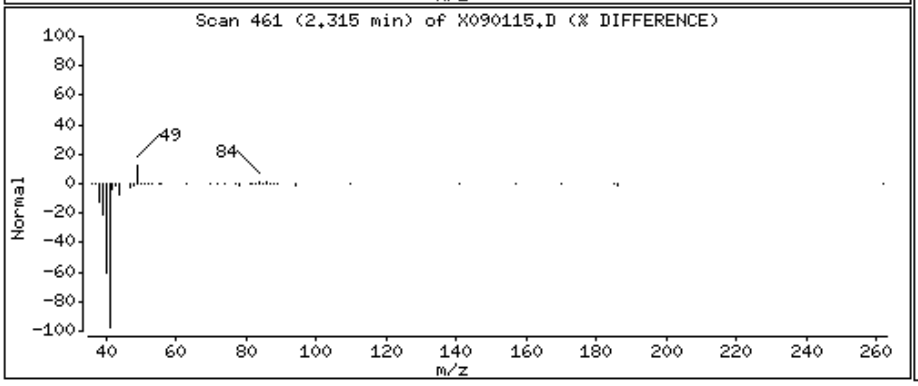
Column phase: DB624 Column diameter: 0.18

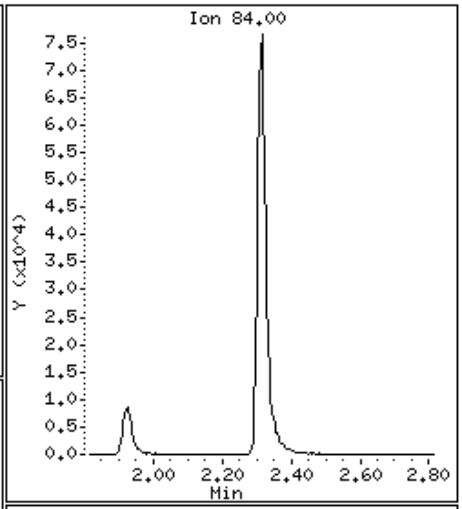
17 Methylene Chloride Concentration: 626.57 ug/l

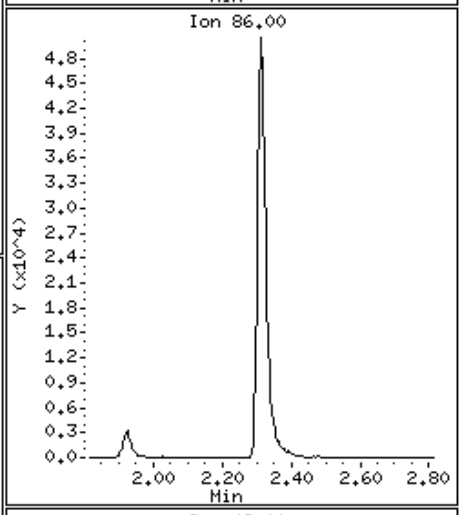


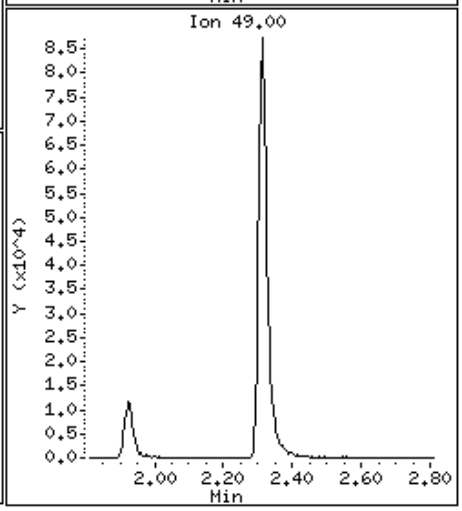












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090115.D

Date : 01-SEP-2022 15:05

Client ID: HS22081514-11

Instrument: voa6.i

Sample Info: HS22081514-11;HS22081514-11;;;

Purge Volume: 5.0

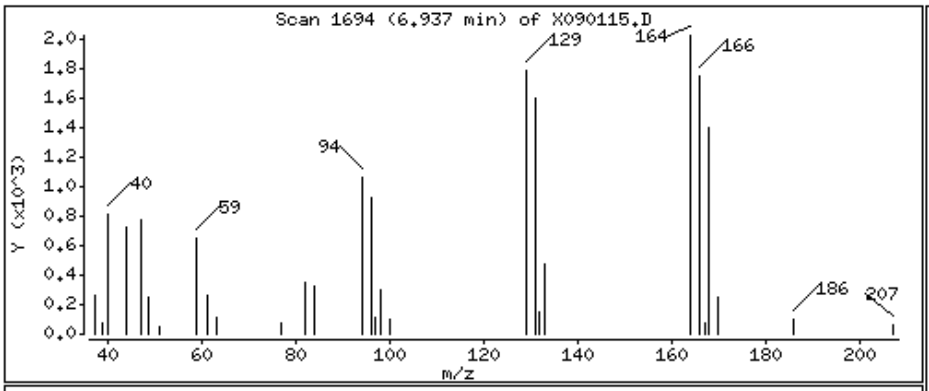
Operator: PC

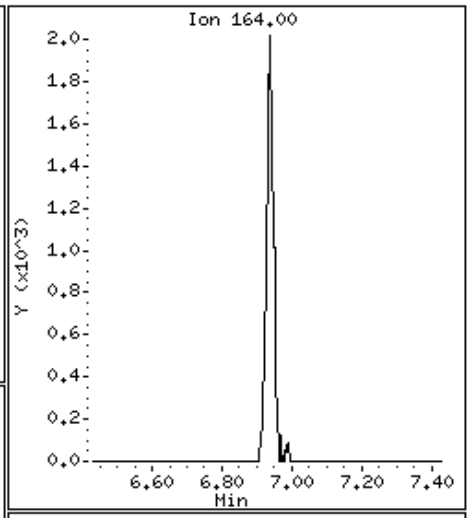
Column phase: DB624

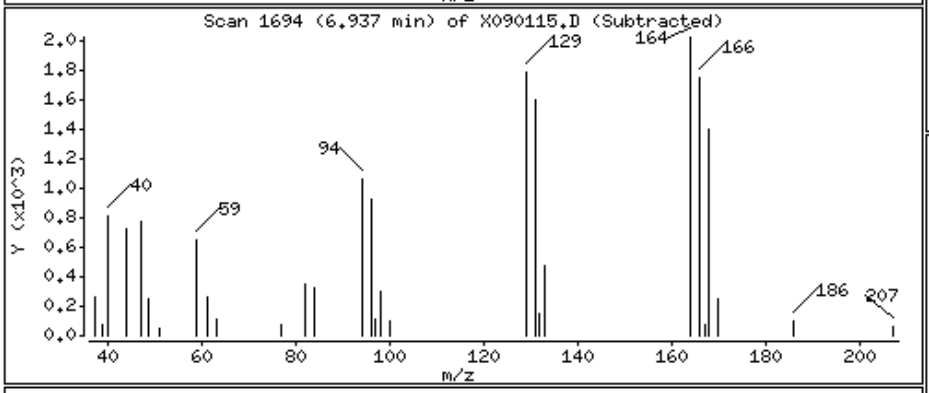
Column diameter: 0.18

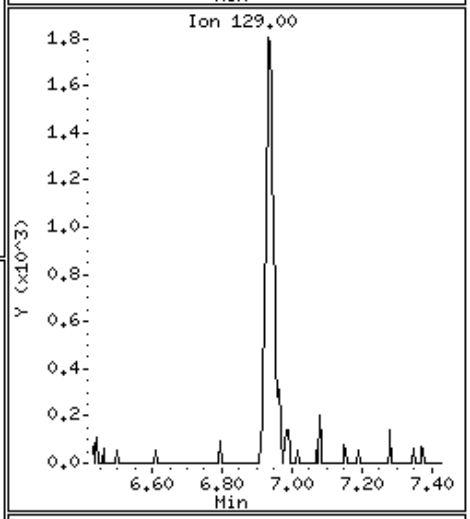
56 Tetrachloroethene

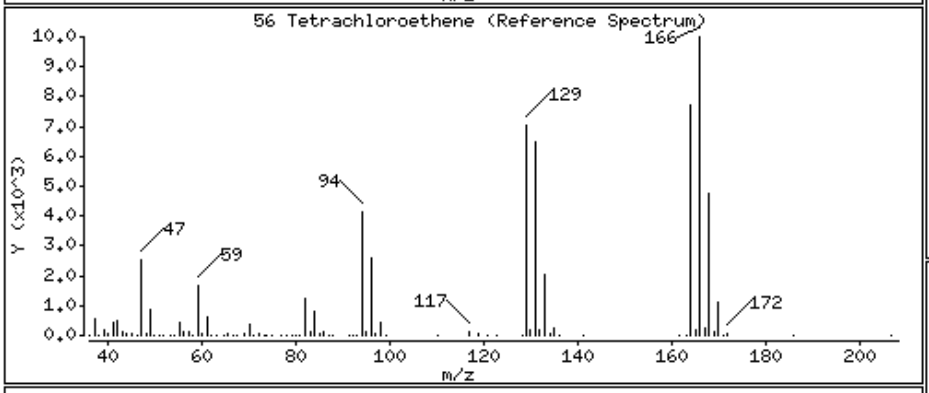
Concentration: 16.23 ug/l

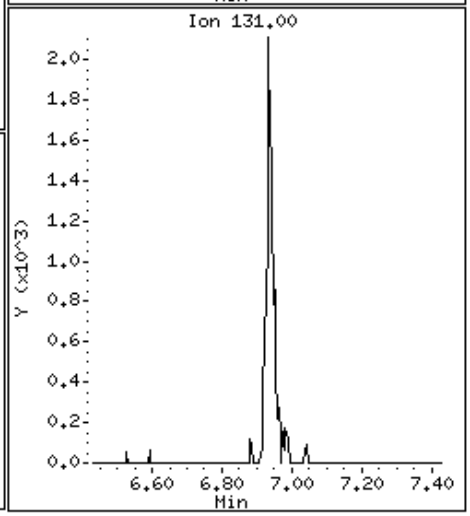


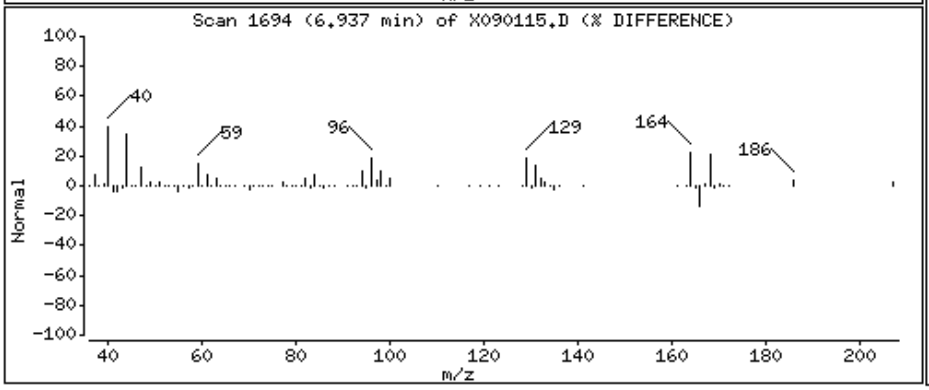












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090115.D Page 7

Date : 01-SEP-2022 15:05

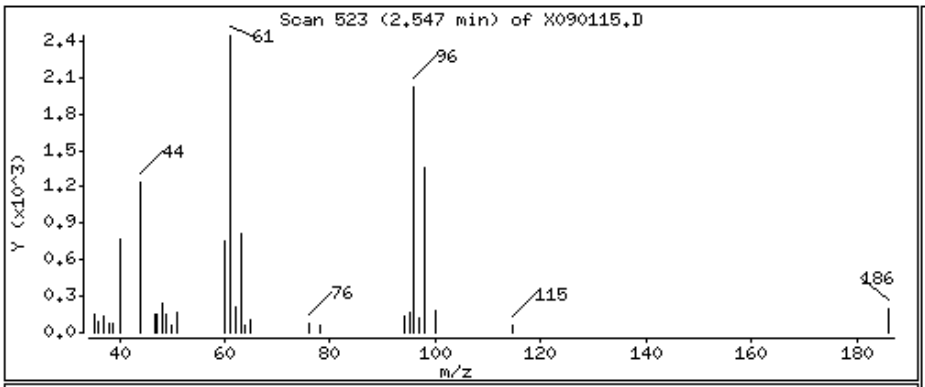
Client ID: HS22081514-11 Instrument: voa6.i

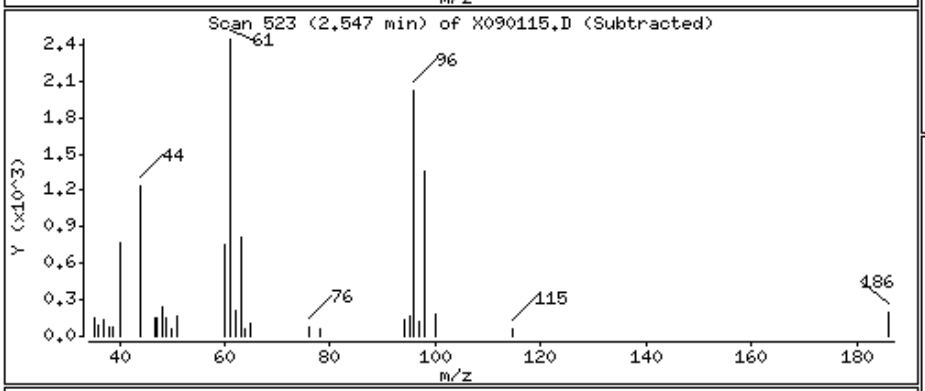
Sample Info: HS22081514-11;HS22081514-11;;;

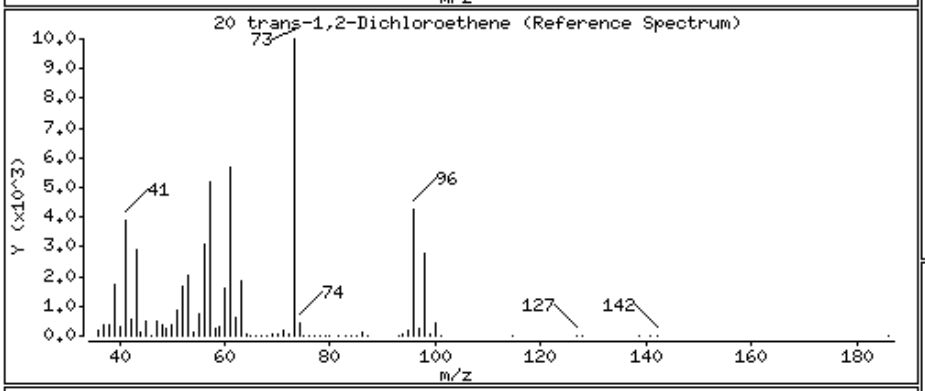
Purge Volume: 5.0 Operator: PC

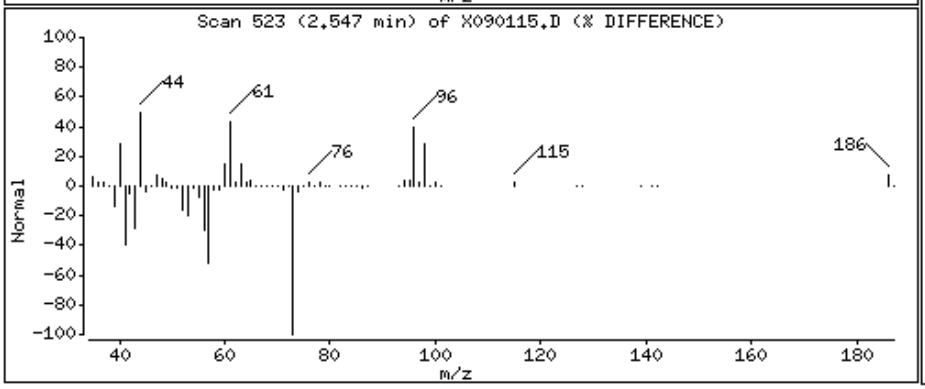
Column phase: DB624 Column diameter: 0.18

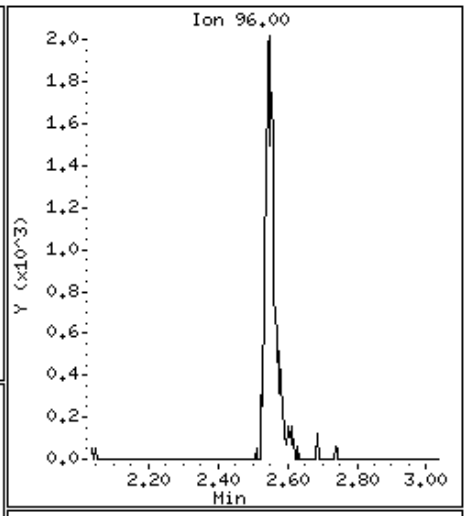
20 trans-1,2-Dichloroethene Concentration: 18.43 ug/l

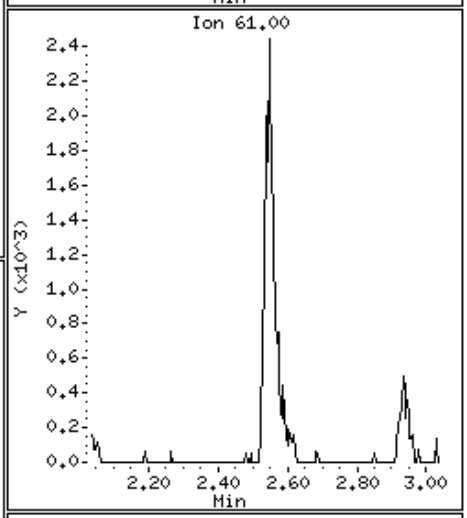


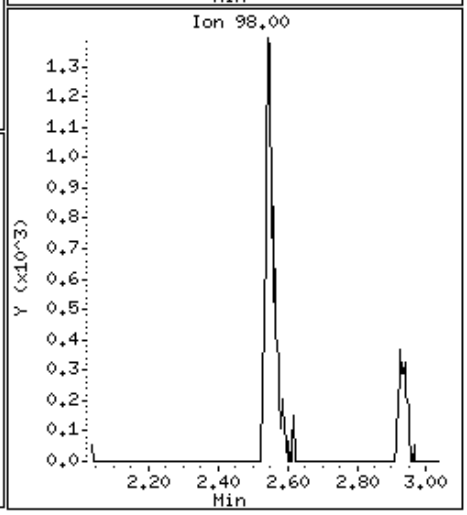












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090115.D Page 8

Date : 01-SEP-2022 15:05

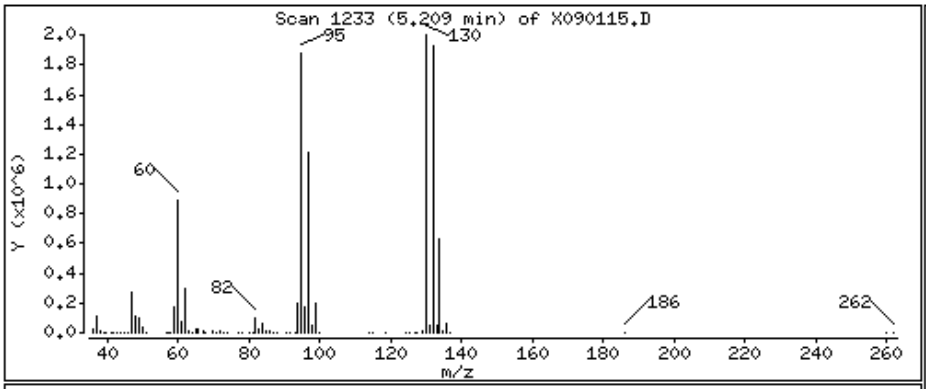
Client ID: HS22081514-11 Instrument: voa6.i

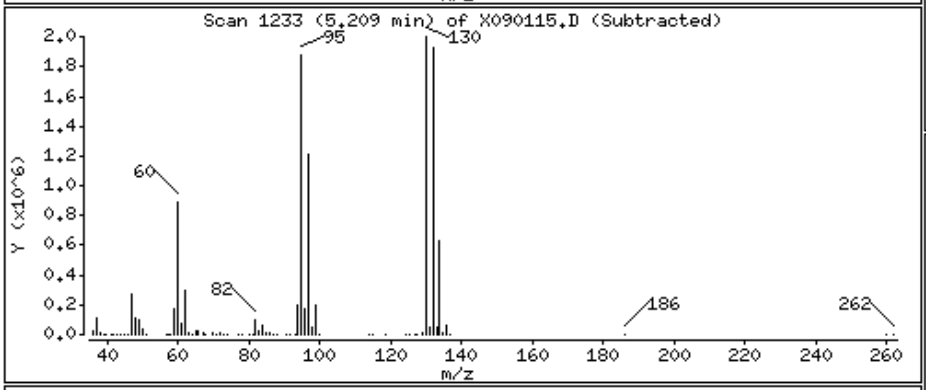
Sample Info: HS22081514-11;HS22081514-11;;;

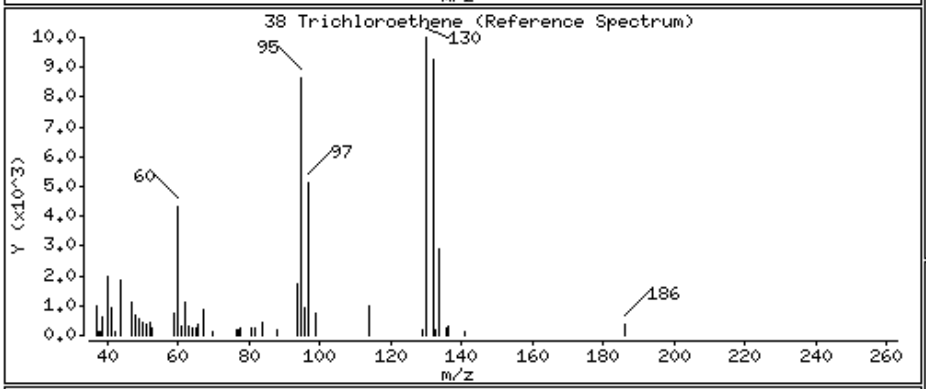
Purge Volume: 5.0 Operator: PC

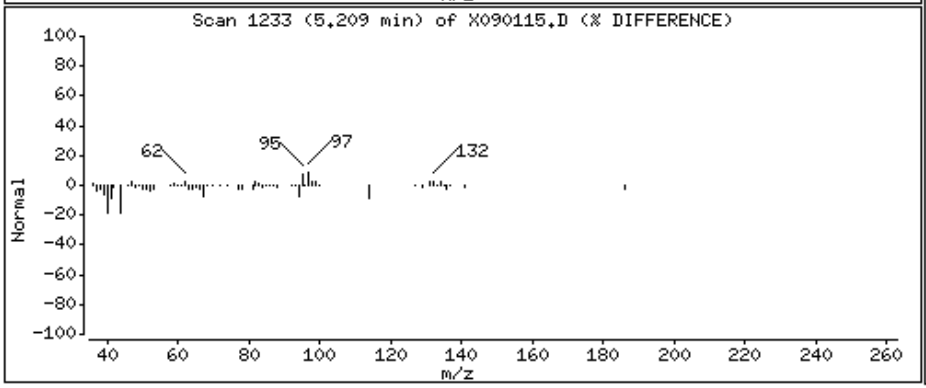
Column phase: DB624 Column diameter: 0.18

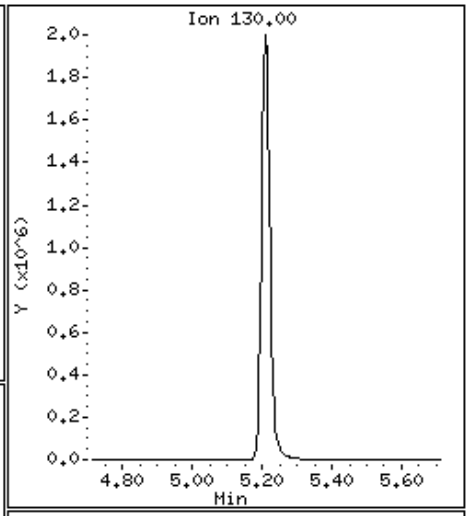
38 Trichloroethene Concentration: 14940.62 ug/l

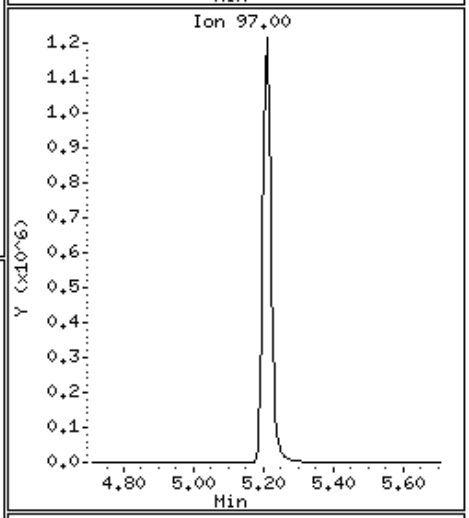


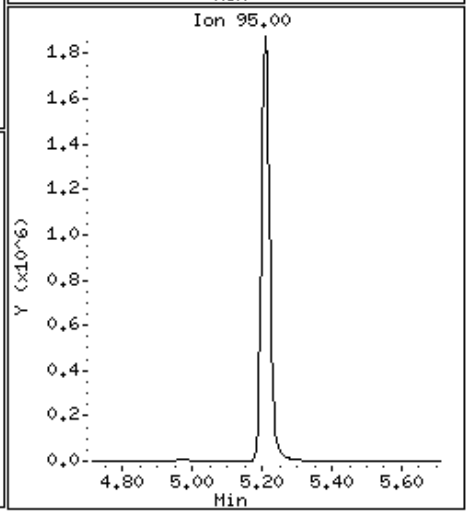












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090115.D Page 9

Date : 01-SEP-2022 15:05

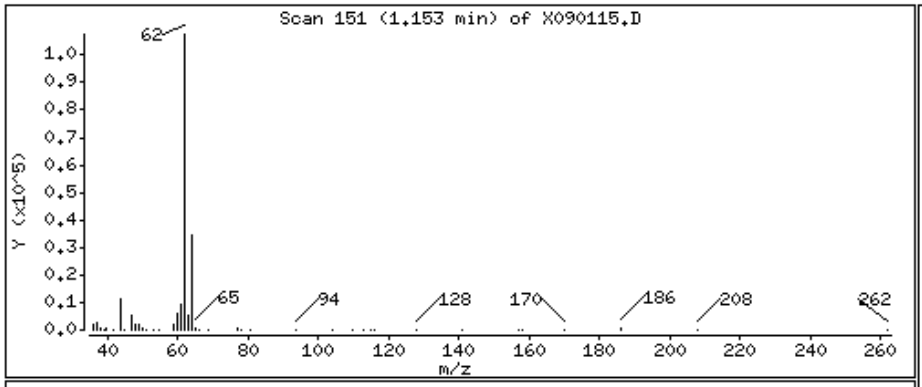
Client ID: HS22081514-11 Instrument: voa6.i

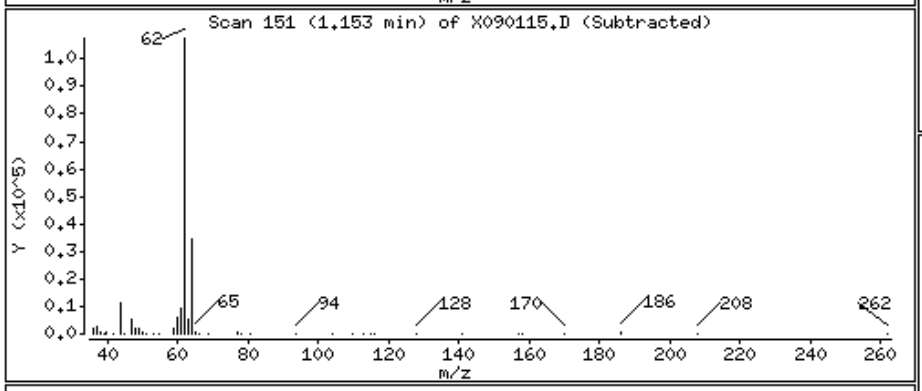
Sample Info: HS22081514-11;HS22081514-11;;;

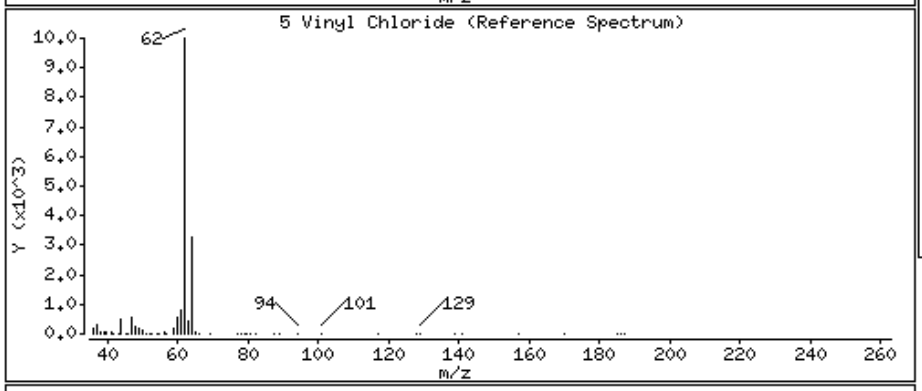
Purge Volume: 5.0 Operator: PC

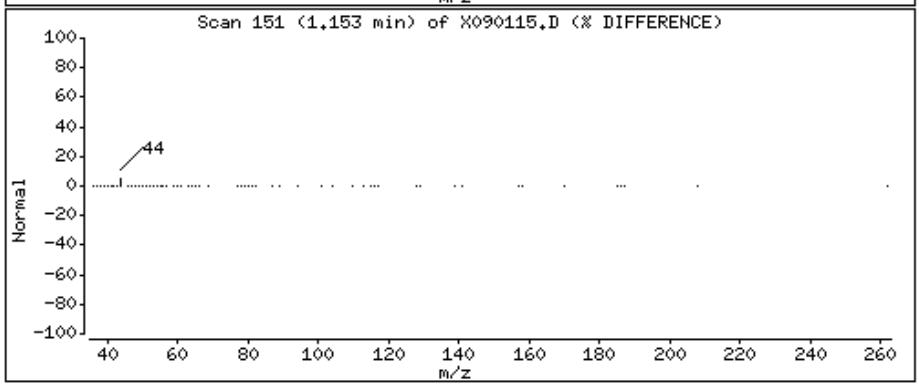
Column phase: DB624 Column diameter: 0.18

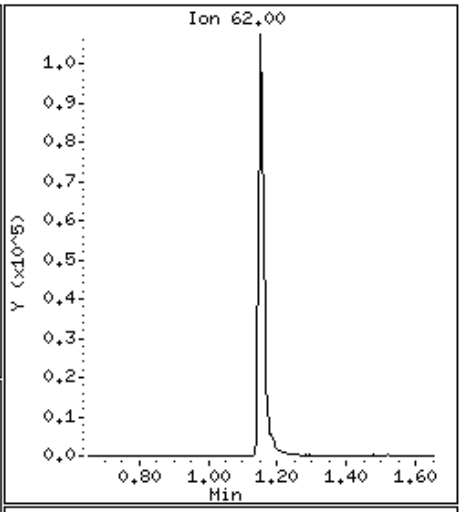
5 Vinyl Chloride Concentration: 491.35 ug/l

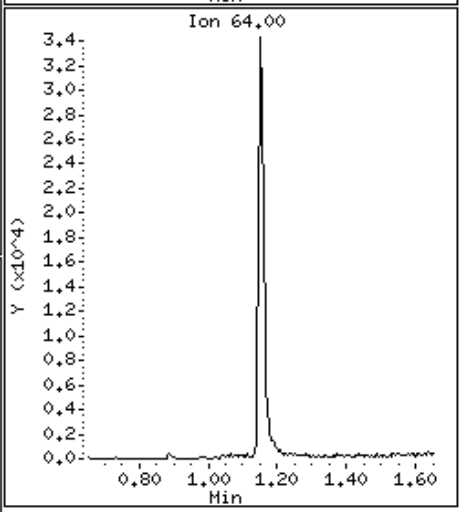












Data File : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090115.D
Inj Date : 01-SEP-2022 15:05
InstruID : voa6.i
LabSampID : HS22081514-11

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090116.D Page 1
Report Date: 09-Sep-2022 16:52

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090116.D
Lab Smp Id: HS22081514-07 Client Smp ID: HS22081514-07
Inj Date : 01-SEP-2022 15:26
Operator : PC Inst ID: voa6.i
Smp Info : HS22081514-07;HS22081514-07;;;
Misc Info : HS22052000V6;WATER;0;5;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\8260W.m
Meth Date : 09-Sep-2022 16:51 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 16
Dil Factor: 5.00000
Integrator: HP RTE Compound Sublist: bhate.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
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	4.189	4.189	(1.000)	579388	50.0000	
* 36 1,4-Difluorobenzene	114	4.969	4.968	(1.000)	798199	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	673465	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.665	(1.000)	280857	50.0000	
$ 30 Dibromofluoromethane	113	4.106	4.106	(0.980)	253643	46.3389	46.33
$ 35 1,2-Dichloroethane-d4	65	4.478	4.477	(1.069)	269131	44.9119	44.91
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	916730	54.5572	54.55
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	274200	45.5531	45.55
33 1,2-Dichloroethane	62	4.567	4.560	(0.919)	9011	1.28722	6.43(a)
34 Carbon Tetrachloride	117	4.271	4.271	(0.860)	7771	1.12865	5.64(a)
28 Chloroform	83	3.915	3.911	(0.935)	12712	1.30075	6.50(a)
27 cis-1,2-Dichloroethene	96	3.537	3.533	(0.844)	16257	2.82230	14.11(a)
38 Trichloroethene	130	5.208	5.208	(1.048)	1268112	226.332	1131.65(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.

01148149

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090116.D

Date : 01-SEP-2022 15:26

Client ID: HS22081514-07

Instrument: voa6.i

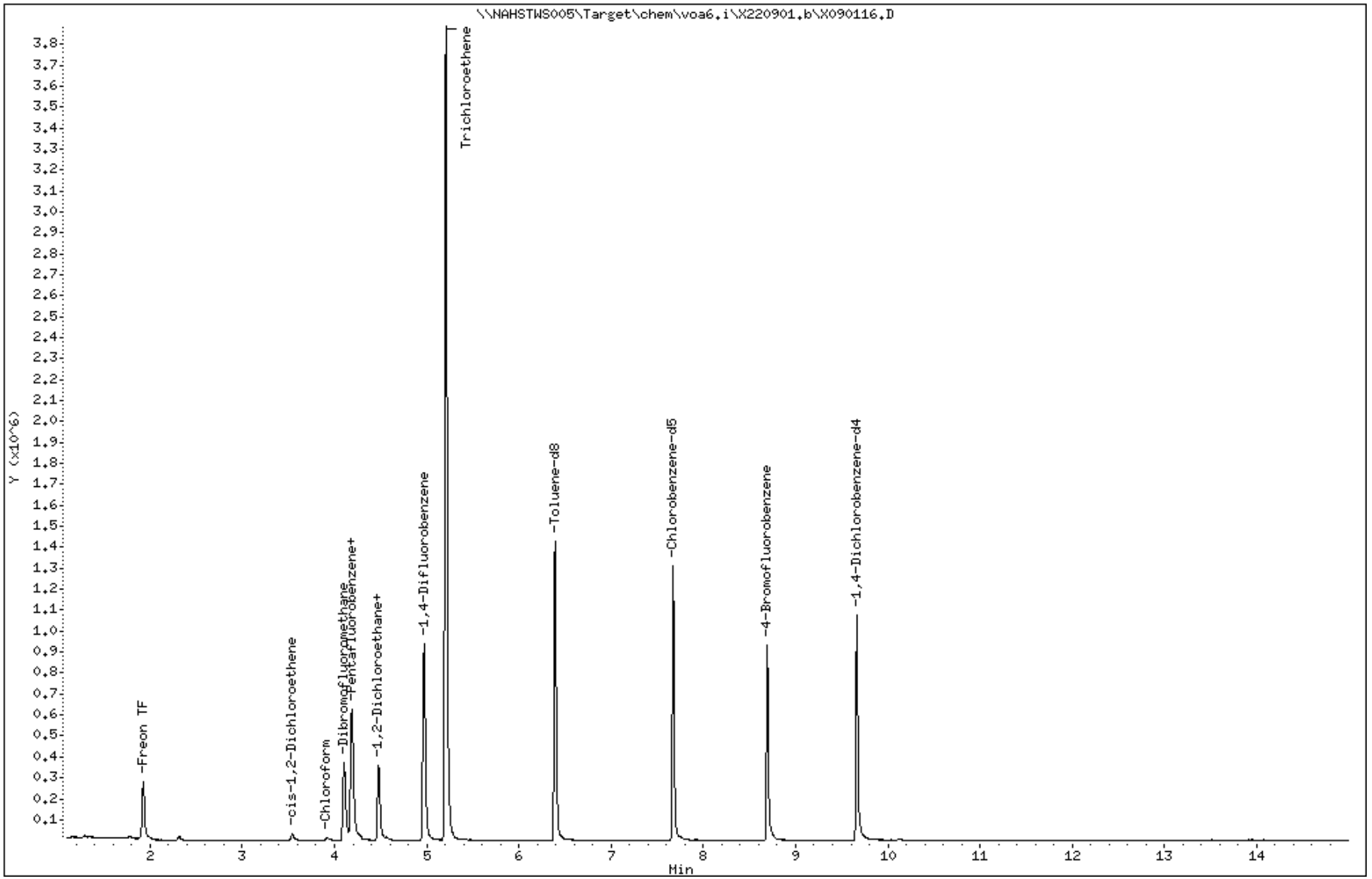
Sample Info: HS22081514-07;HS22081514-07;;;

Purge Volume: 5.0

Operator: PC

Column phase: DB624

Column diameter: 0.18



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Date : 01-SEP-2022 15:26

Client ID: HS22081514-07

Instrument: voa6.i

Sample Info: HS22081514-07;HS22081514-07;;;

Purge Volume: 5.0

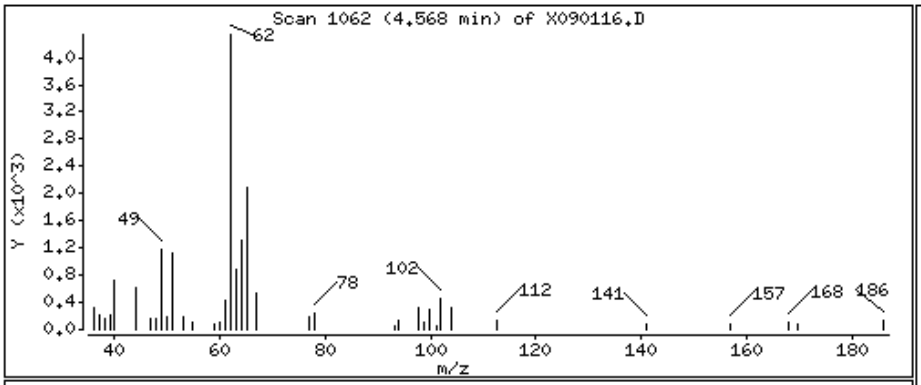
Operator: PC

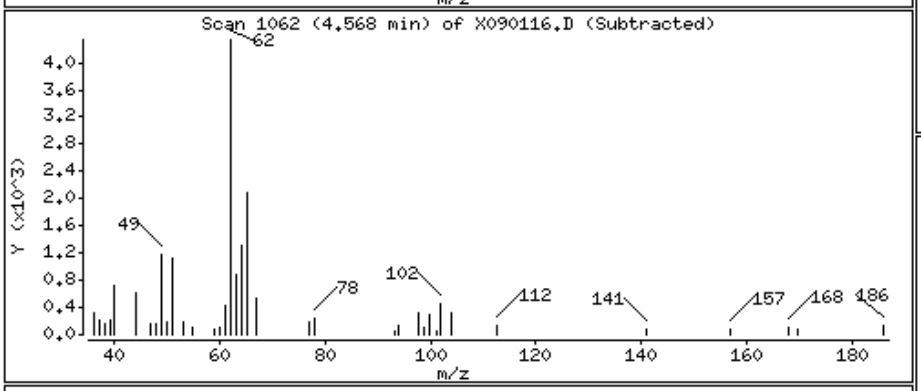
Column phase: DB624

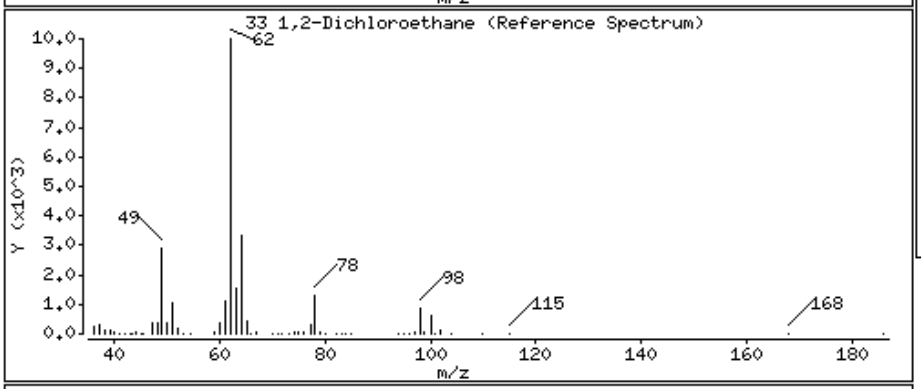
Column diameter: 0.18

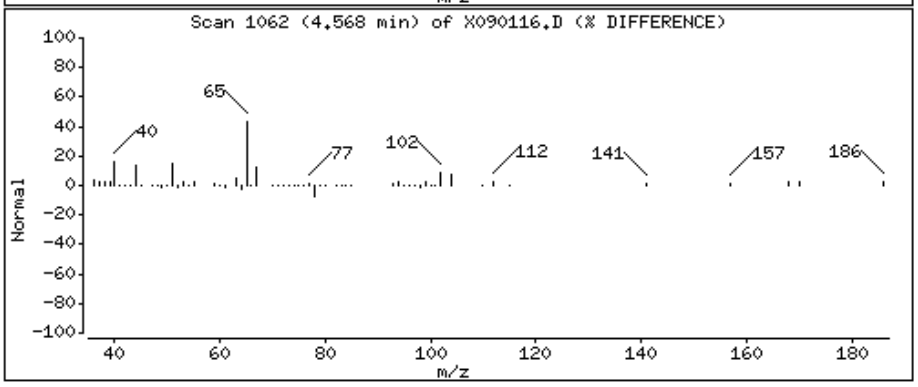
33 1,2-Dichloroethane

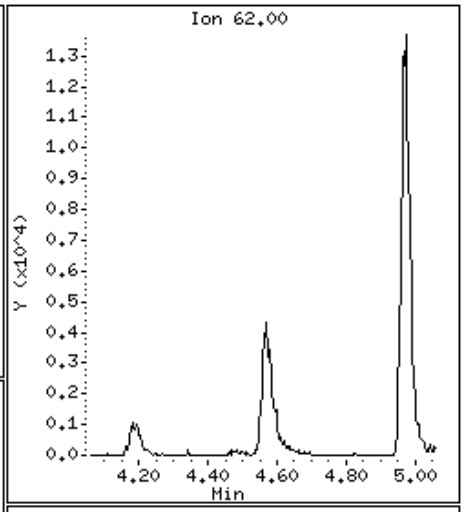
Concentration: 6.43 ug/l

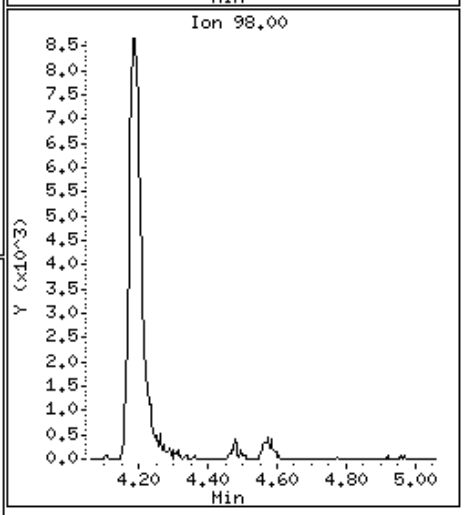












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090116.D

Date : 01-SEP-2022 15:26

Client ID: HS22081514-07

Instrument: voa6.i

Sample Info: HS22081514-07;HS22081514-07;;;

Purge Volume: 5.0

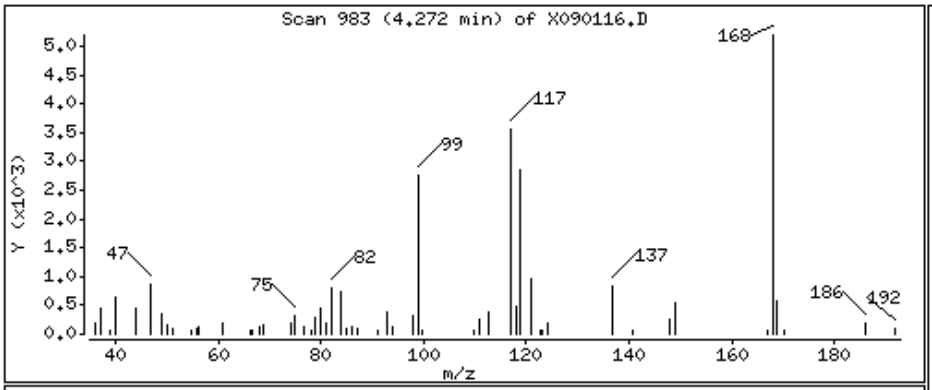
Operator: PC

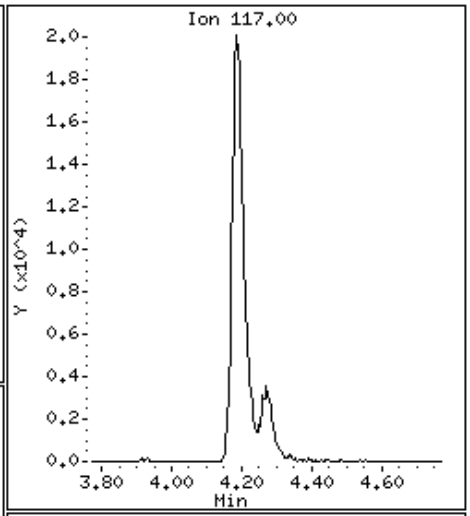
Column phase: DB624

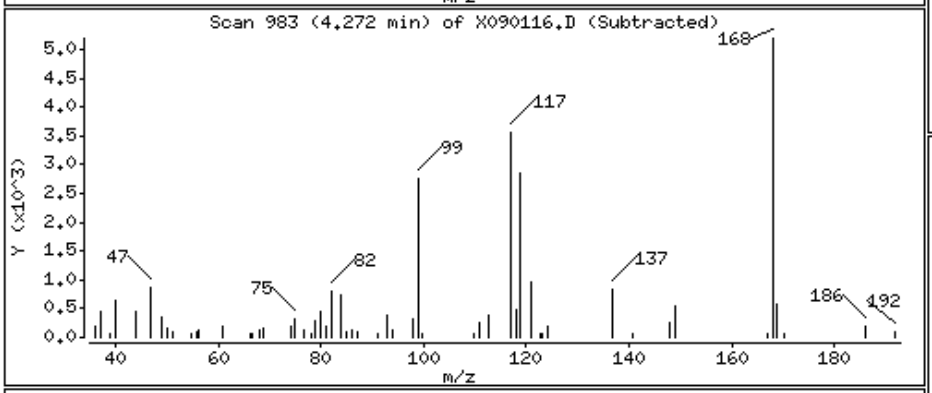
Column diameter: 0.18

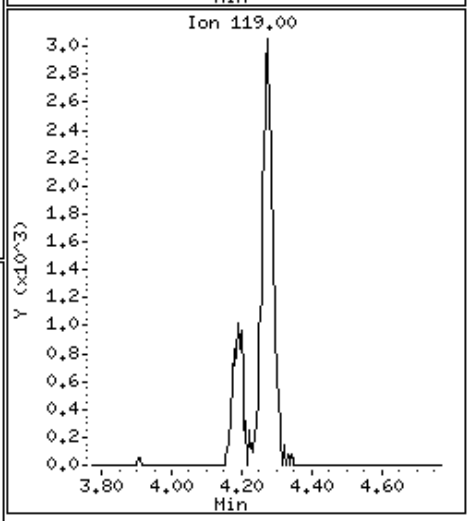
34 Carbon Tetrachloride

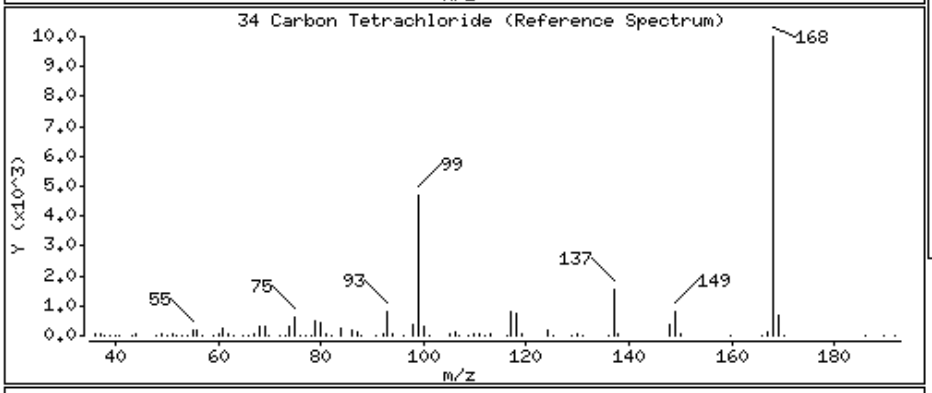
Concentration: 5.64 ug/l

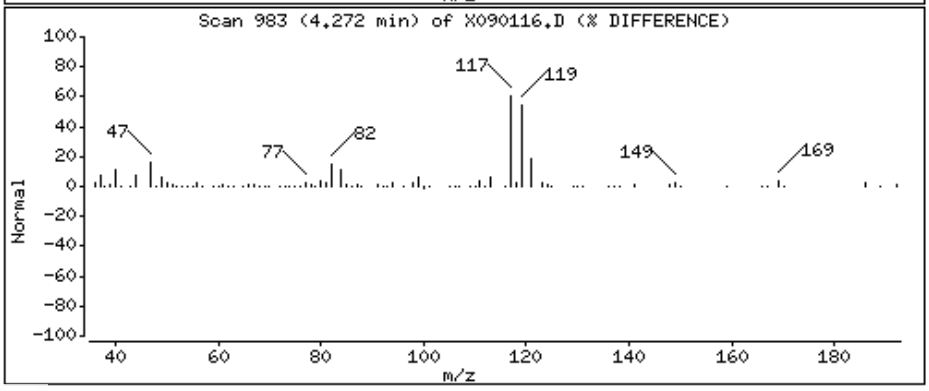












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Date : 01-SEP-2022 15:26

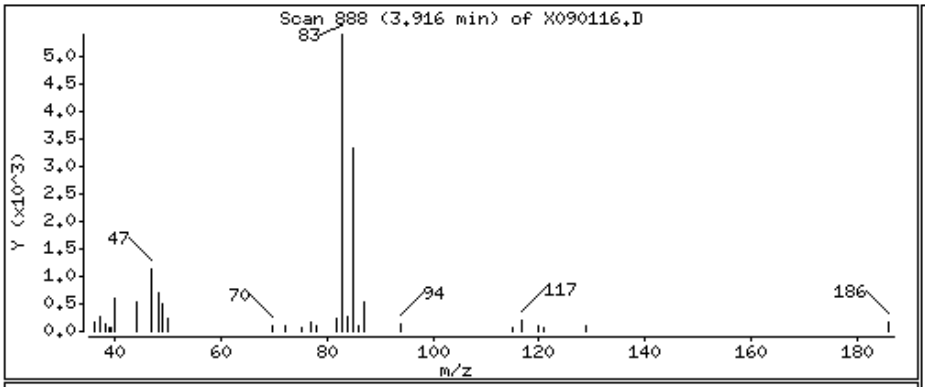
Client ID: HS22081514-07 Instrument: voa6.i

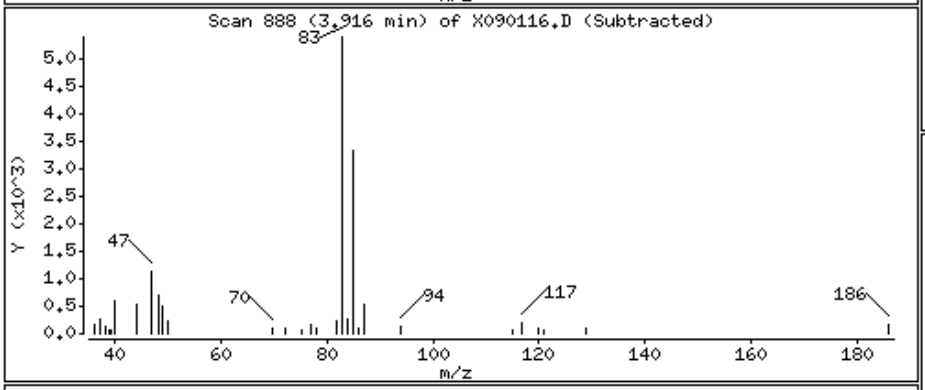
Sample Info: HS22081514-07;HS22081514-07;;;

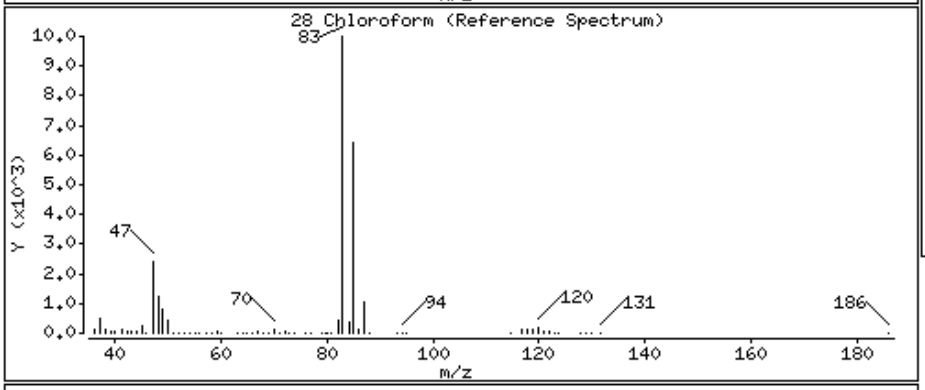
Purge Volume: 5.0 Operator: PC

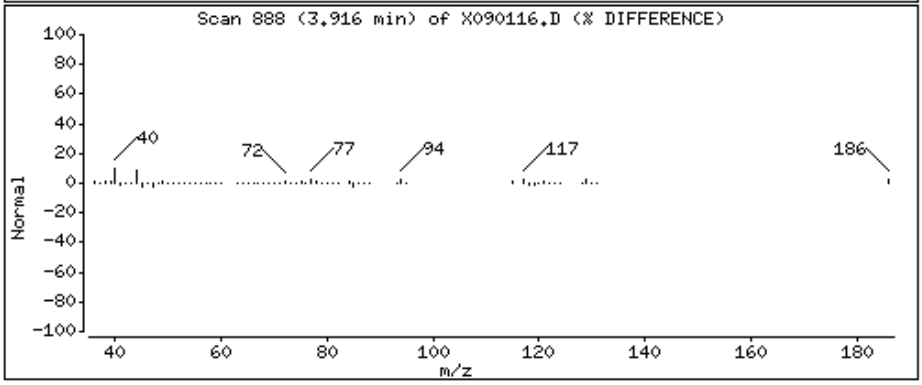
Column phase: DB624 Column diameter: 0.18

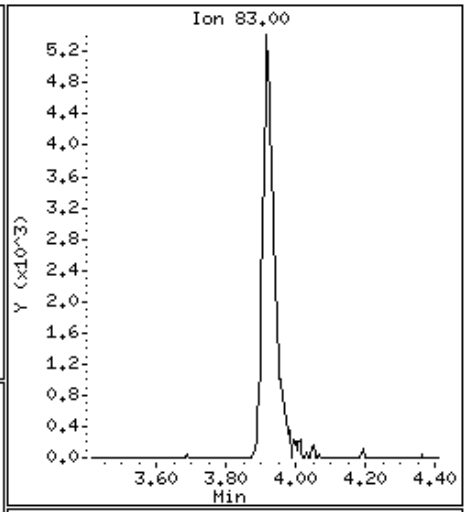
28 Chloroform Concentration: 6.50 ug/l

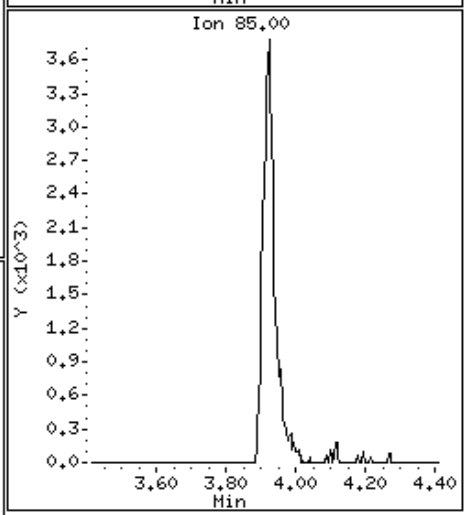












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Date : 01-SEP-2022 15:26

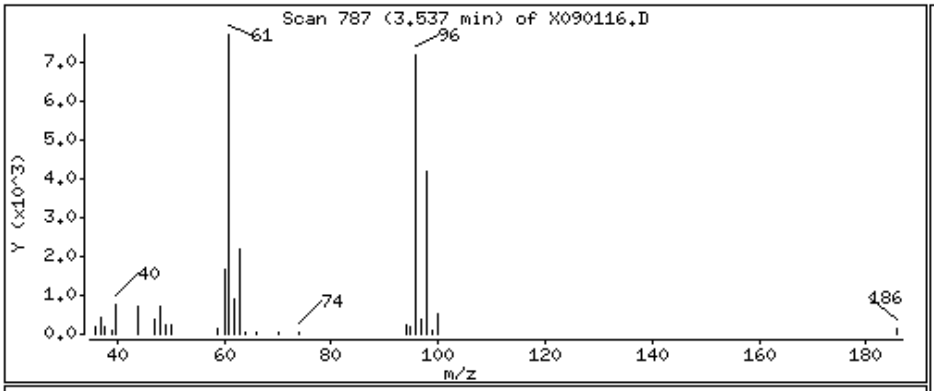
Client ID: HS22081514-07 Instrument: voa6.i

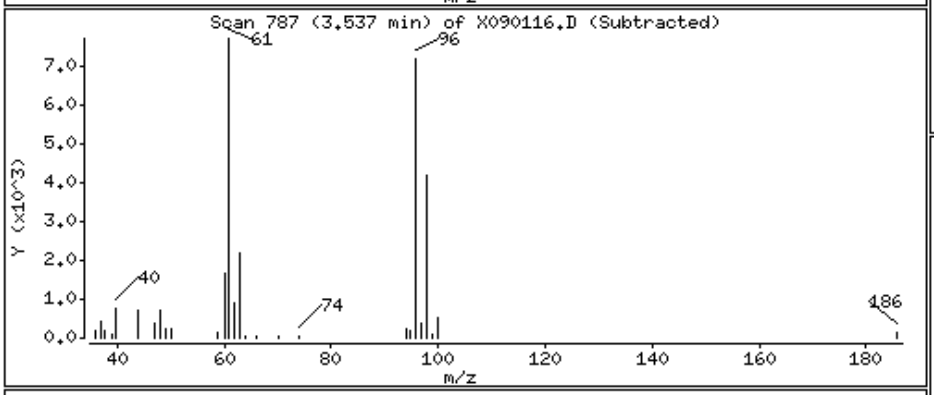
Sample Info: HS22081514-07;HS22081514-07;;;

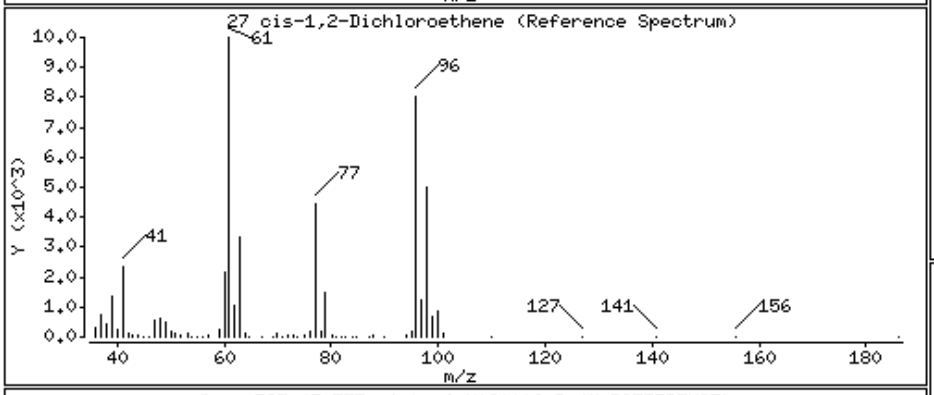
Purge Volume: 5.0 Operator: PC

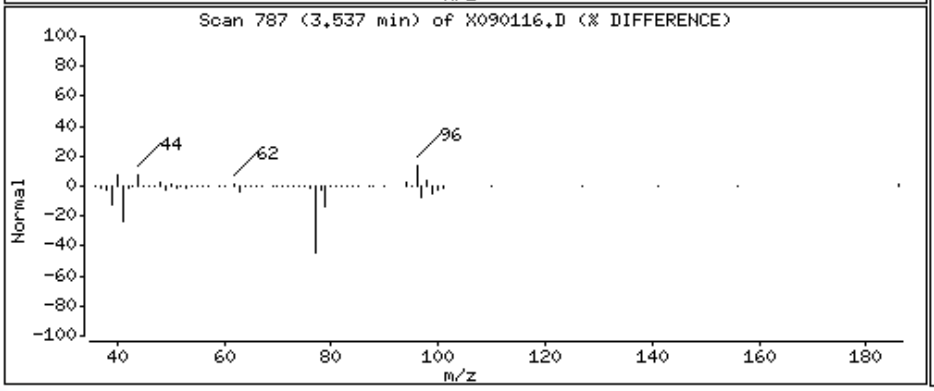
Column phase: DB624 Column diameter: 0.18

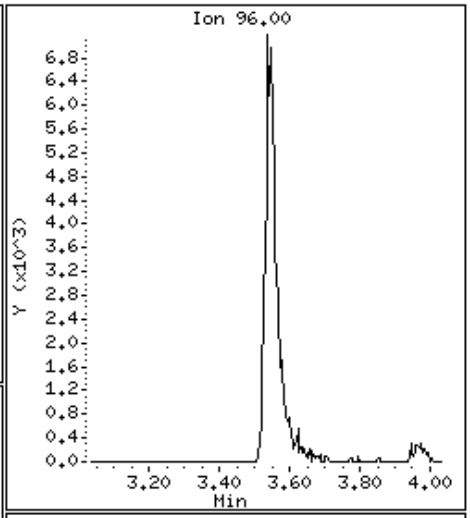
27 cis-1,2-Dichloroethene Concentration: 14.11 ug/l

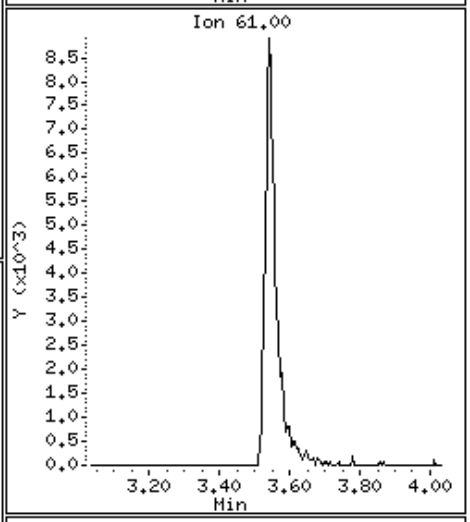


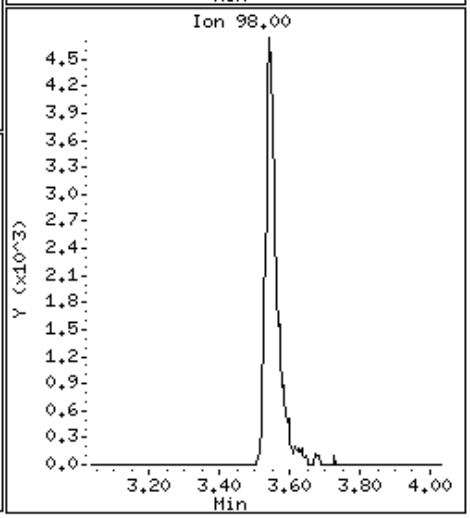












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090116.D

Date : 01-SEP-2022 15:26

Client ID: HS22081514-07

Instrument: voa6.i

Sample Info: HS22081514-07;HS22081514-07;;;

Purge Volume: 5.0

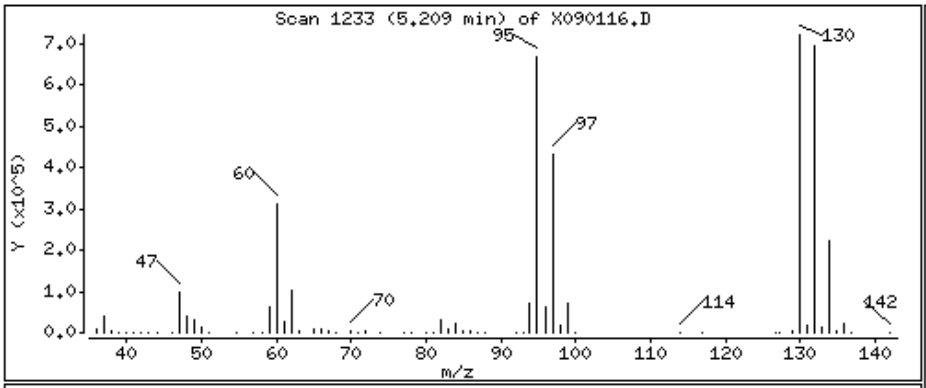
Operator: PC

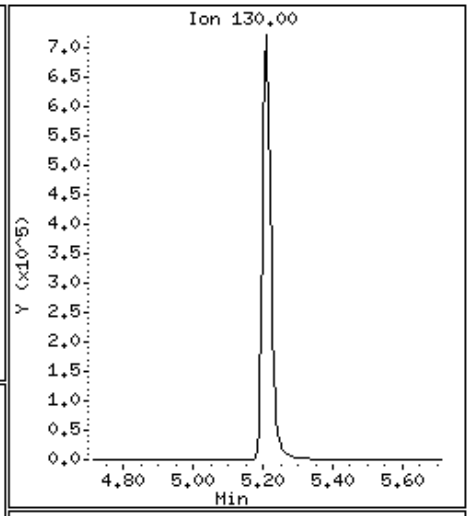
Column phase: DB624

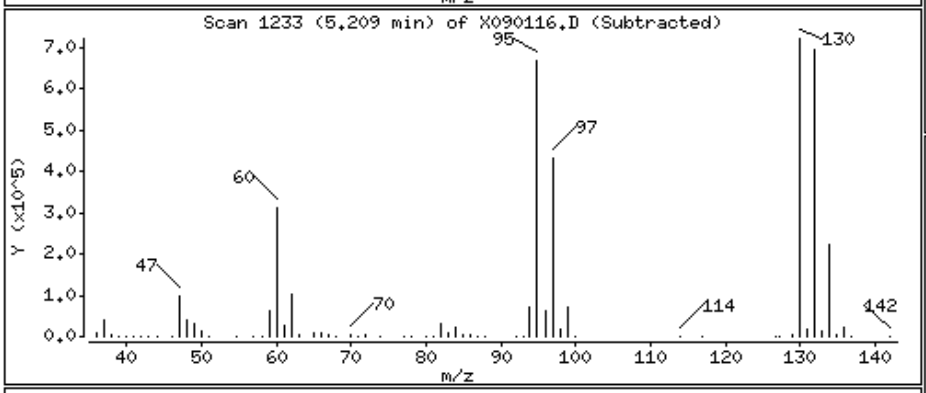
Column diameter: 0.18

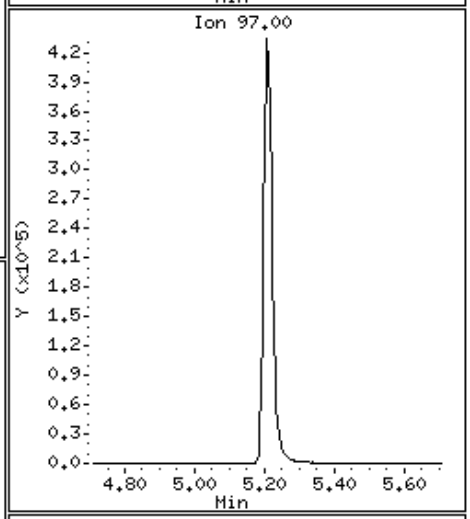
38 Trichloroethene

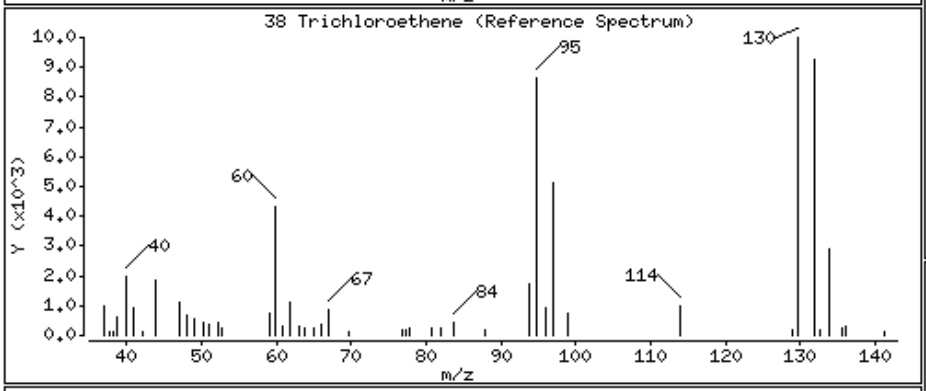
Concentration: 1131.65 ug/l

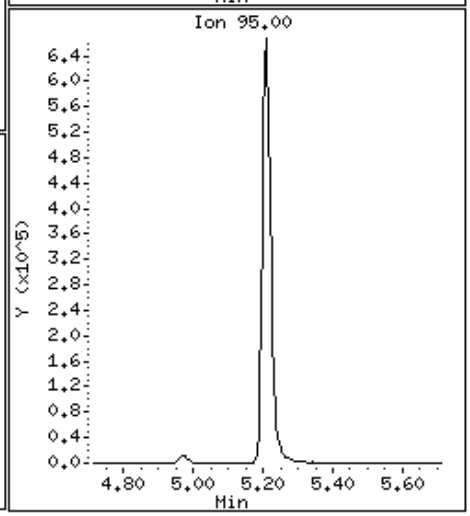


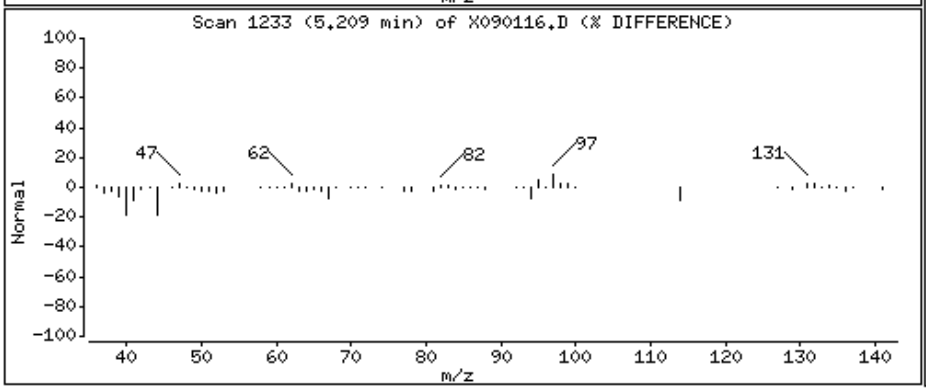












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Inj Date : 01-SEP-2022 15:26
InstruID : voa6.i
LabSampID : HS22081514-07

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090117.D Page 1
Report Date: 09-Sep-2022 16:52

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Data file : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090117.D
Lab Smp Id: HS22081514-22MS Client Smp ID: HS22081514-22MS
Inj Date : 01-SEP-2022 15:47
Operator : PC Inst ID: voa6.i
Smp Info : HS22081514-22MS;HS22081514-22MS;3;;MS
Misc Info : HS22052000V6;WATER;0;250;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\8260W.m
Meth Date : 09-Sep-2022 16:51 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 17 QC Sample: MS
Dil Factor: 250.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7056

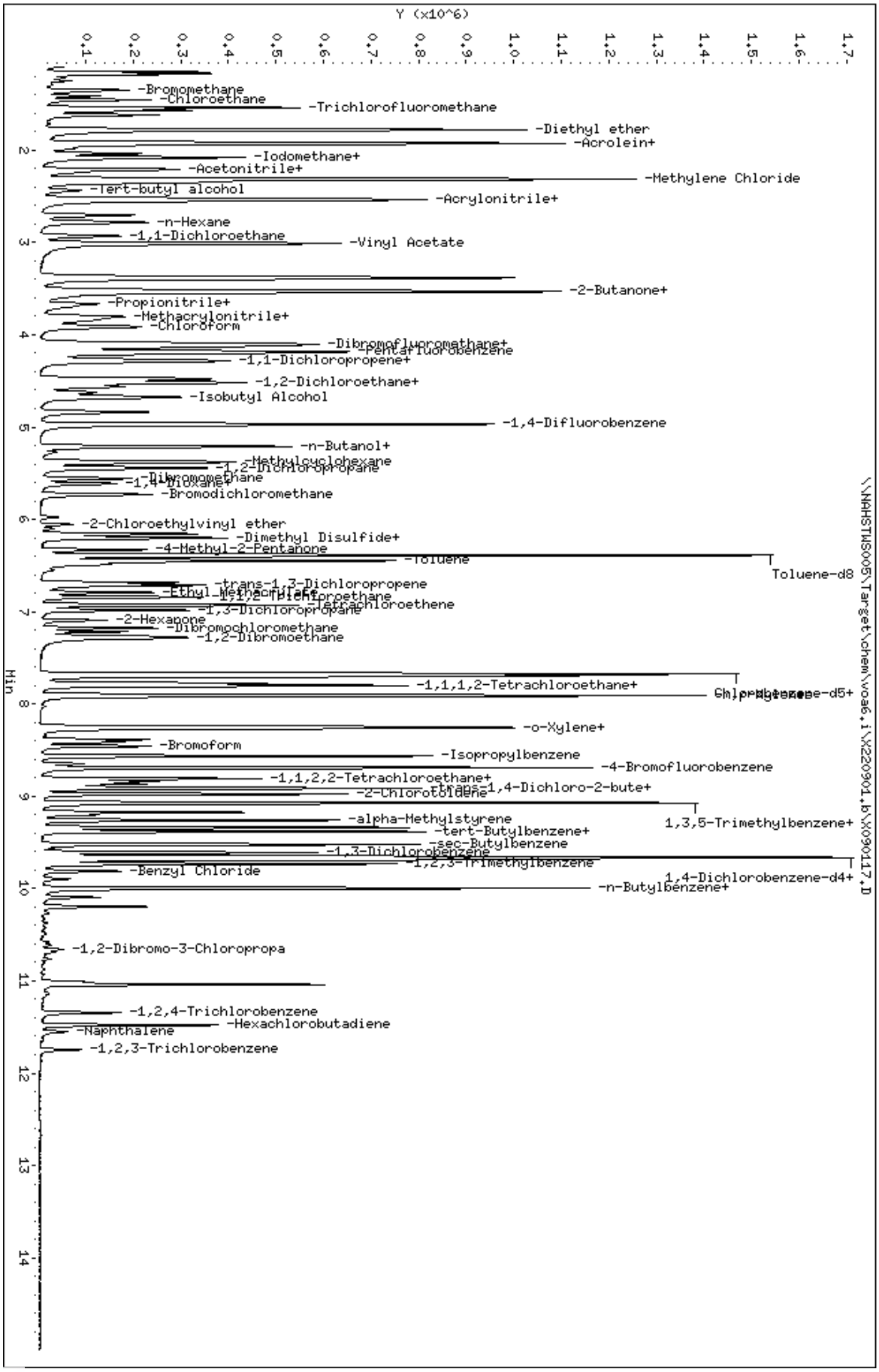
Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	250.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
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	4.185	4.189	(1.000)	578202	50.0000	
* 36 1,4-Difluorobenzene	114	4.969	4.968	(1.000)	792796	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	693307	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.665	(1.000)	323023	50.0000	
$ 30 Dibromofluoromethane	113	4.106	4.106	(0.981)	258015	47.2484	47.24
$ 35 1,2-Dichloroethane-d4	65	4.477	4.477	(1.070)	266666	44.5895	44.58
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	931034	53.8227	53.82
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	299752	48.4239	48.42
60 1,1,1,2-Tetrachloroethane	131	7.776	7.776	(1.014)	103428	21.2339	5308.47
31 1,1,1-Trichloroethane	97	4.091	4.087	(0.978)	164901	20.1039	5025.98
68 1,1,2,2-Tetrachloroethane	83	8.841	8.841	(0.915)	92043	20.2882	5072.06
53 1,1,2-Trichloroethane	83	6.839	6.839	(0.892)	73617	20.6519	5162.97
22 1,1-Dichloroethane	63	2.929	2.929	(0.700)	171391	19.2543	4813.57
11 1,1-Dichloroethene	96	1.925	1.924	(0.460)	98523	20.4125	5103.12
32 1,1-Dichloropropene	75	4.286	4.286	(0.863)	141703	22.1466	5536.64
93 1,2,3-Trichlorobenzene	180	11.746	11.742	(1.215)	27641	16.4603	4115.06
71 1,2,3-Trichloropropane	75	8.867	8.863	(0.917)	67168	19.2020	4800.51
90 1,2,4-Trichlorobenzene	180	11.341	11.337	(1.173)	52457	17.8298	4457.44
79 1,2,4-Trimethylbenzene	105	9.381	9.381	(0.971)	359003	23.1697	5792.42
89 1,2-Dibromo-3-Chloropropane	155	10.663	10.659	(1.103)	5791	17.6718	4417.96

57 1,2-Dibromoethane	107	7.263	7.263 (0.947)	92057	20.3674	5091.84
88 1,2-Dichlorobenzene	146	9.995	9.995 (1.034)	176422	21.8271	5456.78

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
33	1,2-Dichloroethane	62	4.560	4.560	(0.918)	135698	19.5166	4879.14
42	1,2-Dichloropropane	63	5.437	5.441	(1.094)	97886	20.0596	5014.89
75	1,3,5-Trimethylbenzene	105	9.070	9.066	(0.938)	367689	23.4339	5858.48
83	1,3-Dichlorobenzene	146	9.606	9.605	(0.994)	198886	22.1911	5547.78
54	1,3-Dichloropropane	76	6.985	6.985	(0.911)	148290	20.4511	5112.78
84	1,4-Dichlorobenzene	146	9.684	9.684	(1.002)	211078	22.1842	5546.05
26	2,2-Dichloropropane	77	3.514	3.514	(0.840)	154940	19.4477	4861.93
24	2-Butanone	43	3.589	3.585	(0.858)	44668	30.7946	7698.64
76	2-Chlorotoluene	91	8.976	8.976	(0.929)	309084	22.3230	5580.76
52	2-Hexanone	43	7.090	7.090	(0.924)	79044	36.2577	9064.43
77	4-Chlorotoluene	91	9.073	9.073	(0.939)	351513	22.7450	5686.24
82	p-Isopropyltoluene	119	9.651	9.650	(0.998)	383506	24.3399	6084.98
45	4-Methyl-2-Pentanone	43	6.329	6.329	(0.825)	132144	39.1164	9779.10
10	Acetone	43	1.981	1.981	(0.473)	37766	26.8731	6718.27
37	Benzene	78	4.519	4.519	(0.909)	390421	20.7823	5195.57
74	Bromobenzene	156	8.807	8.807	(0.911)	124018	22.4814	5620.35
29	Bromochloromethane	128	3.803	3.803	(0.909)	57019	17.4901	4372.53
39	Bromodichloromethane	83	5.729	5.726	(1.153)	131308	19.6115	4902.87
66	Bromoform	173	8.414	8.413	(1.097)	60956	18.9222	4730.55
6	Bromomethane	94	1.351	1.351	(0.323)	80058	19.4524	4863.09
19	Carbon Disulfide	76	2.078	2.078	(0.497)	506040	39.6025	9900.63
34	Carbon Tetrachloride	117	4.271	4.271	(0.860)	144407	21.1165	5279.12
59	Chlorobenzene	112	7.698	7.694	(1.003)	288727	21.9634	5490.84
7	Chloroethane	64	1.411	1.411	(0.337)	67682	18.2501	4562.52
28	Chloroform	83	3.911	3.911	(0.935)	184612	18.9291	4732.27
3	Chloromethane	50	1.089	1.089	(0.260)	104623	19.5754	4893.84
27	cis-1,2-Dichloroethene	96	3.533	3.533	(0.844)	487730	84.8462	21211.54
46	cis-1,3-Dichloropropene	75	6.161	6.157	(1.240)	161162	19.5955	4898.87
55	Dibromochloromethane	129	7.176	7.176	(0.936)	104676	20.3419	5085.46
44	Dibromomethane	93	5.557	5.557	(1.118)	64141	19.5907	4897.67
2	Dichlorodifluoromethane	85	0.980	0.980	(0.234)	92917	16.7533	4188.32
61	Ethylbenzene	106	7.802	7.802	(1.017)	151069	22.7486	5687.15
91	Hexachlorobutadiene	225	11.484	11.480	(1.188)	62760	23.0979	5774.48
67	Isopropylbenzene	105	8.563	8.563	(1.116)	465289	23.2995	5824.86
62	m,p-Xylenes	106	7.907	7.907	(1.031)	378599	45.8349	11458.72
17	Methylene Chloride	84	2.311	2.311	(0.552)	325455	61.4106	15352.65
87	n-Butylbenzene	91	9.995	9.995	(1.034)	325401	24.8543	6213.56
73	n-Propylbenzene	91	8.916	8.912	(0.922)	528253	24.7894	6197.35
92	Naphthalene	128	11.551	11.547	(1.195)	46426	14.1056	3526.38
63	o-Xylene	106	8.245	8.245	(1.075)	176297	21.9549	5488.72
81	sec-Butylbenzene	105	9.523	9.523	(0.985)	450642	24.7472	6186.79
64	Styrene	104	8.264	8.260	(1.077)	285413	21.5837	5395.93
78	tert-Butylbenzene	119	9.339	9.339	(0.966)	321119	24.1474	6036.84
56	Tetrachloroethene	164	6.933	6.929	(0.904)	104332	23.2068	5801.69
50	Toluene	91	6.449	6.449	(0.841)	433162	22.2258	5556.45
20	trans-1,2-Dichloroethene	96	2.539	2.539	(0.607)	100431	19.7445	4936.13
51	trans-1,3-Dichloropropene	75	6.685	6.685	(1.346)	131492	19.3054	4826.33
38	Trichloroethene	130	5.208	5.208	(1.048)	176679	31.7484	7937.11
8	Trichlorofluoromethane	101	1.568	1.572	(0.375)	182355	20.0281	5007.01
5	Vinyl Chloride	62	1.152	1.152	(0.275)	225449	37.1846	9296.15



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Sample Info: HS22081514-22MS;HS22081514-22MS;3;;MS
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

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Inj Date : 01-SEP-2022 15:47
InstruID : voa6.i
LabSampID : HS22081514-22MS

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090118.D Page 1
Report Date: 09-Sep-2022 16:52

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090118.D
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Inj Date : 01-SEP-2022 16:08
Operator : PC Inst ID: voa6.i
Smp Info : HS22081514-22MSD;HS22081514-22MSD;3;;MSD
Misc Info : HS22052000V6;WATER;0;250;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\8260W.m
Meth Date : 09-Sep-2022 16:51 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 17 QC Sample: MSD
Dil Factor: 250.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	250.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
Cpnd Variable		Local Compound Variable

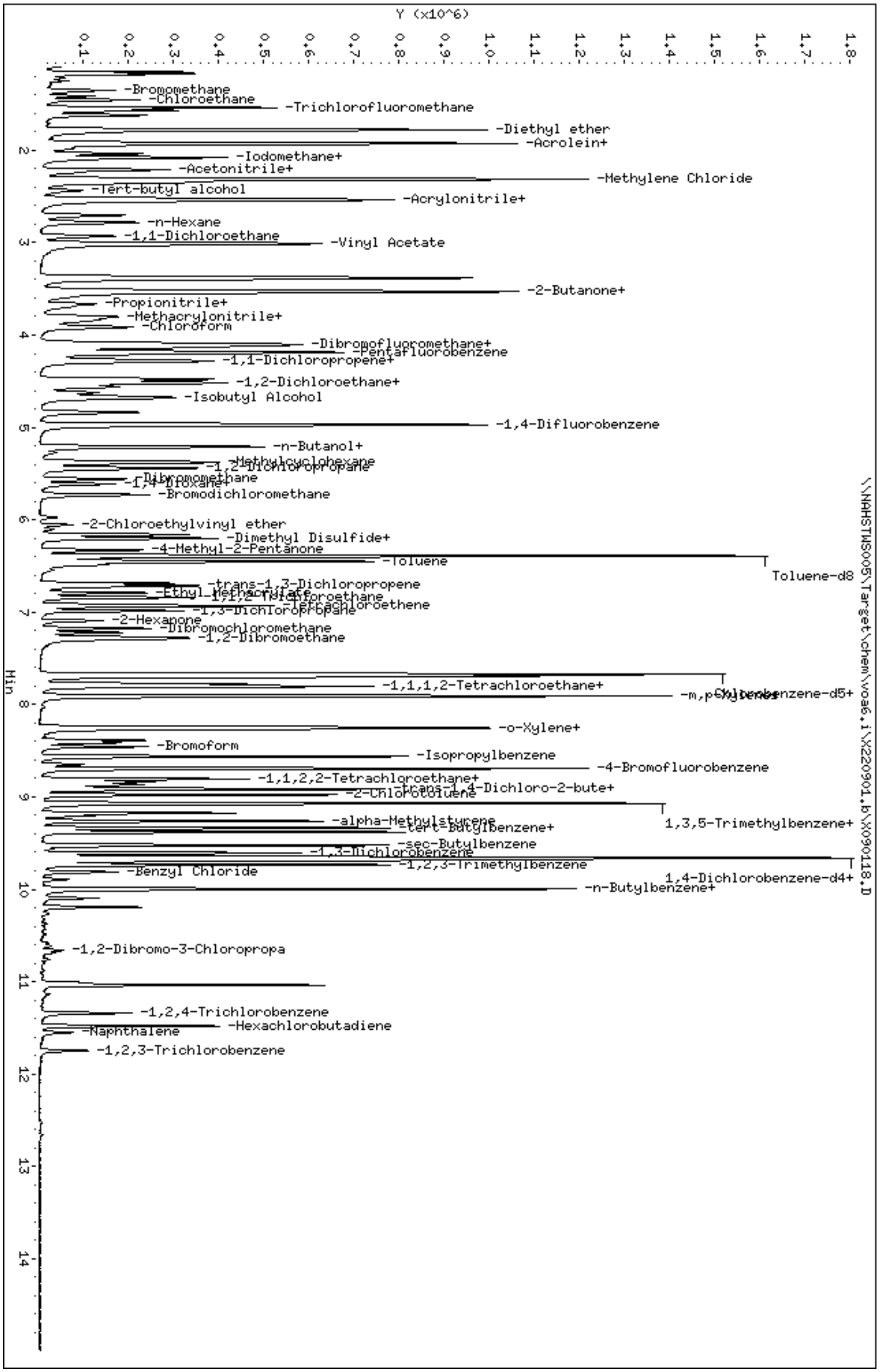
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.189	4.189	(1.000)	592588	50.0000	
* 36 1,4-Difluorobenzene	114	4.969	4.968	(1.000)	832021	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	719189	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.665	(1.000)	342409	50.0000	
$ 30 Dibromofluoromethane	113	4.106	4.106	(0.980)	262720	46.9373	46.93
$ 35 1,2-Dichloroethane-d4	65	4.478	4.477	(1.069)	280008	45.6918	45.69
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	961446	53.5806	53.58
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	315919	49.2122	49.21
60 1,1,1,2-Tetrachloroethane	131	7.776	7.776	(1.014)	102726	20.3308	5082.70
31 1,1,1-Trichloroethane	97	4.091	4.087	(0.977)	156936	18.6684	4667.10
68 1,1,2,2-Tetrachloroethane	83	8.837	8.841	(0.915)	94123	19.5721	4893.02
53 1,1,2-Trichloroethane	83	6.843	6.839	(0.892)	72893	19.7129	4928.22
22 1,1-Dichloroethane	63	2.933	2.929	(0.700)	167155	18.3225	4580.63
11 1,1-Dichloroethene	96	1.925	1.924	(0.460)	92462	18.6917	4672.92
32 1,1-Dichloropropene	75	4.286	4.286	(0.863)	135480	20.1758	5043.93
93 1,2,3-Trichlorobenzene	180	11.746	11.742	(1.216)	34726	19.5086	4877.14
71 1,2,3-Trichloropropane	75	8.867	8.863	(0.918)	74886	20.1964	5049.10(M)
90 1,2,4-Trichlorobenzene	180	11.341	11.337	(1.174)	63118	20.2388	5059.69
79 1,2,4-Trimethylbenzene	105	9.381	9.381	(0.971)	357340	21.7567	5439.16
89 1,2-Dibromo-3-Chloropropane	155	10.663	10.659	(1.104)	6745	19.3515	4837.86

57	1,2-Dibromoethane	107	7.263	7.263 (0.947)	92509	19.7308	4932.70
88	1,2-Dichlorobenzene	146	9.996	9.995 (1.035)	178515	20.8356	5208.90

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
33	1,2-Dichloroethane	62	4.564	4.560	(0.919)	131418	18.0099	4502.48
42	1,2-Dichloropropane	63	5.441	5.441	(1.095)	96055	18.7564	4689.08
75	1,3,5-Trimethylbenzene	105	9.070	9.066	(0.939)	360996	21.7048	5426.19
83	1,3-Dichlorobenzene	146	9.606	9.605	(0.994)	200024	21.0545	5263.63
54	1,3-Dichloropropane	76	6.985	6.985	(0.911)	148080	19.6872	4921.80
84	1,4-Dichlorobenzene	146	9.684	9.684	(1.002)	210765	20.8972	5224.29
26	2,2-Dichloropropane	77	3.514	3.514	(0.839)	151282	18.5159	4628.96
24	2-Butanone	43	3.589	3.585	(0.857)	45739	30.7674	7691.85
76	2-Chlorotoluene	91	8.976	8.976	(0.929)	307685	20.9639	5240.96
52	2-Hexanone	43	7.090	7.090	(0.924)	79464	35.1386	8784.65
77	4-Chlorotoluene	91	9.073	9.073	(0.939)	349326	21.3237	5330.93
82	p-Isopropyltoluene	119	9.651	9.650	(0.999)	379564	22.7259	5681.46
45	4-Methyl-2-Pentanone	43	6.329	6.329	(0.825)	126336	36.0513	9012.83
10	Acetone	43	1.985	1.981	(0.474)	39978	27.9538	6988.45
37	Benzene	78	4.519	4.519	(0.909)	376776	19.1104	4777.61
74	Bromobenzene	156	8.807	8.807	(0.912)	122776	20.9962	5249.04
29	Bromochloromethane	128	3.803	3.803	(0.908)	57048	17.0742	4268.55
39	Bromodichloromethane	83	5.730	5.726	(1.153)	130389	18.5561	4639.03
66	Bromoform	173	8.414	8.413	(1.097)	61683	18.4890	4622.25
6	Bromomethane	94	1.351	1.351	(0.323)	74686	17.5835	4395.88
19	Carbon Disulfide	76	2.078	2.078	(0.496)	487614	37.2341	9308.53
34	Carbon Tetrachloride	117	4.271	4.271	(0.860)	138090	19.2408	4810.20
59	Chlorobenzene	112	7.698	7.694	(1.003)	281980	20.6782	5169.54
7	Chloroethane	64	1.411	1.411	(0.337)	67582	17.7807	4445.18
28	Chloroform	83	3.912	3.911	(0.934)	179549	17.9630	4490.75
3	Chloromethane	50	1.089	1.089	(0.260)	101572	18.5459	4636.48
27	cis-1,2-Dichloroethene	96	3.533	3.533	(0.843)	475389	80.6917	20172.91
46	cis-1,3-Dichloropropene	75	6.161	6.157	(1.240)	162685	18.8481	4712.03
55	Dibromochloromethane	129	7.177	7.176	(0.936)	105056	19.6810	4920.24
44	Dibromomethane	93	5.557	5.557	(1.118)	62888	18.3024	4575.61
2	Dichlorodifluoromethane	85	0.980	0.980	(0.234)	89977	15.8198	3954.95
61	Ethylbenzene	106	7.803	7.802	(1.017)	146595	21.2805	5320.11
91	Hexachlorobutadiene	225	11.480	11.480	(1.188)	65041	22.5822	5645.53
67	Isopropylbenzene	105	8.564	8.563	(1.116)	447862	21.6197	5404.92
62	m,p-Xylenes	106	7.908	7.907	(1.031)	360274	42.0467	10511.68
17	Methylene Chloride	84	2.311	2.311	(0.552)	319235	58.7371	14684.26
87	n-Butylbenzene	91	9.996	9.995	(1.035)	324909	23.4117	5852.91
73	n-Propylbenzene	91	8.916	8.912	(0.923)	515246	22.8101	5702.53
92	Naphthalene	128	11.551	11.547	(1.196)	59008	16.9133	4228.32
63	o-Xylene	106	8.245	8.245	(1.075)	172430	20.7005	5175.13
81	sec-Butylbenzene	105	9.523	9.523	(0.986)	439439	22.7657	5691.42
64	Styrene	104	8.264	8.260	(1.077)	282318	20.5814	5145.33
78	tert-Butylbenzene	119	9.340	9.339	(0.967)	319344	22.6543	5663.58
56	Tetrachloroethene	164	6.929	6.929	(0.903)	98614	21.1455	5286.38
50	Toluene	91	6.449	6.449	(0.841)	416445	20.5991	5149.76
20	trans-1,2-Dichloroethene	96	2.540	2.539	(0.606)	98115	18.8209	4705.23
51	trans-1,3-Dichloropropene	75	6.685	6.685	(1.346)	131752	18.4316	4607.89
38	Trichloroethene	130	5.212	5.208	(1.049)	170260	29.1526	7288.15
8	Trichlorofluoromethane	101	1.569	1.572	(0.375)	173064	18.5462	4636.54
5	Vinyl Chloride	62	1.153	1.152	(0.275)	214750	34.5601	8640.02

QC Flag Legend

M - Compound response manually integrated.



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Date : 01-SEP-2022 16:08
Client ID: HS22081514-22HSD
Sample Info: HS22081514-22HSD;HS22081514-22HSD;3;;HSD
Purge Volume: 5.0
Column phase: DB624

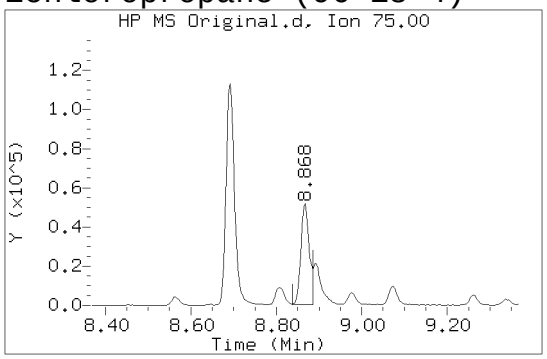
Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090118.D
Inj Date : 01-SEP-2022 16:08
InstruID : voa6.i
LabSampID : HS22081514-22MSD

1,2,3-Trichloropropane (96-18-4)

Reason Code:

BEFORE
MASS
91
AREA
349326
HEIGHT
248785
09-Sep-2022
16:48
linh
pham



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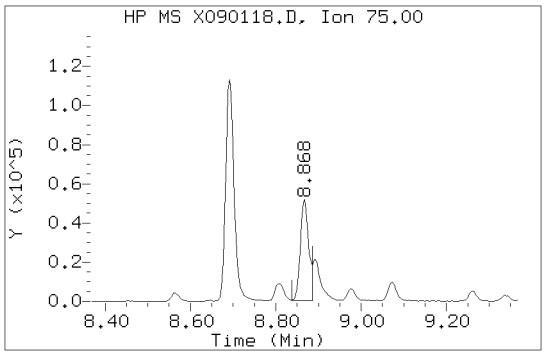

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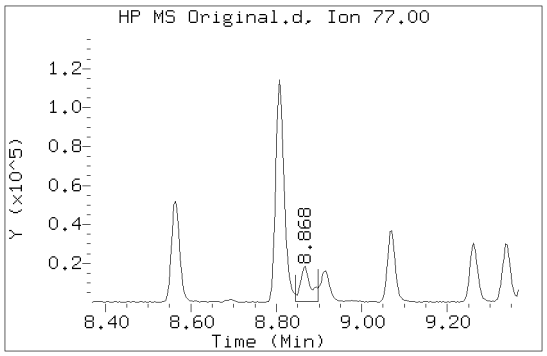

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09-Sep-2022
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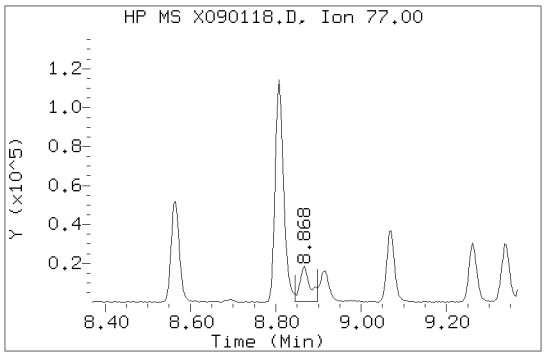


Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090119.D Page 1
Report Date: 09-Sep-2022 16:52

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090119.D
Lab Smp Id: HS22081514-20 Client Smp ID: HS22081514-20
Inj Date : 01-SEP-2022 16:29
Operator : PC Inst ID: voa6.i
Smp Info : HS22081514-20;HS22081514-20;;;
Misc Info : HS22052000V6;WATER;0;5;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\8260W.m
Meth Date : 09-Sep-2022 16:51 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 18
Dil Factor: 5.00000
Integrator: HP RTE Compound Sublist: bhate.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
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	4.189	4.189	(1.000)	569282	50.0000	
* 36 1,4-Difluorobenzene	114	4.969	4.968	(1.000)	793544	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	666897	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.665	(1.000)	287556	50.0000	
$ 30 Dibromofluoromethane	113	4.106	4.106	(0.980)	255813	47.5843	47.58
$ 35 1,2-Dichloroethane-d4	65	4.477	4.477	(1.069)	273272	46.4234	46.42
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	916571	55.0849	55.08
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	277670	46.6025	46.60
27 cis-1,2-Dichloroethene	96	3.540	3.533	(0.845)	52320	9.24427	46.22
38 Trichloroethene	130	5.208	5.208	(1.048)	225383	40.4622	202.31
5 Vinyl Chloride	62	1.152	1.152	(0.275)	11056	1.85210	9.26(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).

01148168

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090119.D

Date : 01-SEP-2022 16:29

Client ID: HS22081514-20

Instrument: voa6.i

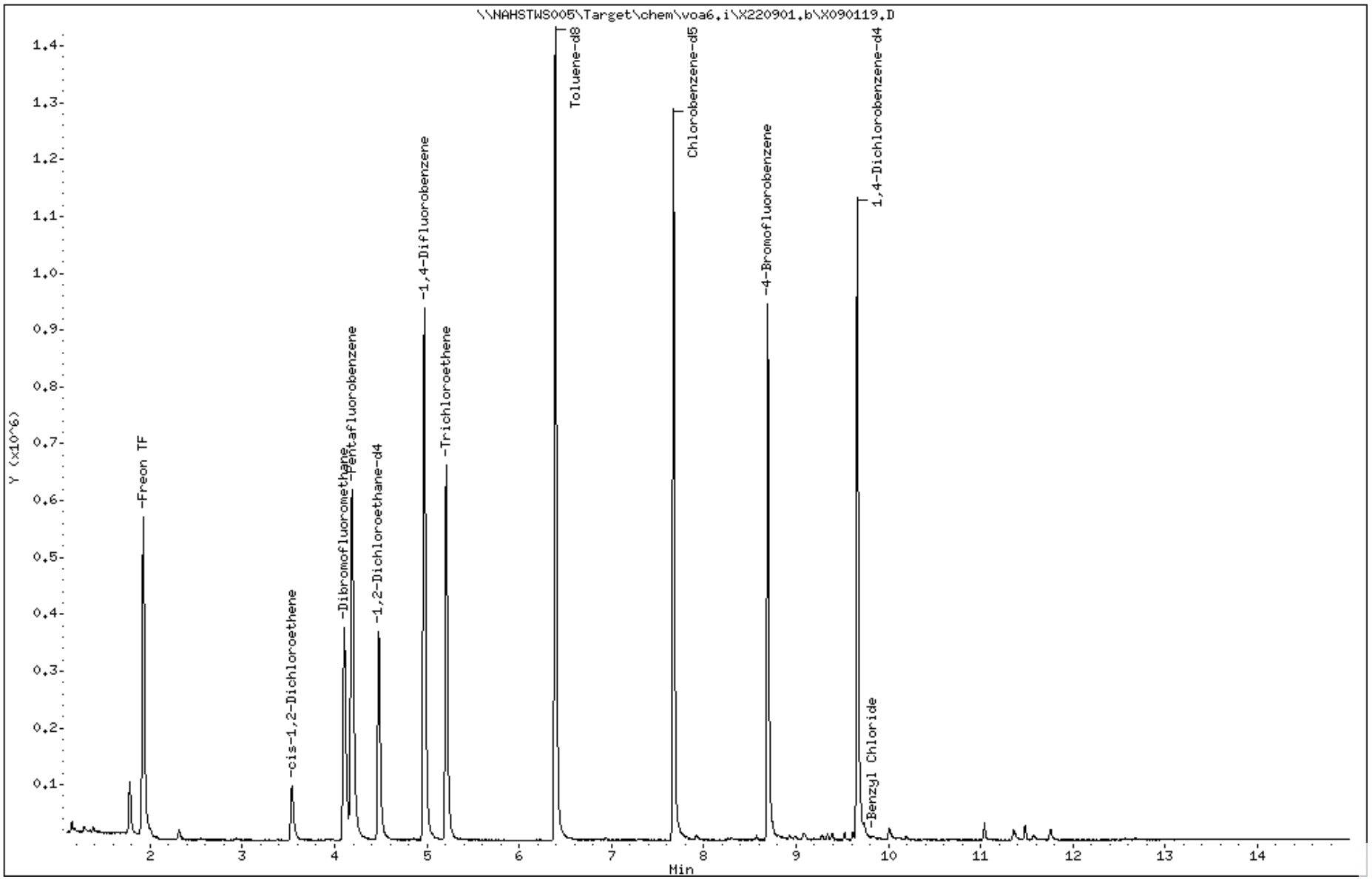
Sample Info: HS22081514-20;HS22081514-20;;;

Purge Volume: 5.0

Operator: PC

Column phase: DB624

Column diameter: 0.18



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Date : 01-SEP-2022 16:29

Client ID: HS22081514-20

Instrument: voa6.i

Sample Info: HS22081514-20;HS22081514-20;;;

Purge Volume: 5.0

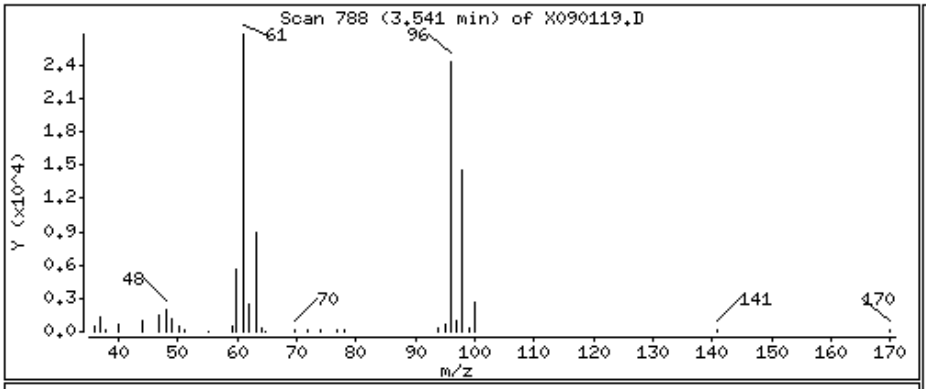
Operator: PC

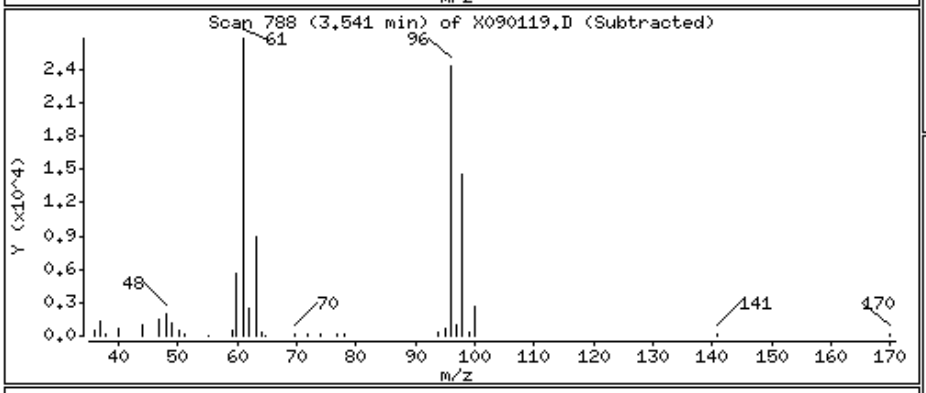
Column phase: DB624

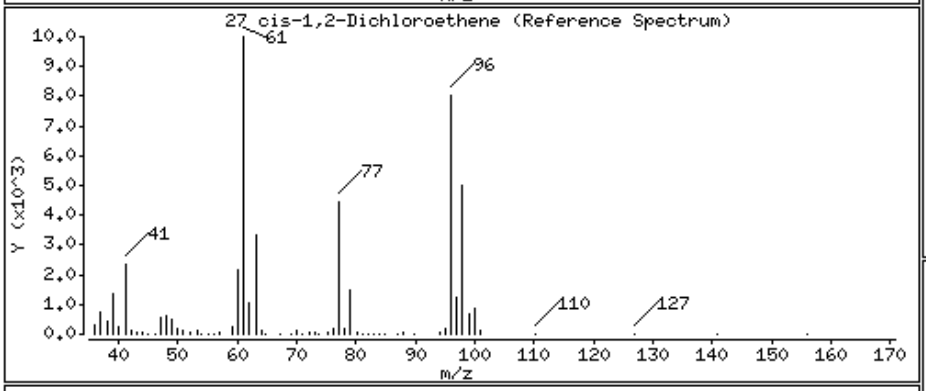
Column diameter: 0.18

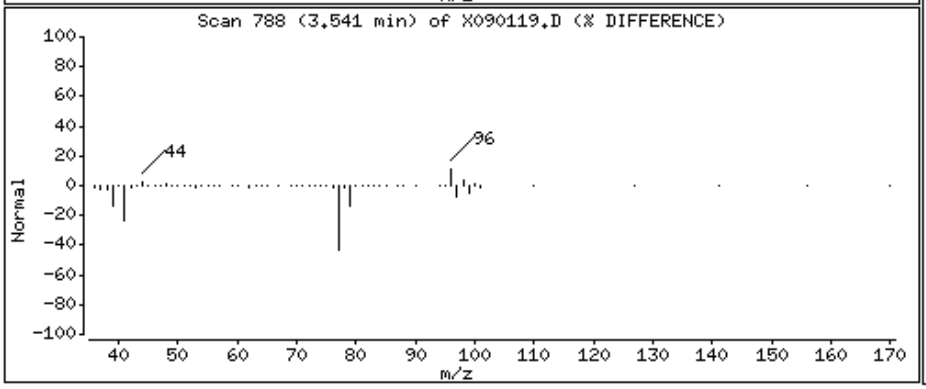
27 cis-1,2-Dichloroethene

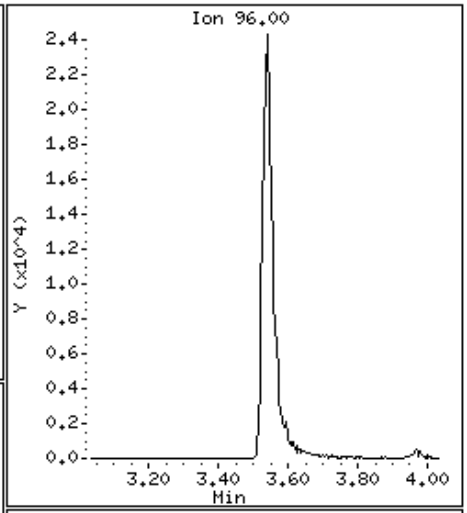
Concentration: 46.22 ug/l

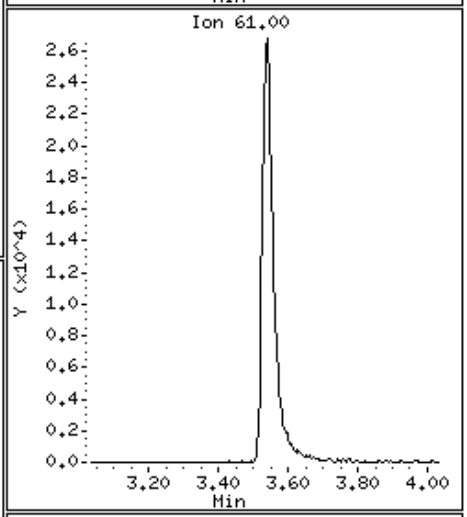


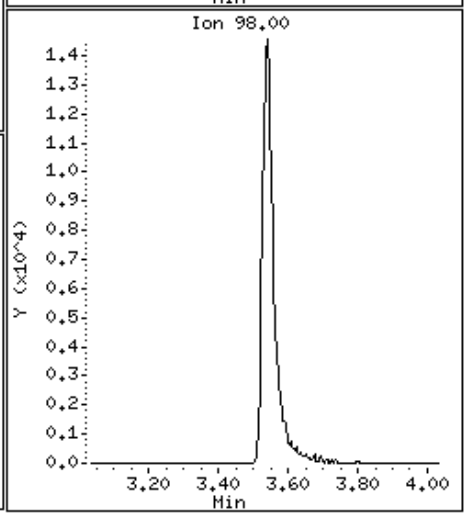












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090119.D

Date : 01-SEP-2022 16:29

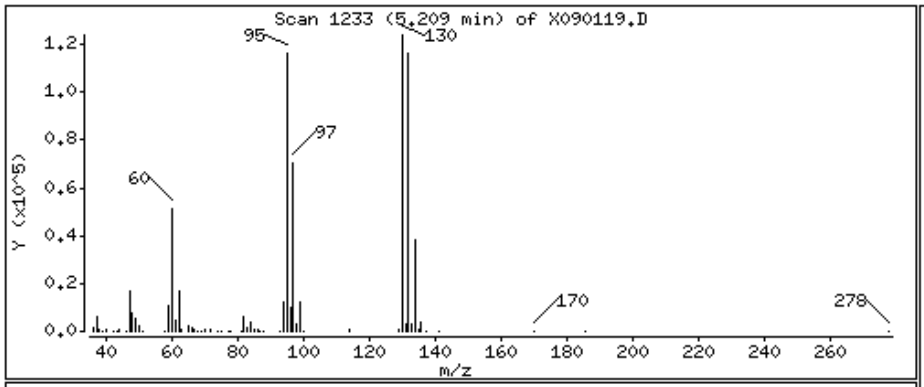
Client ID: HS22081514-20 Instrument: voa6.i

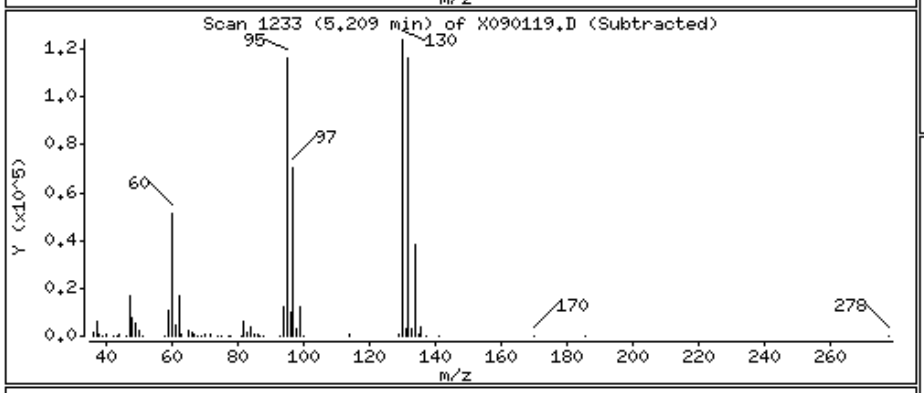
Sample Info: HS22081514-20;HS22081514-20;;;

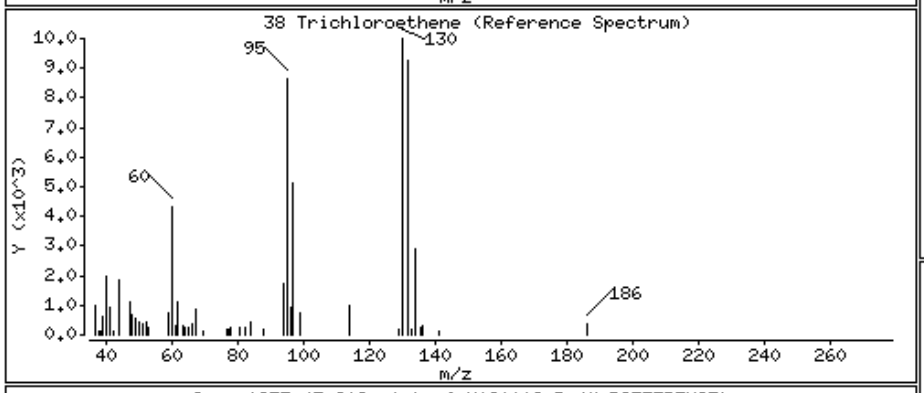
Purge Volume: 5.0 Operator: PC

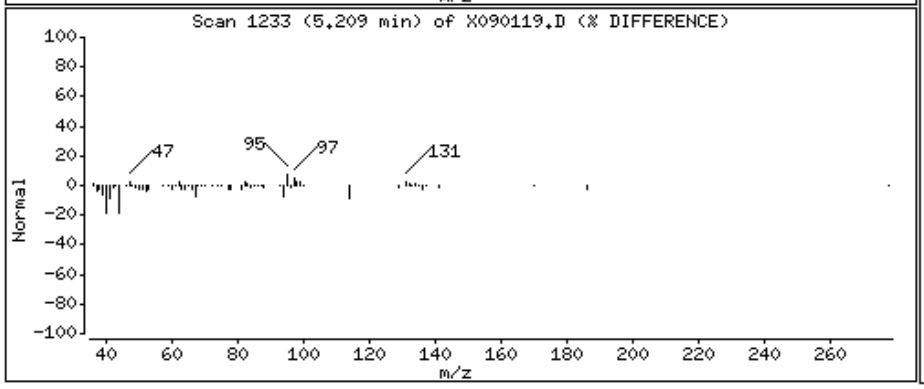
Column phase: DB624 Column diameter: 0.18

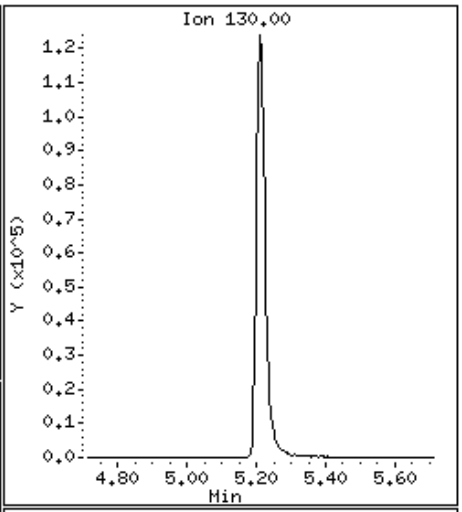
38 Trichloroethene Concentration: 202.31 ug/l

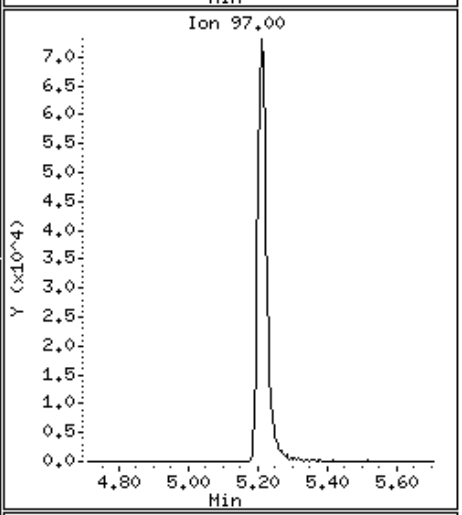


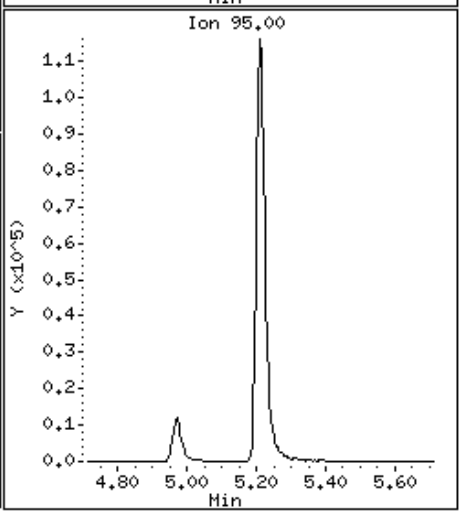












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090119.D

Date : 01-SEP-2022 16:29

Client ID: HS22081514-20

Instrument: voa6.i

Sample Info: HS22081514-20;HS22081514-20;;;

Purge Volume: 5.0

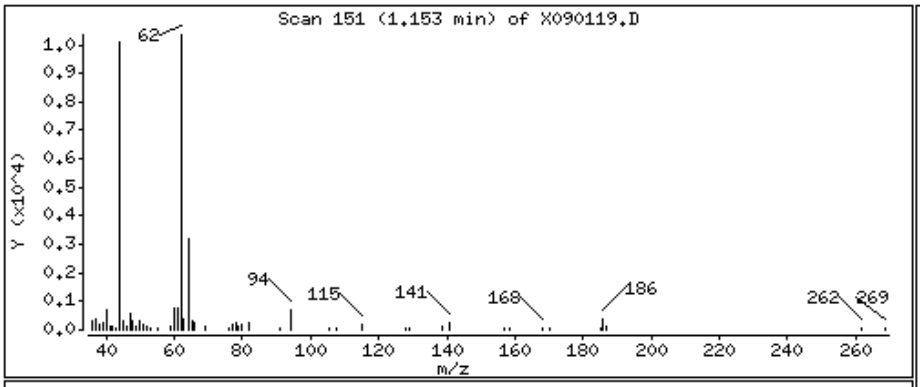
Operator: PC

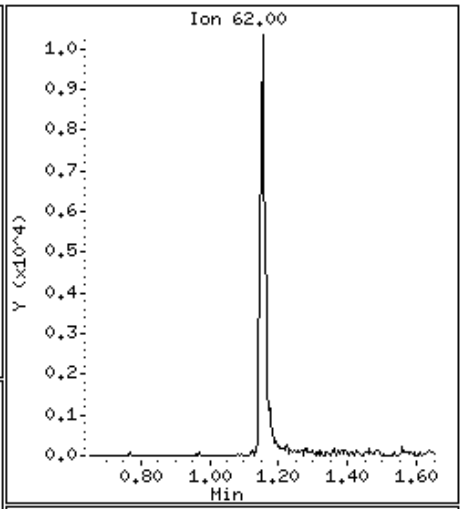
Column phase: DB624

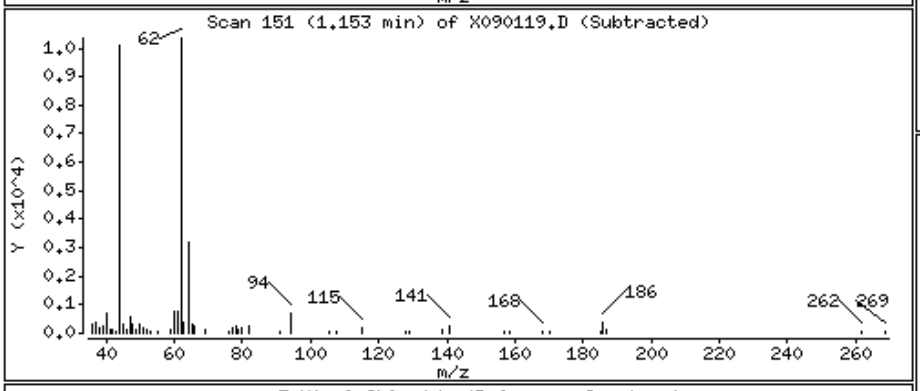
Column diameter: 0.18

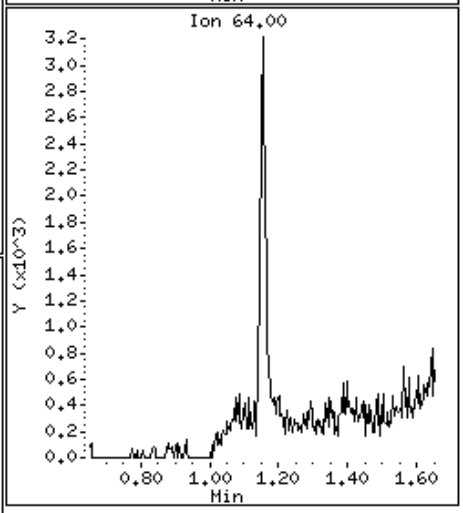
5 Vinyl Chloride

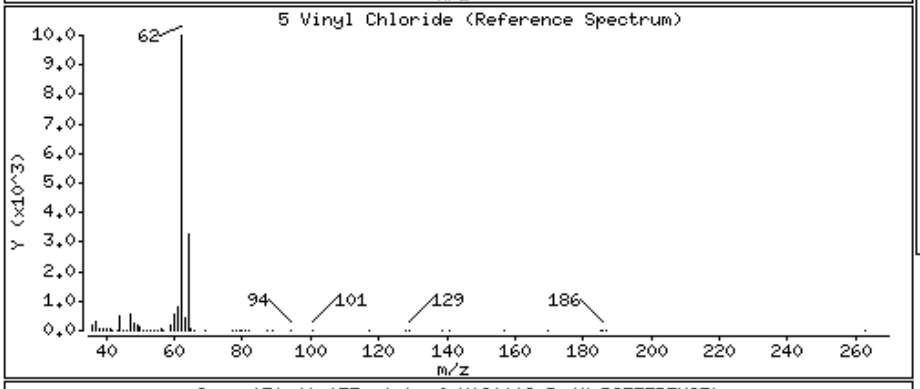
Concentration: 9.26 ug/l

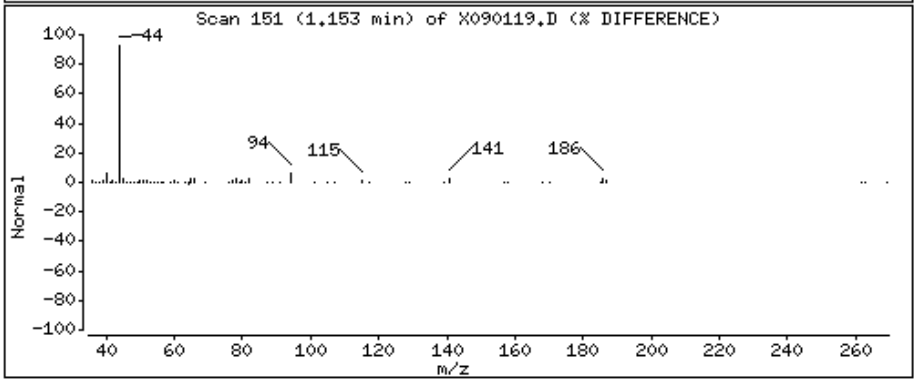












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Inj Date : 01-SEP-2022 16:29
InstruID : voa6.i
LabSampID : HS22081514-20

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090120.D Page 1
Report Date: 09-Sep-2022 16:52

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090120.D
Lab Smp Id: HS22081514-10 Client Smp ID: HS22081514-10
Inj Date : 01-SEP-2022 16:51
Operator : PC Inst ID: voa6.i
Smp Info : HS22081514-10;HS22081514-10;;;
Misc Info : HS22052000V6;WATER;0;500;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\8260W.m
Meth Date : 09-Sep-2022 16:51 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 19
Dil Factor: 500.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	500.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
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	4.185	4.189	(1.000)	577079	50.0000	
* 36 1,4-Difluorobenzene	114	4.968	4.968	(1.000)	809418	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	683406	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.665	(1.000)	292118	50.0000	
$ 30 Dibromofluoromethane	113	4.106	4.106	(0.981)	255597	46.8913	46.89
$ 35 1,2-Dichloroethane-d4	65	4.477	4.477	(1.070)	273909	45.8993	45.89
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	931258	54.6156	54.61
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	283209	46.3801	46.38
33 1,2-Dichloroethane	62	4.571	4.560	(0.920)	7375	1.03892	519.45(a)
27 cis-1,2-Dichloroethene	96	3.533	3.533	(0.844)	458863	79.9798	39989.88
17 Methylene Chloride	84	2.311	2.311	(0.552)	30680	5.00864	2504.32
38 Trichloroethene	130	5.208	5.208	(1.048)	206866	36.4095	18204.77
5 Vinyl Chloride	62	1.152	1.152	(0.275)	12309	2.03415	1017.07(a)

QC Flag Legend

a - Target compound detected but, quantitated amount Below Limit Of Quantitation(BLOQ).

01148174

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090120.D

Page 1

Date : 01-SEP-2022 16:51

Client ID: HS22081514-10

Instrument: voa6.i

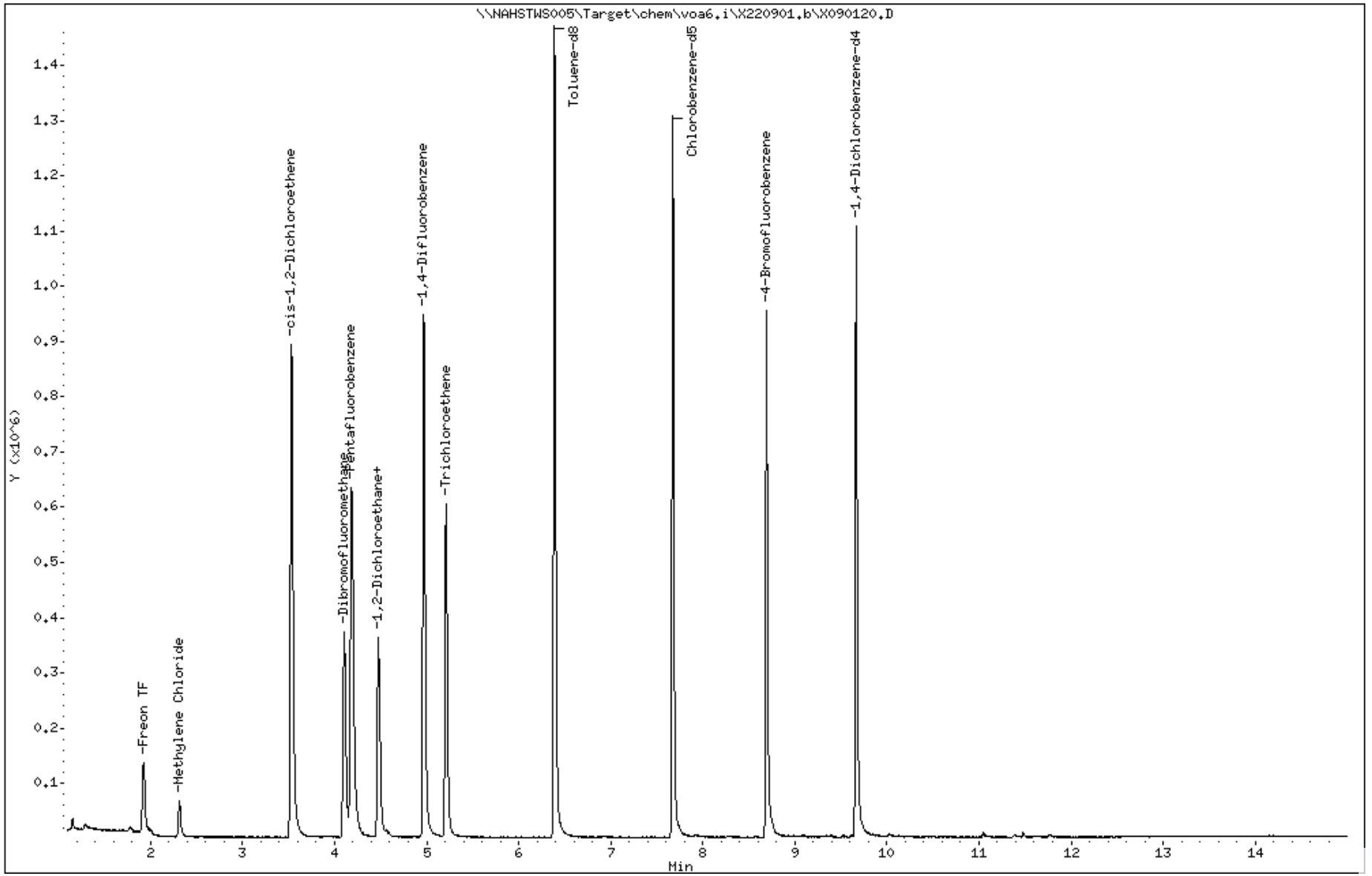
Sample Info: HS22081514-10;HS22081514-10;;;

Purge Volume: 5.0

Operator: PC

Column phase: DB624

Column diameter: 0.18



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Date : 01-SEP-2022 16:51

Client ID: HS22081514-10

Instrument: voa6.i

Sample Info: HS22081514-10;HS22081514-10;;;

Purge Volume: 5.0

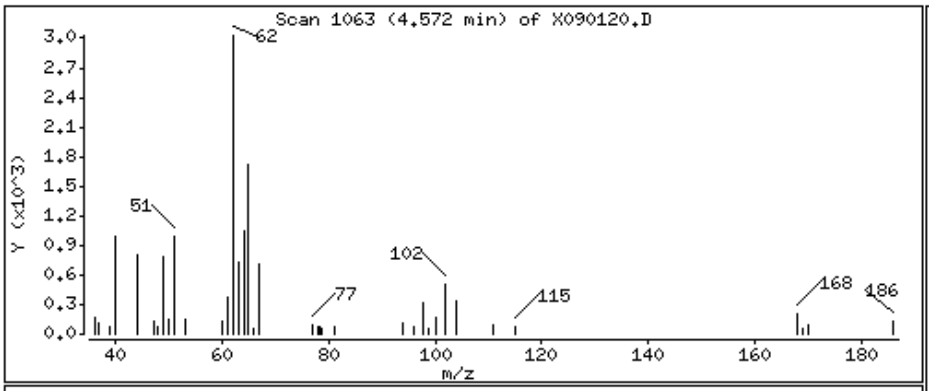
Operator: PC

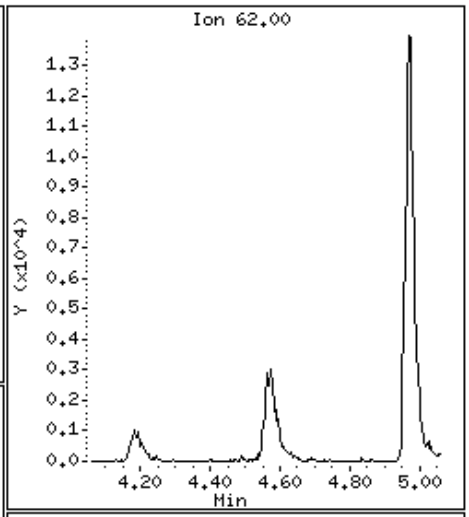
Column phase: DB624

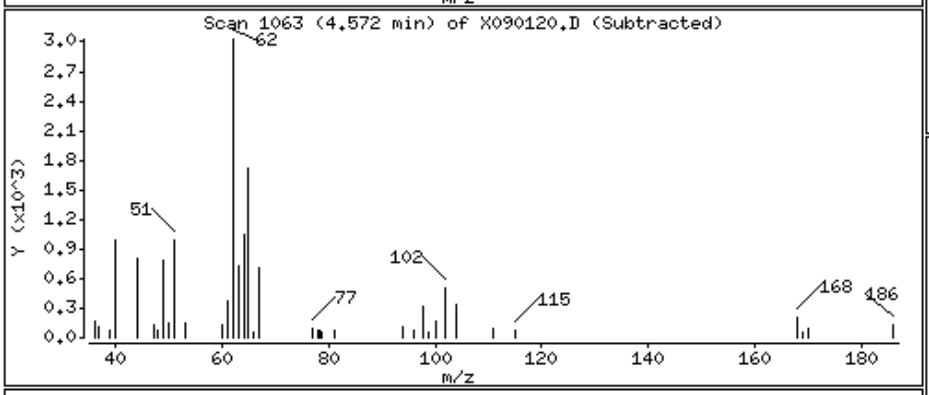
Column diameter: 0.18

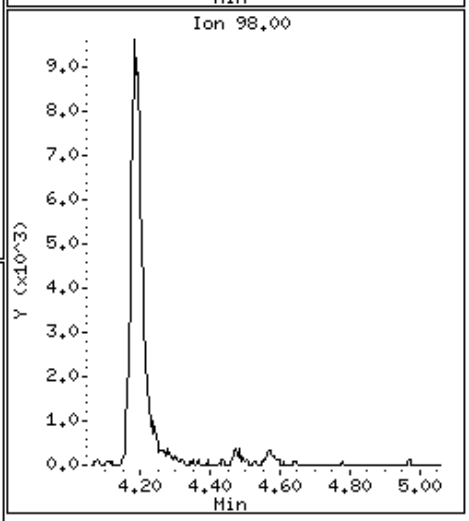
33 1,2-Dichloroethane

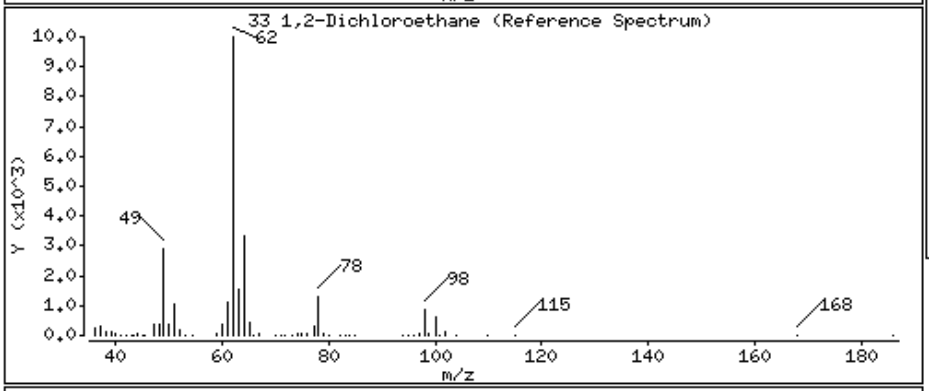
Concentration: 519.45 ug/l

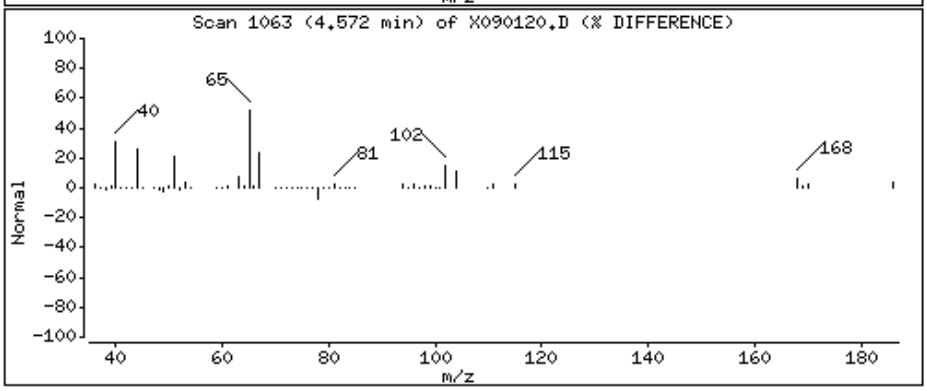












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090120.D Page 3

Date : 01-SEP-2022 16:51

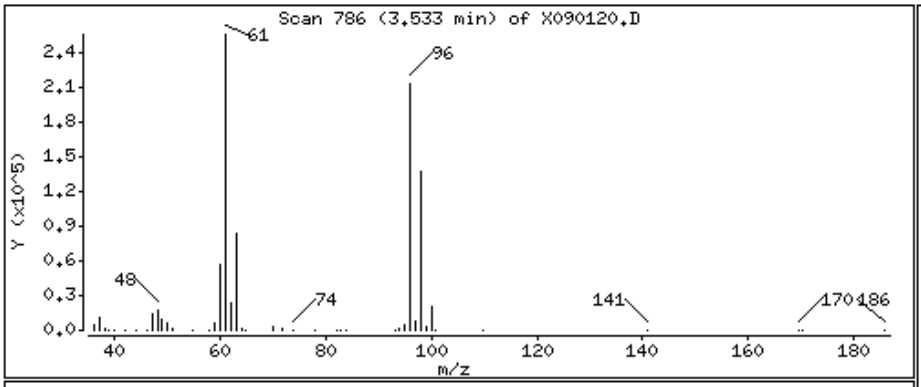
Client ID: HS22081514-10 Instrument: voa6.i

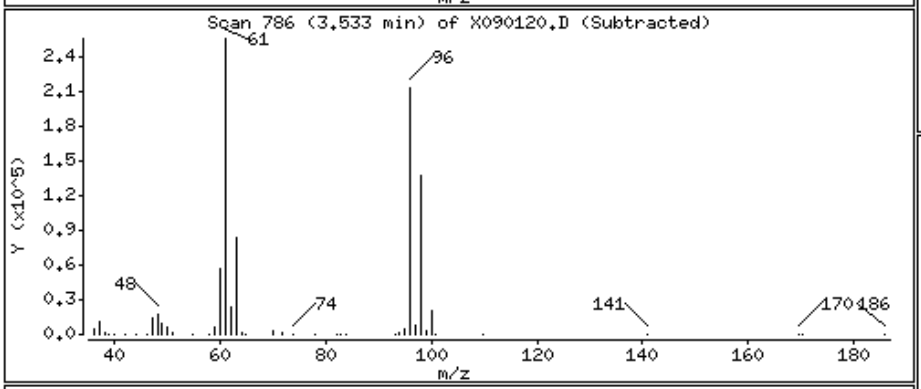
Sample Info: HS22081514-10;HS22081514-10;;;

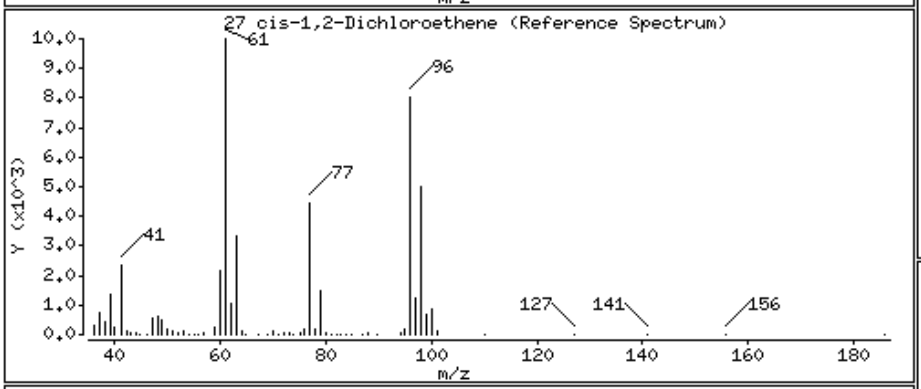
Purge Volume: 5.0 Operator: PC

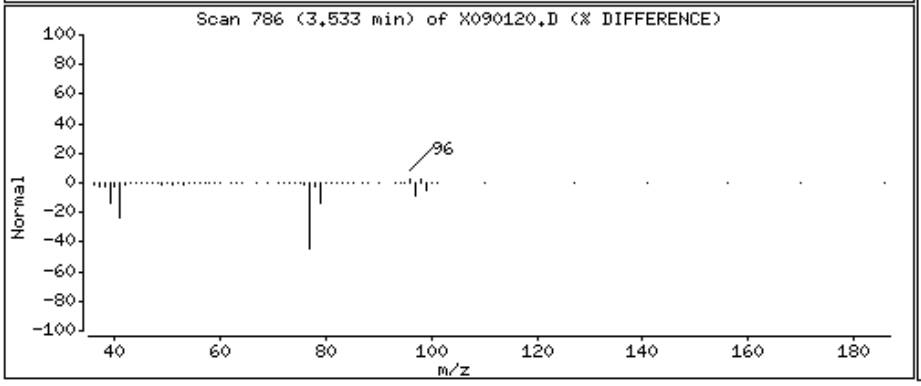
Column phase: DB624 Column diameter: 0.18

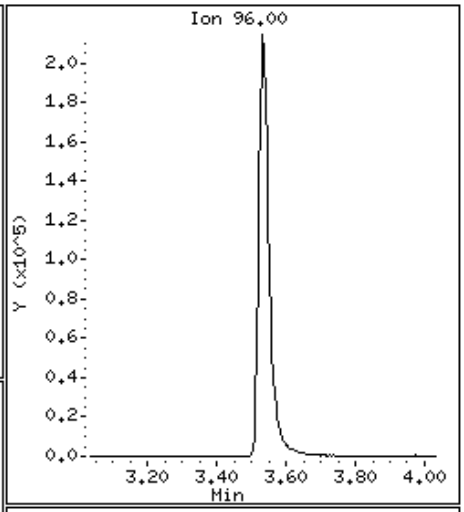
27 cis-1,2-Dichloroethene Concentration: 39989.88 ug/l

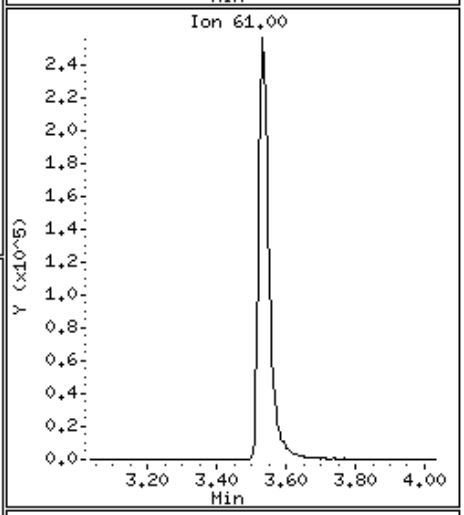


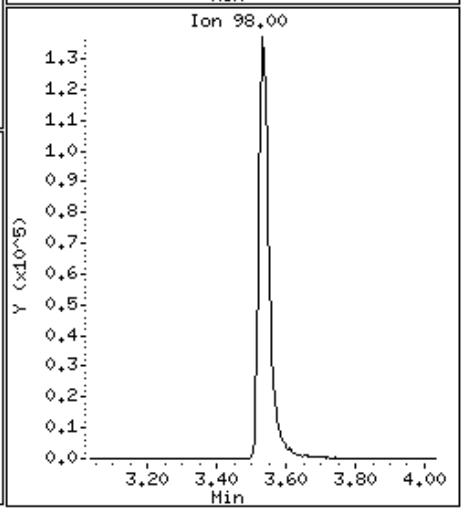












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Date : 01-SEP-2022 16:51

Client ID: HS22081514-10

Instrument: voa6.i

Sample Info: HS22081514-10;HS22081514-10;;;

Purge Volume: 5.0

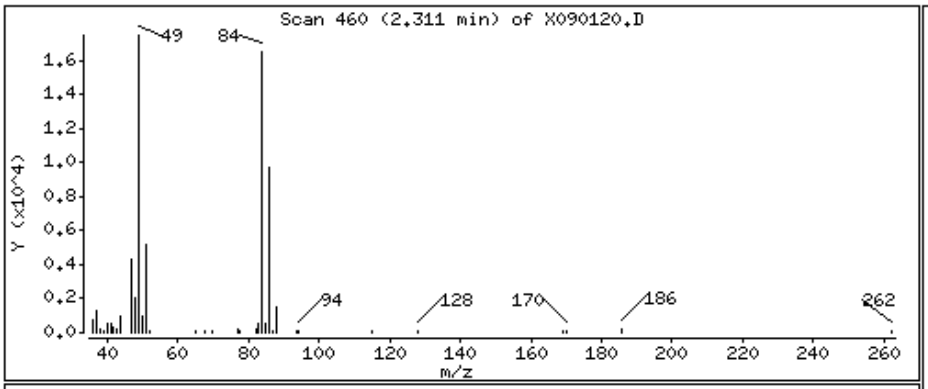
Operator: PC

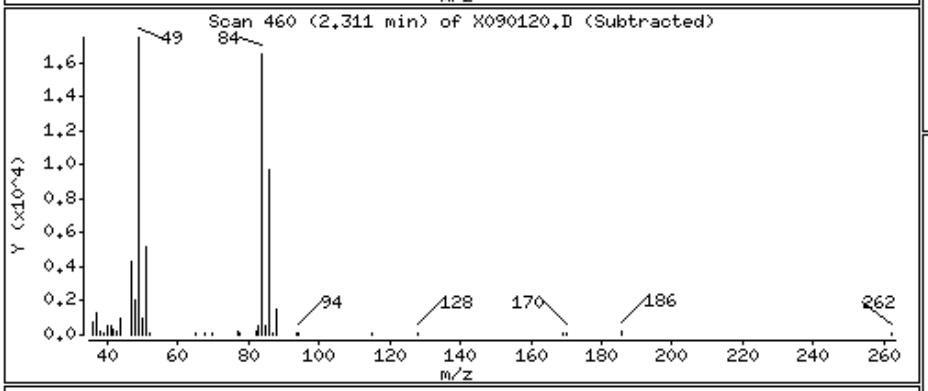
Column phase: DB624

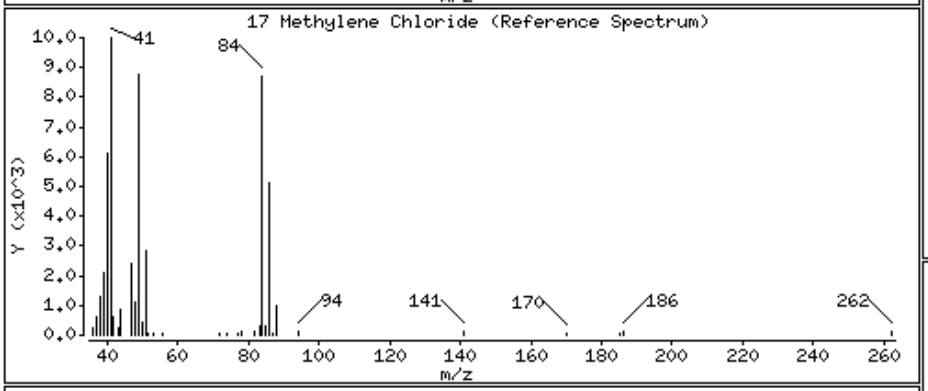
Column diameter: 0.18

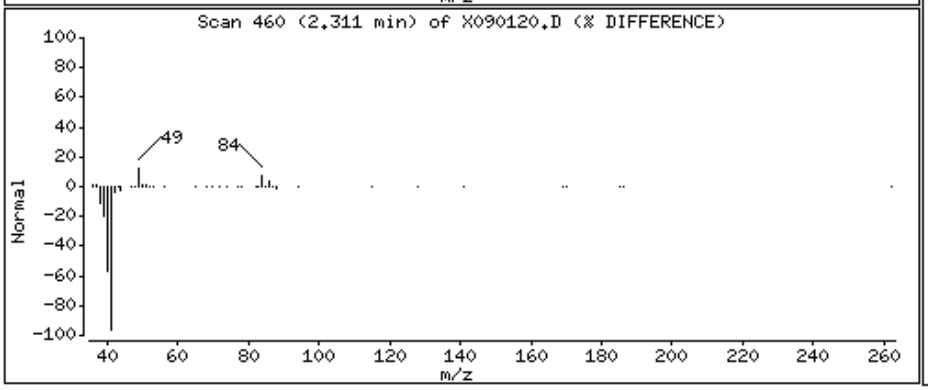
17 Methylene Chloride

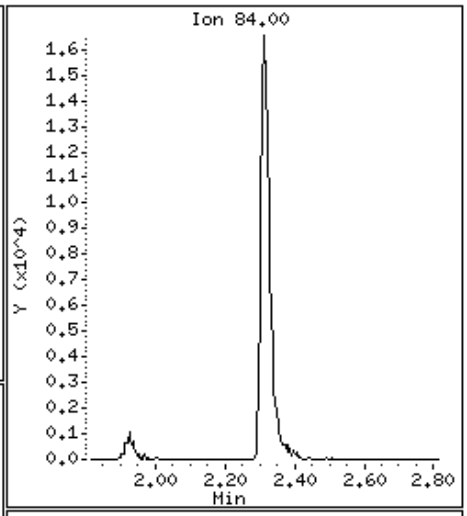
Concentration: 2504.32 ug/l

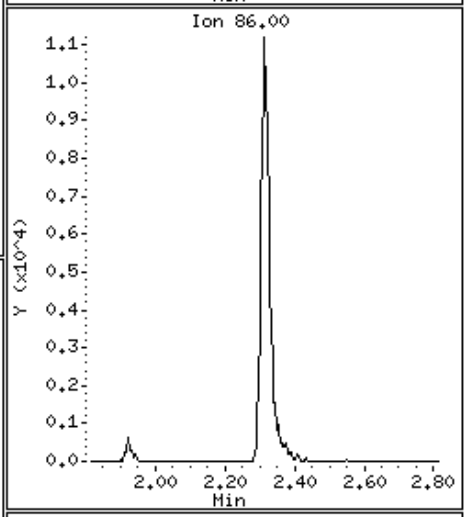


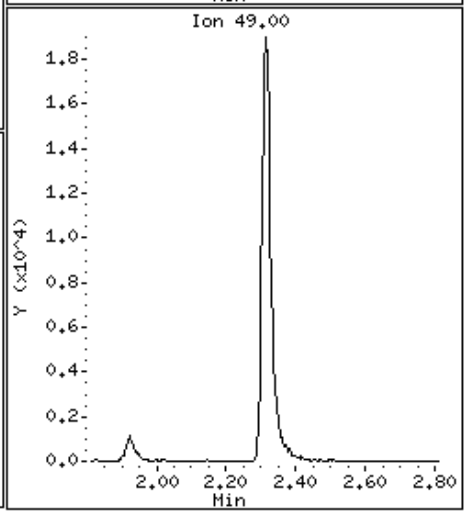












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090120.D

Date : 01-SEP-2022 16:51

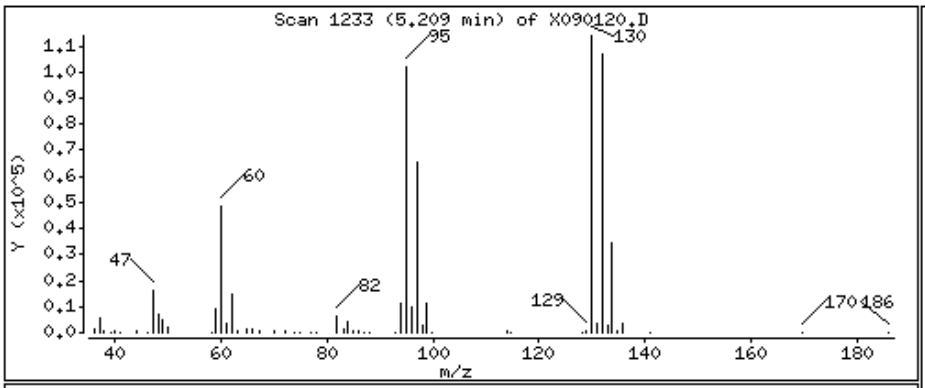
Client ID: HS22081514-10 Instrument: voa6.i

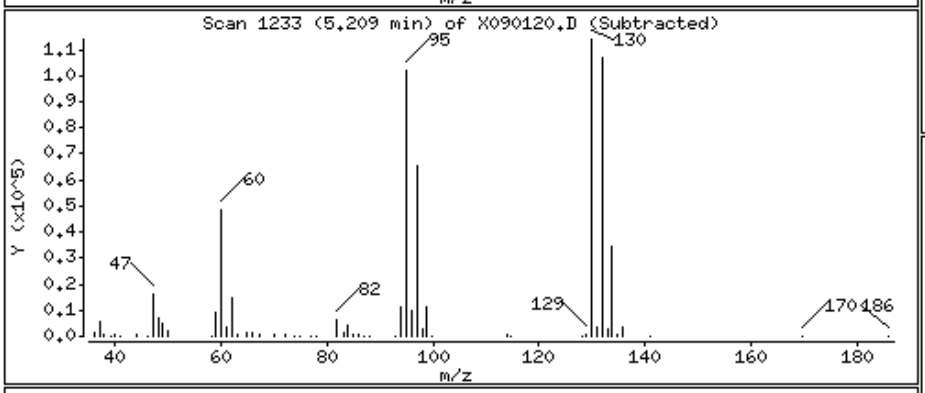
Sample Info: HS22081514-10;HS22081514-10;;;

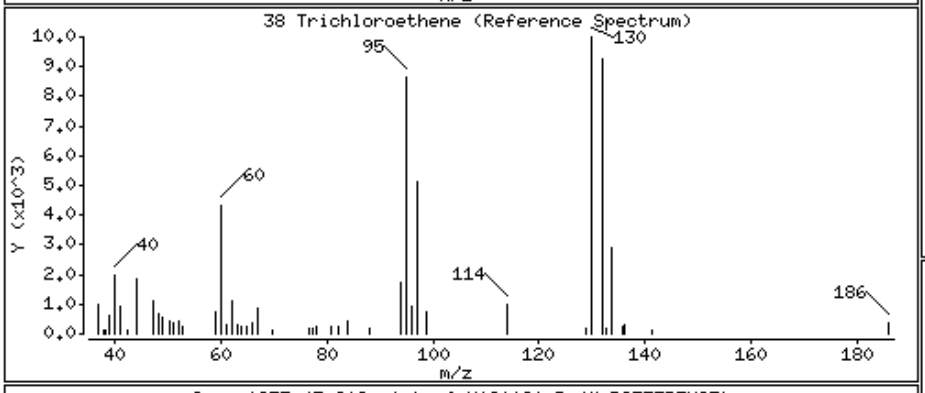
Purge Volume: 5.0 Operator: PC

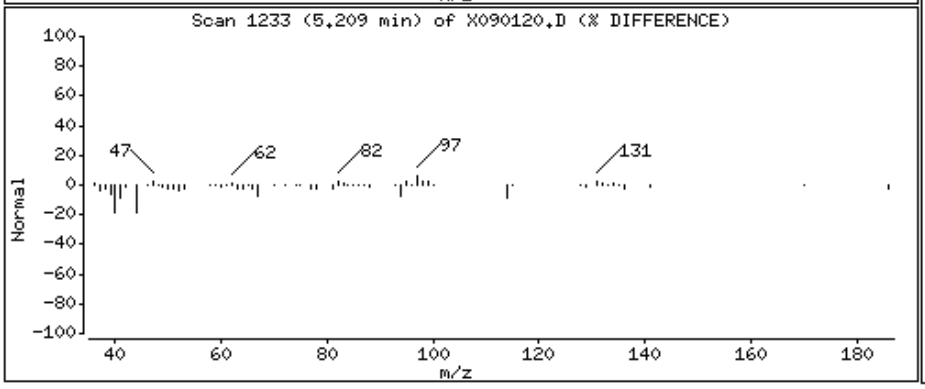
Column phase: DB624 Column diameter: 0.18

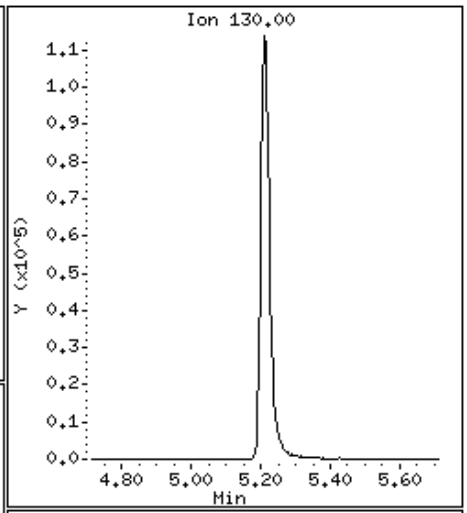
38 Trichloroethene Concentration: 18204.77 ug/l

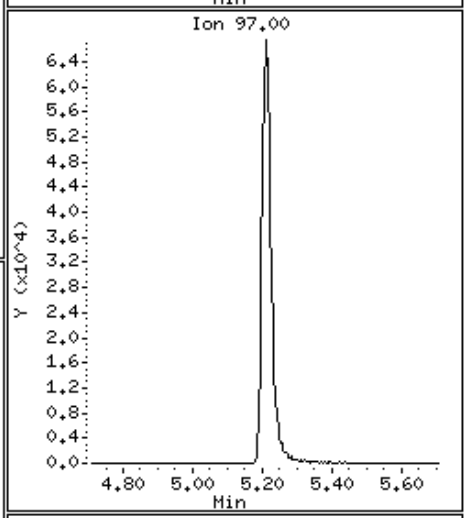


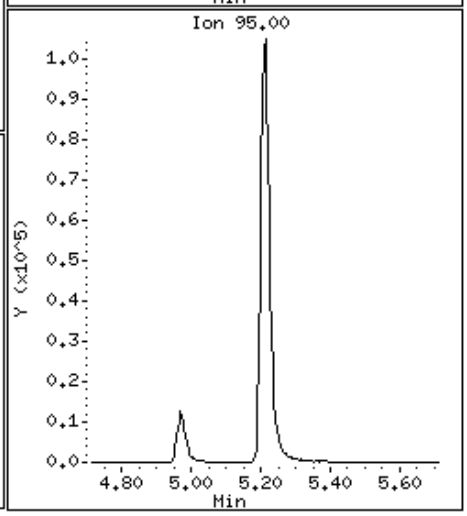












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090120.D

Date : 01-SEP-2022 16:51

Client ID: HS22081514-10

Instrument: voa6.i

Sample Info: HS22081514-10;HS22081514-10;;;

Purge Volume: 5.0

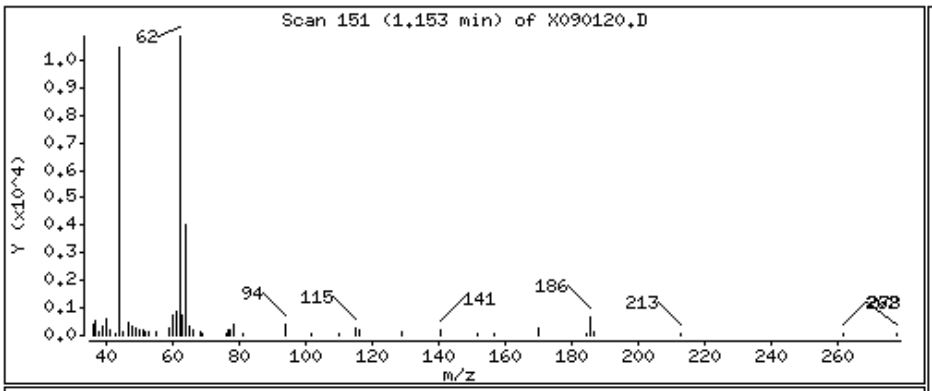
Operator: PC

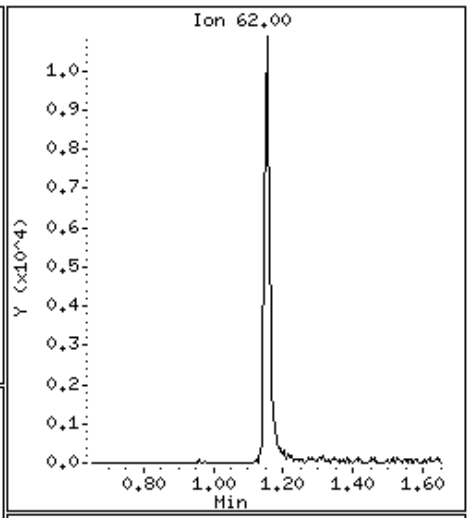
Column phase: DB624

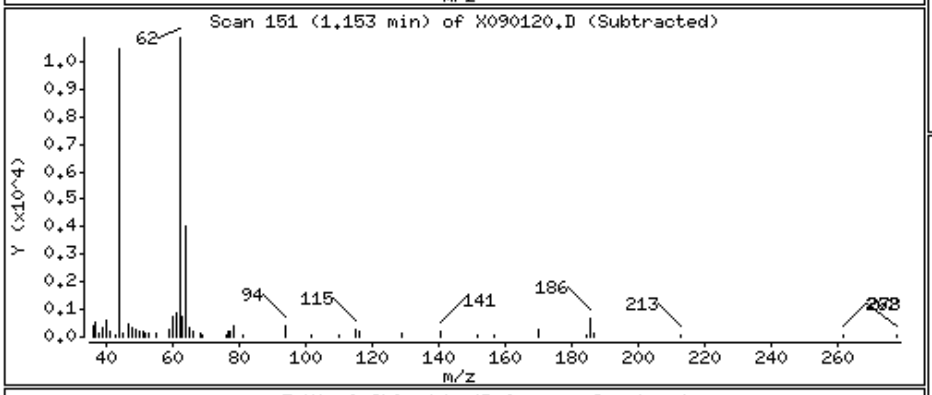
Column diameter: 0.18

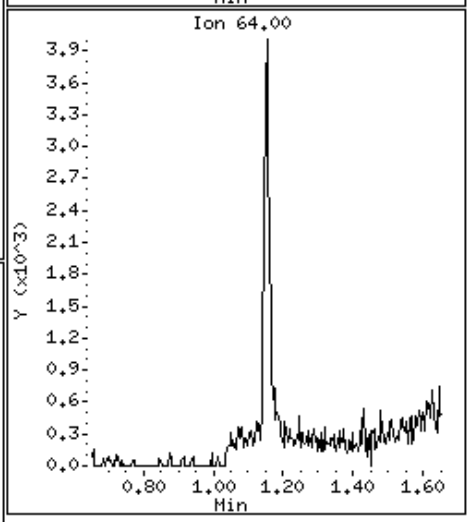
5 Vinyl Chloride

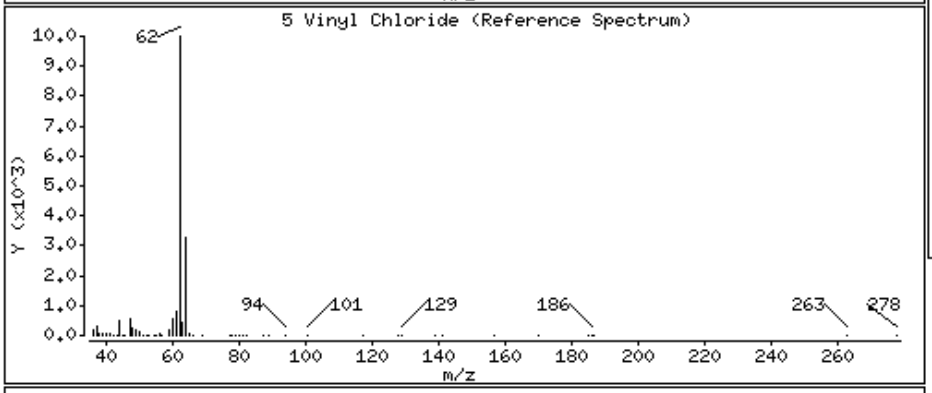
Concentration: 1017.07 ug/l

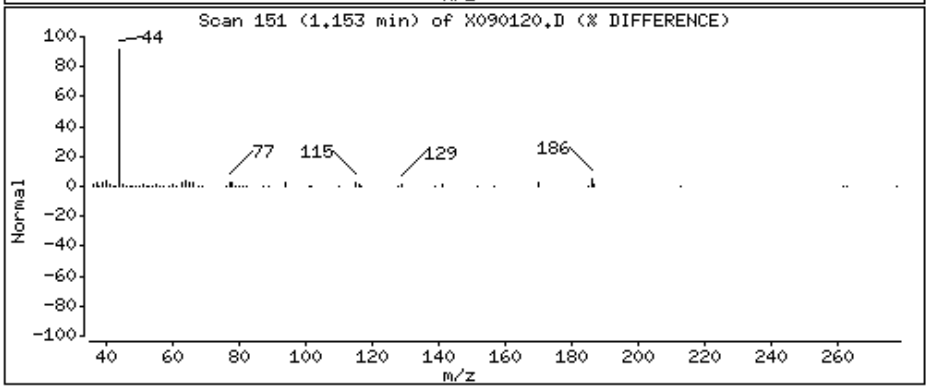












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Inj Date : 01-SEP-2022 16:51
InstruID : voa6.i
LabSampID : HS22081514-10

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090121.D Page 1
Report Date: 09-Sep-2022 16:52

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090121.D
Lab Smp Id: HS22081514-11 Client Smp ID: HS22081514-11
Inj Date : 01-SEP-2022 17:12
Operator : PC Inst ID: voa6.i
Smp Info : HS22081514-11;HS22081514-11;;;
Misc Info : HS22052000V6;WATER;0;500;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\8260W.m
Meth Date : 09-Sep-2022 16:51 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 20
Dil Factor: 500.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	500.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
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	4.185	4.189	(1.000)	590474	50.0000	
* 36 1,4-Difluorobenzene	114	4.969	4.968	(1.000)	810593	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	696955	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.665	(1.000)	301730	50.0000	
$ 30 Dibromofluoromethane	113	4.106	4.106	(0.981)	258187	46.2826	46.28
$ 35 1,2-Dichloroethane-d4	65	4.478	4.477	(1.070)	273617	44.8024	44.80
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	941735	54.1564	54.15
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	287695	46.1956	46.19
33 1,2-Dichloroethane	62	4.571	4.560	(0.920)	5439	0.76508	382.54(a)
27 cis-1,2-Dichloroethene	96	3.533	3.533	(0.844)	283514	48.2954	24147.71
17 Methylene Chloride	84	2.315	2.311	(0.553)	14683	1.87734	938.67(a)
38 Trichloroethene	130	5.209	5.208	(1.048)	187670	32.9831	16491.53
5 Vinyl Chloride	62	1.153	1.152	(0.275)	6782	1.09535	547.67(a)

QC Flag Legend

a - Target compound detected but, quantitated amount Below Limit Of Quantitation(BLOQ).

01148182

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090121.D

Date : 01-SEP-2022 17:12

Client ID: HS22081514-11

Instrument: voa6.i

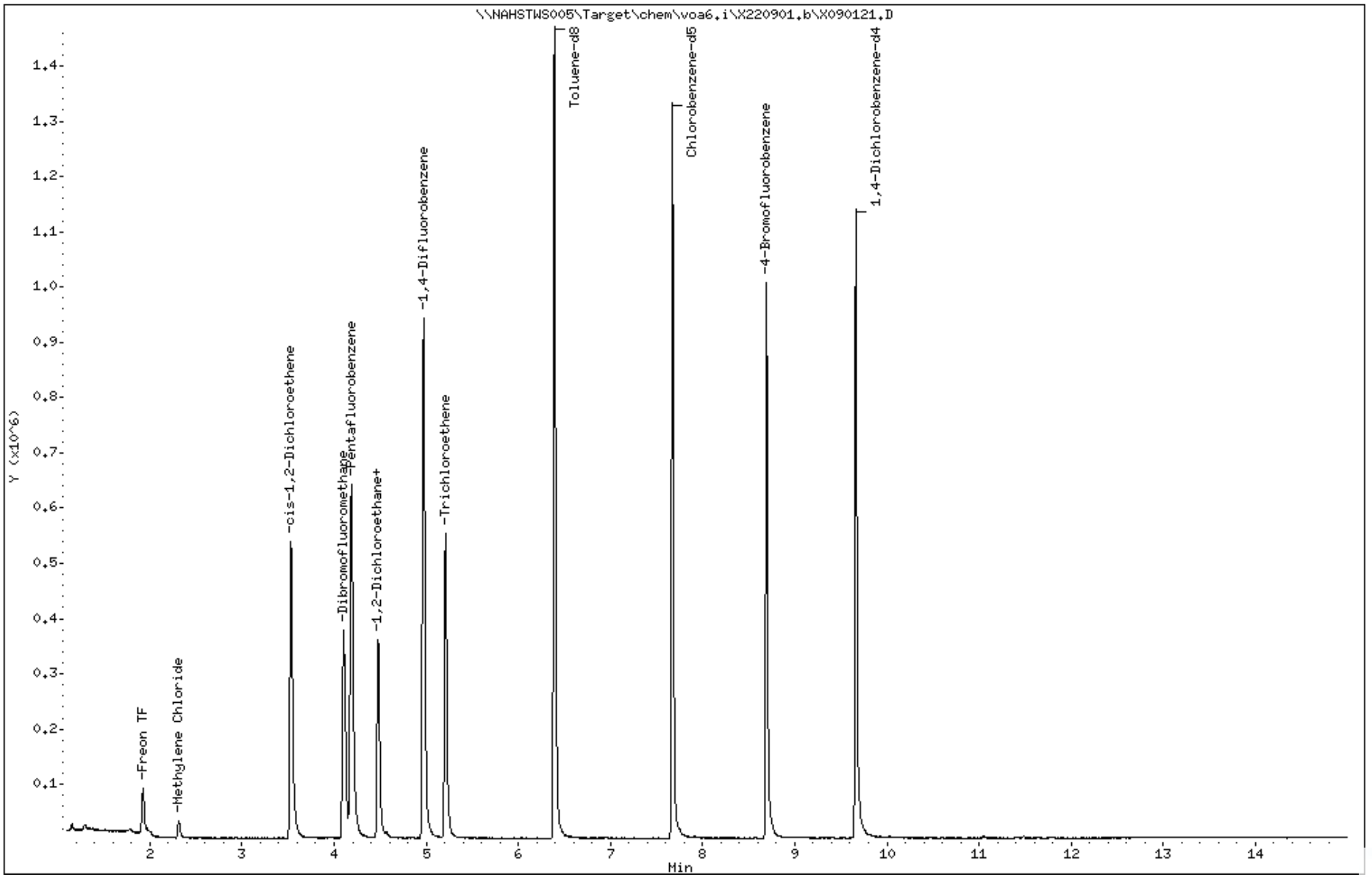
Sample Info: HS22081514-11;HS22081514-11;;;

Purge Volume: 5.0

Operator: PC

Column phase: DB624

Column diameter: 0.18



Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090121.D

Date : 01-SEP-2022 17:12

Client ID: HS22081514-11

Instrument: voa6.i

Sample Info: HS22081514-11;HS22081514-11;;;

Purge Volume: 5.0

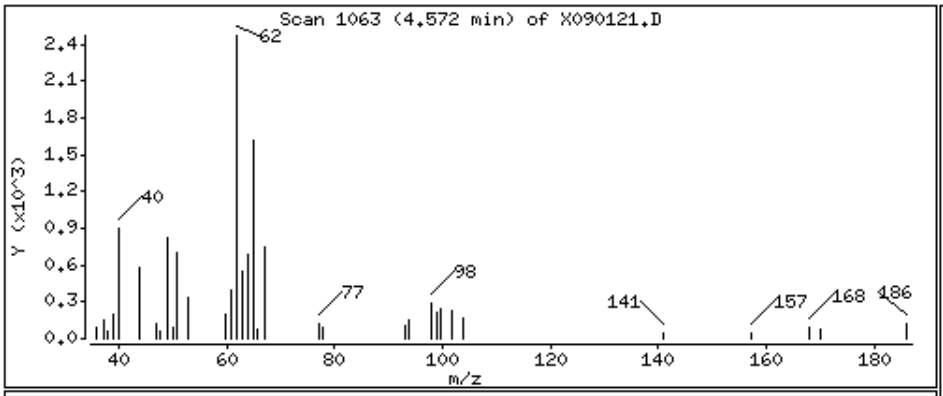
Operator: PC

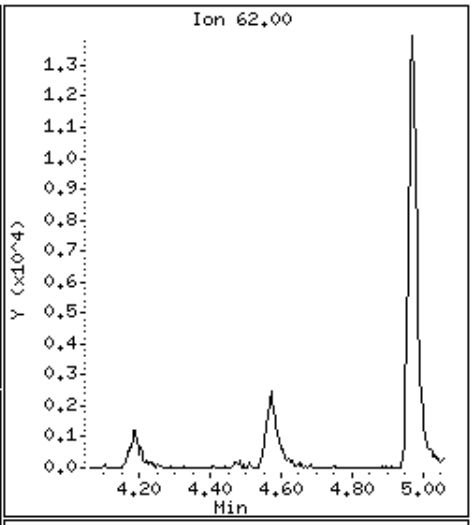
Column phase: DB624

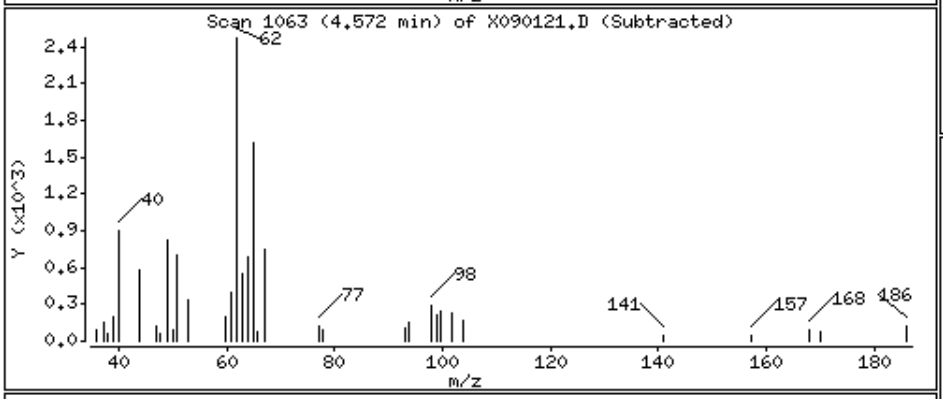
Column diameter: 0.18

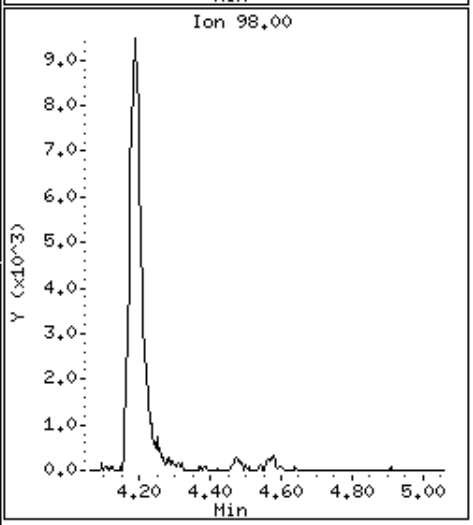
33 1,2-Dichloroethane

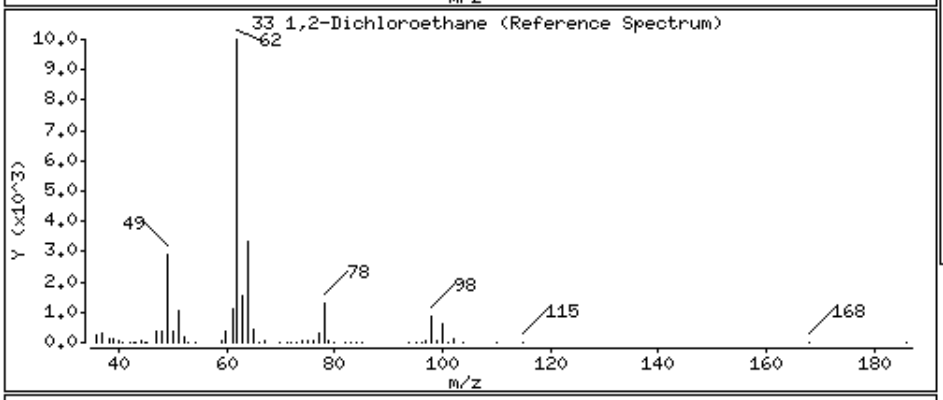
Concentration: 382.54 ug/l

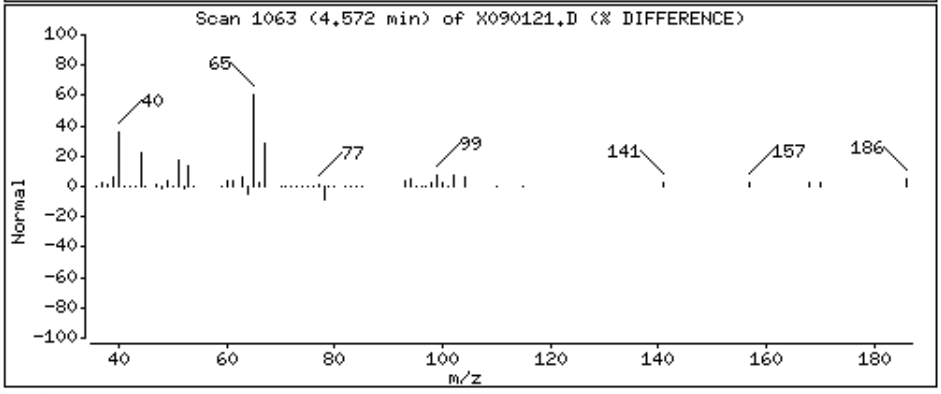












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090121.D

Date : 01-SEP-2022 17:12

Client ID: HS22081514-11

Instrument: voa6.i

Sample Info: HS22081514-11;HS22081514-11;;;

Purge Volume: 5.0

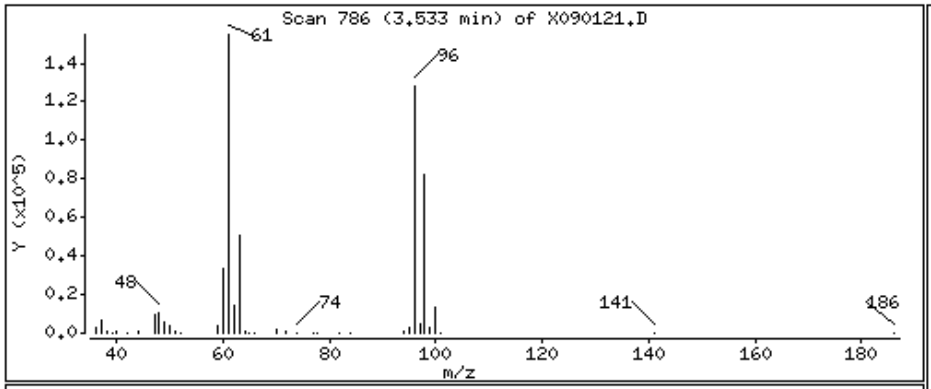
Operator: PC

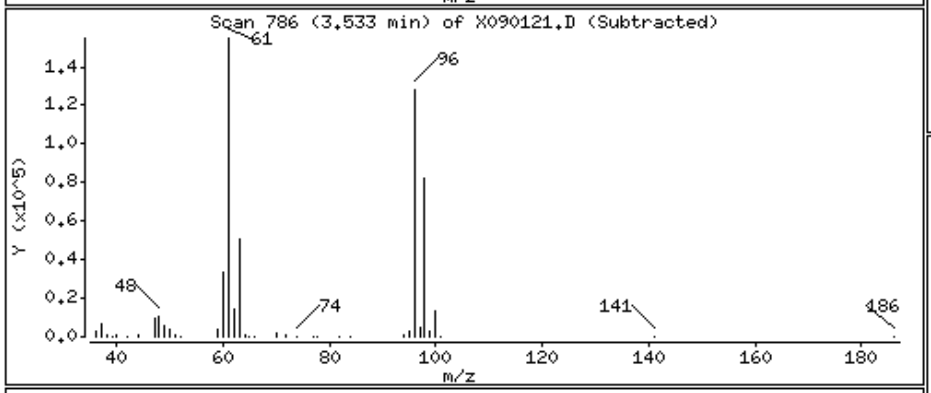
Column phase: DB624

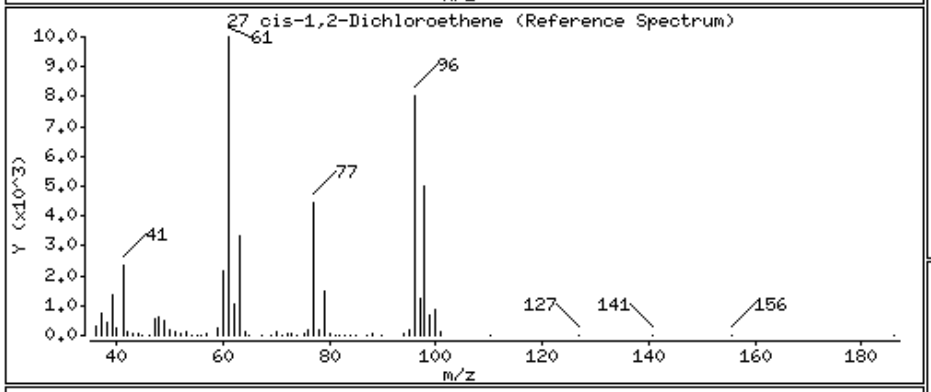
Column diameter: 0.18

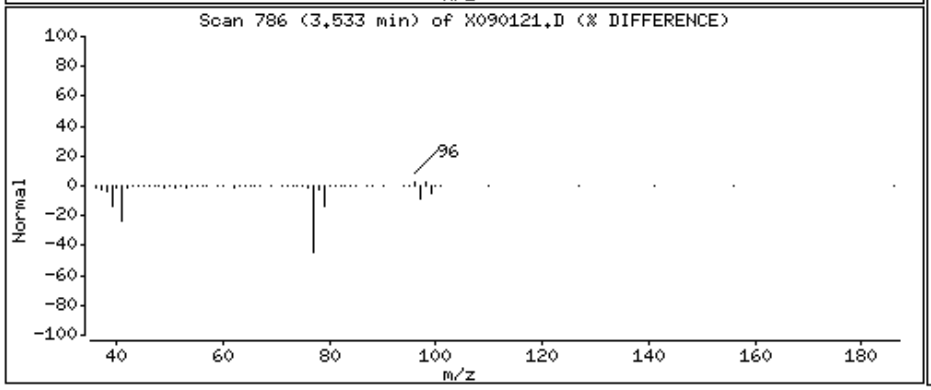
27 cis-1,2-Dichloroethene

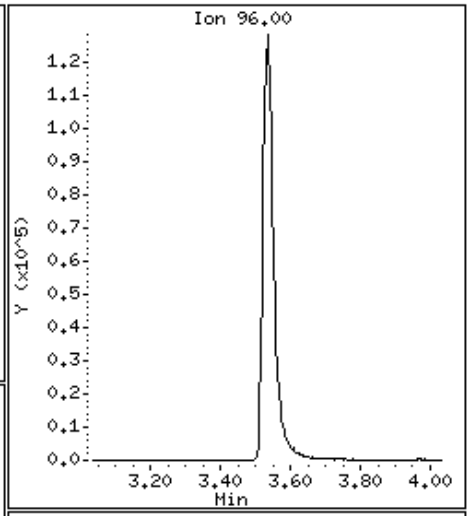
Concentration: 24147.71 ug/l

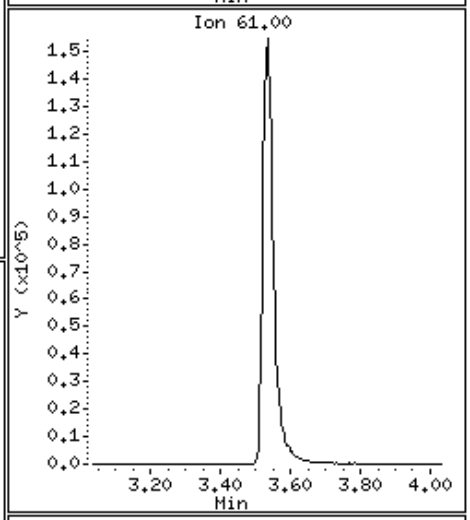


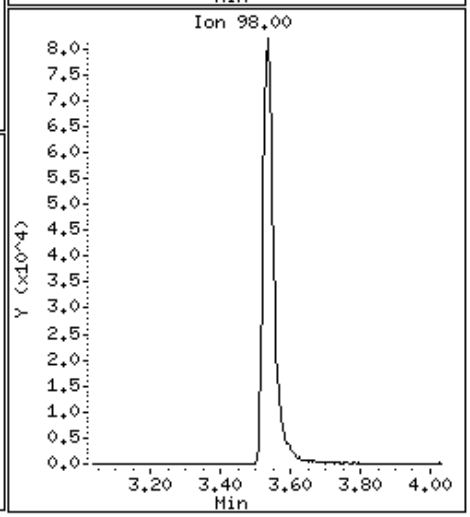












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090121.D

Date : 01-SEP-2022 17:12

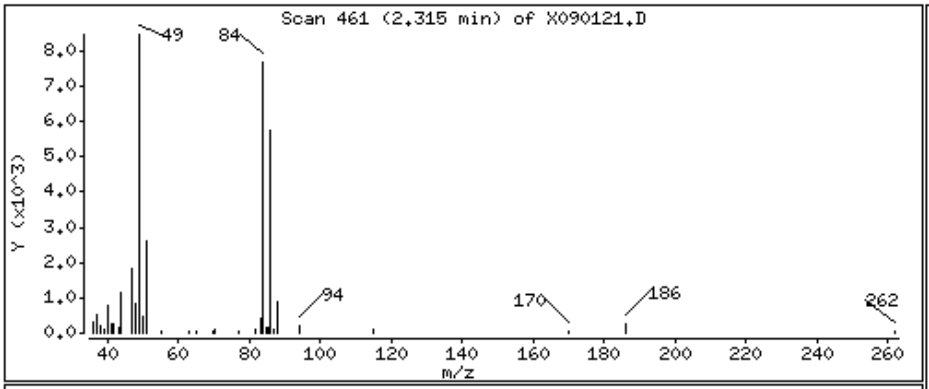
Client ID: HS22081514-11 Instrument: voa6.i

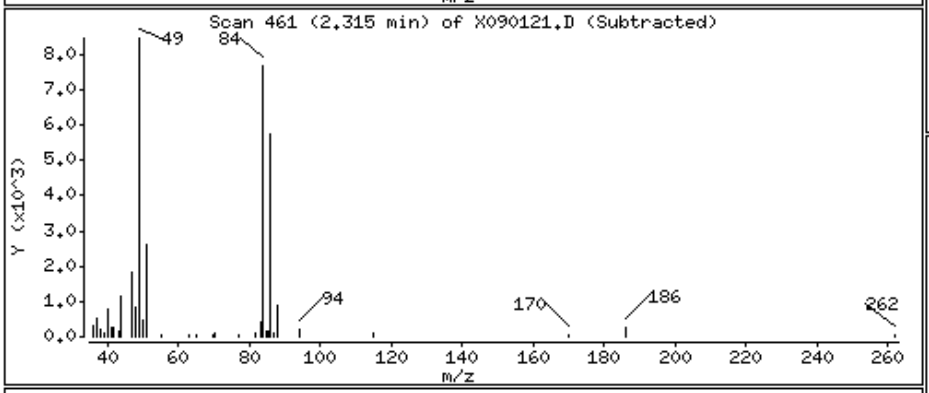
Sample Info: HS22081514-11;HS22081514-11;;;

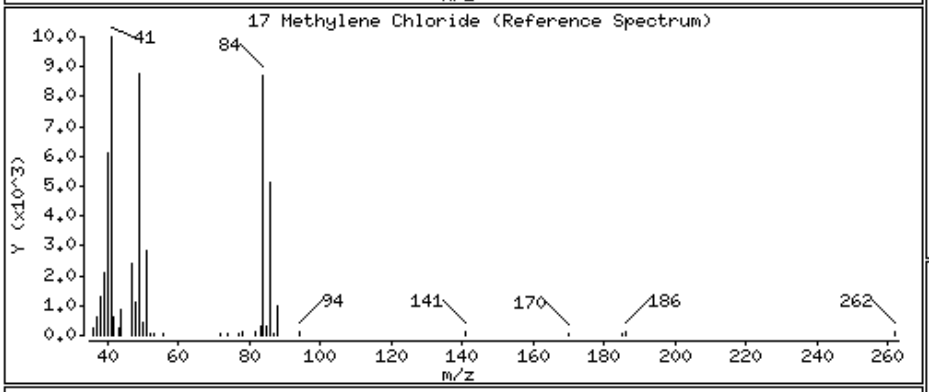
Purge Volume: 5.0 Operator: PC

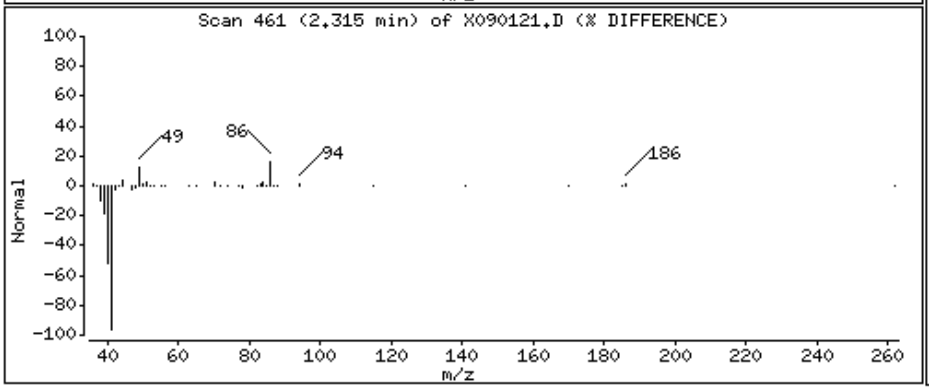
Column phase: DB624 Column diameter: 0.18

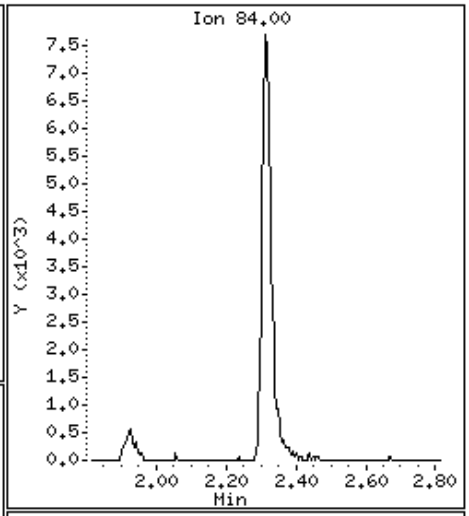
17 Methylene Chloride Concentration: 938.67 ug/l

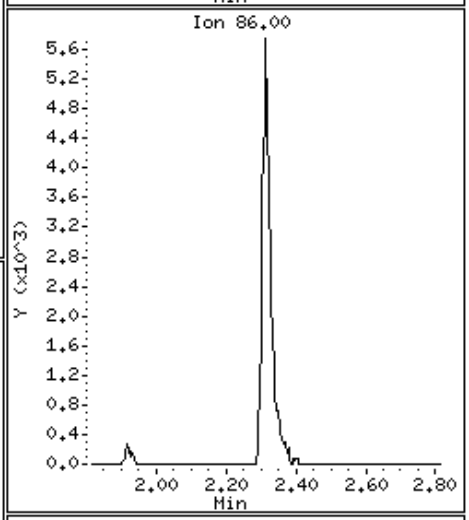


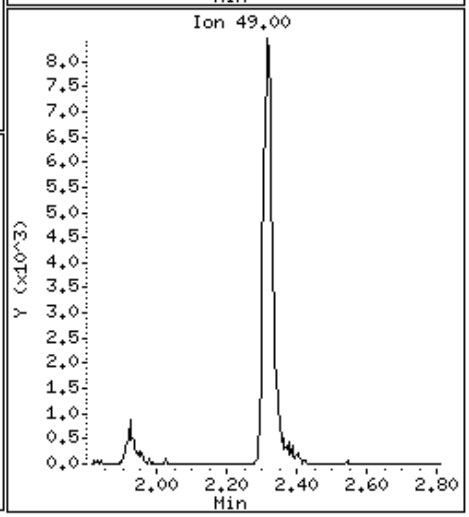












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Date : 01-SEP-2022 17:12

Client ID: HS22081514-11

Instrument: voa6.i

Sample Info: HS22081514-11;HS22081514-11;;;

Purge Volume: 5.0

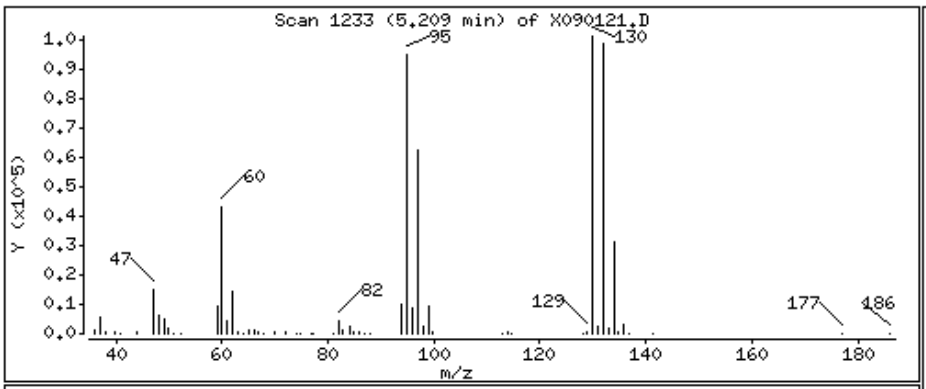
Operator: PC

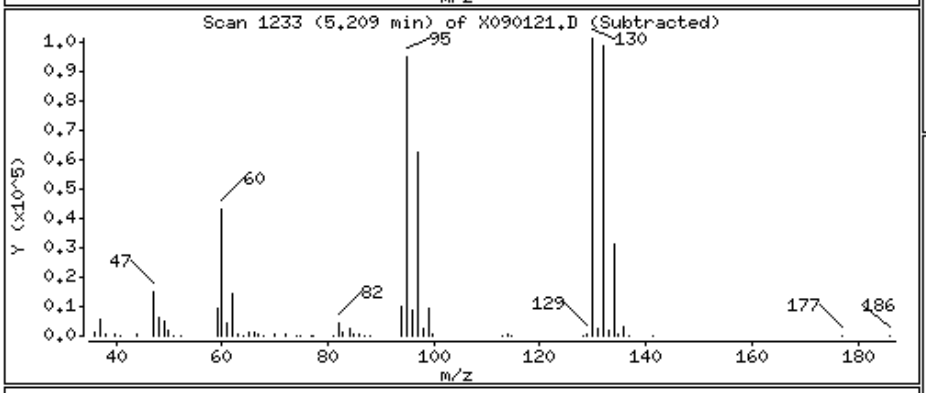
Column phase: DB624

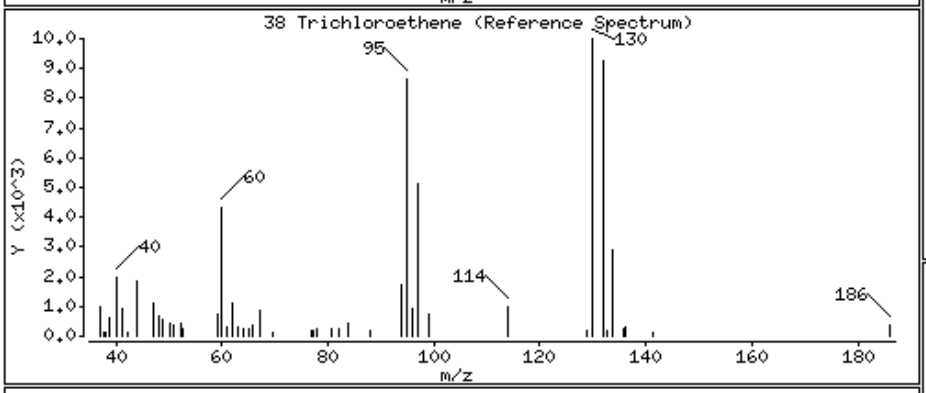
Column diameter: 0.18

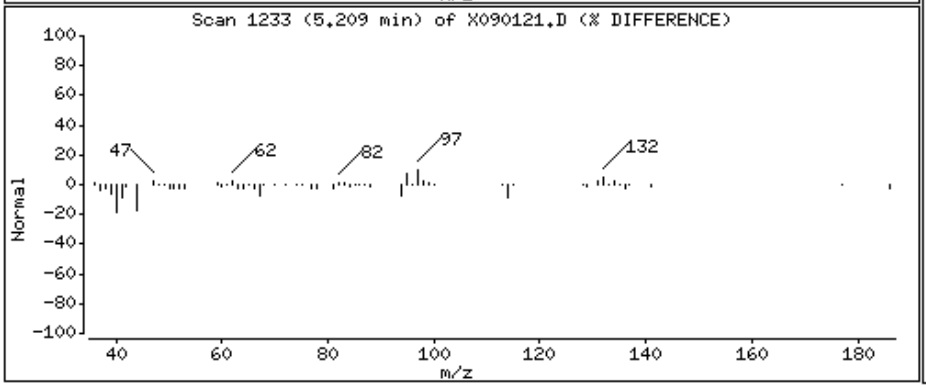
38 Trichloroethene

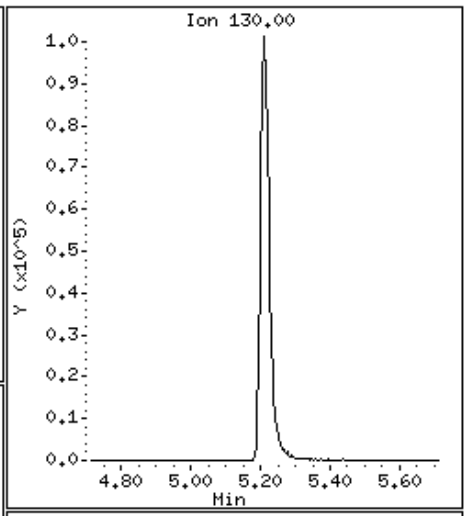
Concentration: 16491.53 ug/l

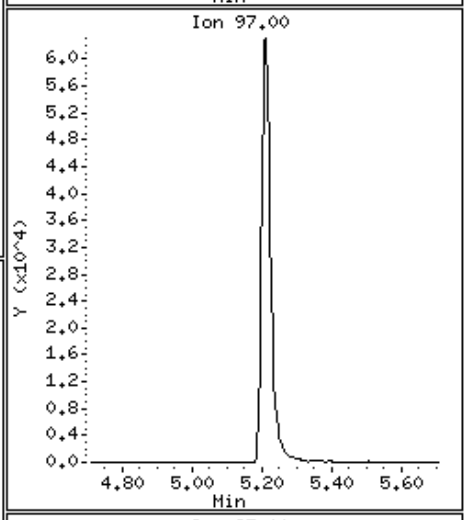


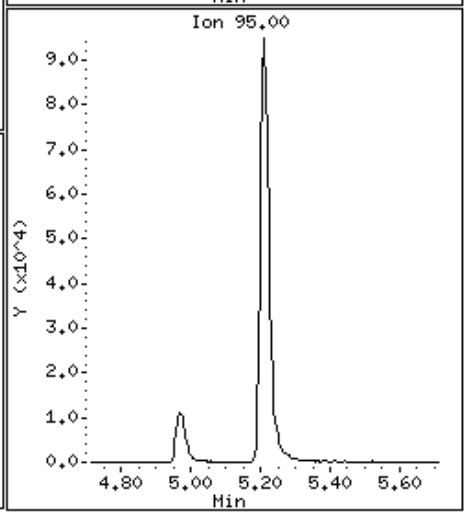












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090121.D

Date : 01-SEP-2022 17:12

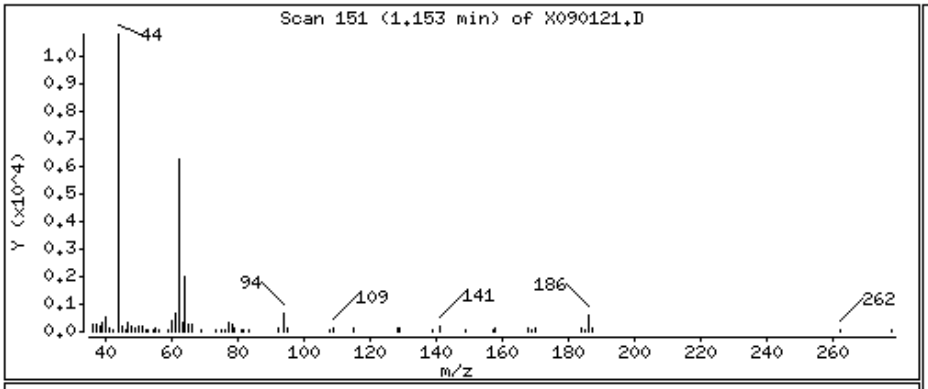
Client ID: HS22081514-11 Instrument: voa6.i

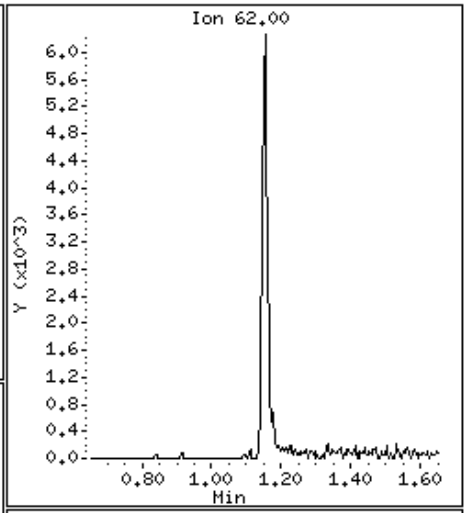
Sample Info: HS22081514-11;HS22081514-11;;;

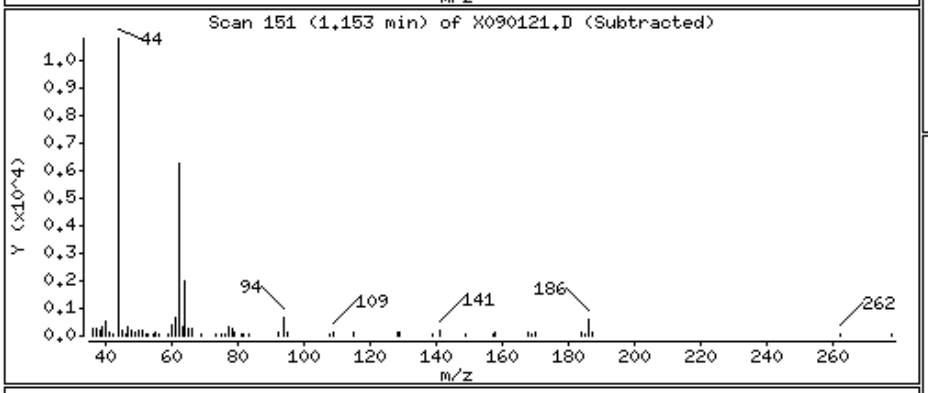
Purge Volume: 5.0 Operator: PC

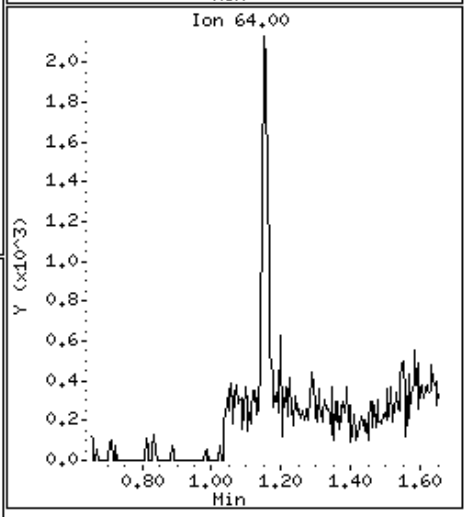
Column phase: DB624 Column diameter: 0.18

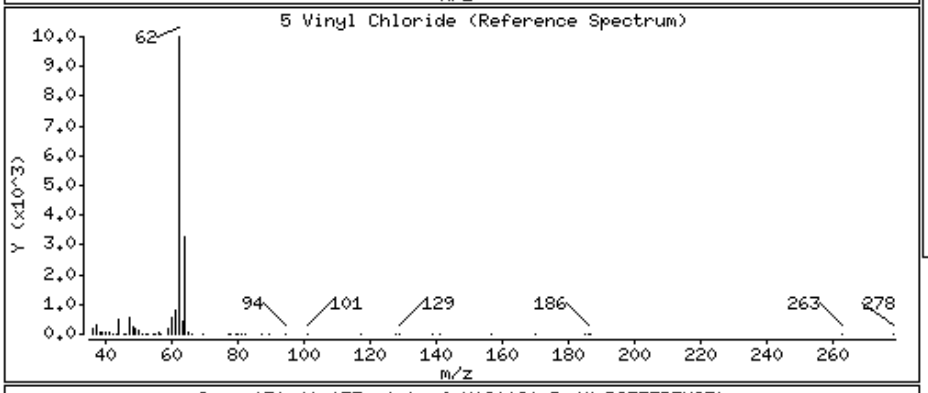
5 Vinyl Chloride Concentration: 547.67 ug/l

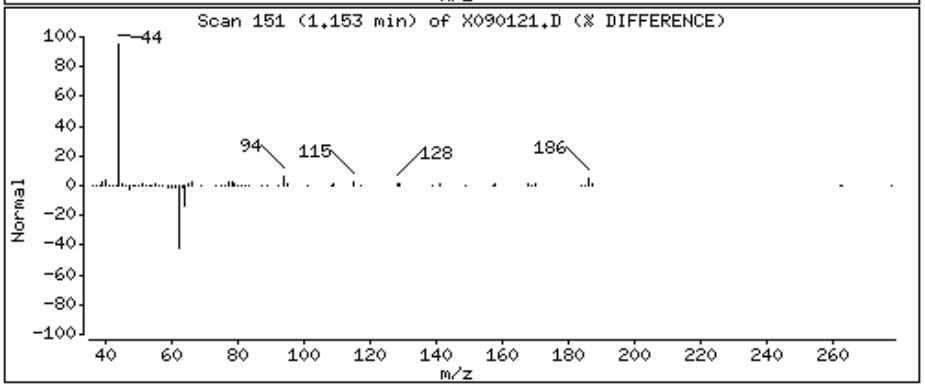












Data File : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090121.D
Inj Date : 01-SEP-2022 17:12
InstruID : voa6.i
LabSampID : HS22081514-11

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090122.D Page 1
Report Date: 09-Sep-2022 16:52

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090122.D
Lab Smp Id: HS22081514-07 Client Smp ID: HS22081514-07
Inj Date : 01-SEP-2022 17:33
Operator : PC Inst ID: voa6.i
Smp Info : HS22081514-07;HS22081514-07;;;
Misc Info : HS22052000V6;WATER;0;25;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\8260W.m
Meth Date : 09-Sep-2022 16:51 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 21
Dil Factor: 25.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	25.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
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	4.185	4.189	(1.000)	576833	50.0000	
* 36 1,4-Difluorobenzene	114	4.968	4.968	(1.000)	794713	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	674723	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.665	9.665	(1.000)	295622	50.0000	
$ 30 Dibromofluoromethane	113	4.102	4.106	(0.980)	251881	46.2190	46.21
$ 35 1,2-Dichloroethane-d4	65	4.481	4.477	(1.071)	268547	45.0137	45.01
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	916457	54.4392	54.43
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	274357	45.4931	45.49
27 cis-1,2-Dichloroethene	96	3.540	3.533	(0.846)	5615	0.97911	24.47(a)
38 Trichloroethene	130	5.208	5.208	(1.048)	241031	43.2077	1080.19

QC Flag Legend

a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).

01148190

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090122.D

Date : 01-SEP-2022 17:33

Client ID: HS22081514-07

Instrument: voa6.i

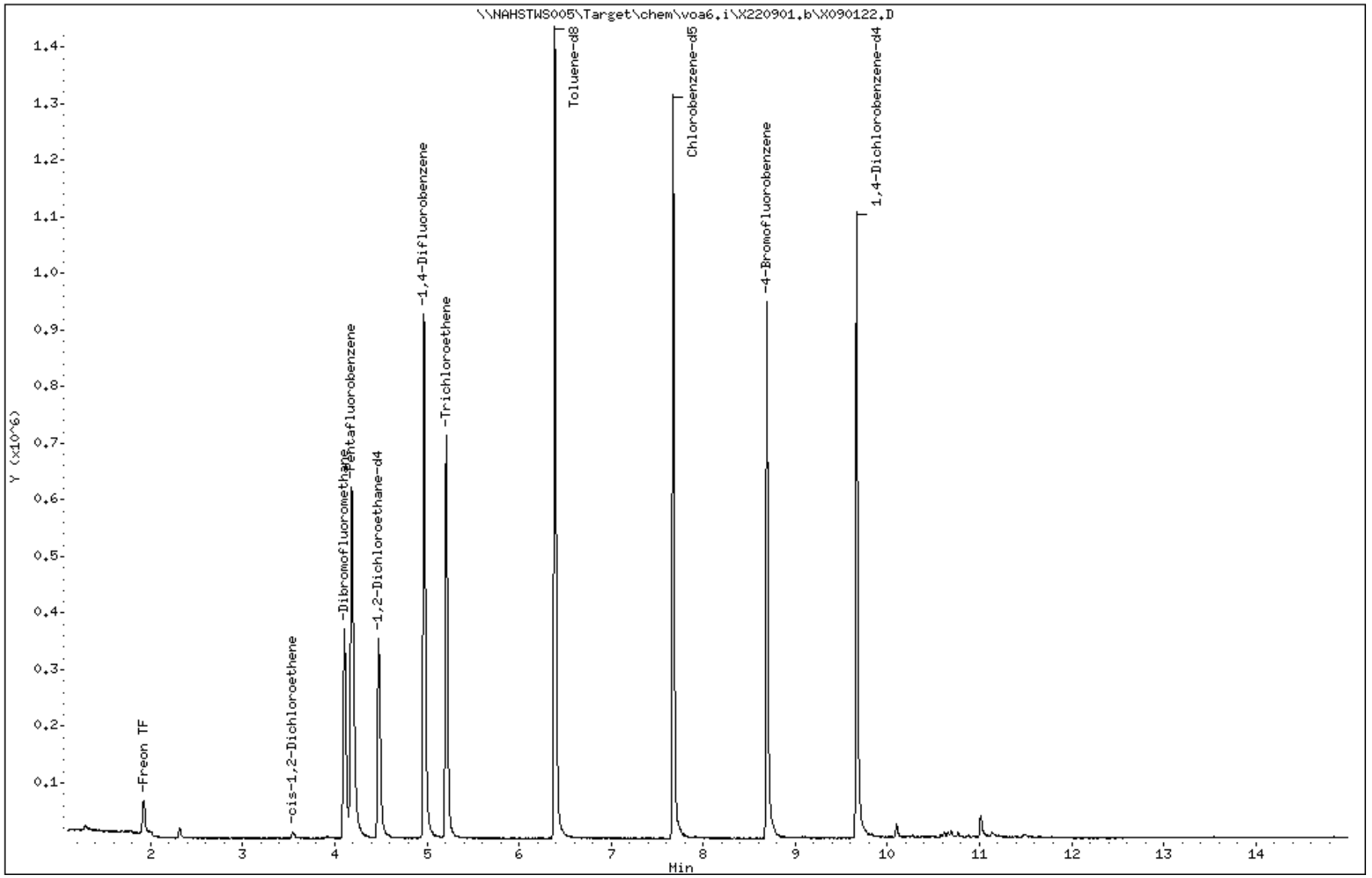
Sample Info: HS22081514-07;HS22081514-07;;;

Purge Volume: 5.0

Operator: PC

Column phase: DB624

Column diameter: 0.18



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Date : 01-SEP-2022 17:33

Client ID: HS22081514-07

Instrument: voa6.i

Sample Info: HS22081514-07;HS22081514-07;;;

Purge Volume: 5.0

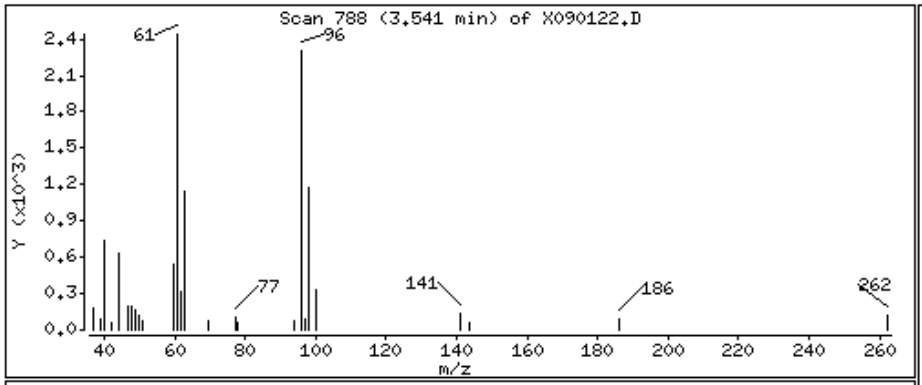
Operator: PC

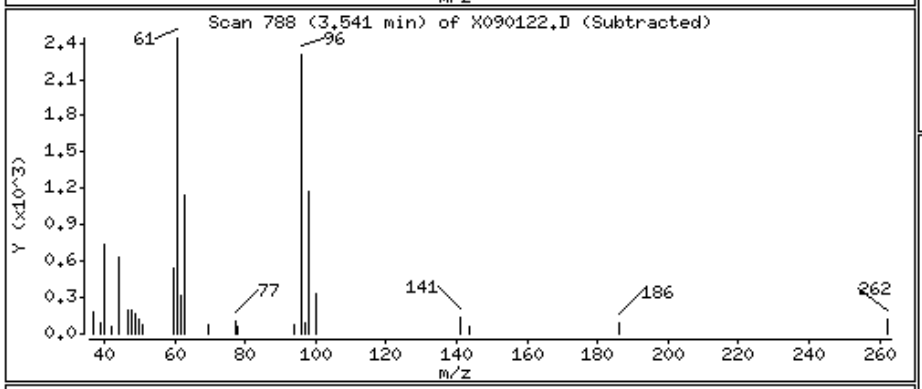
Column phase: DB624

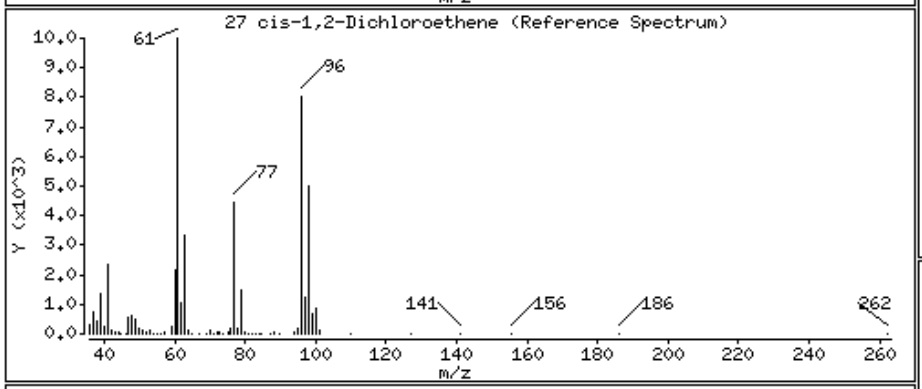
Column diameter: 0.18

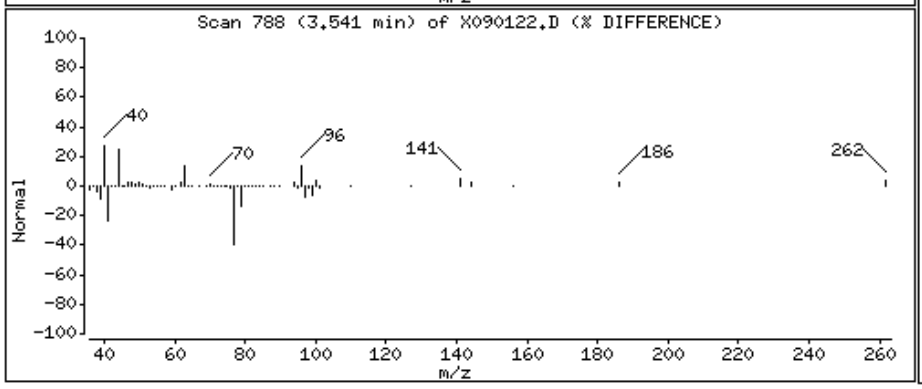
27 cis-1,2-Dichloroethene

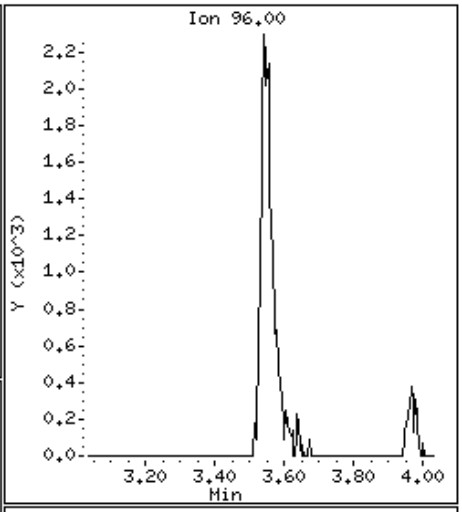
Concentration: 24.47 ug/l

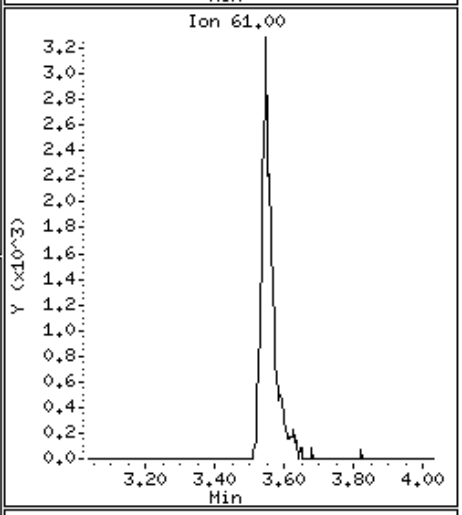


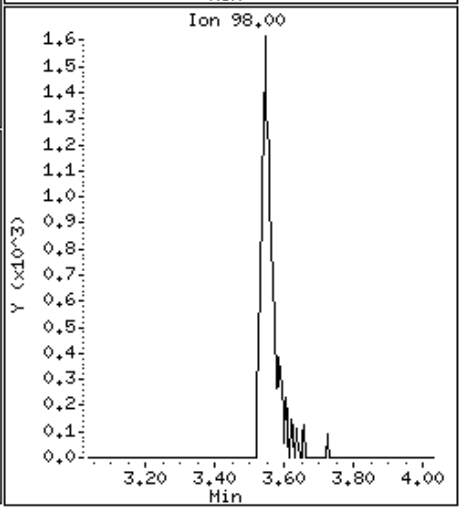












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090122.D

Date : 01-SEP-2022 17:33

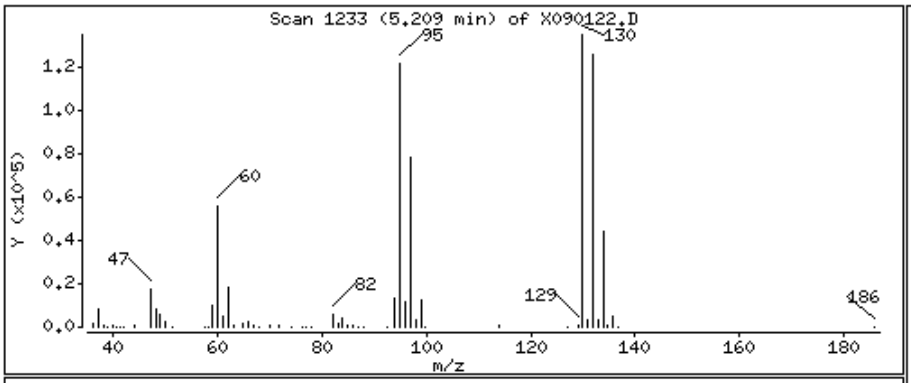
Client ID: HS22081514-07 Instrument: voa6.i

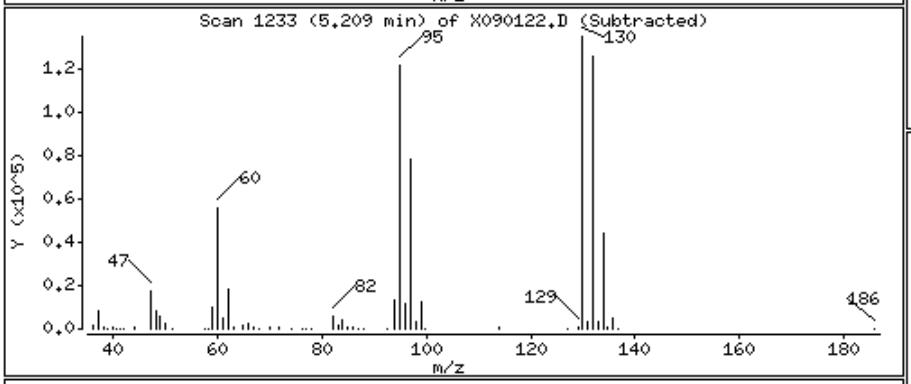
Sample Info: HS22081514-07;HS22081514-07;;;

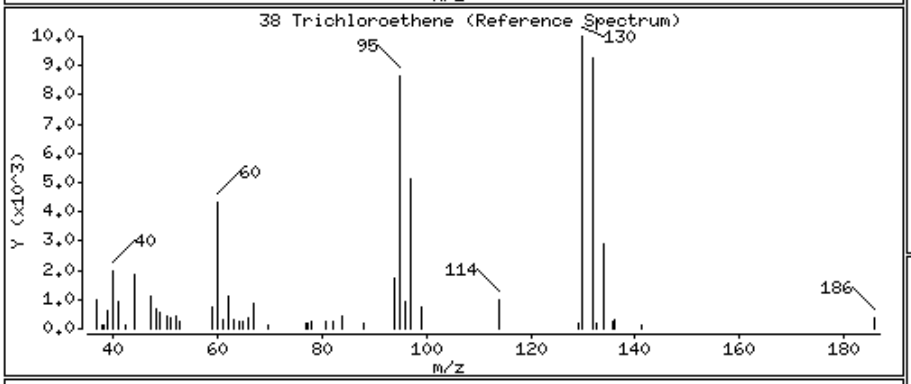
Purge Volume: 5.0 Operator: PC

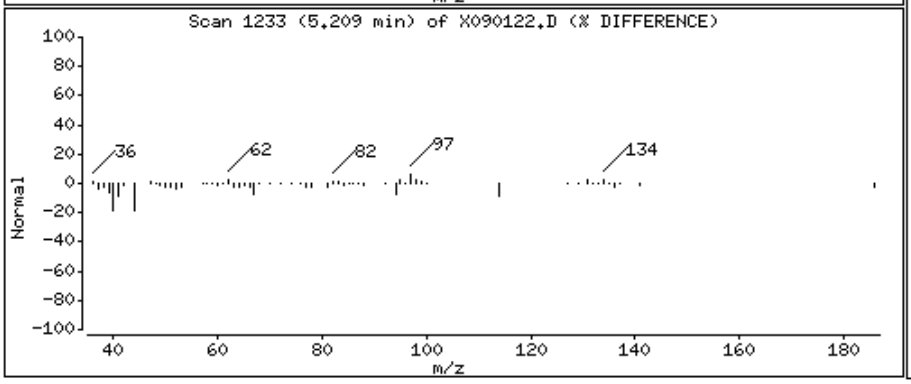
Column phase: DB624 Column diameter: 0.18

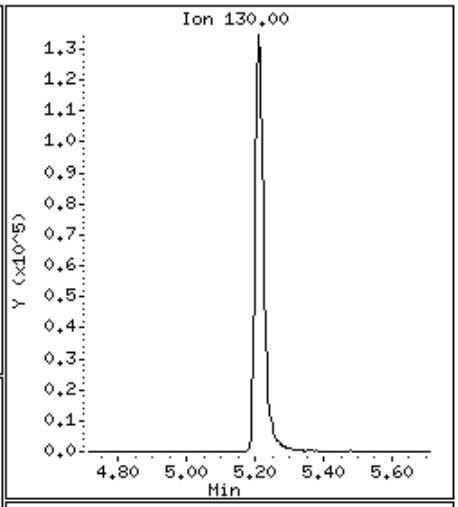
38 Trichloroethene Concentration: 1080.19 ug/l

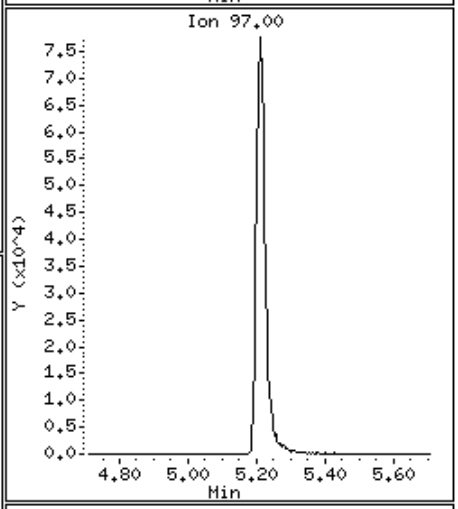


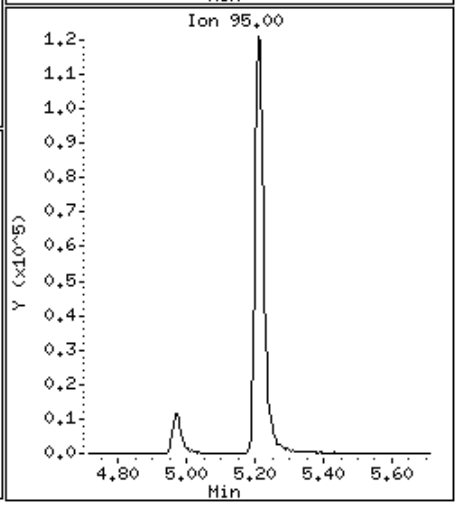












Data File : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090122.D
Inj Date : 01-SEP-2022 17:33
InstruID : voa6.i
LabSampID : HS22081514-07

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090123.D Page 1
Report Date: 09-Sep-2022 16:52

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090123.D
Lab Smp Id: HS22081514-02 Client Smp ID: HS22081514-02
Inj Date : 01-SEP-2022 17:54
Operator : PC Inst ID: voa6.i
Smp Info : HS22081514-02;HS22081514-02;;;
Misc Info : HS22052000V6;WATER;0;10;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\8260W.m
Meth Date : 09-Sep-2022 16:51 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 22
Dil Factor: 10.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7056

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
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	4.185	4.189	(1.000)	572161	50.0000	
* 36 1,4-Difluorobenzene	114	4.969	4.968	(1.000)	798110	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	670747	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.665	(1.000)	290615	50.0000	
$ 30 Dibromofluoromethane	113	4.106	4.106	(0.981)	252845	46.7835	46.78
$ 35 1,2-Dichloroethane-d4	65	4.478	4.477	(1.070)	272031	45.9769	45.97
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	919001	54.9140	54.91
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	278699	46.5051	46.50
33 1,2-Dichloroethane	62	4.564	4.560	(0.919)	62866	8.98142	89.81
34 Carbon Tetrachloride	117	4.268	4.271	(0.859)	8526	1.23845	12.38(a)
28 Chloroform	83	3.923	3.911	(0.937)	6914	0.71641	7.16(a)
27 cis-1,2-Dichloroethene	96	3.533	3.533	(0.844)	542804	95.4239	954.23
38 Trichloroethene	130	5.209	5.208	(1.048)	2043828	364.822	3648.21(A)
5 Vinyl Chloride	62	1.152	1.152	(0.275)	4577	0.76288	7.62(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.

01148196

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090123.D

Date : 01-SEP-2022 17:54

Client ID: HS22081514-02

Instrument: voa6.i

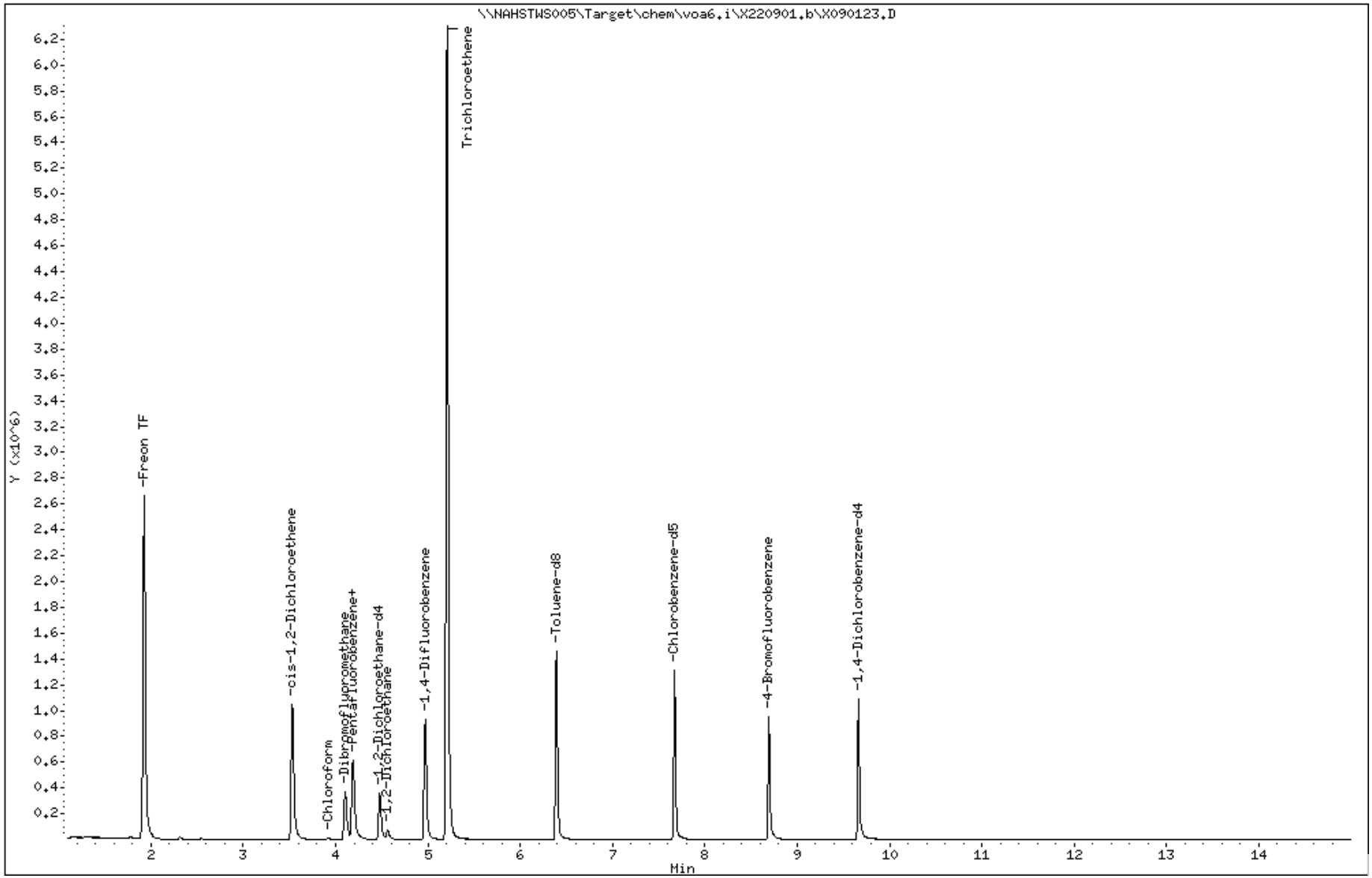
Sample Info: HS22081514-02;HS22081514-02;;;

Purge Volume: 5.0

Operator: PC

Column phase: DB624

Column diameter: 0.18



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Date : 01-SEP-2022 17:54

Client ID: HS22081514-02

Instrument: voa6.i

Sample Info: HS22081514-02;HS22081514-02;;;

Purge Volume: 5.0

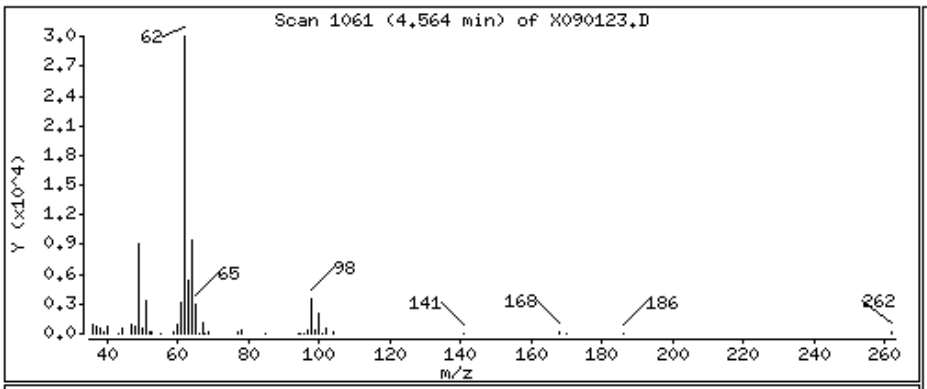
Operator: PC

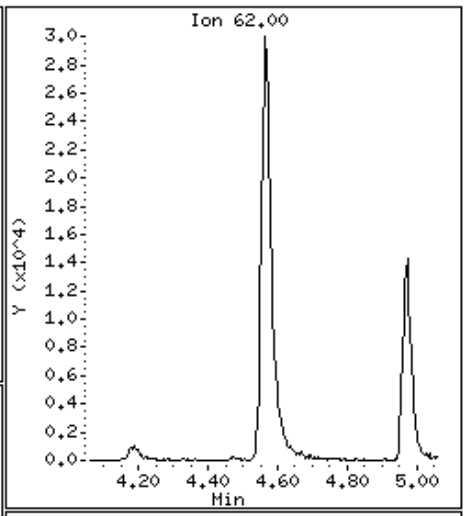
Column phase: DB624

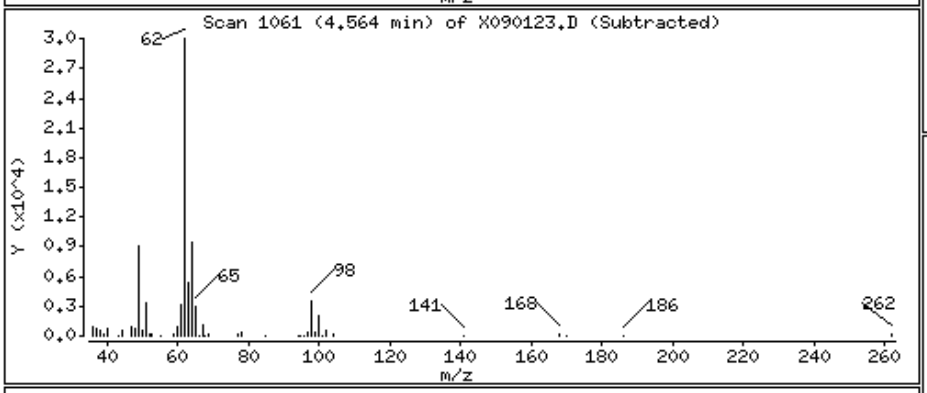
Column diameter: 0.18

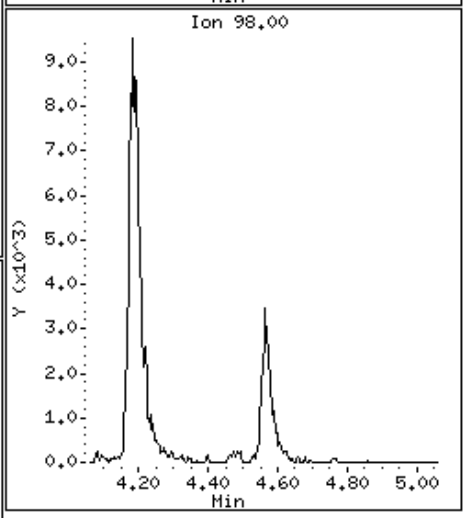
33 1,2-Dichloroethane

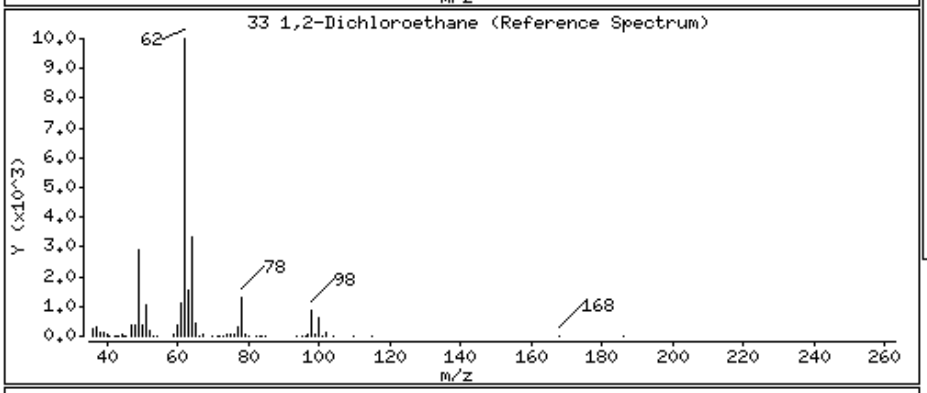
Concentration: 89.81 ug/l

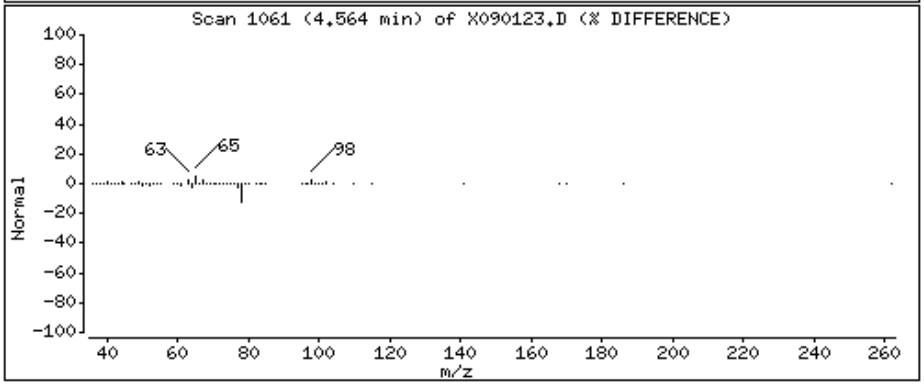












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Date : 01-SEP-2022 17:54

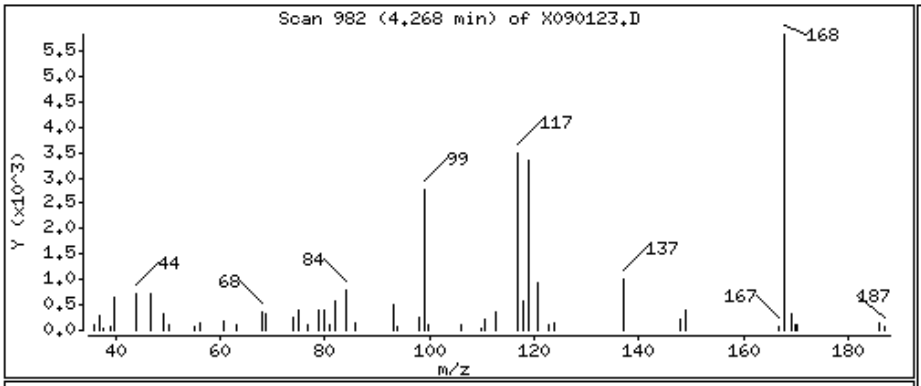
Client ID: HS22081514-02 Instrument: voa6.i

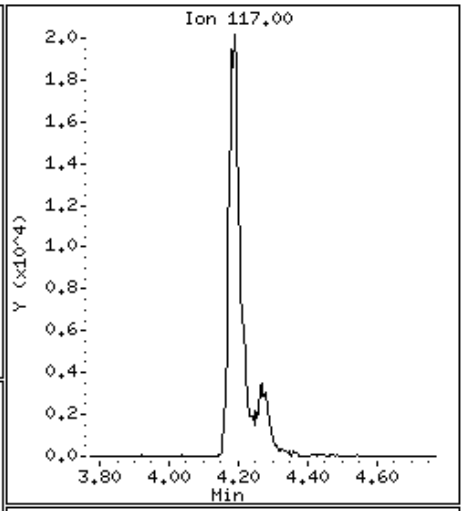
Sample Info: HS22081514-02;HS22081514-02;;;

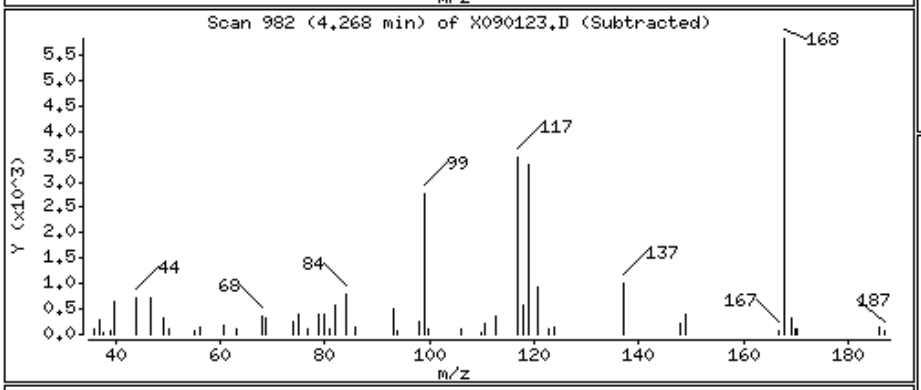
Purge Volume: 5.0 Operator: PC

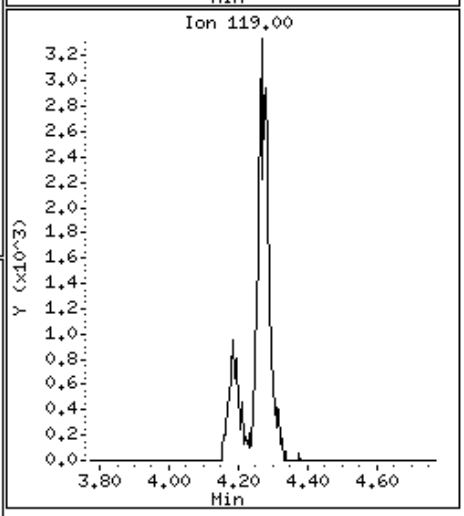
Column phase: DB624 Column diameter: 0.18

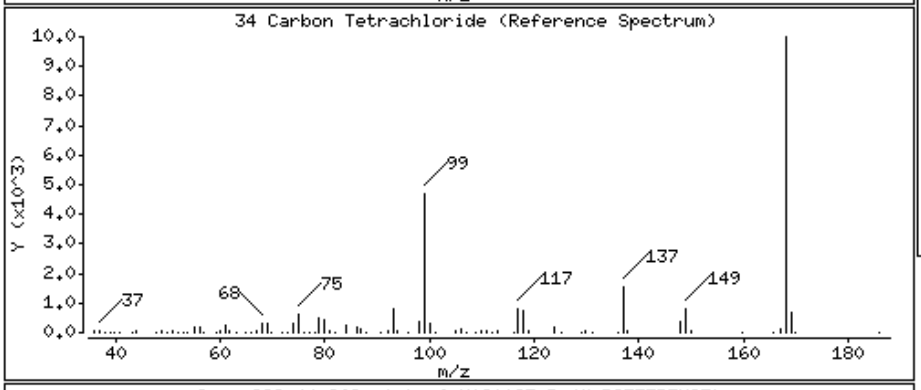
34 Carbon Tetrachloride Concentration: 12.38 ug/l

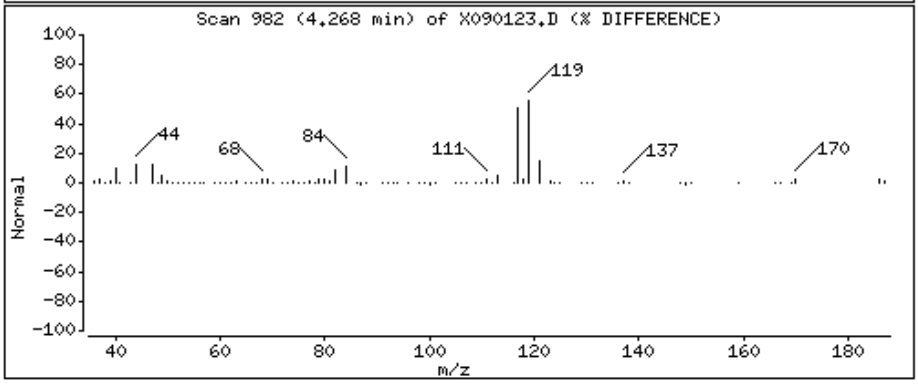












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Date : 01-SEP-2022 17:54

Client ID: HS22081514-02

Instrument: voa6.i

Sample Info: HS22081514-02;HS22081514-02;;;

Purge Volume: 5.0

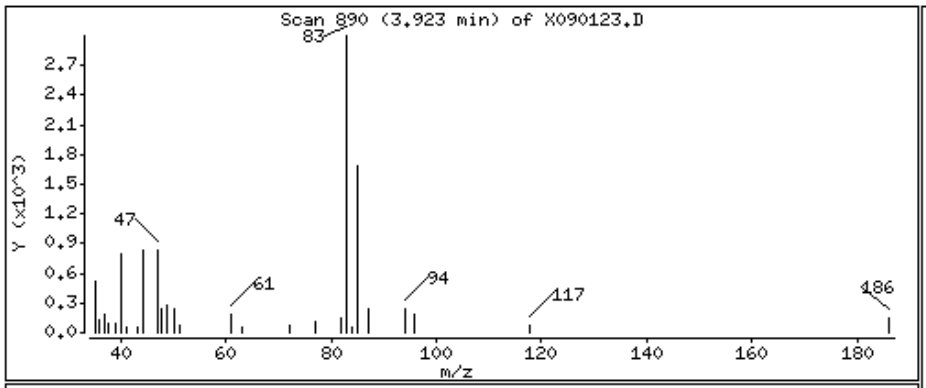
Operator: PC

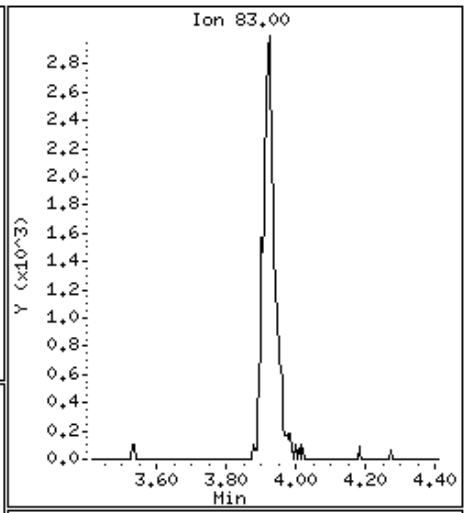
Column phase: DB624

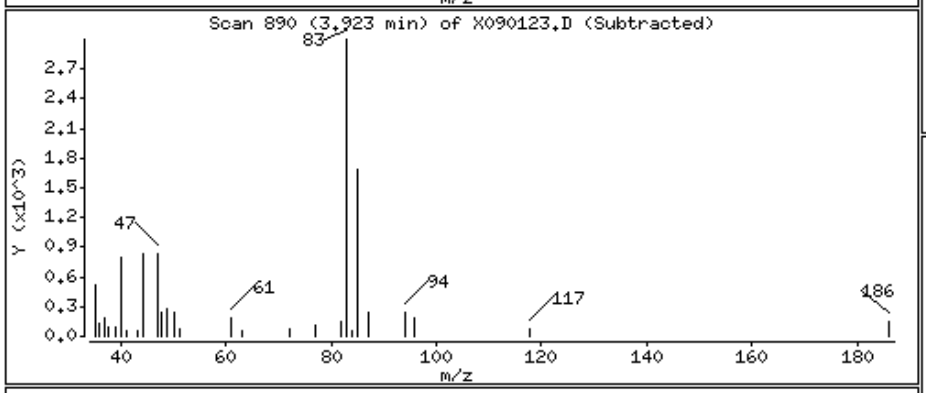
Column diameter: 0.18

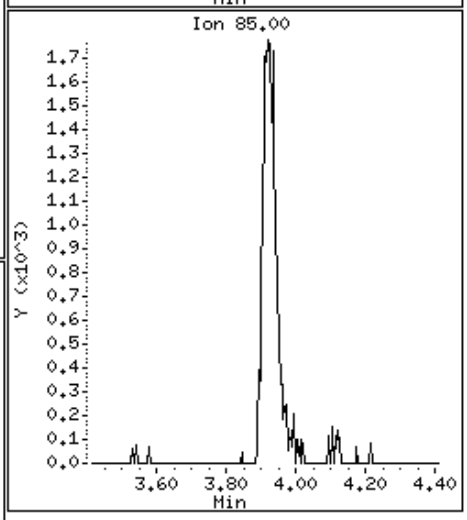
28 Chloroform

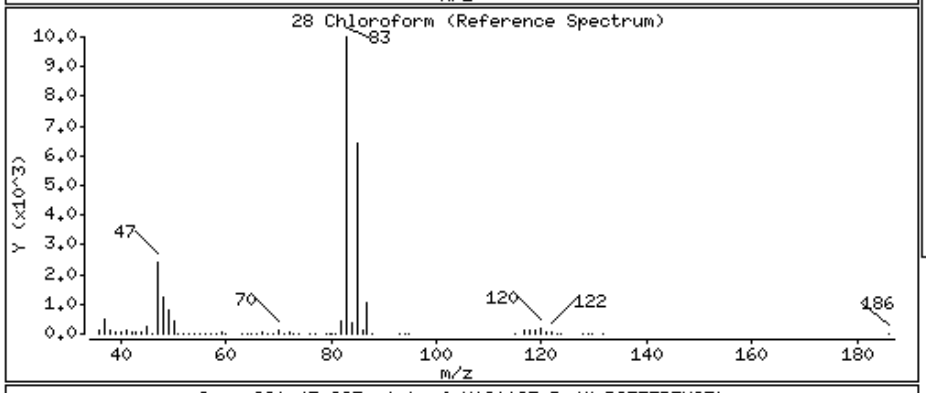
Concentration: 7.16 ug/l

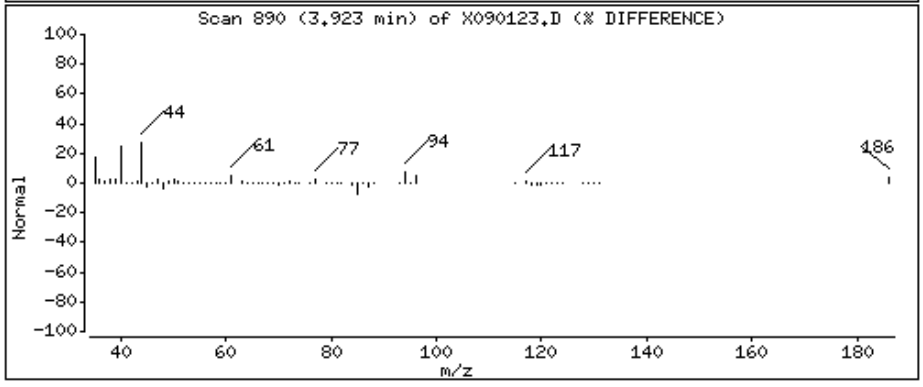












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Date : 01-SEP-2022 17:54

Client ID: HS22081514-02

Instrument: voa6.i

Sample Info: HS22081514-02;HS22081514-02;;;

Purge Volume: 5.0

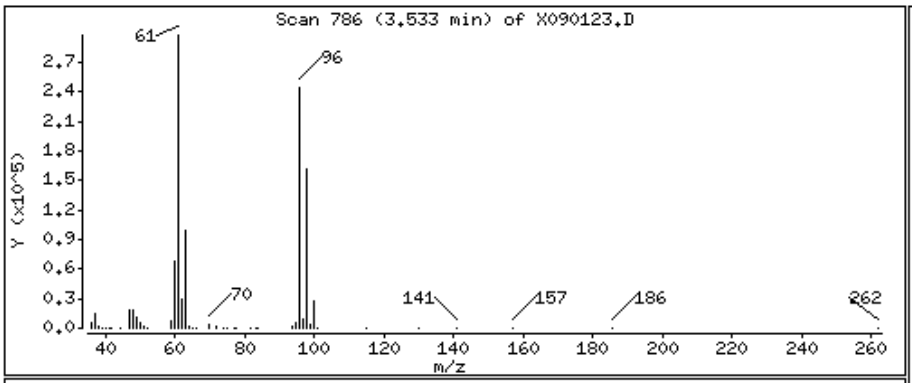
Operator: PC

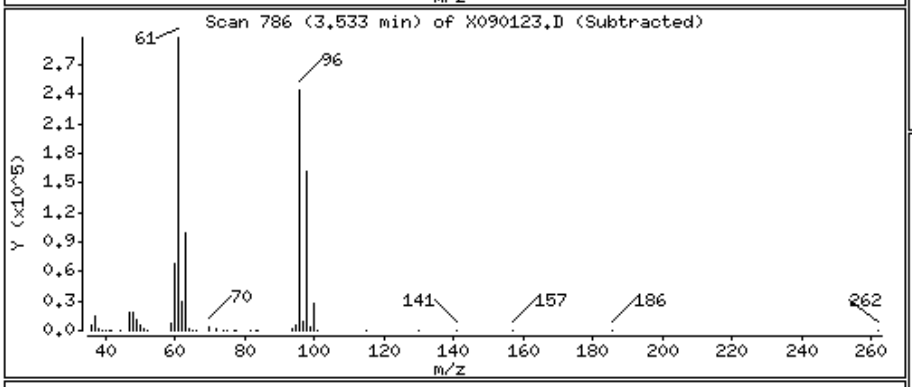
Column phase: DB624

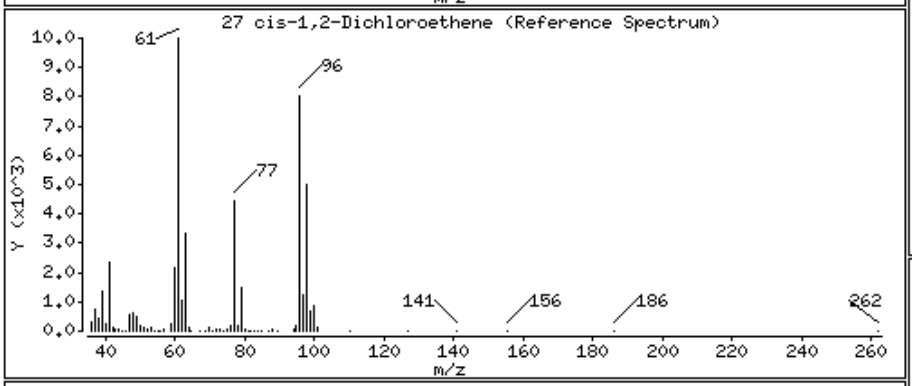
Column diameter: 0.18

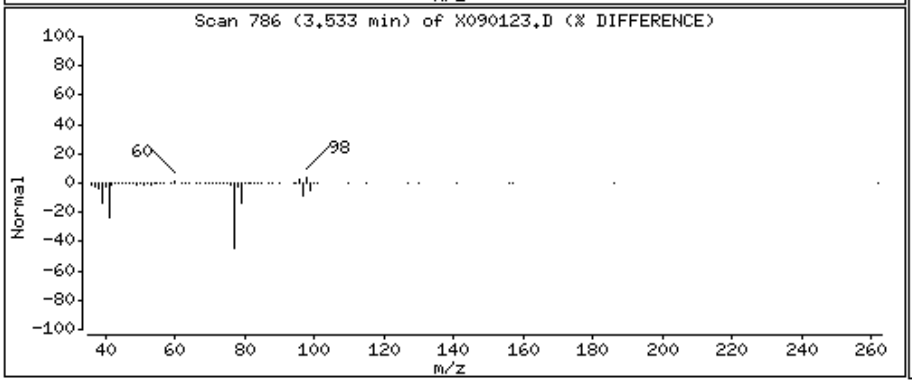
27 cis-1,2-Dichloroethene

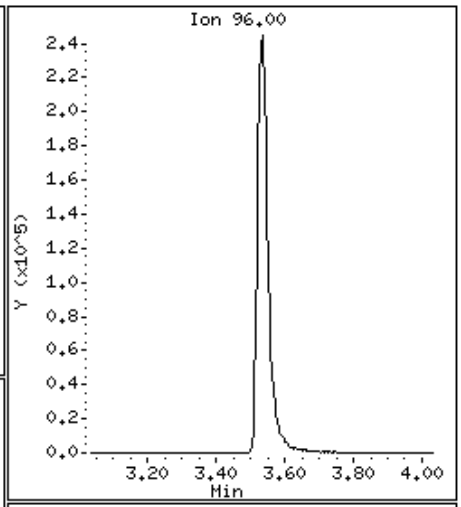
Concentration: 954.23 ug/l

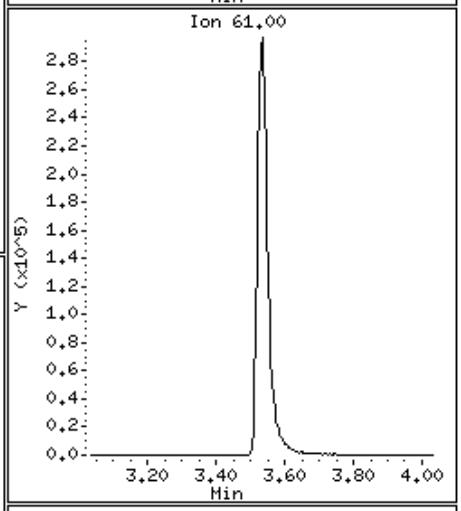


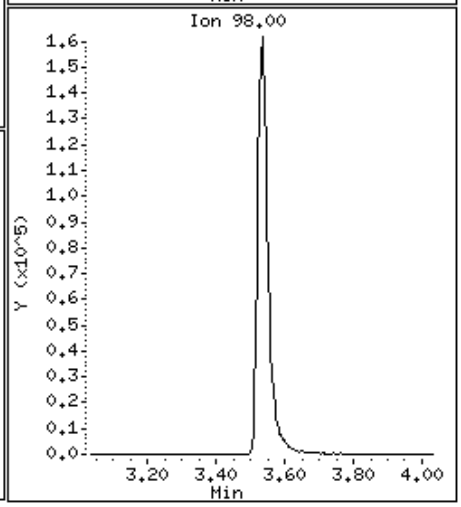












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090123.D Page 6

Date : 01-SEP-2022 17:54

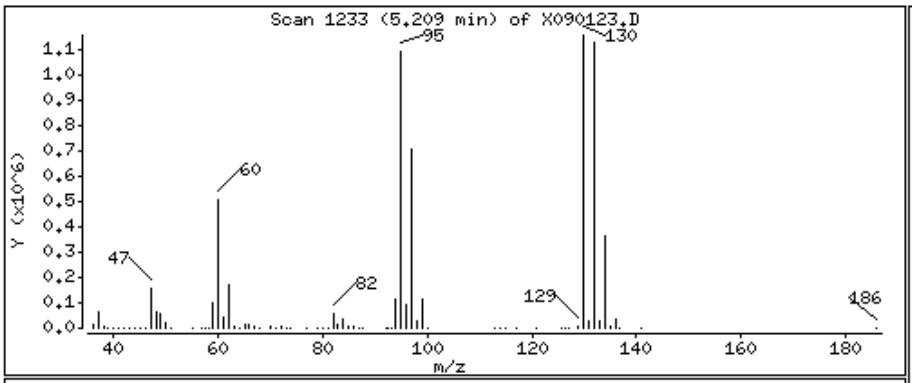
Client ID: HS22081514-02 Instrument: voa6.i

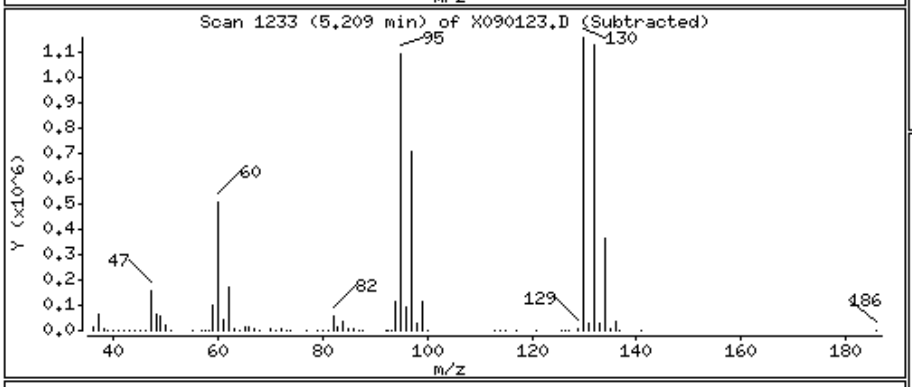
Sample Info: HS22081514-02;HS22081514-02;;;

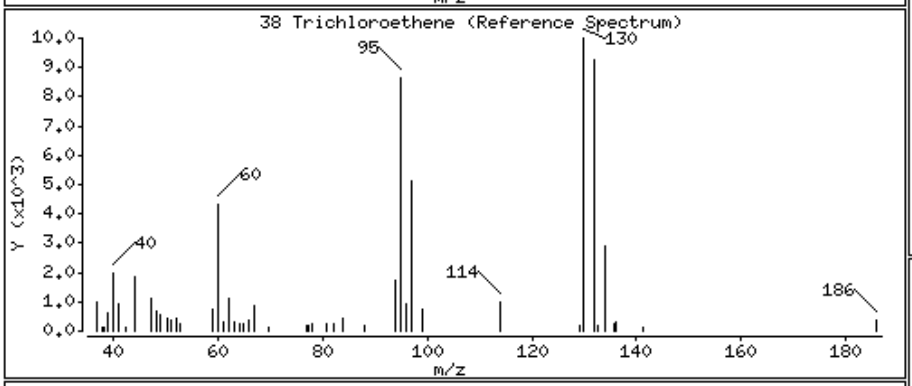
Purge Volume: 5.0 Operator: PC

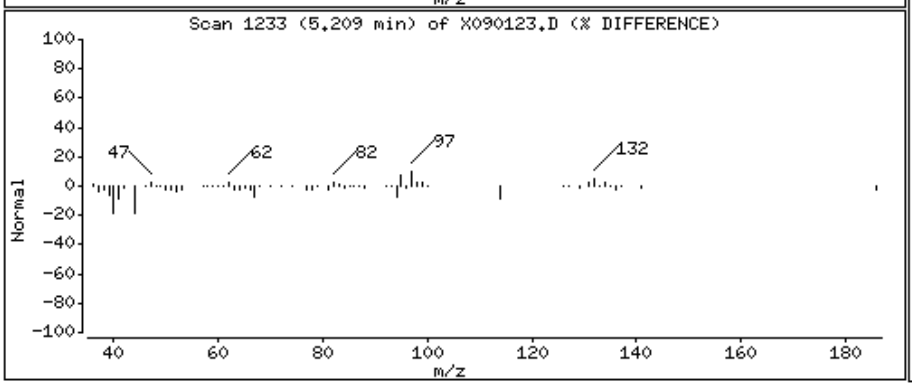
Column phase: DB624 Column diameter: 0.18

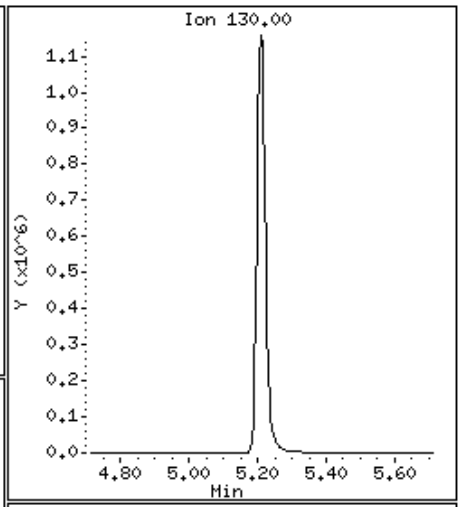
38 Trichloroethene Concentration: 3648.21 ug/l

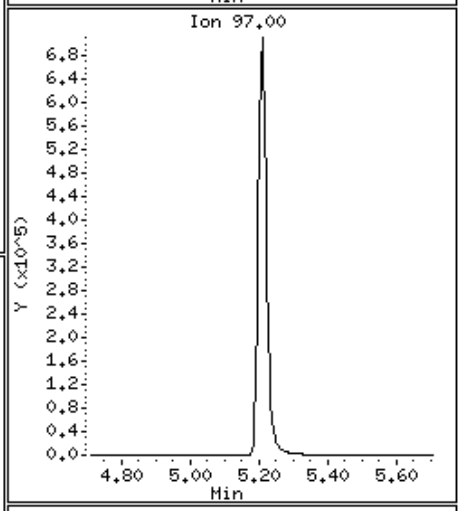


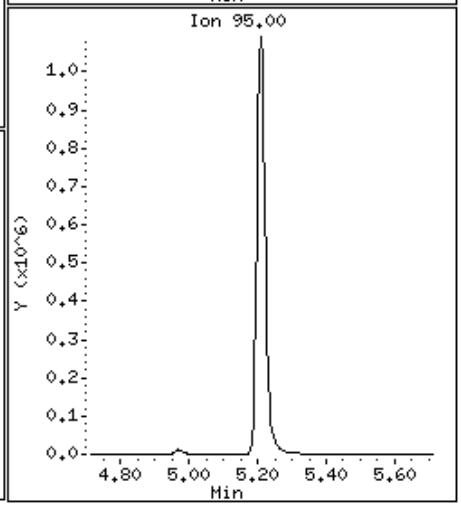












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Date : 01-SEP-2022 17:54

Client ID: HS22081514-02

Instrument: voa6.i

Sample Info: HS22081514-02;HS22081514-02;;;

Purge Volume: 5.0

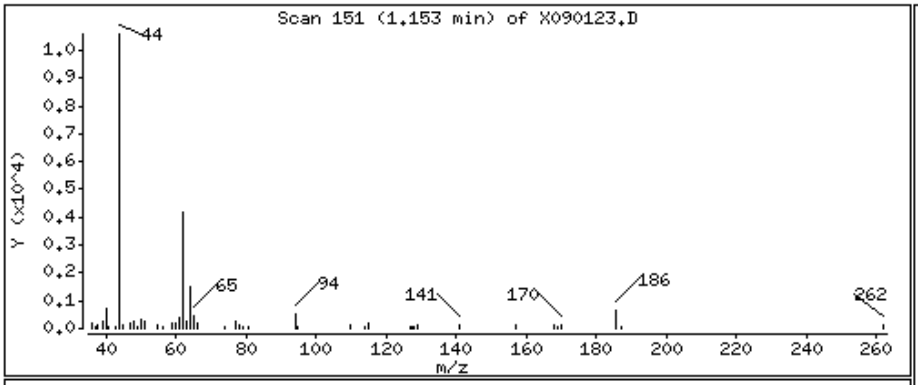
Operator: PC

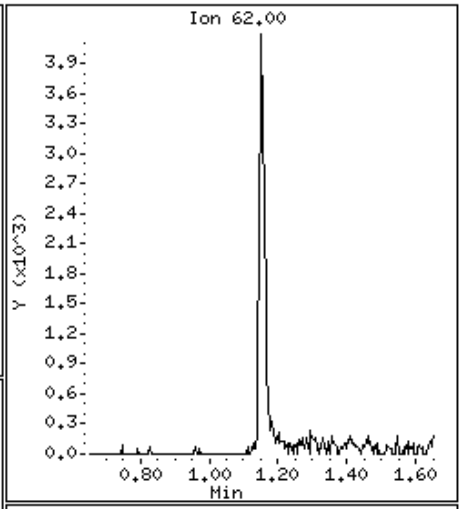
Column phase: DB624

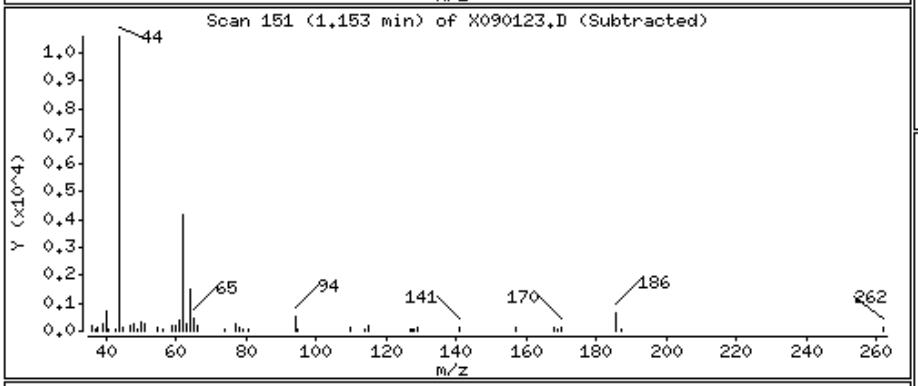
Column diameter: 0.18

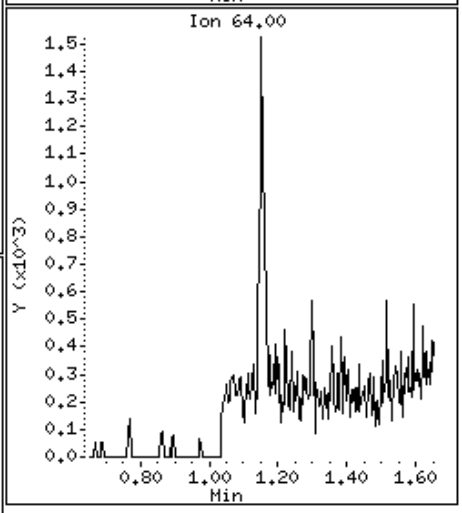
5 Vinyl Chloride

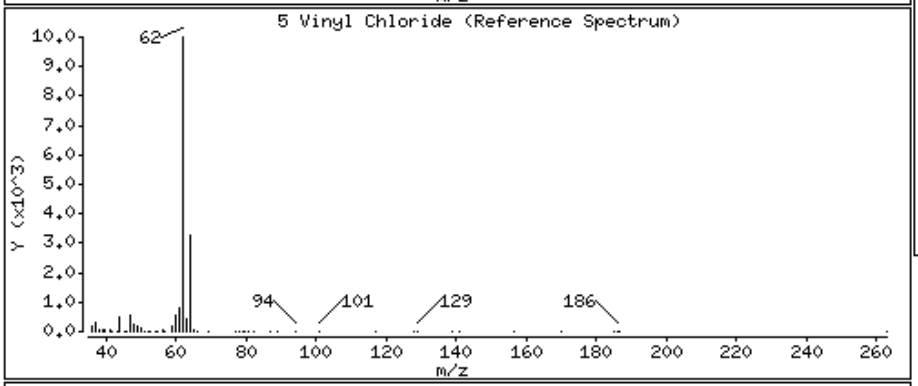
Concentration: 7.62 ug/l

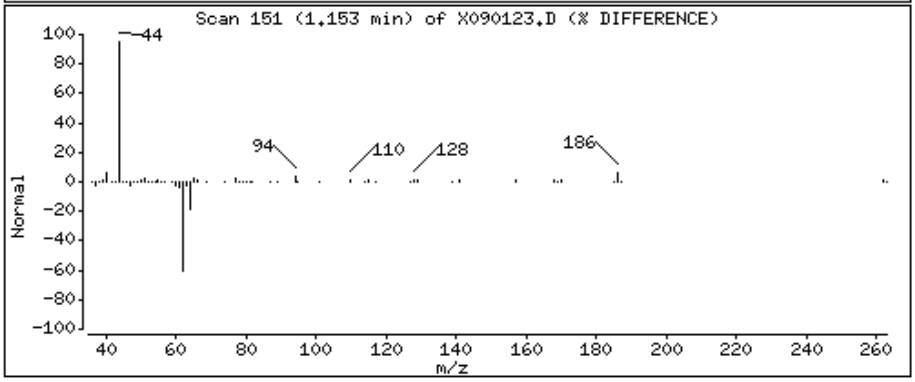












Data File : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090123.D
Inj Date : 01-SEP-2022 17:54
InstruID : voa6.i
LabSampID : HS22081514-02

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090124.D Page 1
Report Date: 09-Sep-2022 16:52

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090124.D
Lab Smp Id: HS22081514-02 Client Smp ID: HS22081514-02
Inj Date : 01-SEP-2022 18:15
Operator : PC Inst ID: voa6.i
Smp Info : HS22081514-02;HS22081514-02;;;
Misc Info : HS22052000V6;WATER;0;50;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\8260W.m
Meth Date : 09-Sep-2022 16:51 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 23
Dil Factor: 50.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	50.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
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	4.189	4.189	(1.000)	586481	50.0000	
* 36 1,4-Difluorobenzene	114	4.969	4.968	(1.000)	815610	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	685971	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.665	(1.000)	294539	50.0000	
$ 30 Dibromofluoromethane	113	4.106	4.106	(0.980)	255537	46.1169	46.11
$ 35 1,2-Dichloroethane-d4	65	4.478	4.477	(1.069)	271574	44.7704	44.77
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	938222	54.8183	54.81
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	284152	46.3601	46.36
33 1,2-Dichloroethane	62	4.568	4.560	(0.919)	12570	1.75729	87.86(a)
27 cis-1,2-Dichloroethene	96	3.537	3.533	(0.844)	100950	17.3135	865.67
38 Trichloroethene	130	5.209	5.208	(1.048)	382136	66.7474	3337.37

QC Flag Legend

a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).

01148205

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090124.D

Date : 01-SEP-2022 18:15

Client ID: HS22081514-02

Instrument: voa6.i

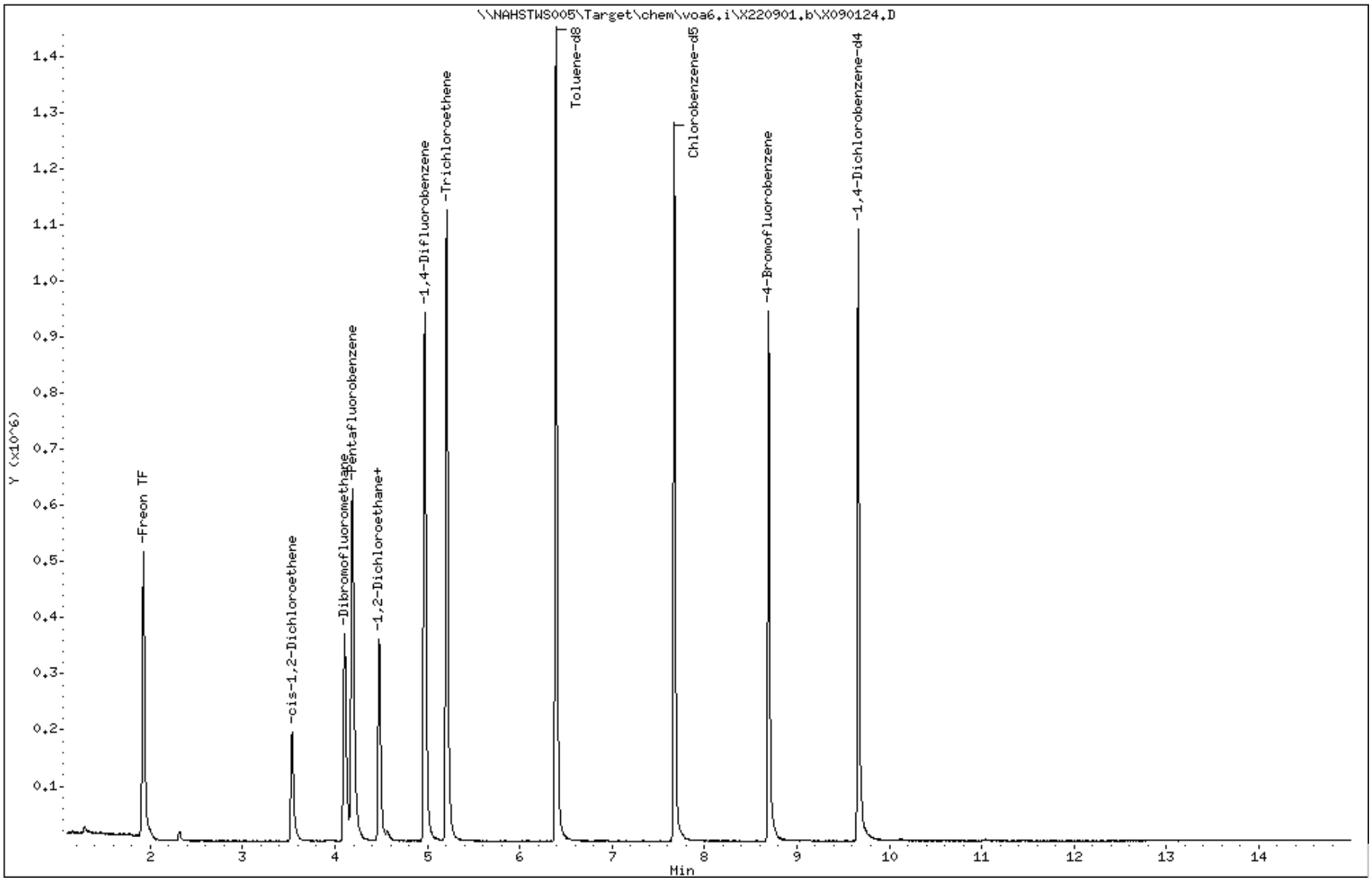
Sample Info: HS22081514-02;HS22081514-02;;;

Purge Volume: 5.0

Operator: PC

Column phase: DB624

Column diameter: 0.18



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Date : 01-SEP-2022 18:15

Client ID: HS22081514-02

Instrument: voa6.i

Sample Info: HS22081514-02;HS22081514-02;;;

Purge Volume: 5.0

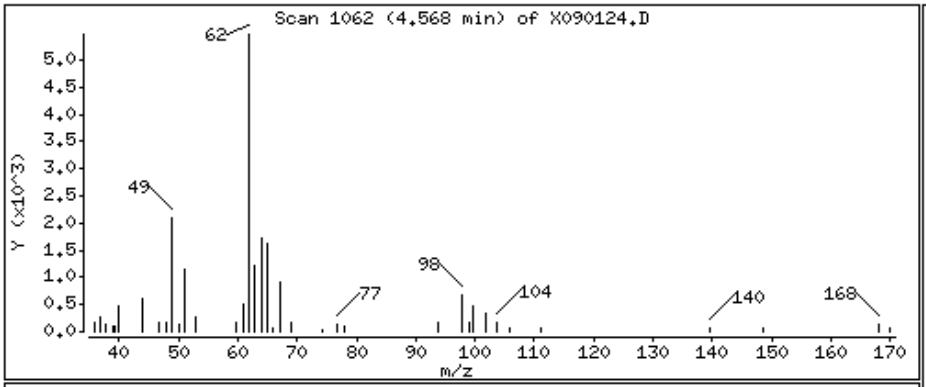
Operator: PC

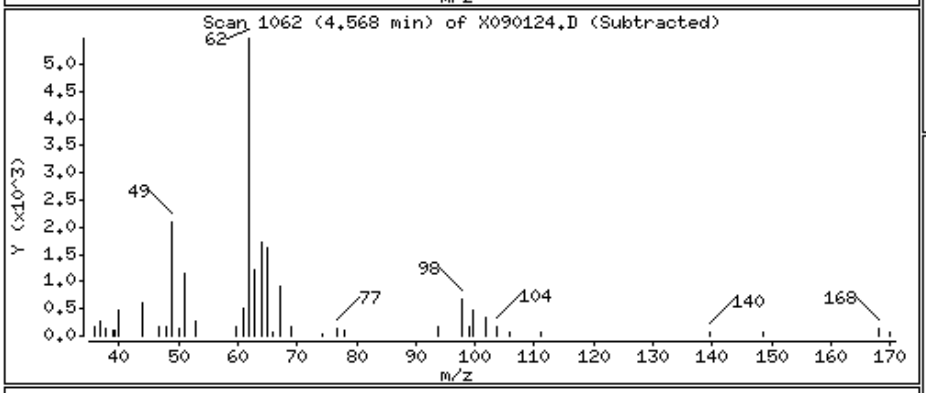
Column phase: DB624

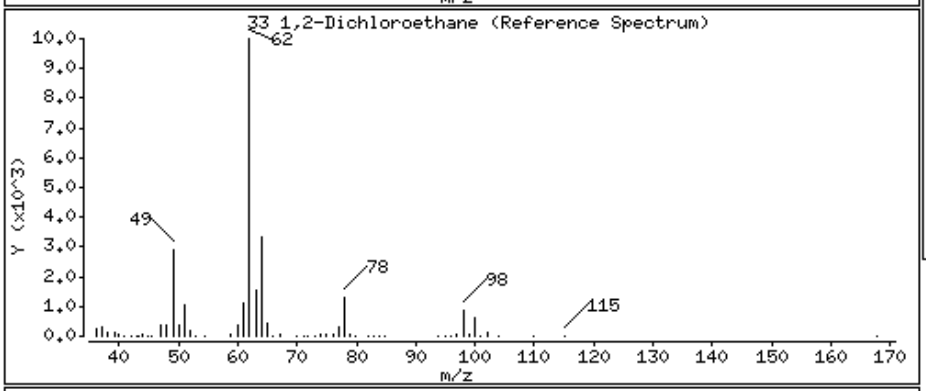
Column diameter: 0.18

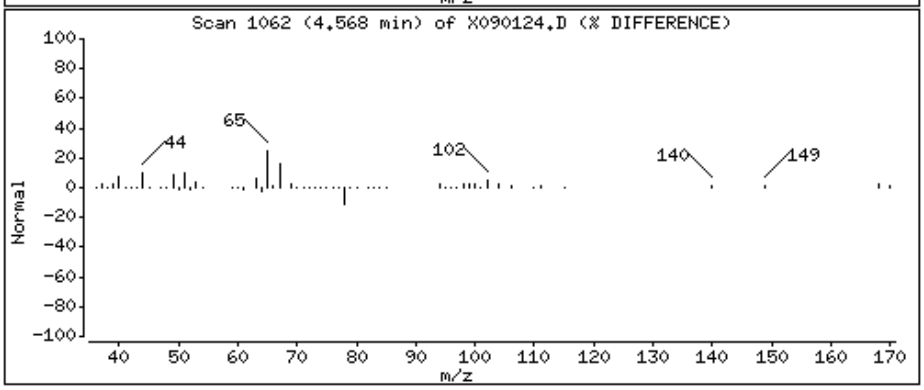
33 1,2-Dichloroethane

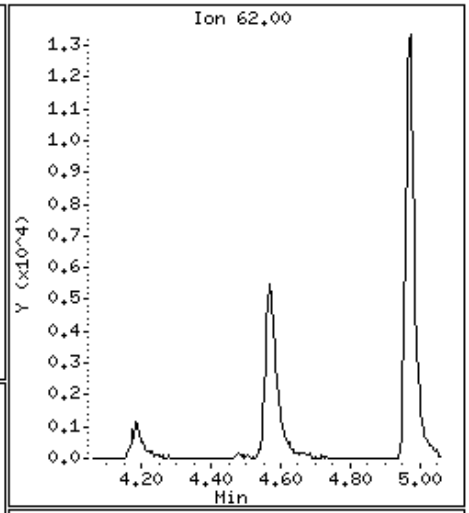
Concentration: 87.86 ug/l

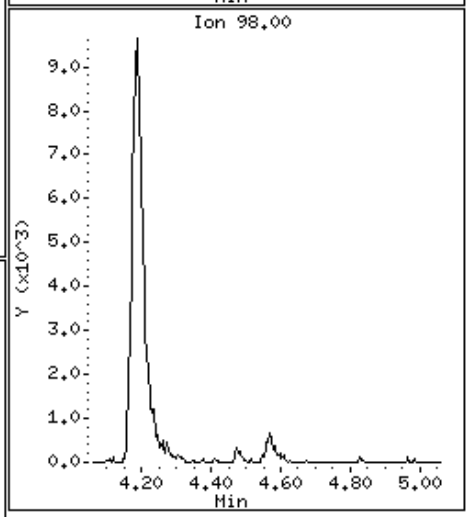












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Date : 01-SEP-2022 18:15

Client ID: HS22081514-02

Instrument: voa6.i

Sample Info: HS22081514-02;HS22081514-02;;;

Purge Volume: 5.0

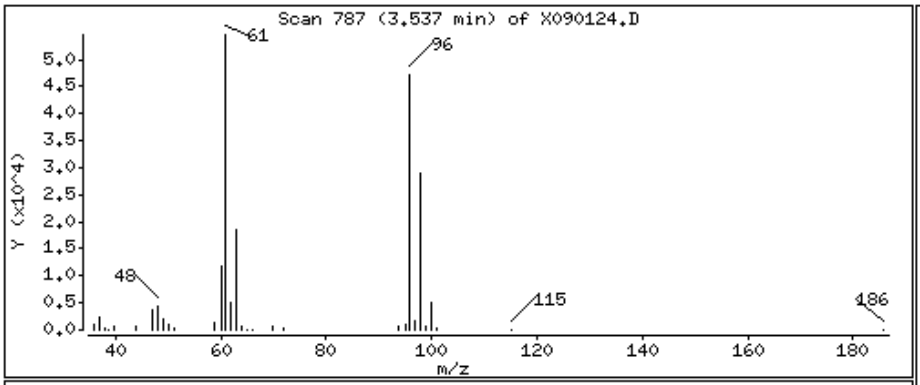
Operator: PC

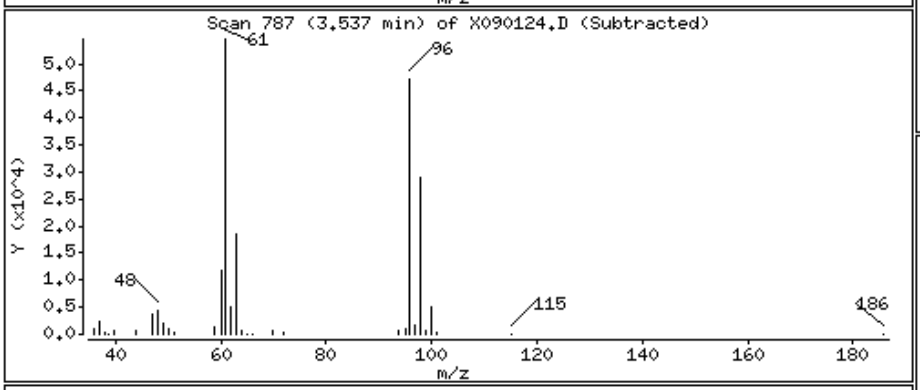
Column phase: DB624

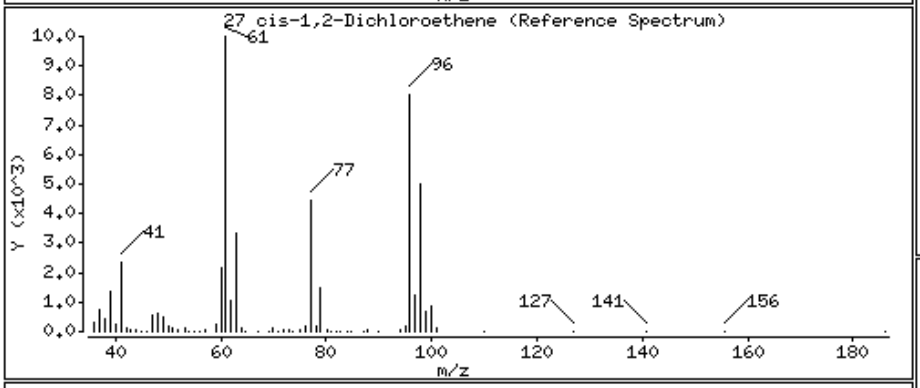
Column diameter: 0.18

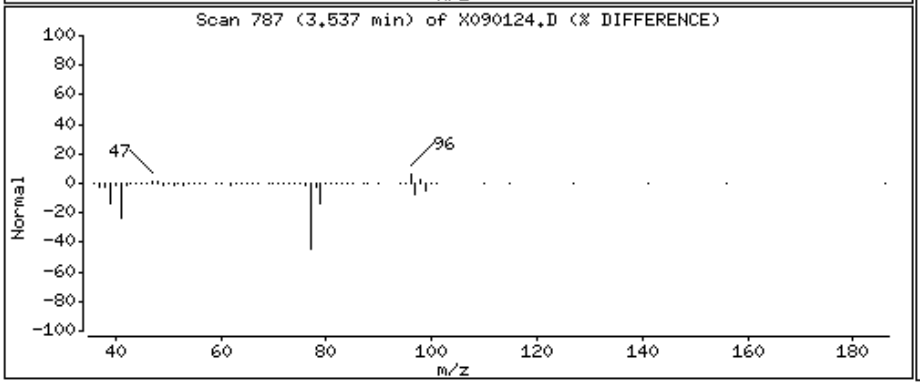
27 cis-1,2-Dichloroethene

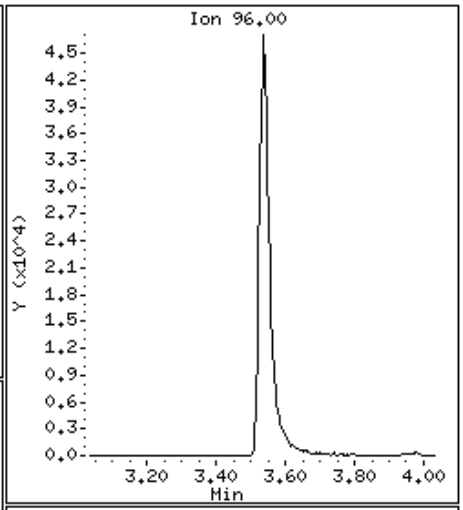
Concentration: 865.67 ug/l

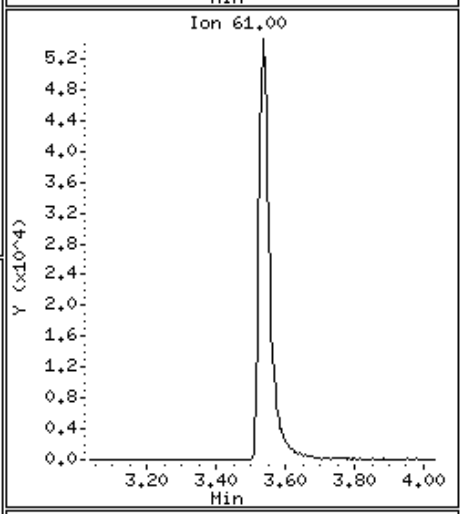


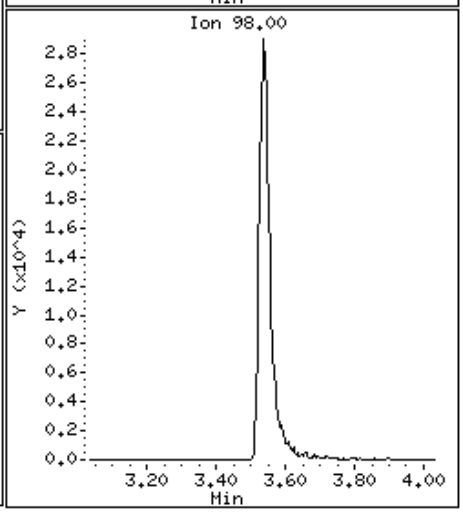












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090124.D

Date : 01-SEP-2022 18:15

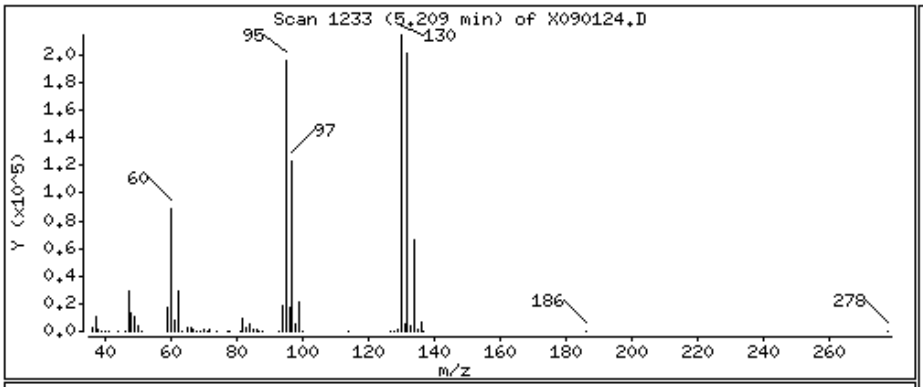
Client ID: HS22081514-02 Instrument: voa6.i

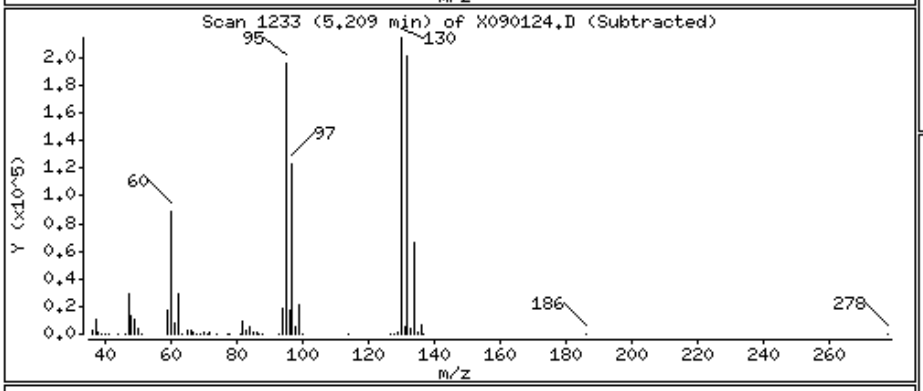
Sample Info: HS22081514-02;HS22081514-02;;;

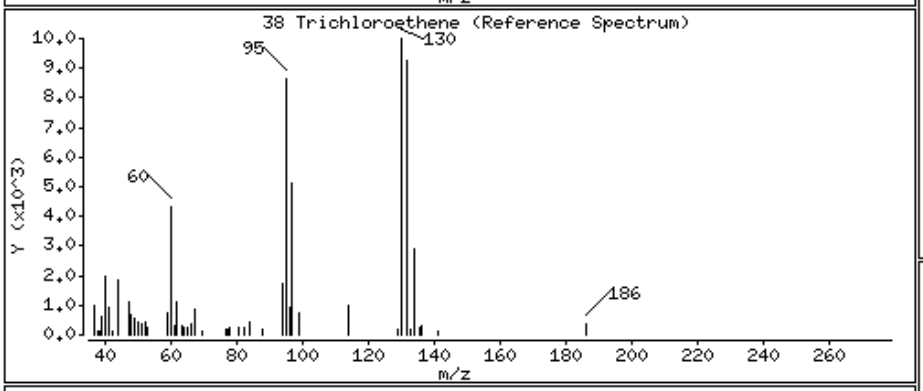
Purge Volume: 5.0 Operator: PC

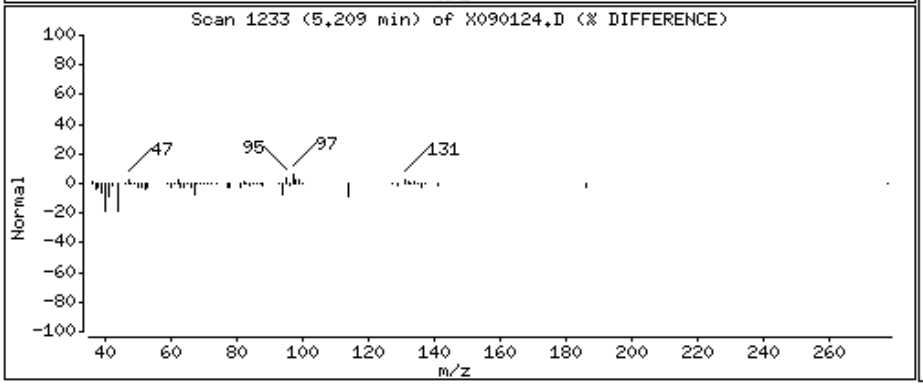
Column phase: DB624 Column diameter: 0.18

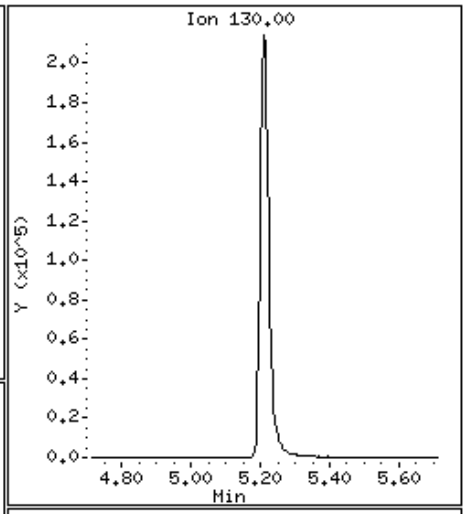
38 Trichloroethene Concentration: 3337.37 ug/l

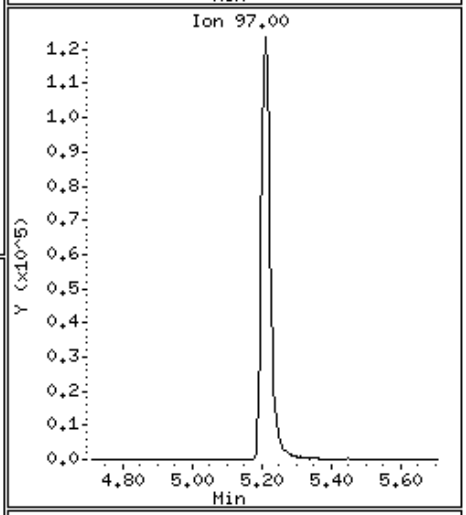


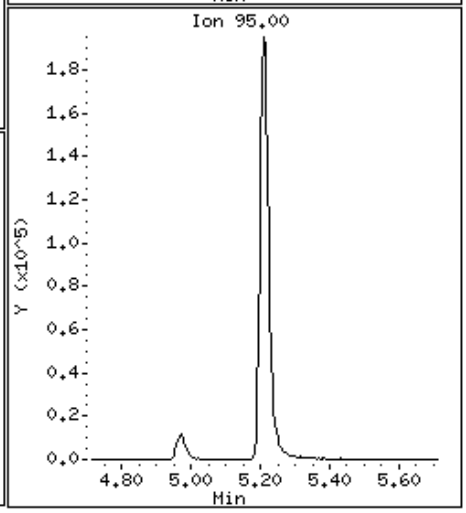












Data File : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090124.D
Inj Date : 01-SEP-2022 18:15
InstruID : voa6.i
LabSampID : HS22081514-02

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090125.D Page 1
Report Date: 09-Sep-2022 16:52

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090125.D
Lab Smp Id: HS22081514-04 Client Smp ID: HS22081514-04
Inj Date : 01-SEP-2022 18:36
Operator : PC Inst ID: voa6.i
Smp Info : HS22081514-04;HS22081514-04;;;
Misc Info : HS22052000V6;WATER;0;25;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\8260W.m
Meth Date : 09-Sep-2022 16:51 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 24
Dil Factor: 25.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	25.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
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	4.189	4.189	(1.000)	578494	50.0000	
* 36 1,4-Difluorobenzene	114	4.968	4.968	(1.000)	795884	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	673341	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.665	(1.000)	278100	50.0000	
$ 30 Dibromofluoromethane	113	4.106	4.106	(0.980)	250260	45.7829	45.78
$ 35 1,2-Dichloroethane-d4	65	4.474	4.477	(1.068)	266128	44.4762	44.47
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	921111	54.8280	54.82
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	270550	44.9441	44.94
22 1,1-Dichloroethane	63	2.933	2.929	(0.700)	4916	0.55199	13.79(a)
33 1,2-Dichloroethane	62	4.567	4.560	(0.919)	15713	2.25113	56.27(a)
27 cis-1,2-Dichloroethene	96	3.533	3.533	(0.843)	1335643	232.233	5805.82(A)
17 Methylene Chloride	84	2.311	2.311	(0.552)	247060	46.3837	1159.59
56 Tetrachloroethene	164	6.933	6.929	(0.904)	42652	9.76848	244.21
20 trans-1,2-Dichloroethene	96	2.543	2.539	(0.607)	3197	0.62821	15.70(a)
38 Trichloroethene	130	5.208	5.208	(1.048)	1391104	249.005	6225.13(A)
5 Vinyl Chloride	62	1.152	1.152	(0.275)	142214	23.4443	586.10

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.

01148212

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090125.D

Date : 01-SEP-2022 18:36

Client ID: HS22081514-04

Instrument: voa6.i

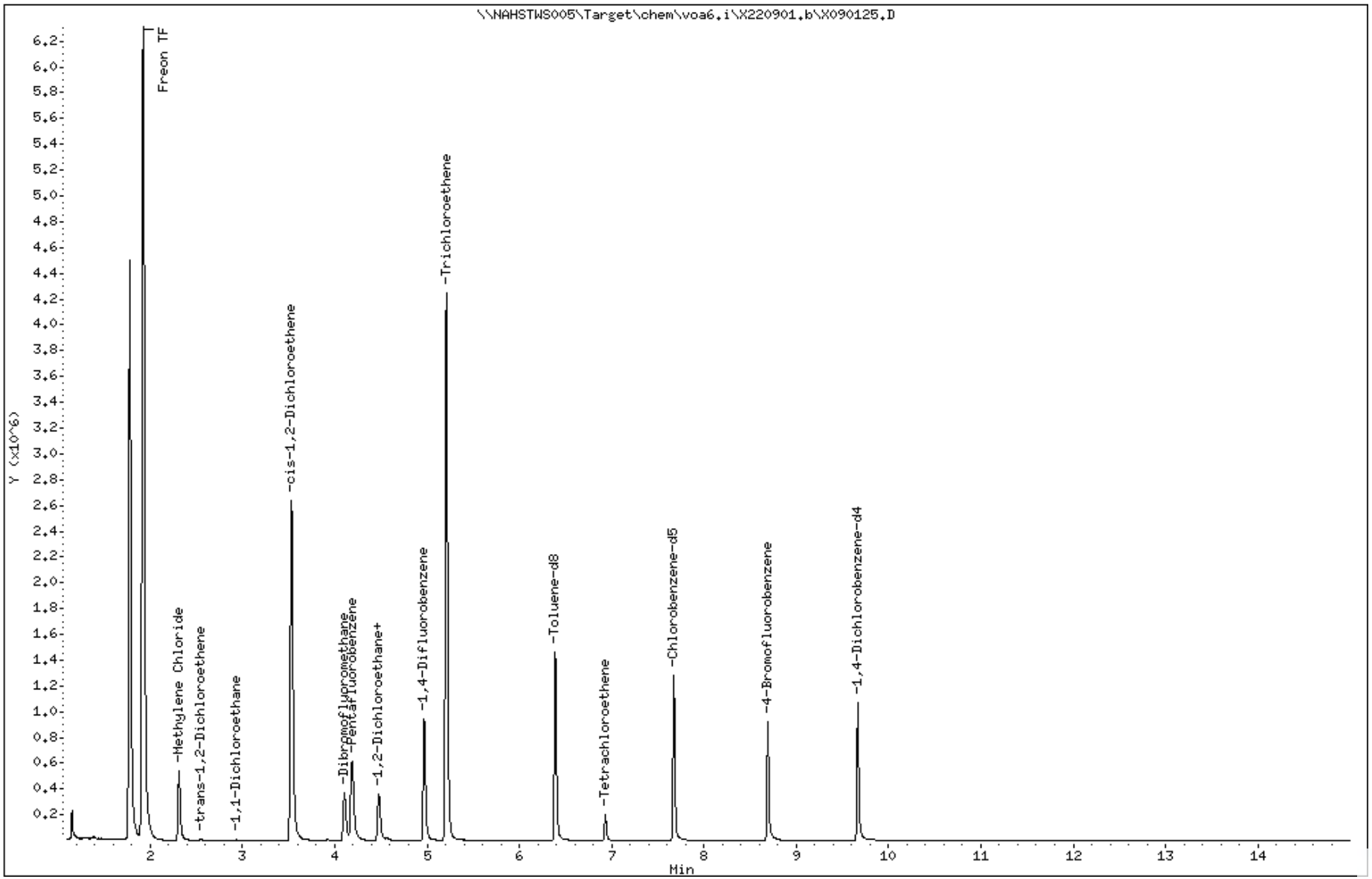
Sample Info: HS22081514-04;HS22081514-04;;;

Purge Volume: 5.0

Operator: PC

Column phase: DB624

Column diameter: 0.18



Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090125.D

Date : 01-SEP-2022 18:36

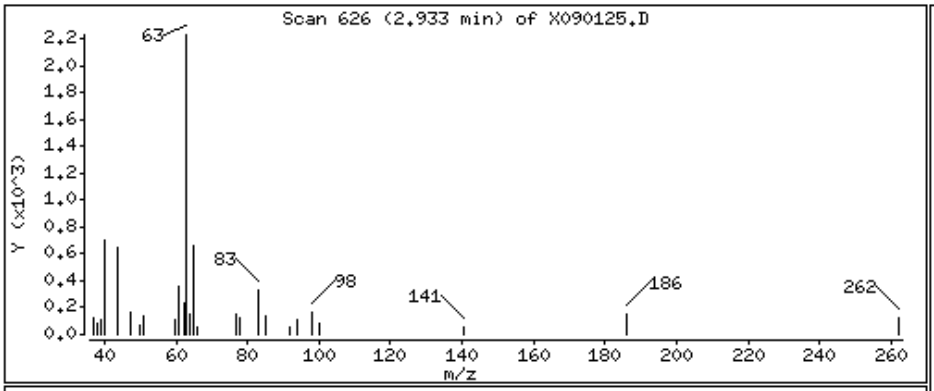
Client ID: HS22081514-04 Instrument: voa6.i

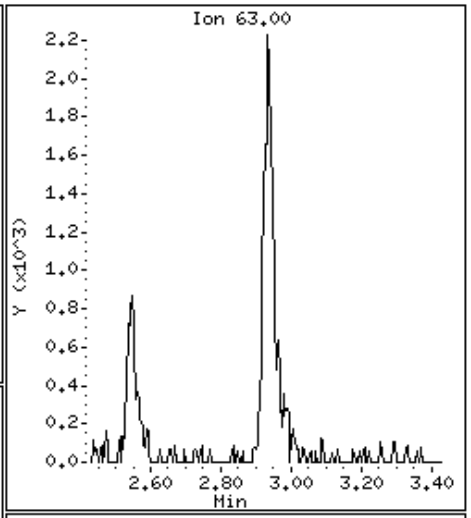
Sample Info: HS22081514-04;HS22081514-04;;;

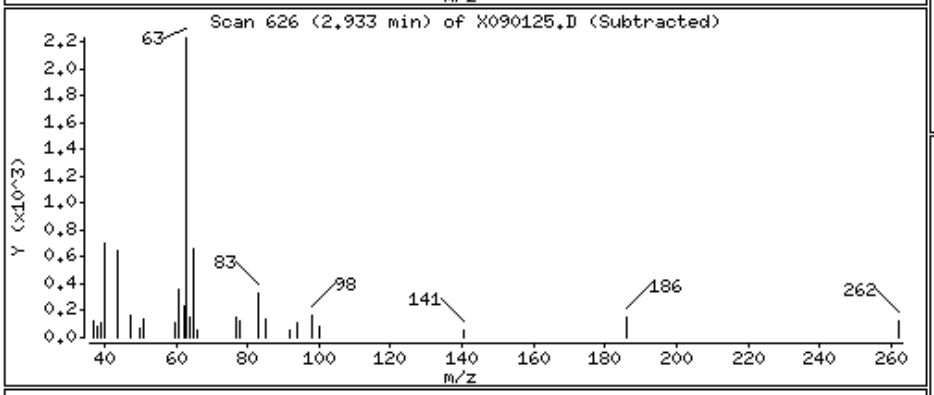
Purge Volume: 5.0 Operator: PC

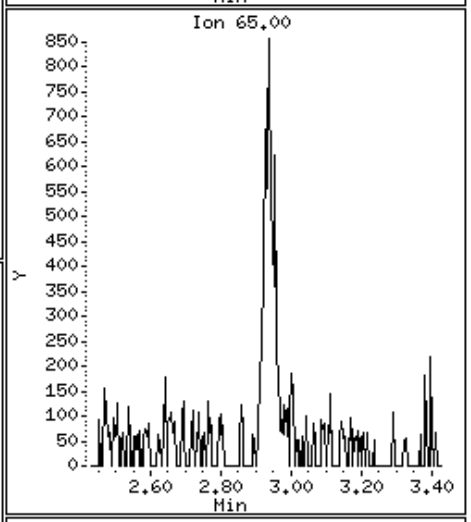
Column phase: DB624 Column diameter: 0.18

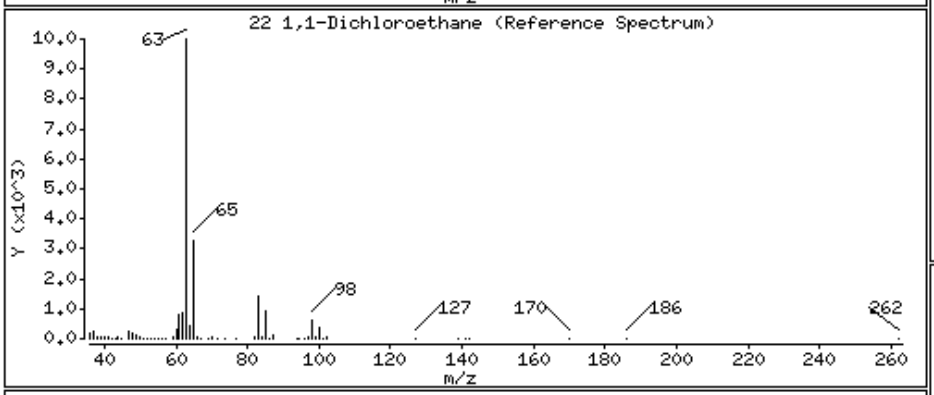
22 1,1-Dichloroethane Concentration: 13.79 ug/l

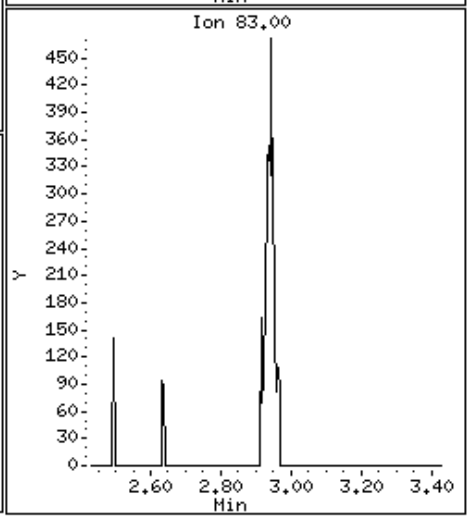


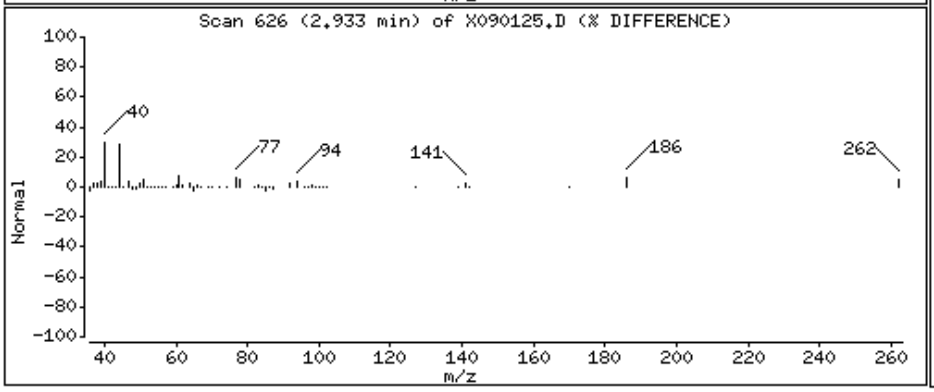












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090125.D

Date : 01-SEP-2022 18:36

Client ID: HS22081514-04

Instrument: voa6.i

Sample Info: HS22081514-04;HS22081514-04;;;

Purge Volume: 5.0

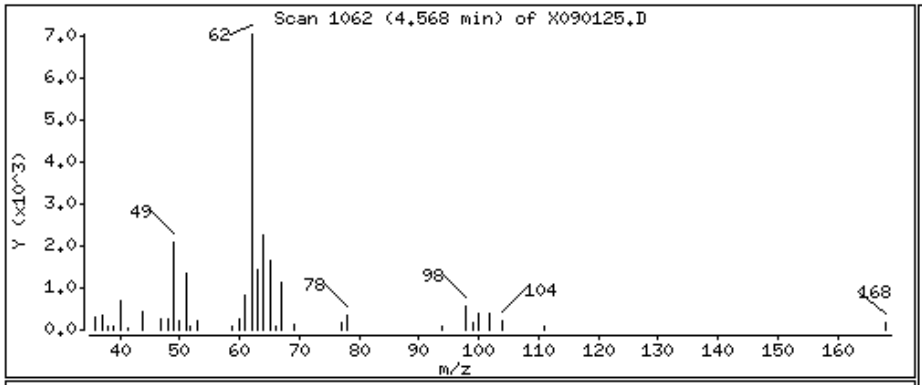
Operator: PC

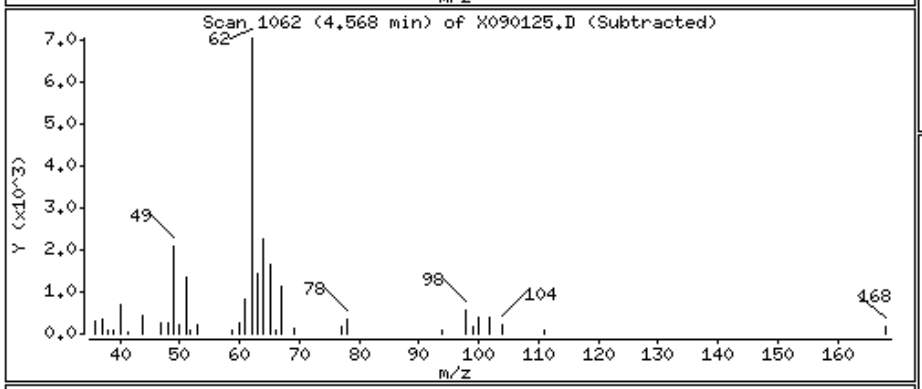
Column phase: DB624

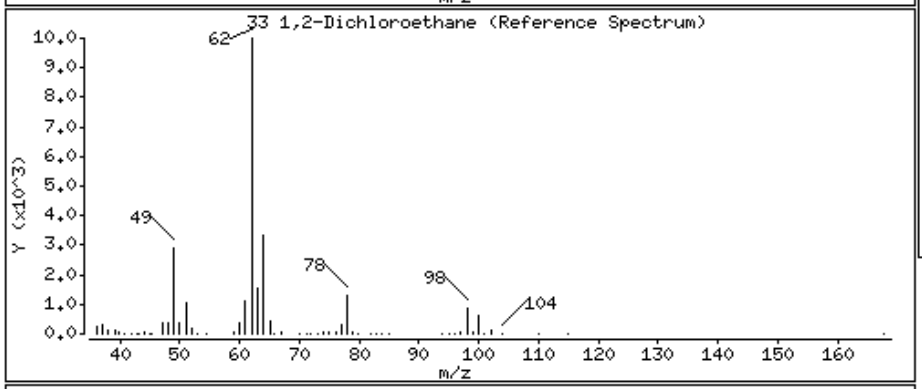
Column diameter: 0.18

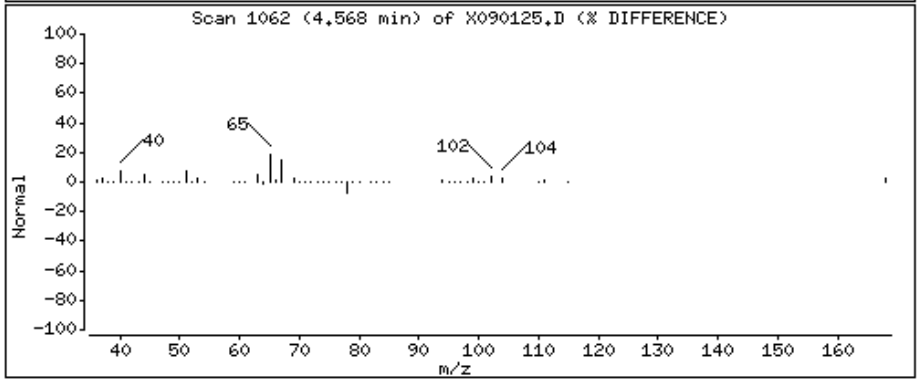
33 1,2-Dichloroethane

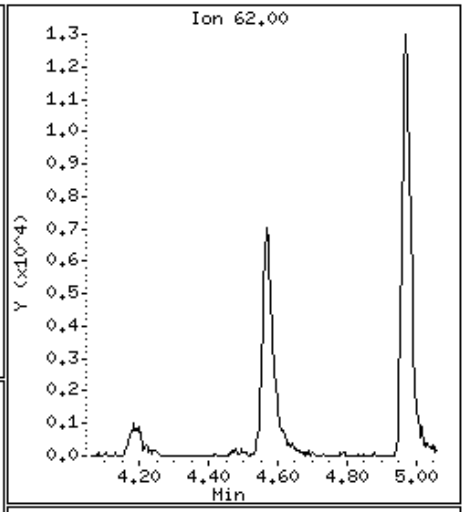
Concentration: 56.27 ug/l

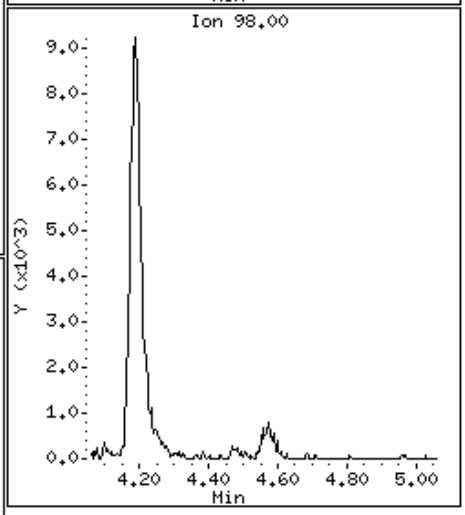












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090125.D

Date : 01-SEP-2022 18:36

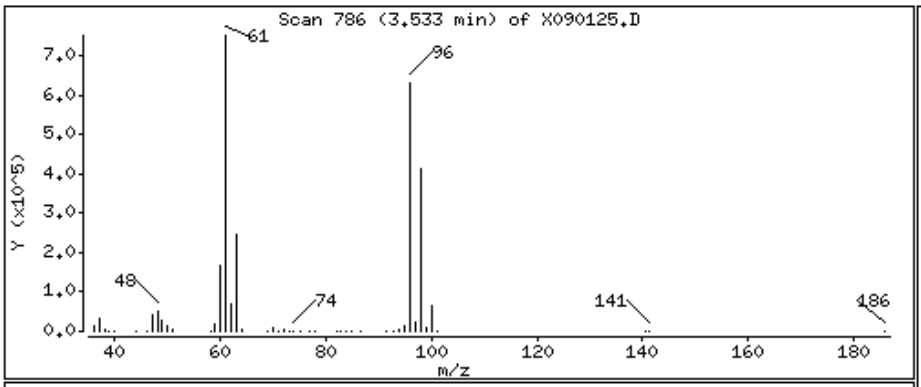
Client ID: HS22081514-04 Instrument: voa6.i

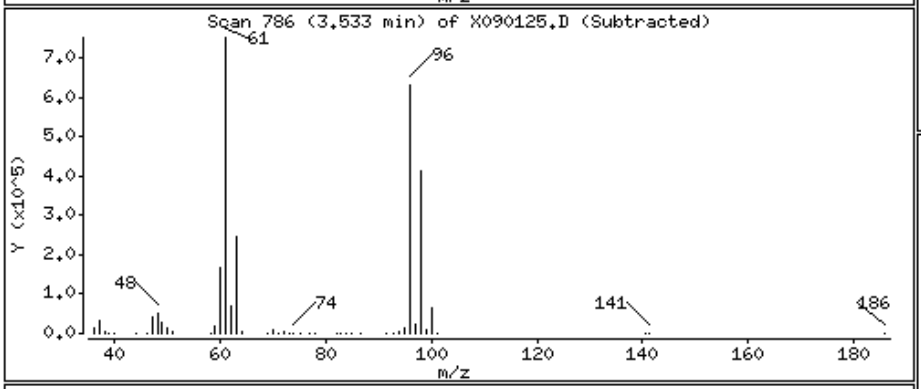
Sample Info: HS22081514-04;HS22081514-04;;;

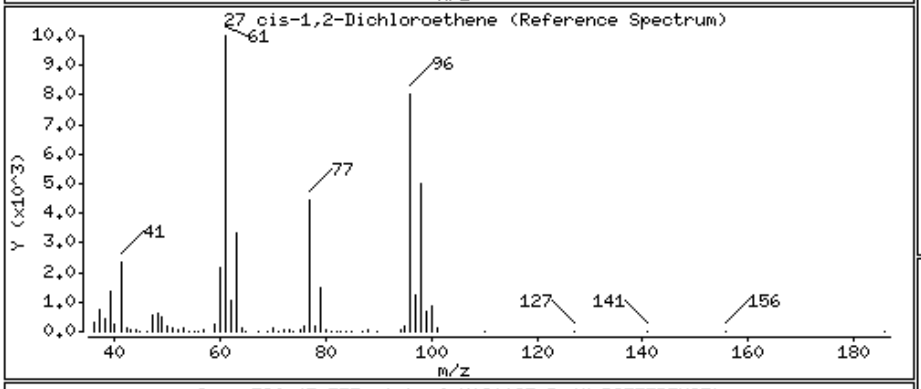
Purge Volume: 5.0 Operator: PC

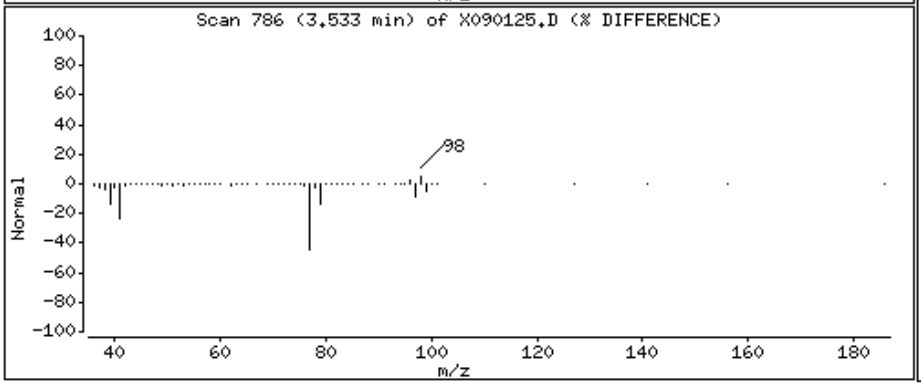
Column phase: DB624 Column diameter: 0.18

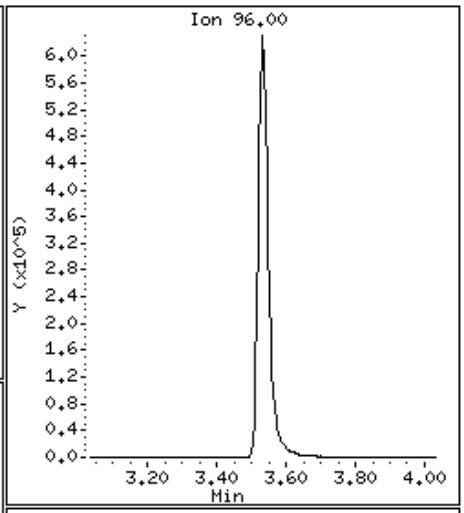
27 cis-1,2-Dichloroethene Concentration: 5805.82 ug/l

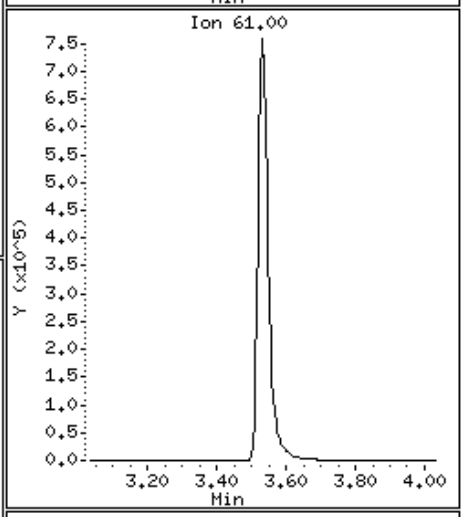


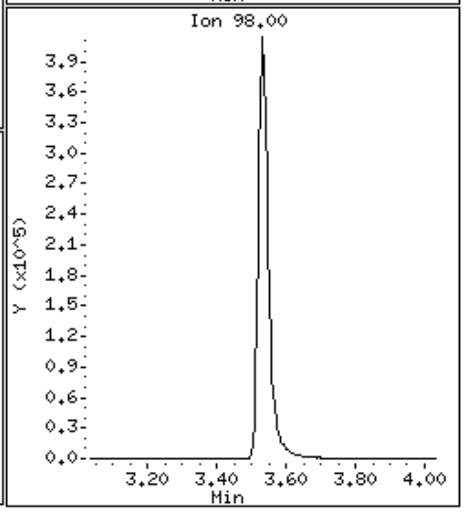












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090125.D Page 5

Date : 01-SEP-2022 18:36

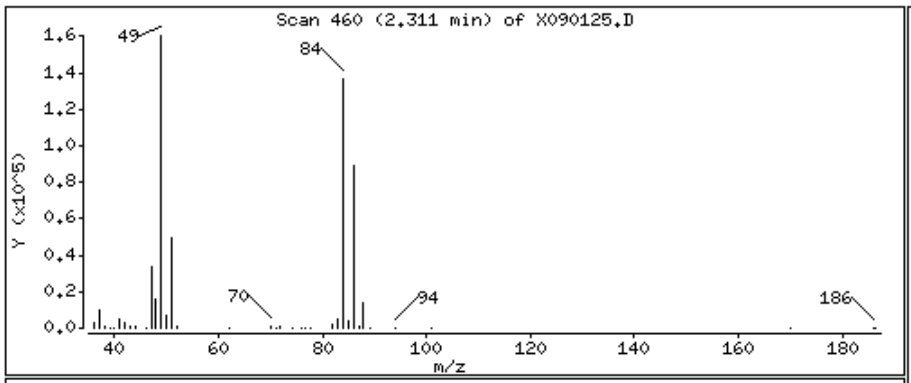
Client ID: HS22081514-04 Instrument: voa6.i

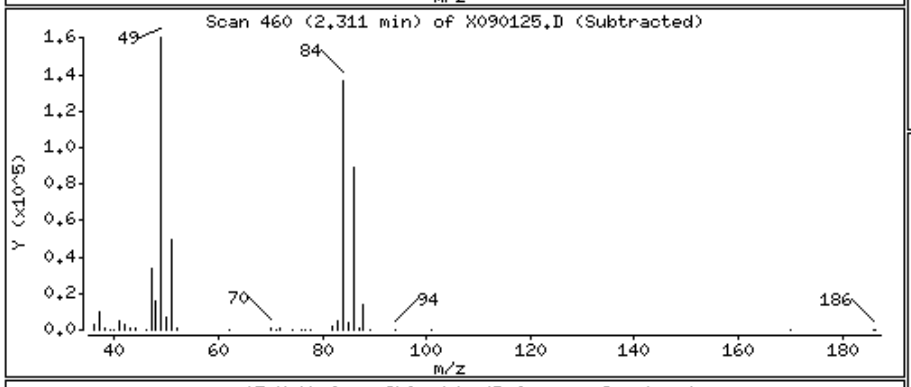
Sample Info: HS22081514-04;HS22081514-04;;;

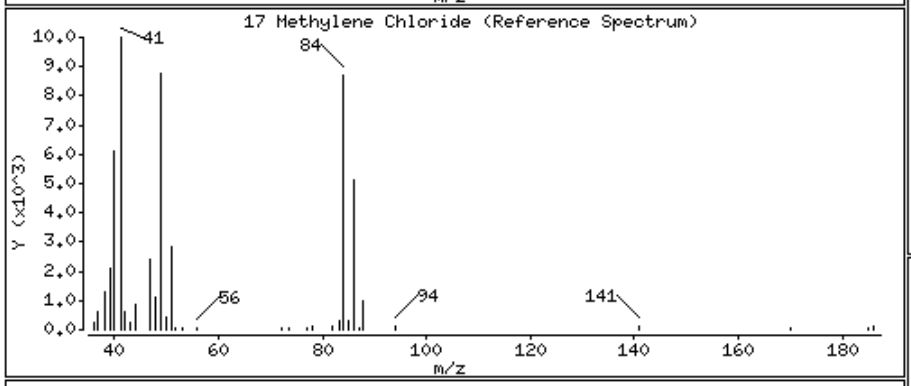
Purge Volume: 5.0 Operator: PC

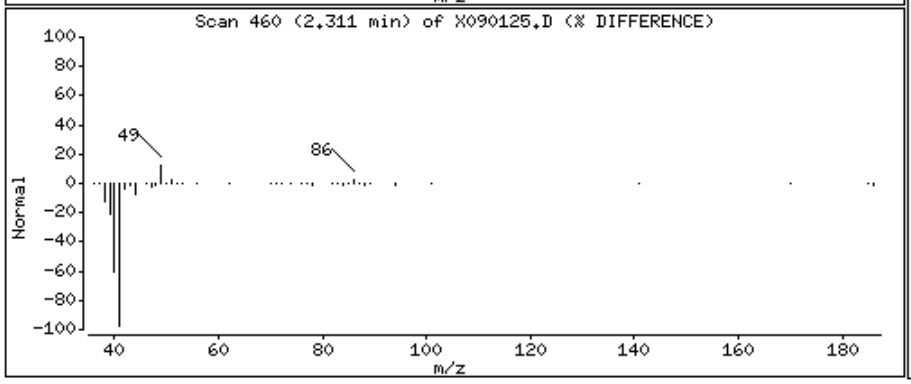
Column phase: DB624 Column diameter: 0.18

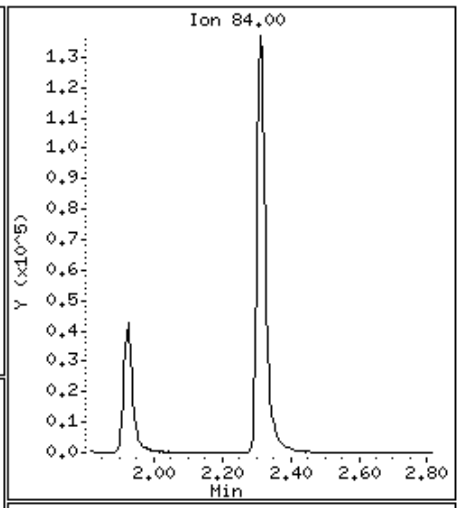
17 Methylene Chloride Concentration: 1159.59 ug/l

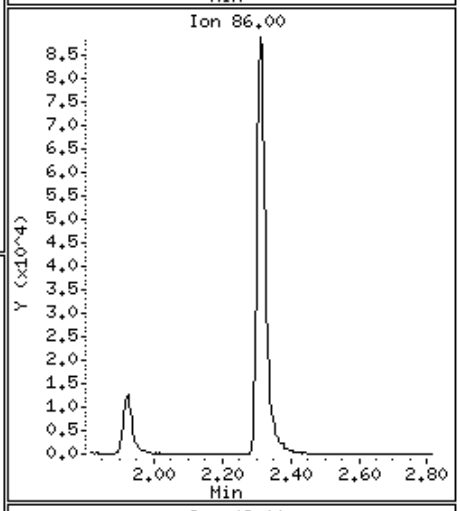


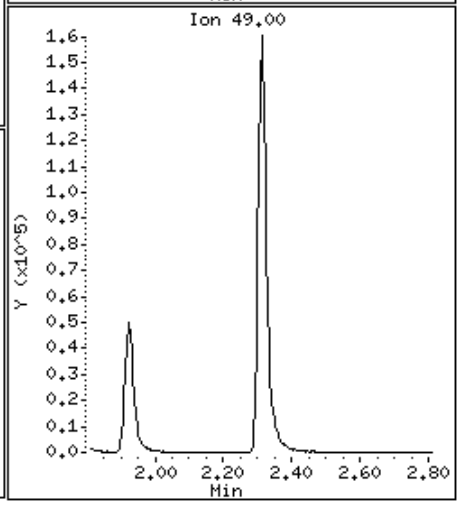












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090125.D Page 6

Date : 01-SEP-2022 18:36

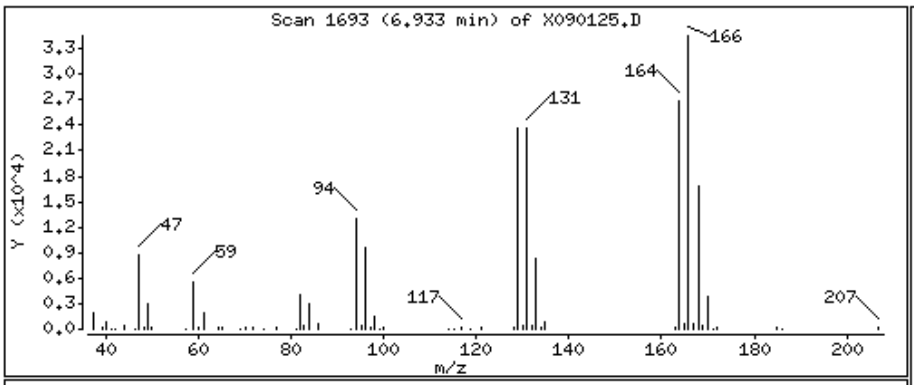
Client ID: HS22081514-04 Instrument: voa6.i

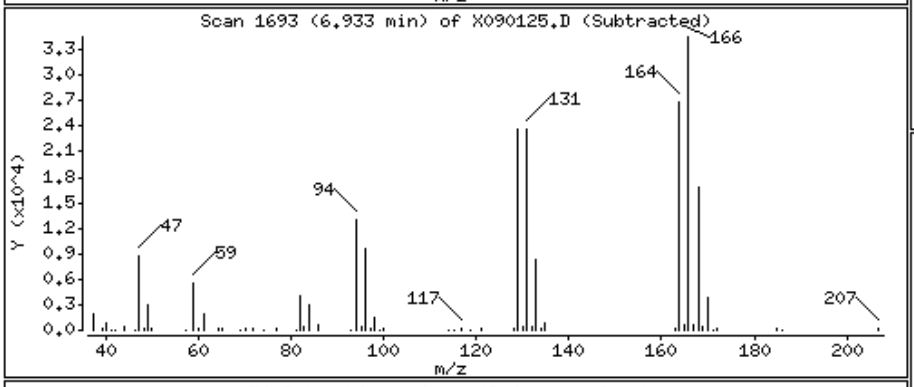
Sample Info: HS22081514-04;HS22081514-04;;;

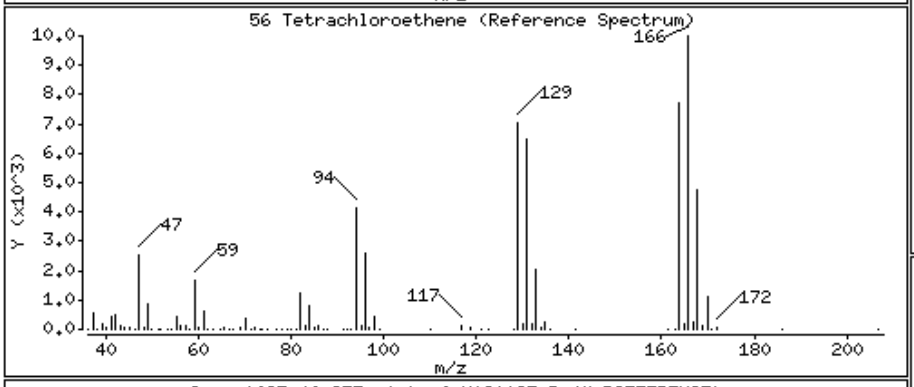
Purge Volume: 5.0 Operator: PC

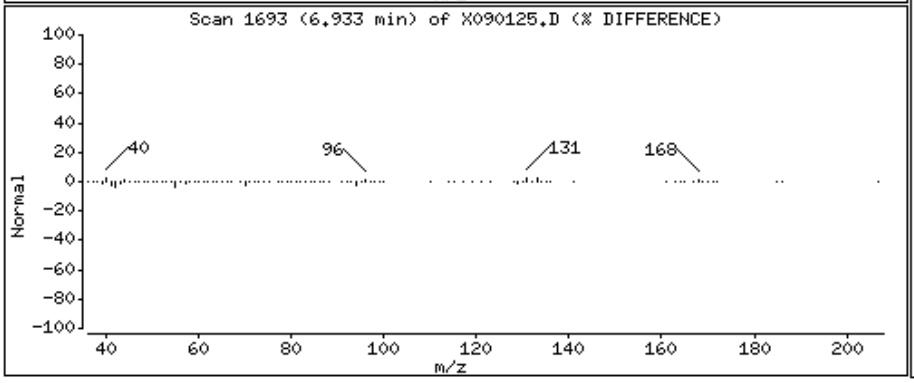
Column phase: DB624 Column diameter: 0.18

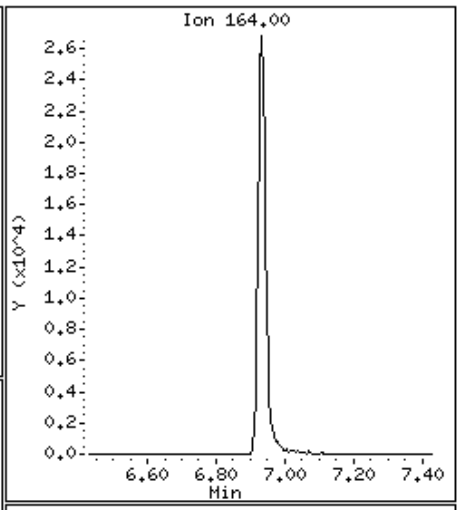
56 Tetrachloroethene Concentration: 244.21 ug/l

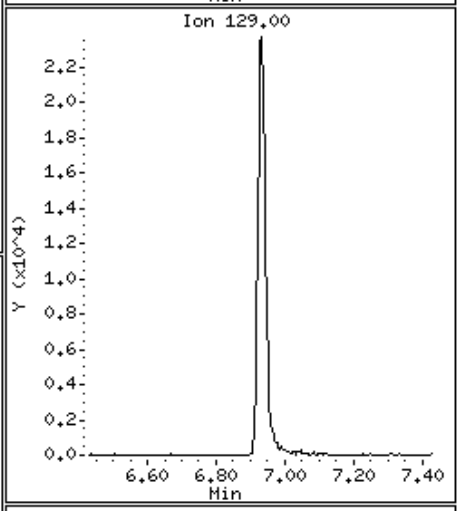


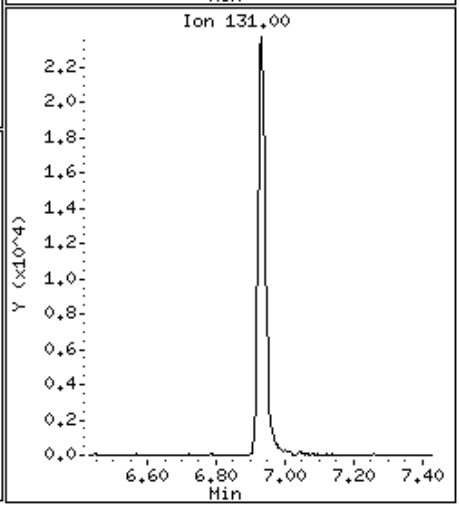












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090125.D Page 7

Date : 01-SEP-2022 18:36

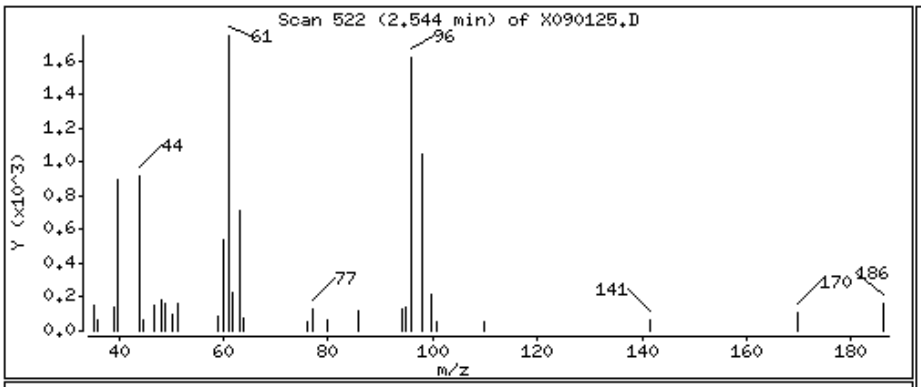
Client ID: HS22081514-04 Instrument: voa6.i

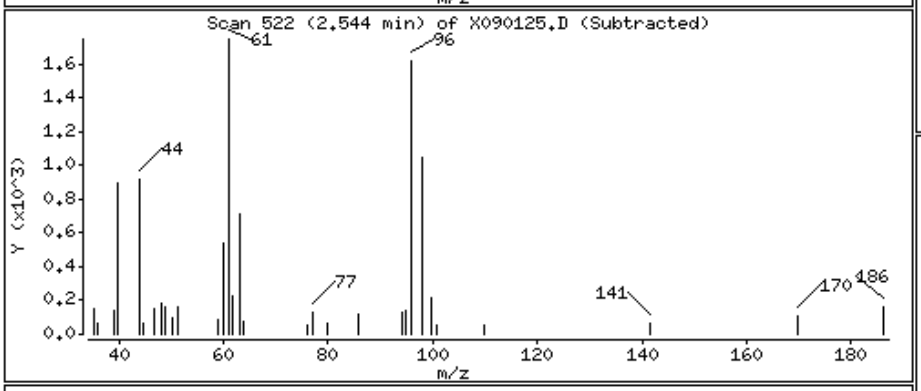
Sample Info: HS22081514-04;HS22081514-04;;;

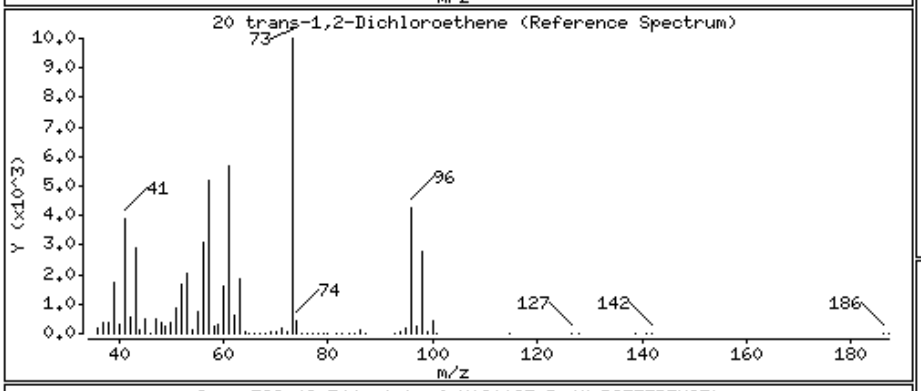
Purge Volume: 5.0 Operator: PC

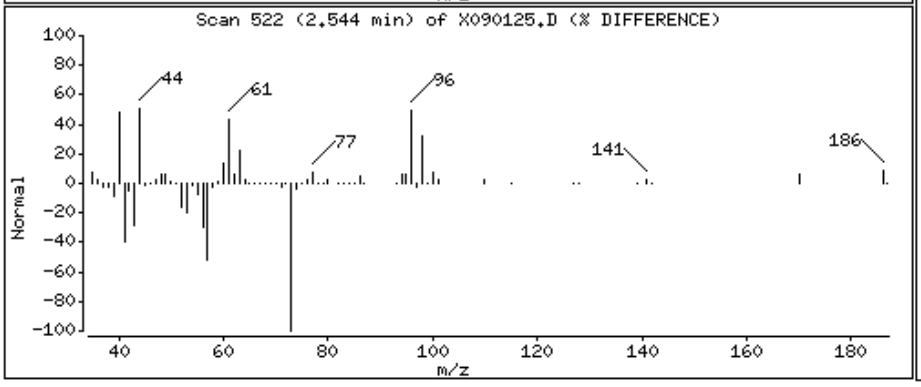
Column phase: DB624 Column diameter: 0.18

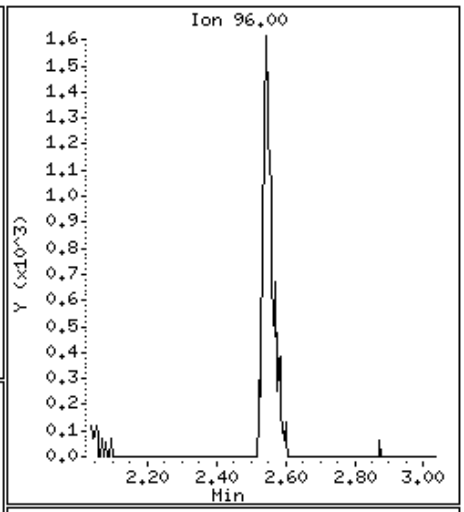
20 trans-1,2-Dichloroethene Concentration: 15.70 ug/l

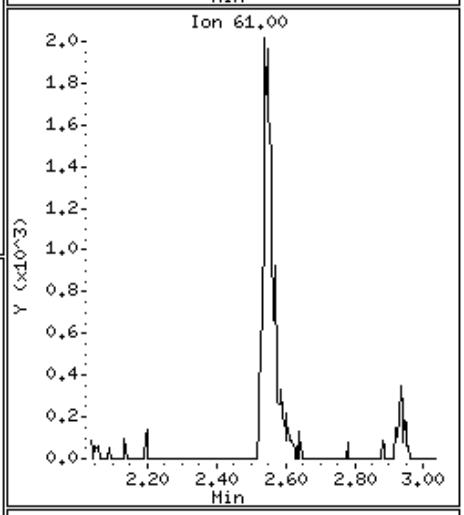


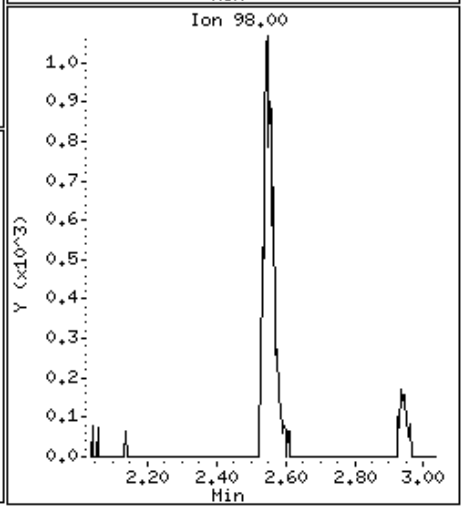












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090125.D Page 8

Date : 01-SEP-2022 18:36

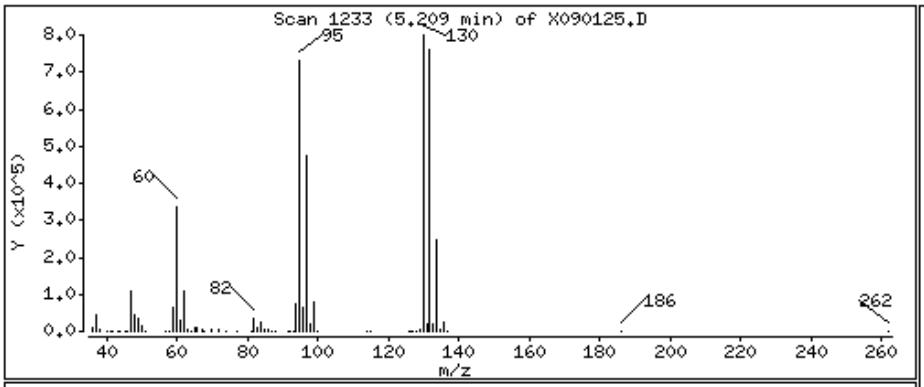
Client ID: HS22081514-04 Instrument: voa6.i

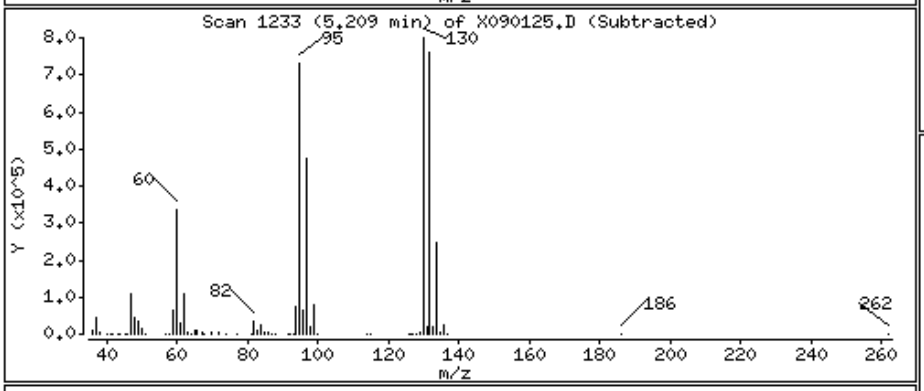
Sample Info: HS22081514-04;HS22081514-04;;;

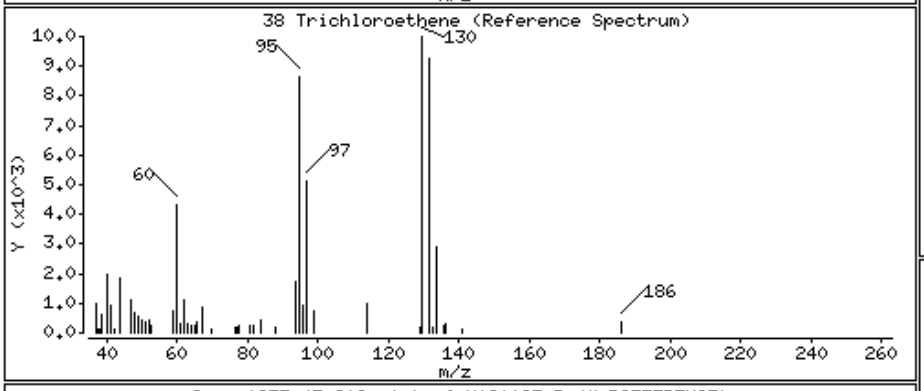
Purge Volume: 5.0 Operator: PC

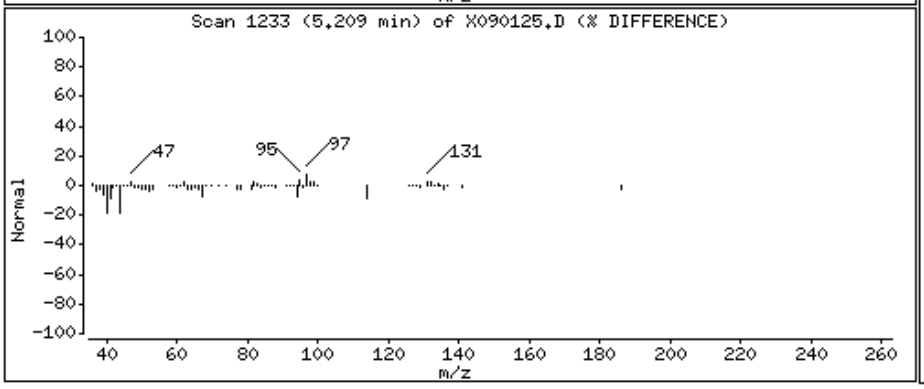
Column phase: DB624 Column diameter: 0.18

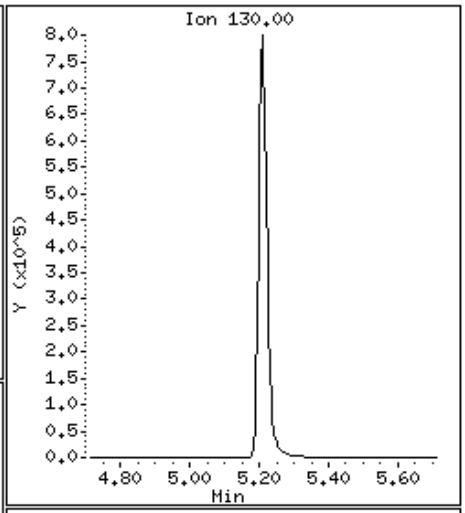
38 Trichloroethene Concentration: 6225.13 ug/l

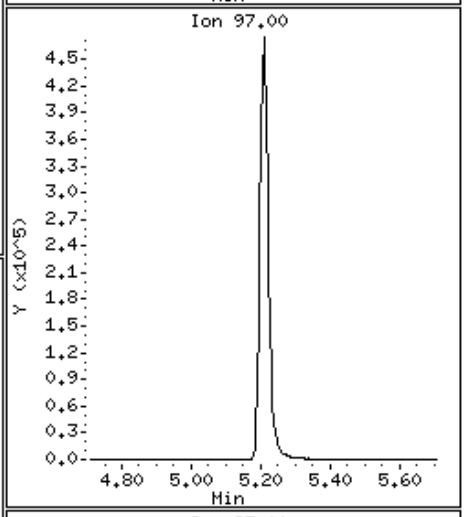


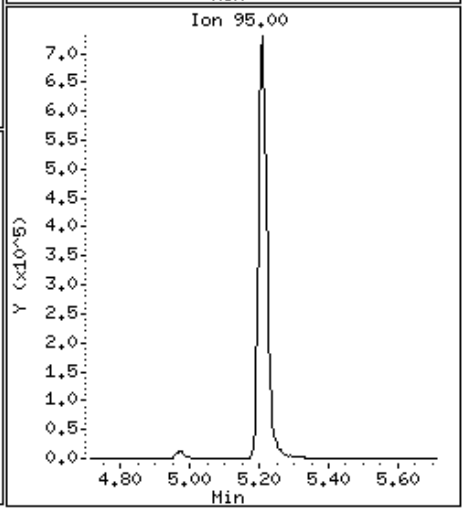












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090125.D

Date : 01-SEP-2022 18:36

Client ID: HS22081514-04

Instrument: voa6.i

Sample Info: HS22081514-04;HS22081514-04;;;

Purge Volume: 5.0

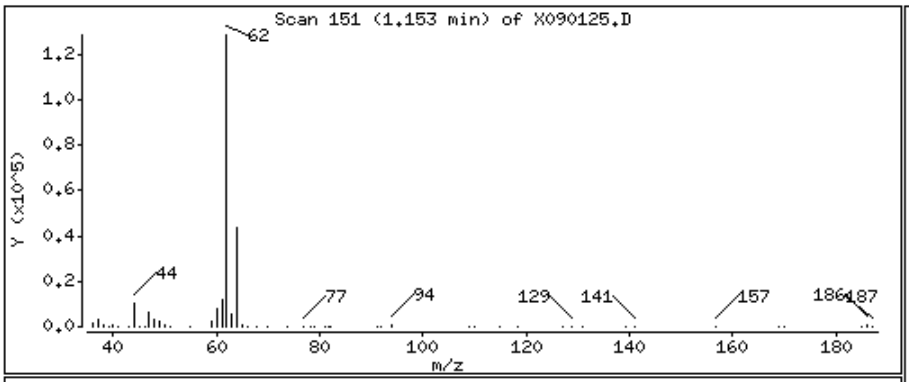
Operator: PC

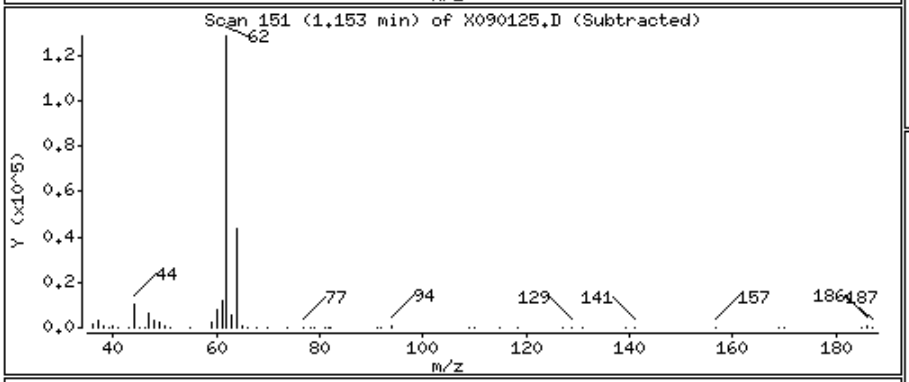
Column phase: DB624

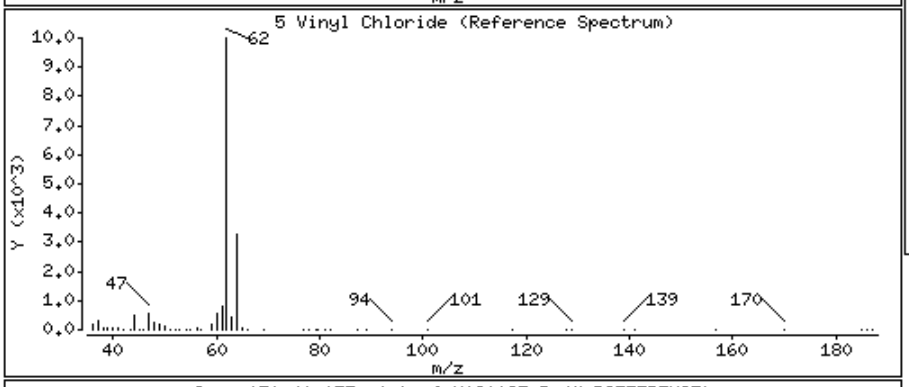
Column diameter: 0.18

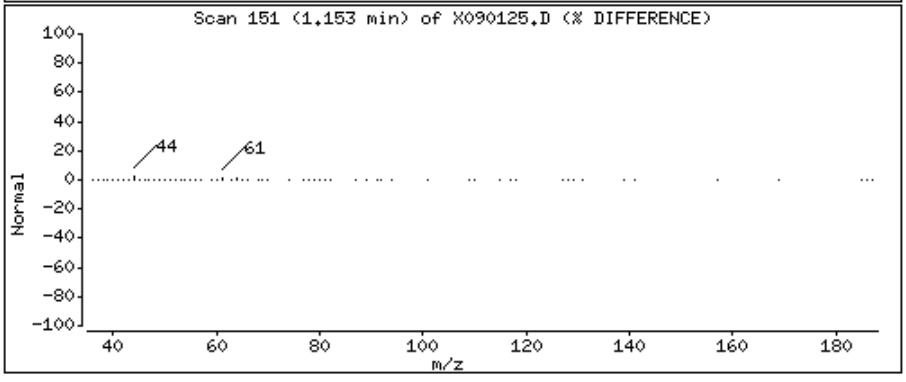
5 Vinyl Chloride

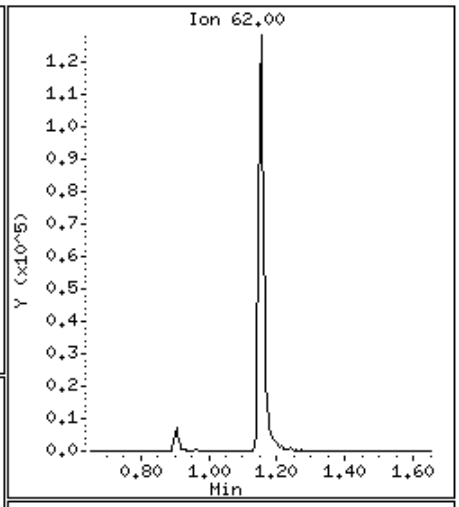
Concentration: 586.10 ug/l

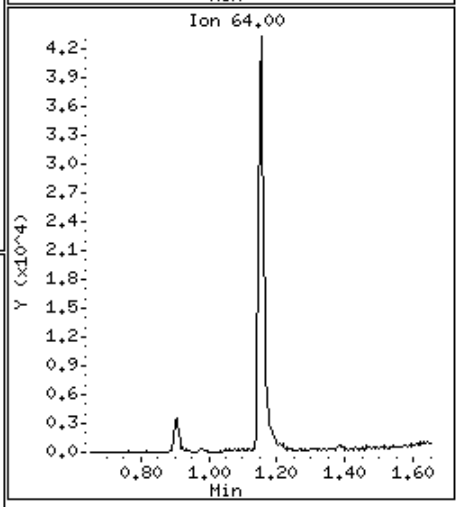












Data File : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090125.D
Inj Date : 01-SEP-2022 18:36
InstruID : voa6.i
LabSampID : HS22081514-04

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090126.D Page 1
Report Date: 09-Sep-2022 16:52

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090126.D
Lab Smp Id: HS22081514-04 Client Smp ID: HS22081514-04
Inj Date : 01-SEP-2022 18:57
Operator : PC Inst ID: voa6.i
Smp Info : HS22081514-04;HS22081514-04;;;
Misc Info : HS22052000V6;WATER;0;250;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\8260W.m
Meth Date : 09-Sep-2022 16:51 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 25
Dil Factor: 250.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	250.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
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	4.189	4.189	(1.000)	578148	50.0000	
* 36 1,4-Difluorobenzene	114	4.969	4.968	(1.000)	802670	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	689854	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.665	(1.000)	298519	50.0000	
$ 30 Dibromofluoromethane	113	4.106	4.106	(0.980)	255313	46.7504	46.75
$ 35 1,2-Dichloroethane-d4	65	4.477	4.477	(1.069)	275118	46.0175	46.01
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	921578	53.5427	53.54
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	281284	45.6210	45.62
27 cis-1,2-Dichloroethene	96	3.537	3.533	(0.844)	147156	25.6018	6400.46
17 Methylene Chloride	84	2.311	2.311	(0.552)	35020	5.82842	1457.10
56 Tetrachloroethene	164	6.933	6.929	(0.904)	4857	1.08576	271.43(a)
38 Trichloroethene	130	5.212	5.208	(1.049)	154013	27.3350	6833.75
5 Vinyl Chloride	62	1.152	1.152	(0.275)	15979	2.63576	658.93(a)

QC Flag Legend

a - Target compound detected but, quantitated amount Below Limit Of Quantitation(BLOQ).

01148223

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090126.D

Date : 01-SEP-2022 18:57

Client ID: HS22081514-04

Instrument: voa6.i

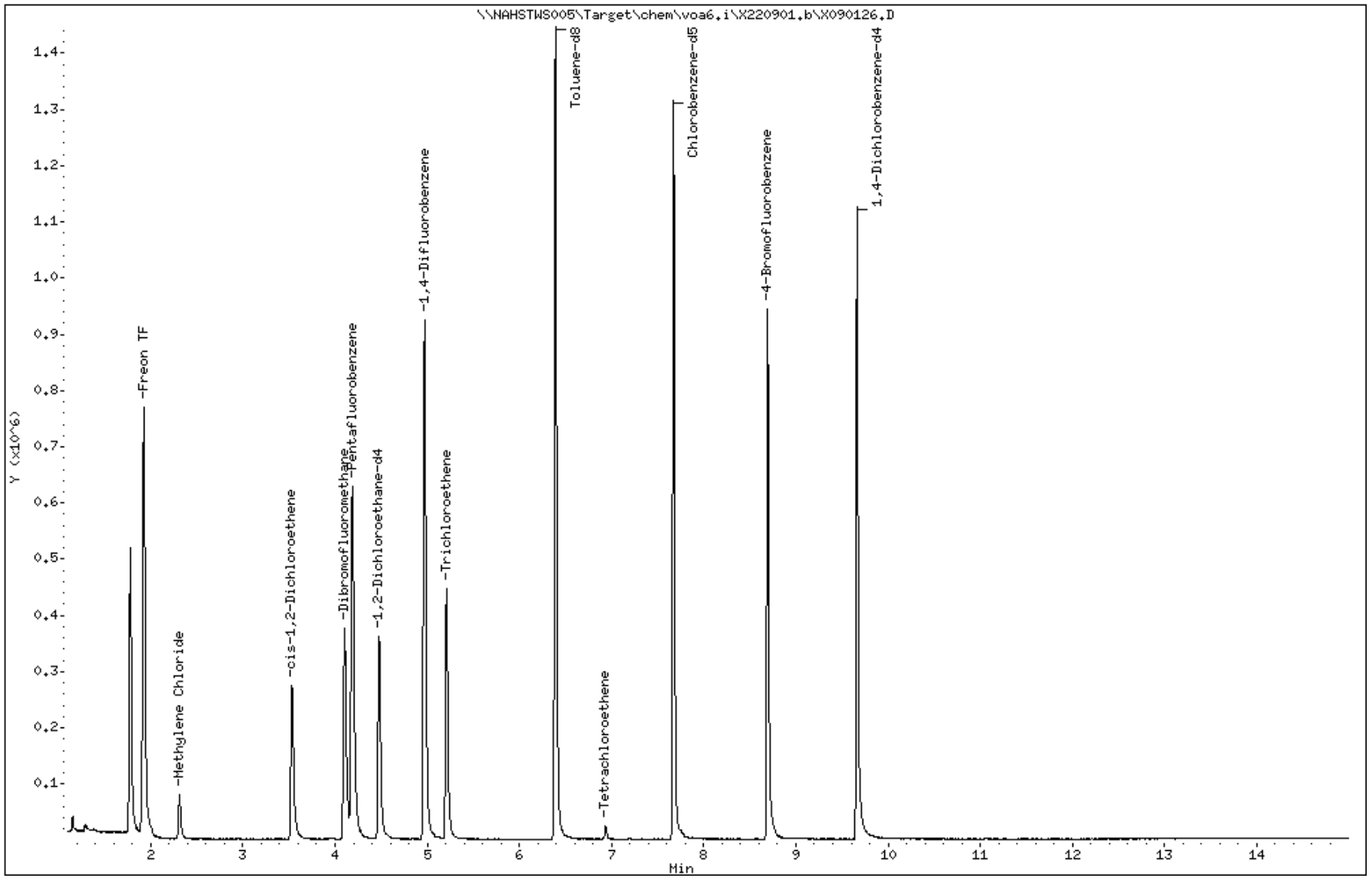
Sample Info: HS22081514-04;HS22081514-04;;;

Purge Volume: 5.0

Operator: PC

Column phase: DB624

Column diameter: 0.18



Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090126.D

Date : 01-SEP-2022 18:57

Client ID: HS22081514-04

Instrument: voa6.i

Sample Info: HS22081514-04;HS22081514-04;;;

Purge Volume: 5.0

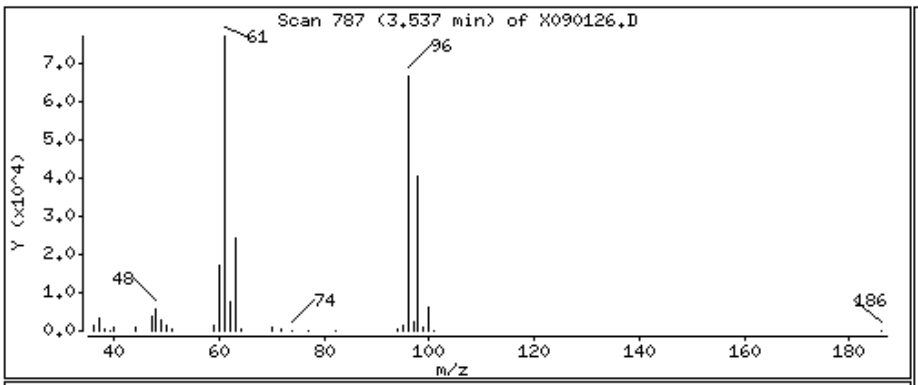
Operator: PC

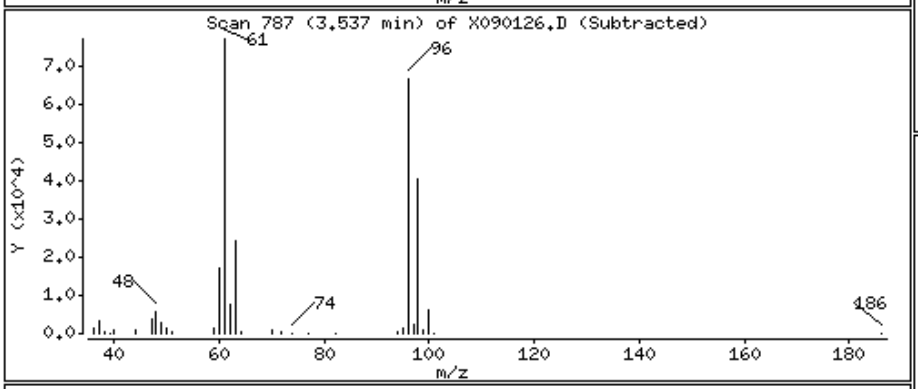
Column phase: DB624

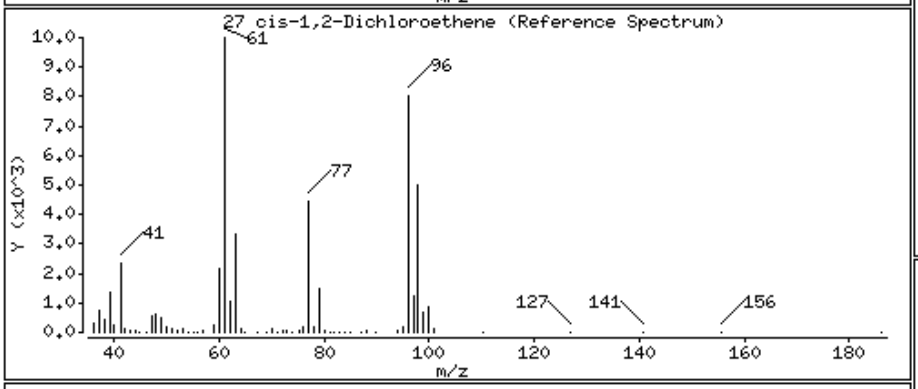
Column diameter: 0.18

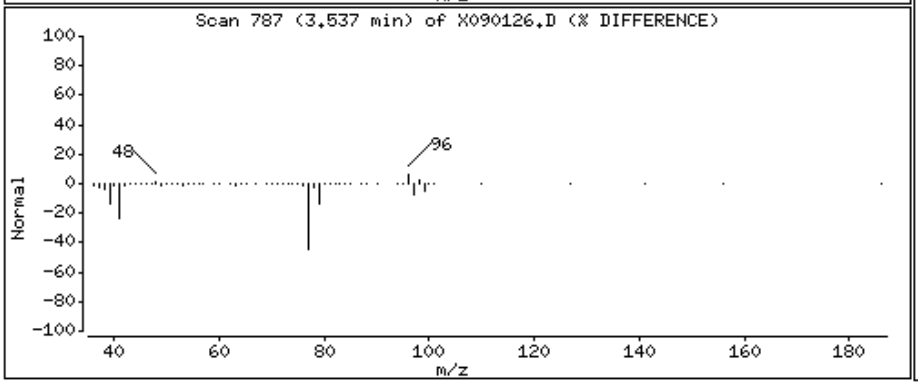
27 cis-1,2-Dichloroethene

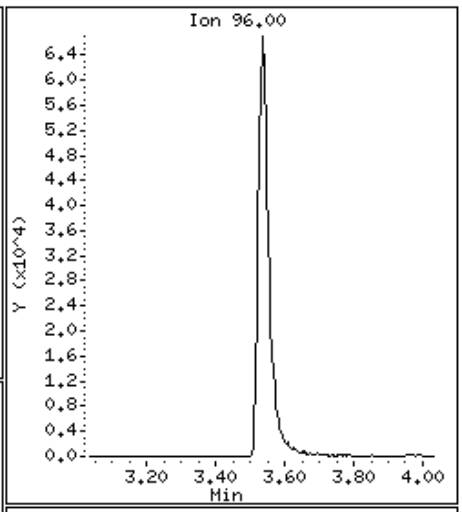
Concentration: 6400.46 ug/l

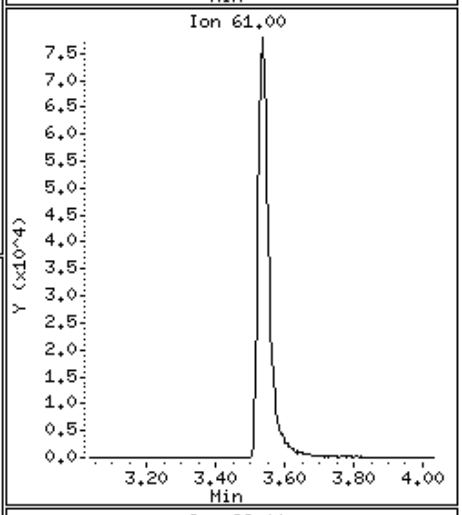


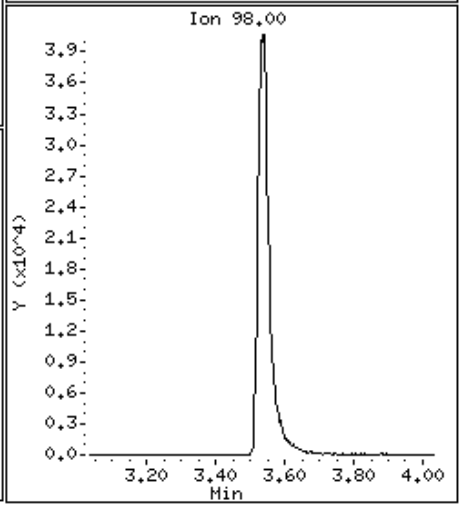












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090126.D Page 3

Date : 01-SEP-2022 18:57

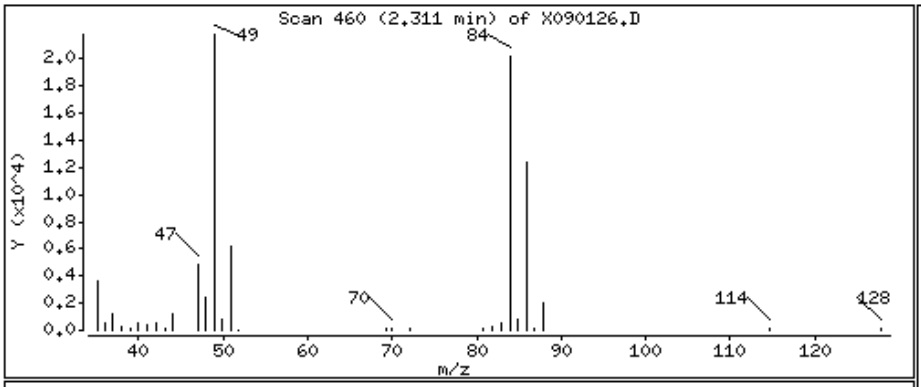
Client ID: HS22081514-04 Instrument: voa6.i

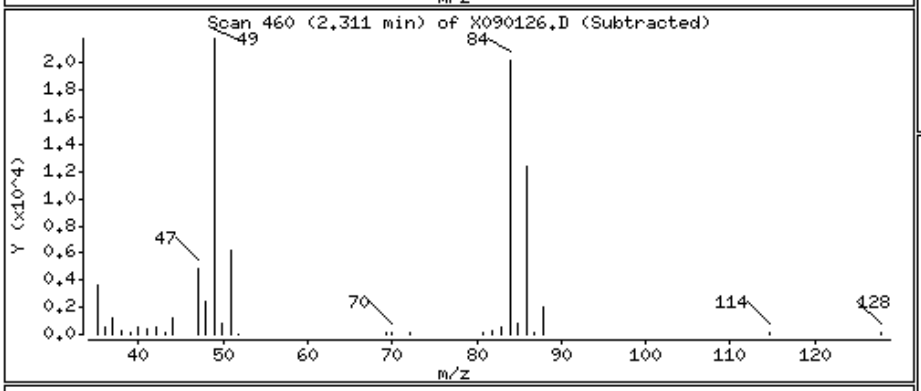
Sample Info: HS22081514-04;HS22081514-04;;;

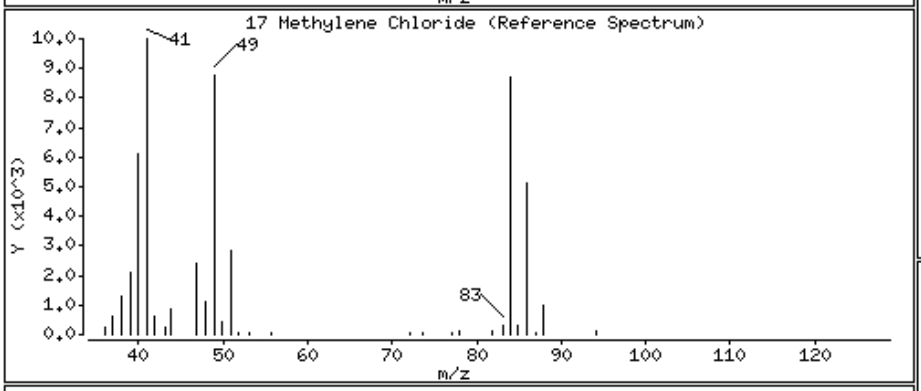
Purge Volume: 5.0 Operator: PC

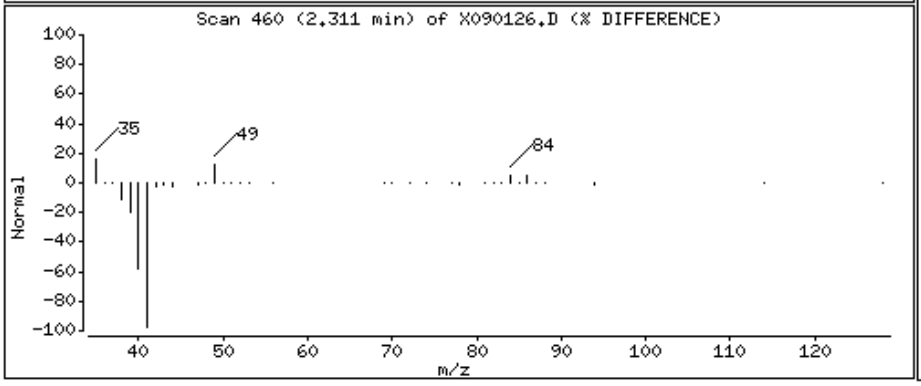
Column phase: DB624 Column diameter: 0.18

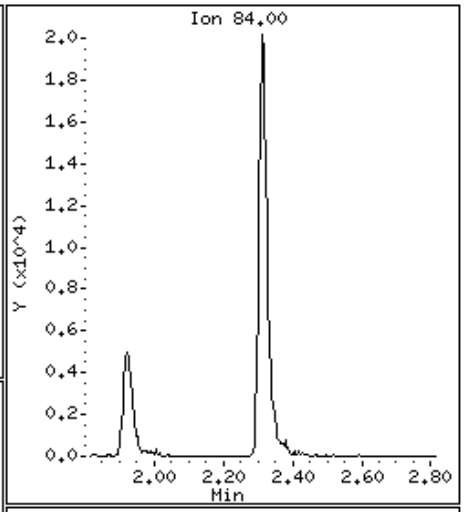
17 Methylene Chloride Concentration: 1457.10 ug/l

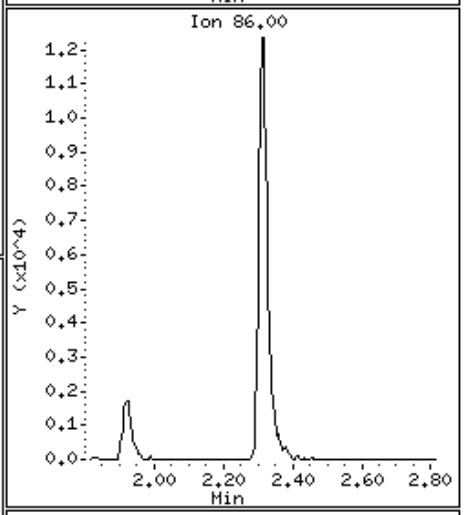


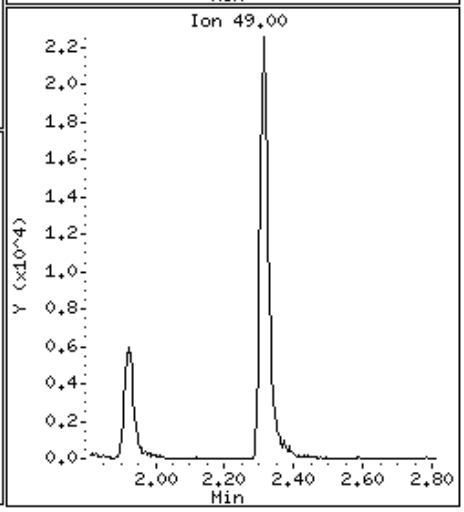












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090126.D Page 4

Date : 01-SEP-2022 18:57

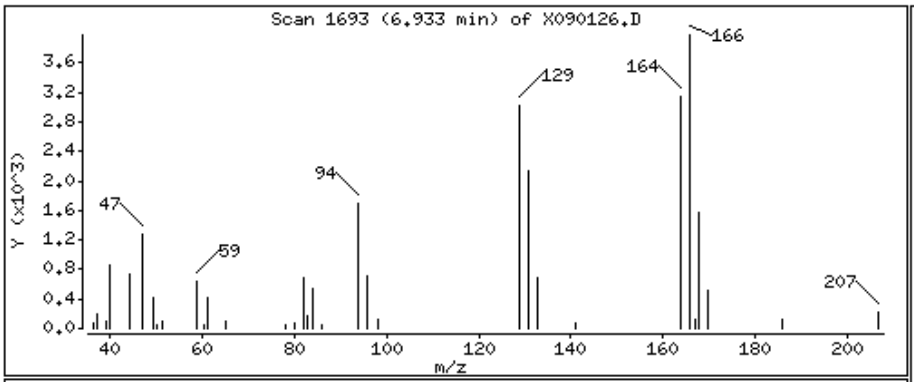
Client ID: HS22081514-04 Instrument: voa6.i

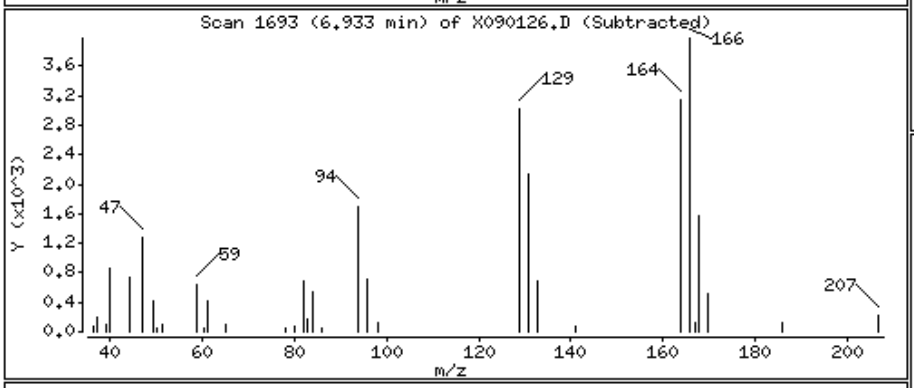
Sample Info: HS22081514-04;HS22081514-04;;;

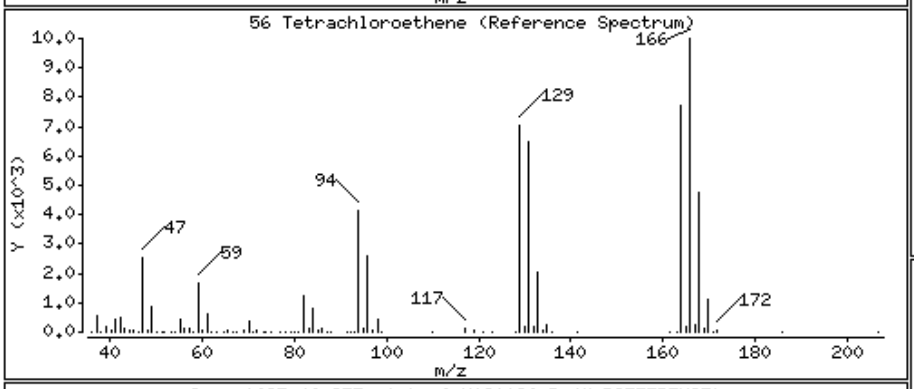
Purge Volume: 5.0 Operator: PC

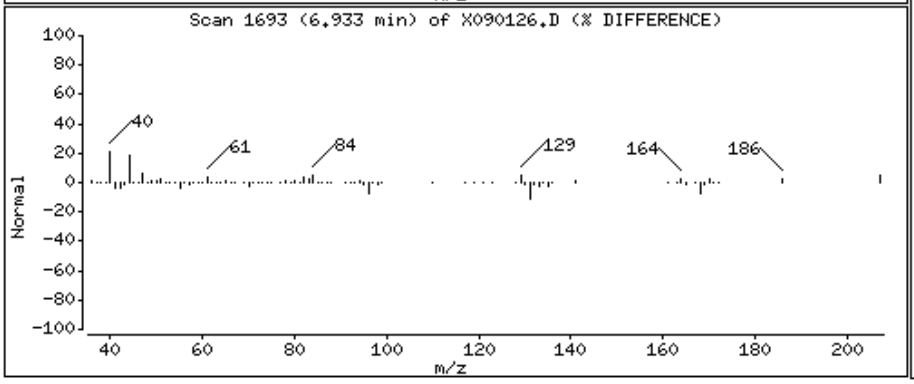
Column phase: DB624 Column diameter: 0.18

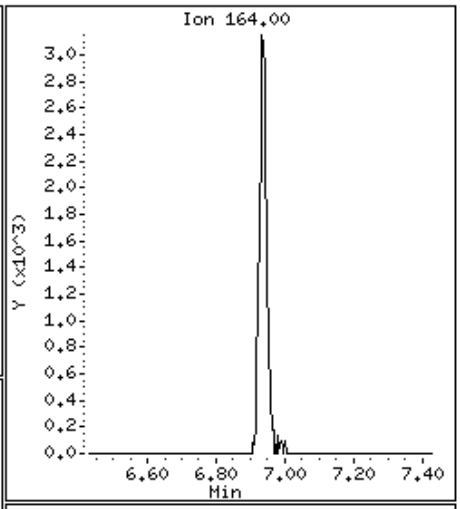
56 Tetrachloroethene Concentration: 271.43 ug/l

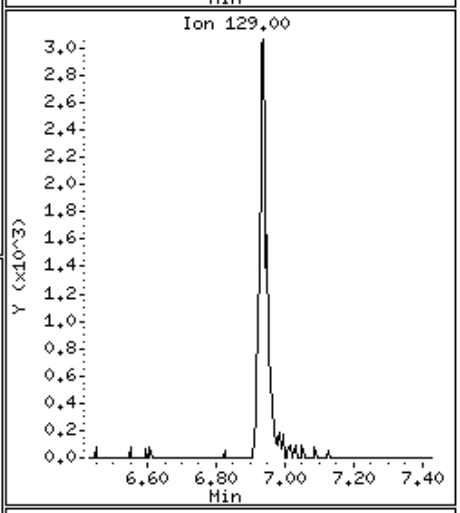


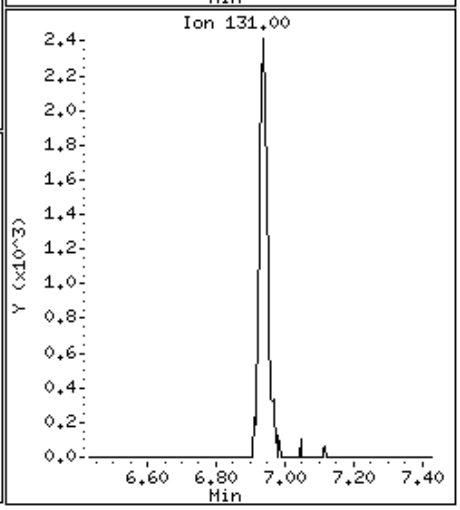












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090126.D Page 5

Date : 01-SEP-2022 18:57

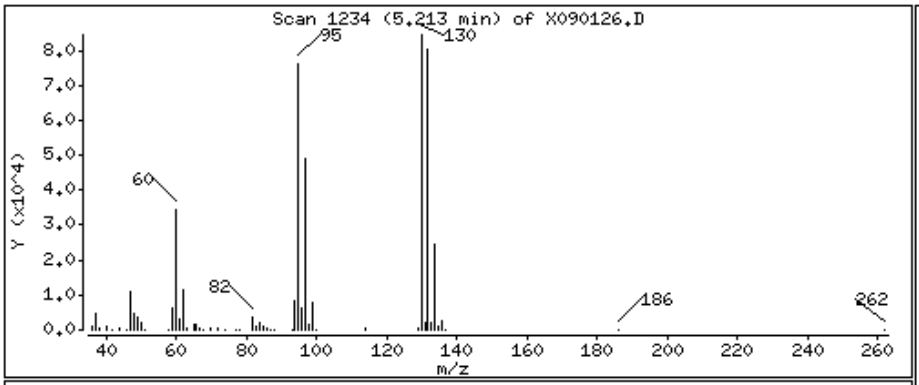
Client ID: HS22081514-04 Instrument: voa6.i

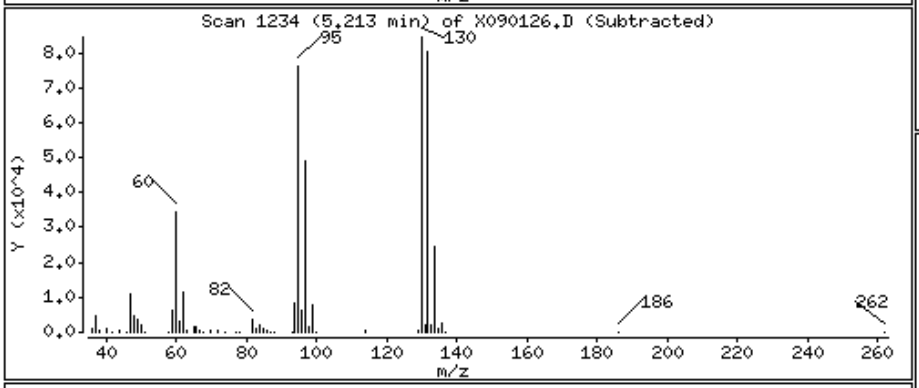
Sample Info: HS22081514-04;HS22081514-04;;;

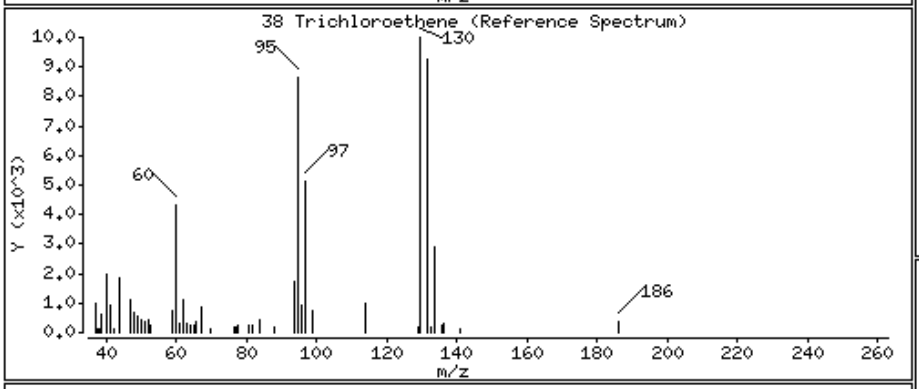
Purge Volume: 5.0 Operator: PC

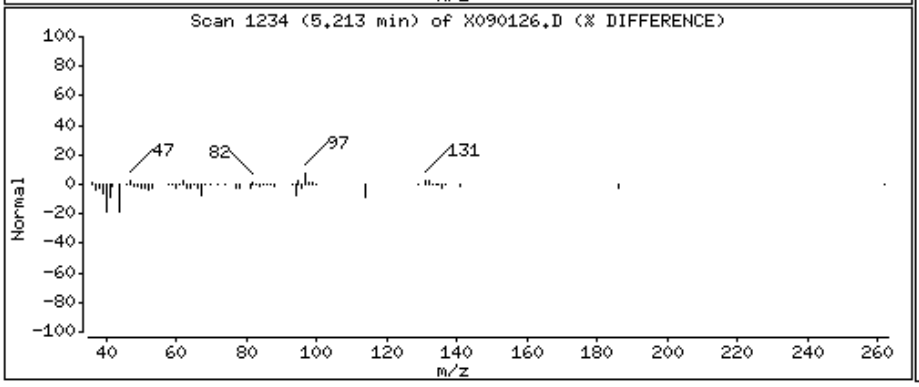
Column phase: DB624 Column diameter: 0.18

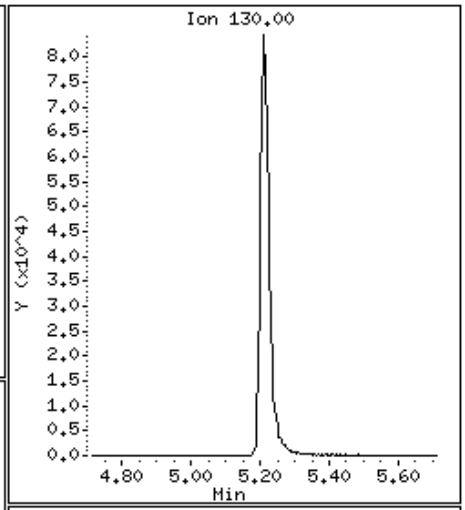
38 Trichloroethene Concentration: 6833.75 ug/l

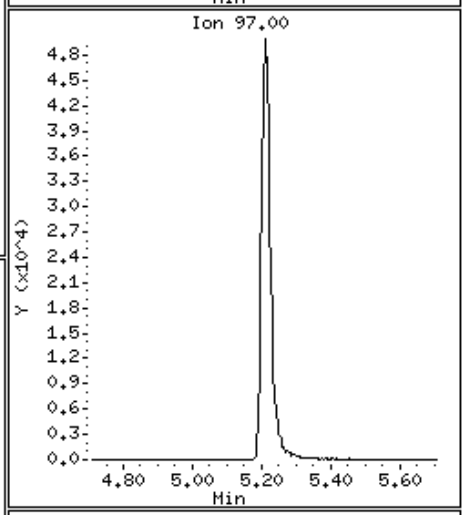


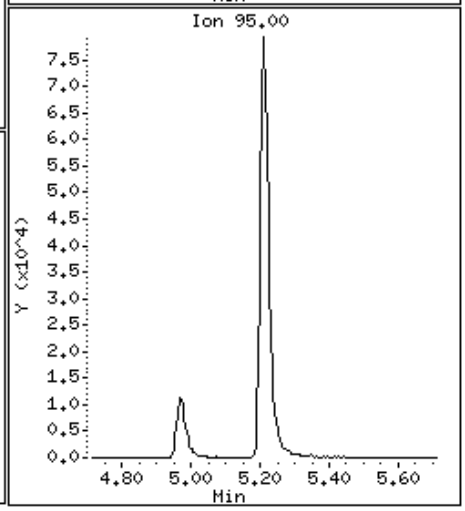












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090126.D Page 6

Date : 01-SEP-2022 18:57

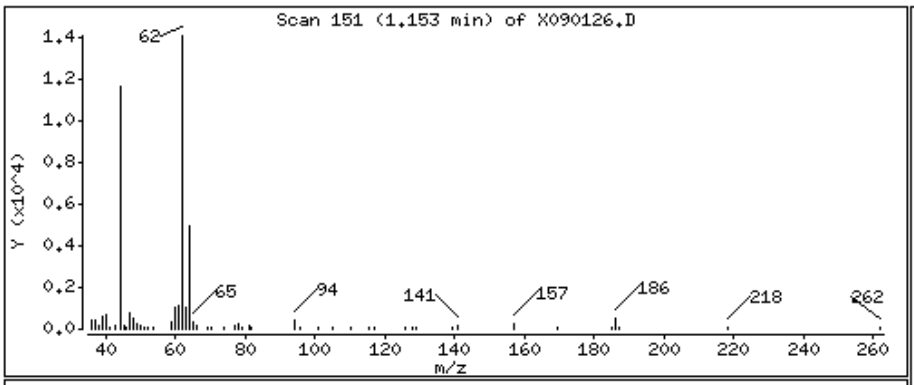
Client ID: HS22081514-04 Instrument: voa6.i

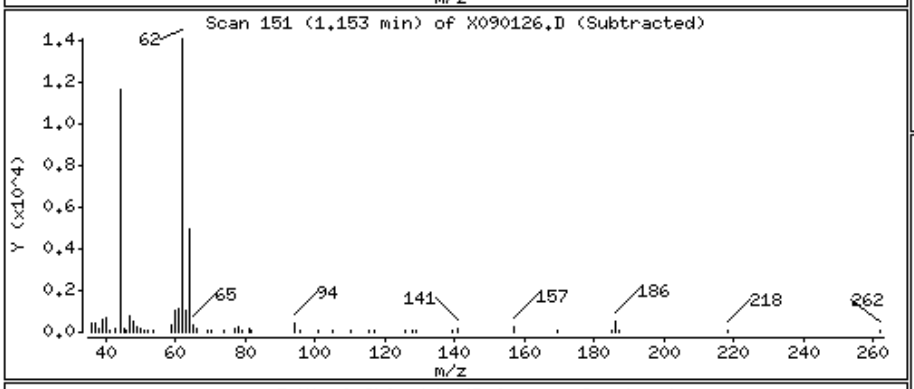
Sample Info: HS22081514-04;HS22081514-04;;;

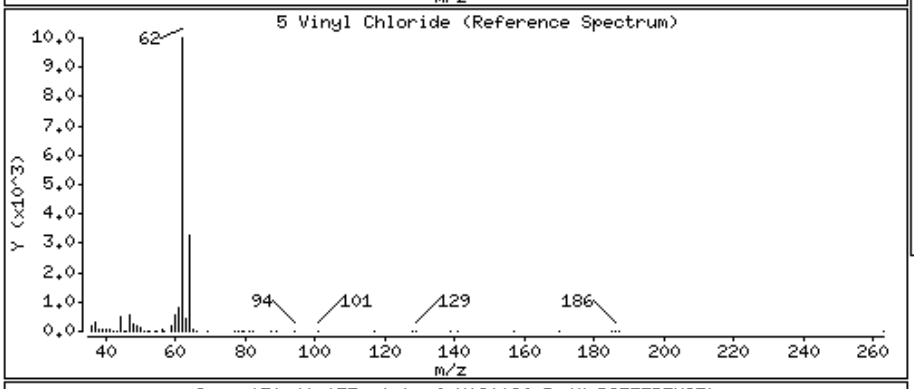
Purge Volume: 5.0 Operator: PC

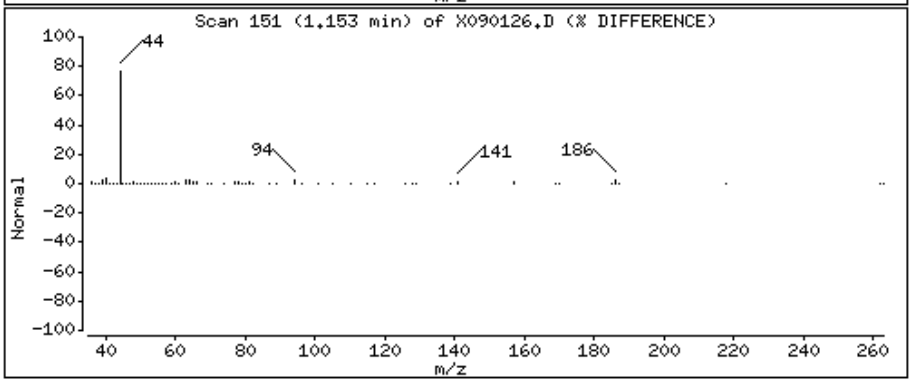
Column phase: DB624 Column diameter: 0.18

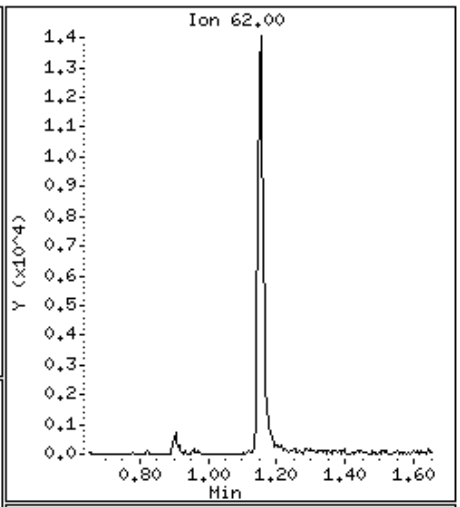
5 Vinyl Chloride Concentration: 658.93 ug/l

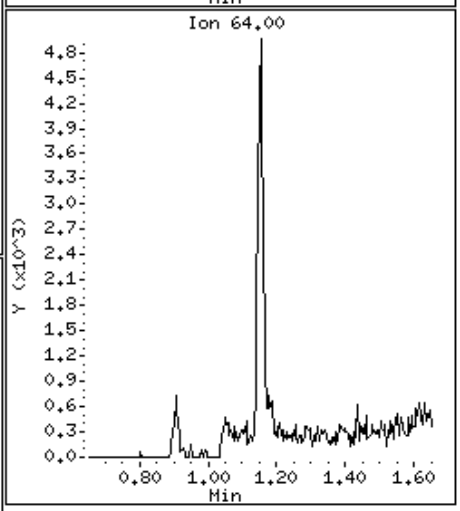












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Inj Date : 01-SEP-2022 18:57
InstruID : voa6.i
LabSampID : HS22081514-04

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090127.D Page 1
Report Date: 09-Sep-2022 16:52

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090127.D
Lab Smp Id: HS22081514-08 Client Smp ID: HS22081514-08
Inj Date : 01-SEP-2022 19:18
Operator : PC Inst ID: voa6.i
Smp Info : HS22081514-08;HS22081514-08;;;
Misc Info : HS22052000V6;WATER;0;25;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\8260W.m
Meth Date : 09-Sep-2022 16:51 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 26
Dil Factor: 25.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	25.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
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	4.189	4.189	(1.000)	564508	50.0000	
* 36 1,4-Difluorobenzene	114	4.969	4.968	(1.000)	796015	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	679309	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.665	(1.000)	296607	50.0000	
$ 30 Dibromofluoromethane	113	4.106	4.106	(0.980)	250885	47.0543	47.05
$ 35 1,2-Dichloroethane-d4	65	4.477	4.477	(1.069)	272297	46.6506	46.65
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	900712	53.1428	53.14
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	281051	46.3029	46.30
22 1,1-Dichloroethane	63	2.937	2.929	(0.701)	6532	0.75161	18.79(a)
11 1,1-Dichloroethene	96	1.921	1.924	(0.459)	15443	3.27717	81.92(a)
33 1,2-Dichloroethane	62	4.567	4.560	(0.919)	12139	1.73881	43.47(a)
28 Chloroform	83	3.919	3.911	(0.936)	9907	1.04045	26.01(a)
27 cis-1,2-Dichloroethene	96	3.533	3.533	(0.843)	1066816	190.087	4752.16
17 Methylene Chloride	84	2.311	2.311	(0.552)	1739066	340.018	8500.44(A)
38 Trichloroethene	130	5.208	5.208	(1.048)	2632550	471.145	11778.62(A)
5 Vinyl Chloride	62	1.152	1.152	(0.275)	21777	3.67894	91.97(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.

01148232

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090127.D

Page 1

Date : 01-SEP-2022 19:18

Client ID: HS22081514-08

Instrument: voa6.i

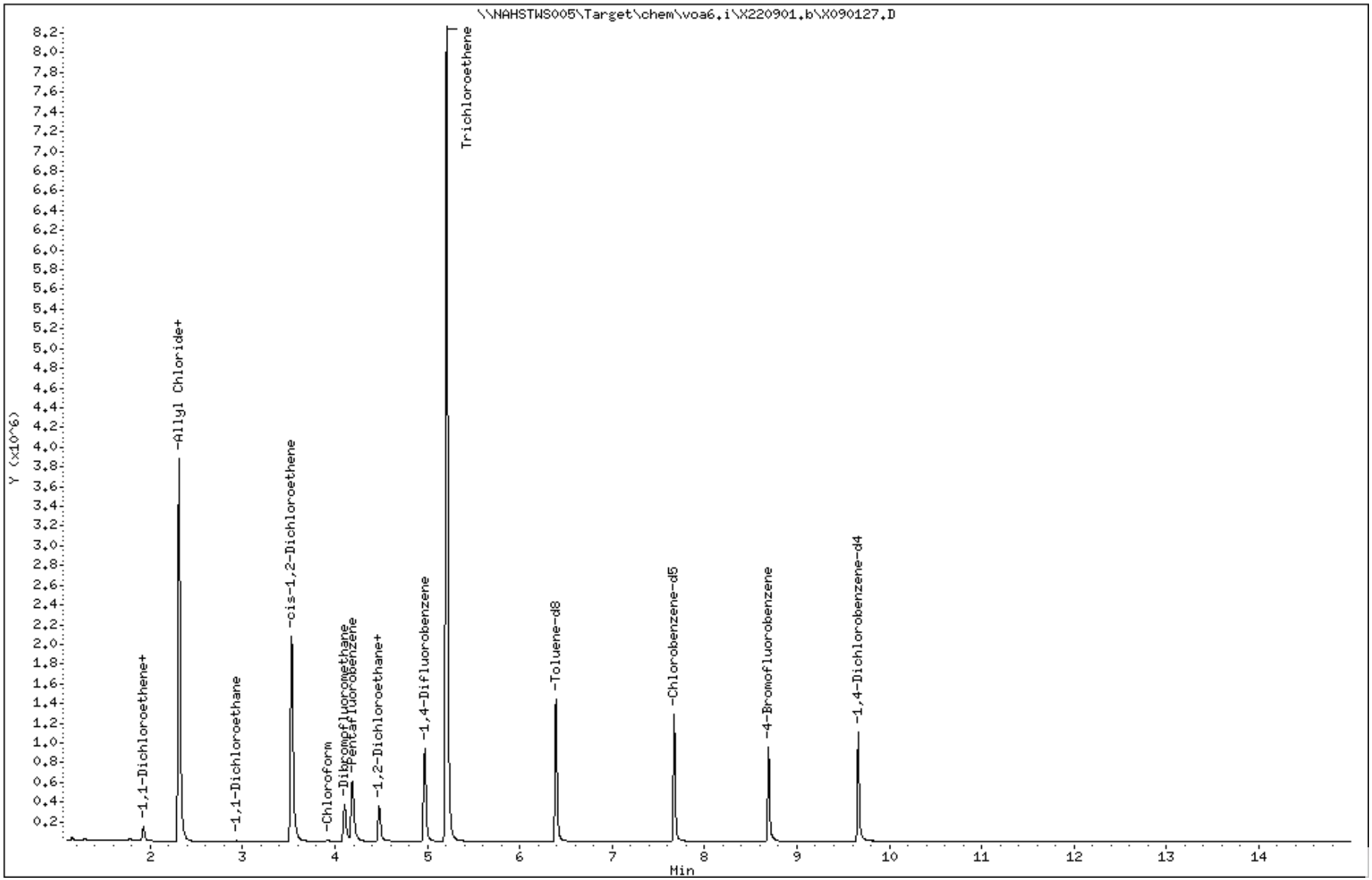
Sample Info: HS22081514-08;HS22081514-08;;;

Purge Volume: 5.0

Operator: PC

Column phase: DB624

Column diameter: 0.18



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Date : 01-SEP-2022 19:18

Client ID: HS22081514-08

Instrument: voa6.i

Sample Info: HS22081514-08;HS22081514-08;;;

Purge Volume: 5.0

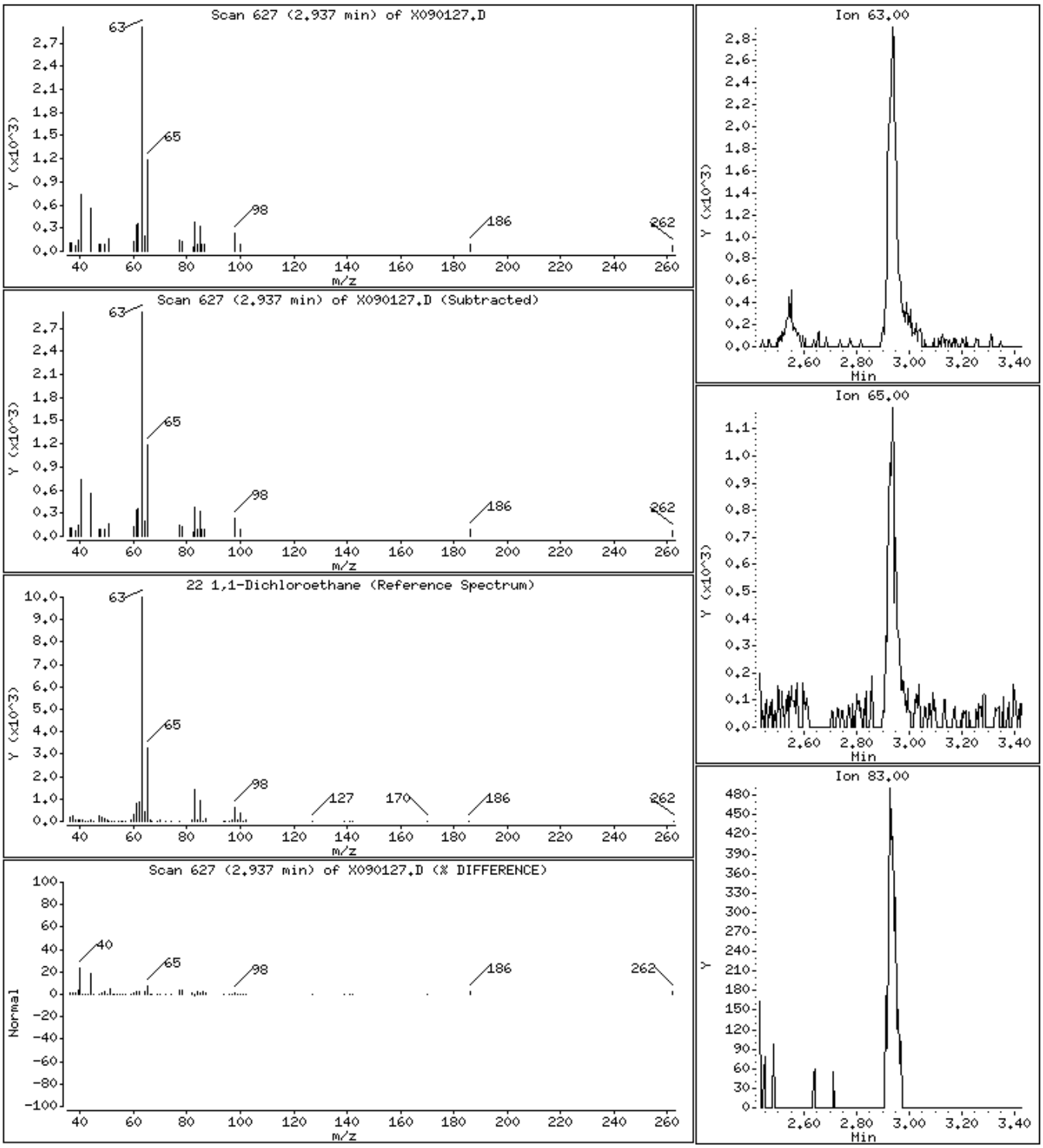
Operator: PC

Column phase: DB624

Column diameter: 0.18

22 1,1-Dichloroethane

Concentration: 18.79 ug/l



Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090127.D Page 3

Date : 01-SEP-2022 19:18

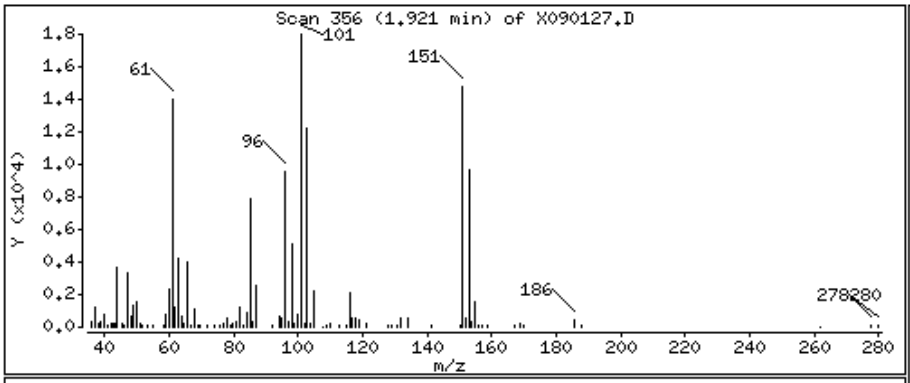
Client ID: HS22081514-08 Instrument: voa6.i

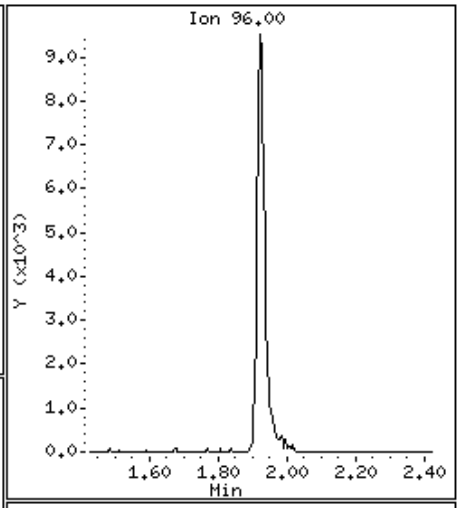
Sample Info: HS22081514-08;HS22081514-08;;;

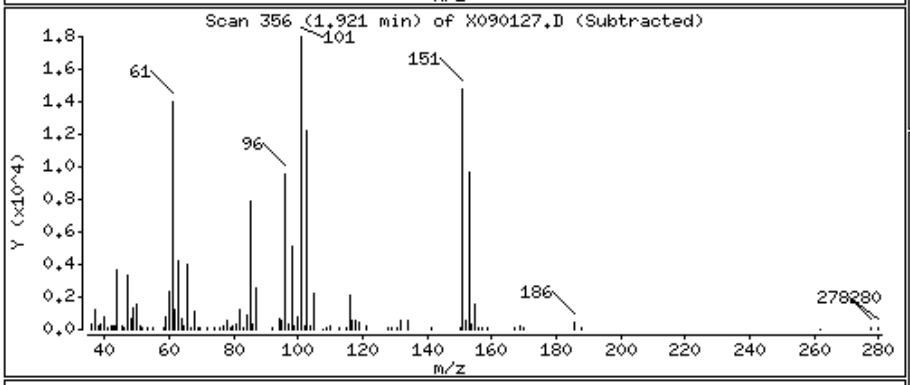
Purge Volume: 5.0 Operator: PC

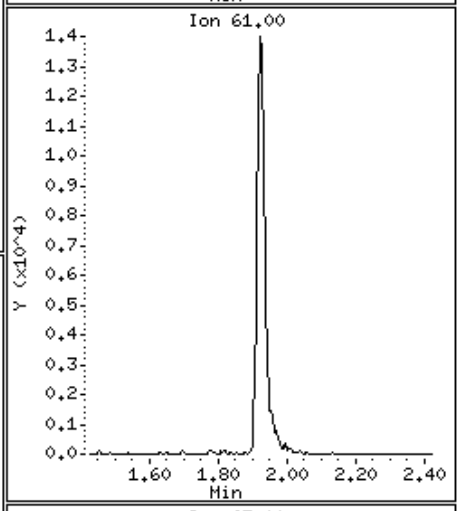
Column phase: DB624 Column diameter: 0.18

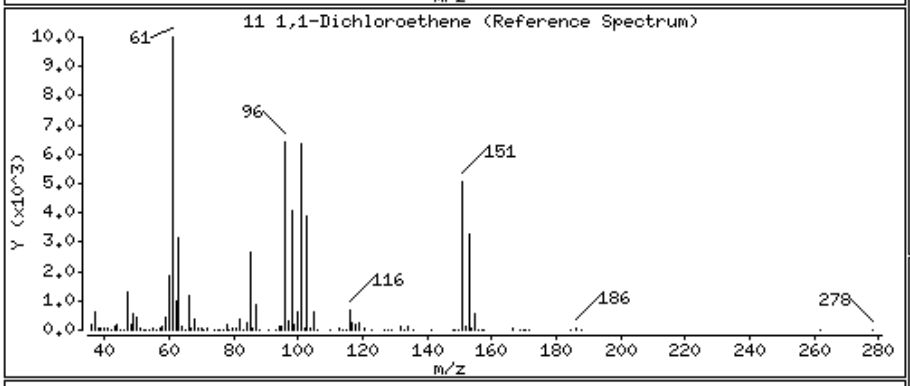
11 1,1-Dichloroethene Concentration: 81.92 ug/l

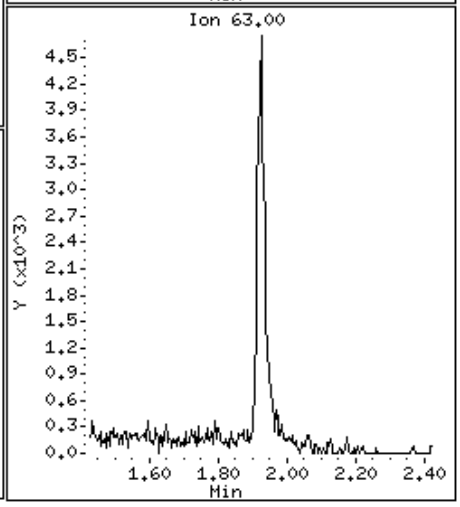


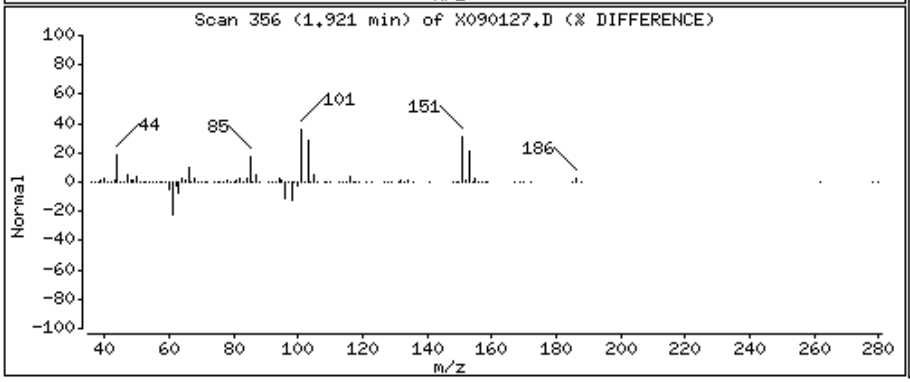












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090127.D

Date : 01-SEP-2022 19:18

Client ID: HS22081514-08

Instrument: voa6.i

Sample Info: HS22081514-08;HS22081514-08;;;

Purge Volume: 5.0

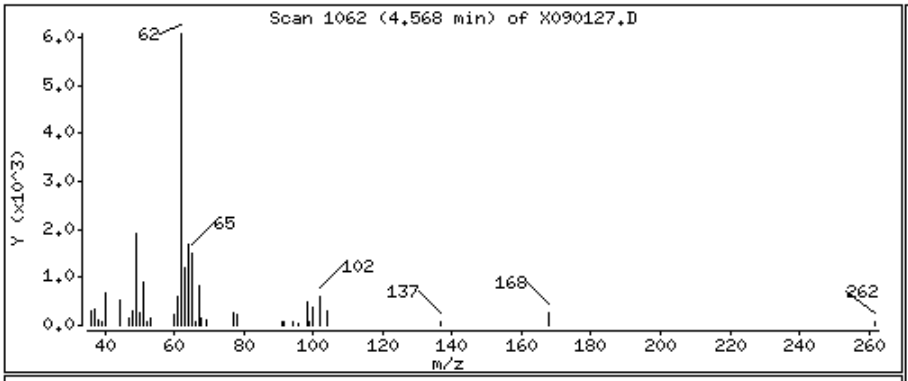
Operator: PC

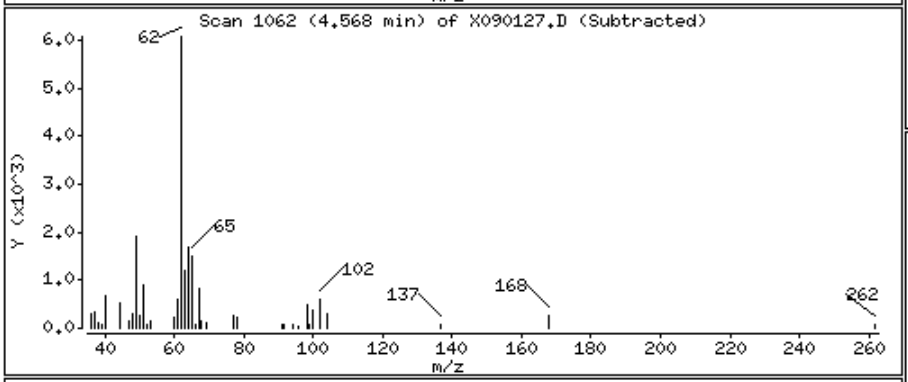
Column phase: DB624

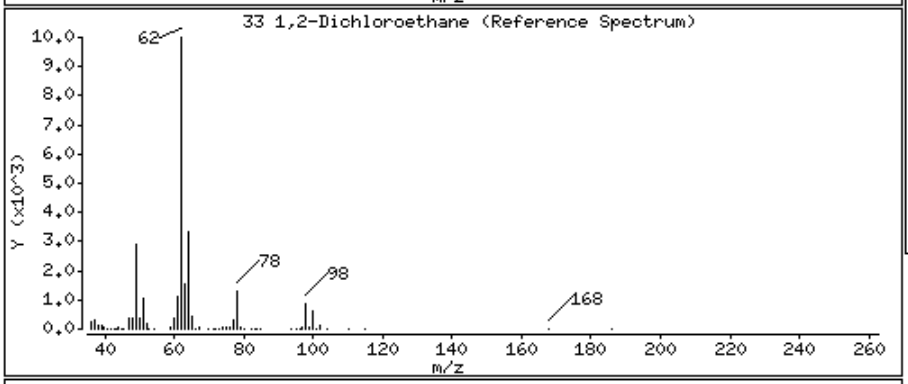
Column diameter: 0.18

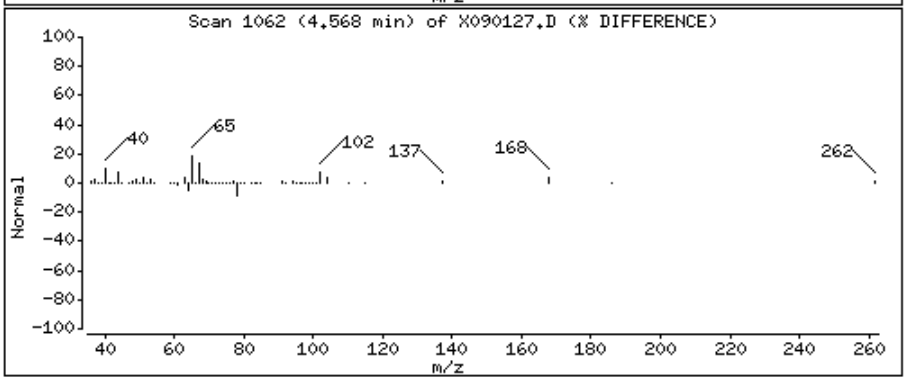
33 1,2-Dichloroethane

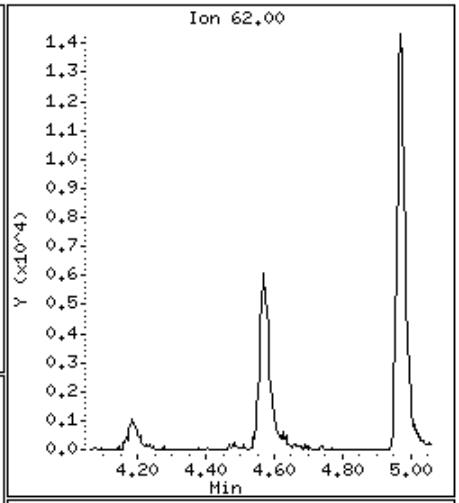
Concentration: 43.47 ug/l

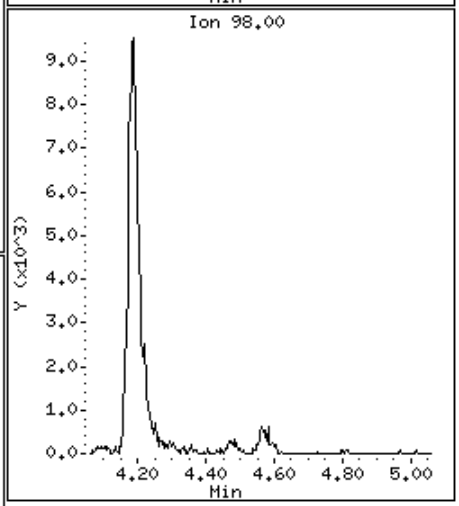












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090127.D

Date : 01-SEP-2022 19:18

Client ID: HS22081514-08

Instrument: voa6.i

Sample Info: HS22081514-08;HS22081514-08;;;

Purge Volume: 5.0

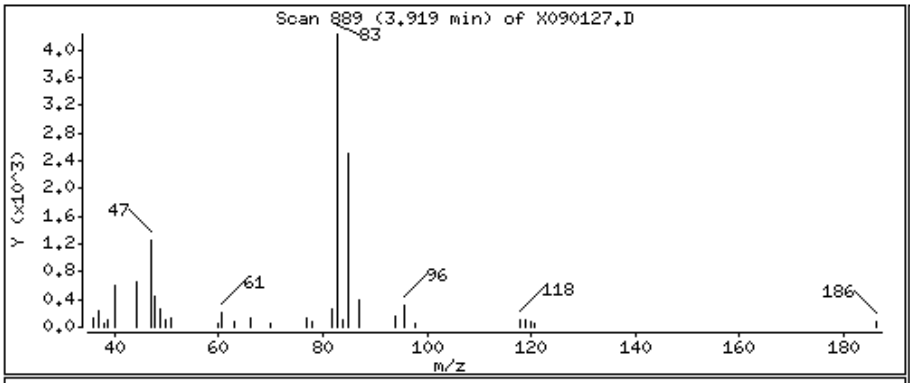
Operator: PC

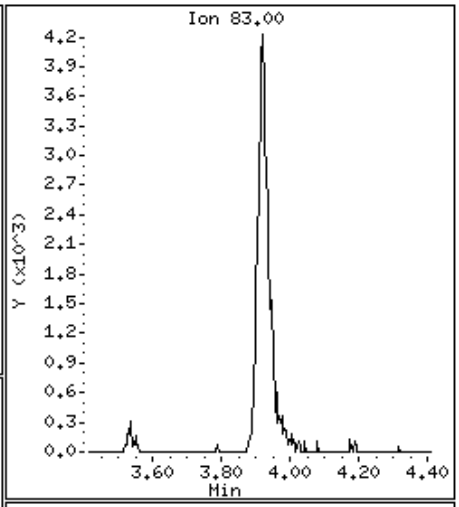
Column phase: DB624

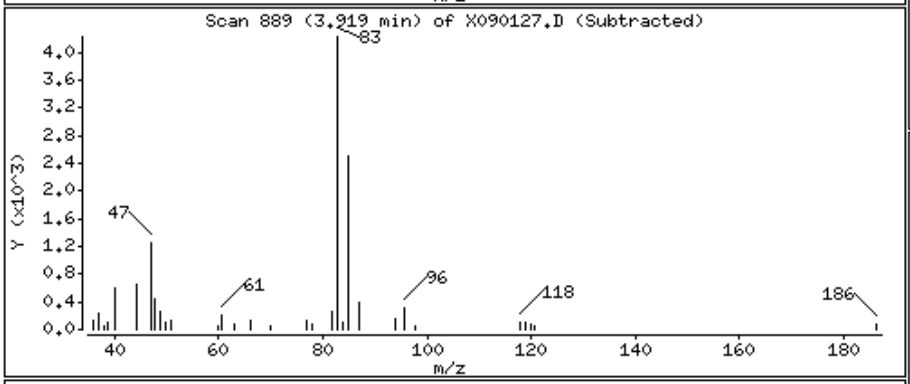
Column diameter: 0.18

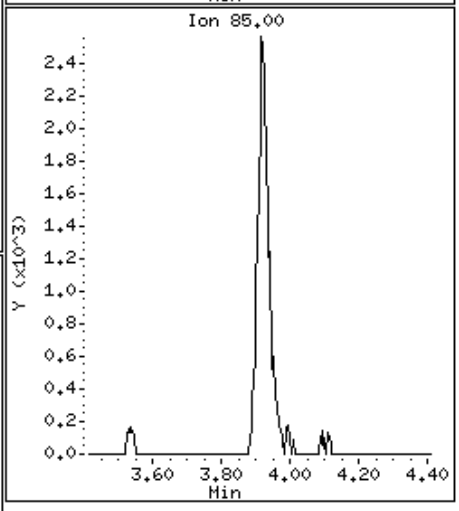
28 Chloroform

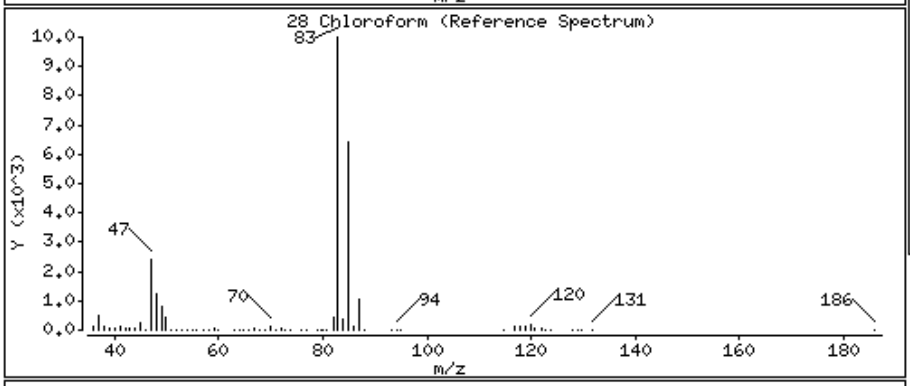
Concentration: 26.01 ug/l

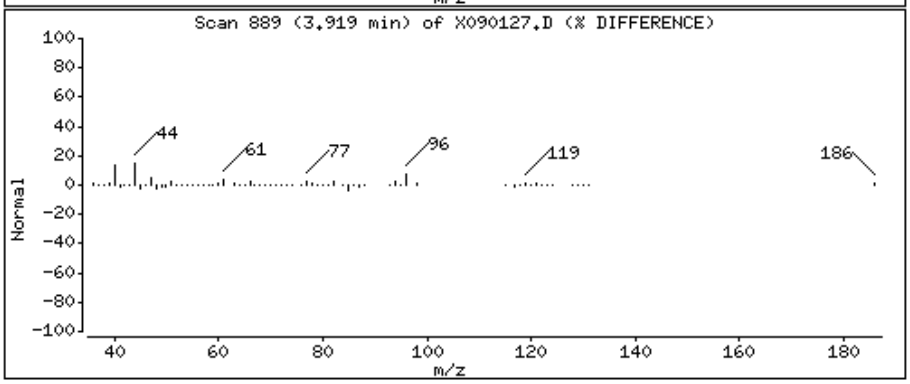












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090127.D

Date : 01-SEP-2022 19:18

Client ID: HS22081514-08

Instrument: voa6.i

Sample Info: HS22081514-08;HS22081514-08;;;

Purge Volume: 5.0

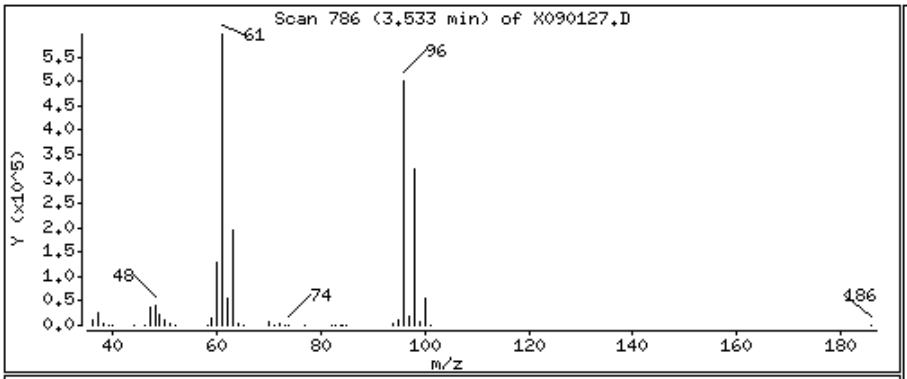
Operator: PC

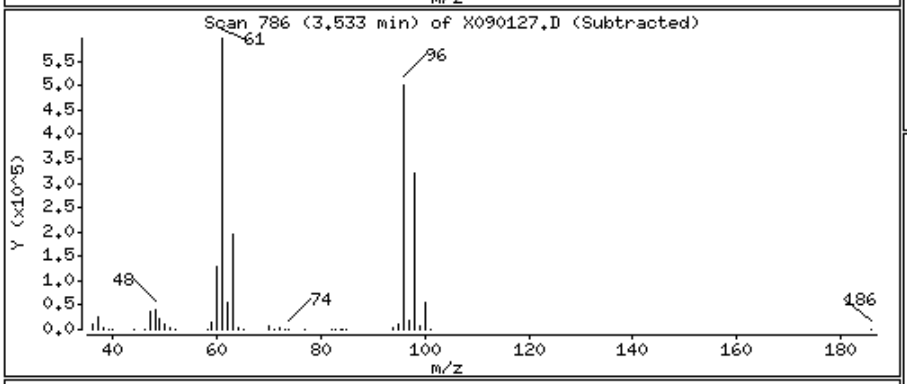
Column phase: DB624

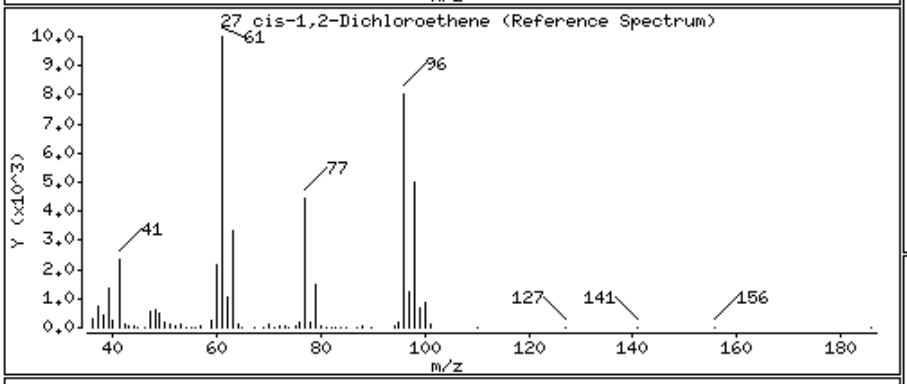
Column diameter: 0.18

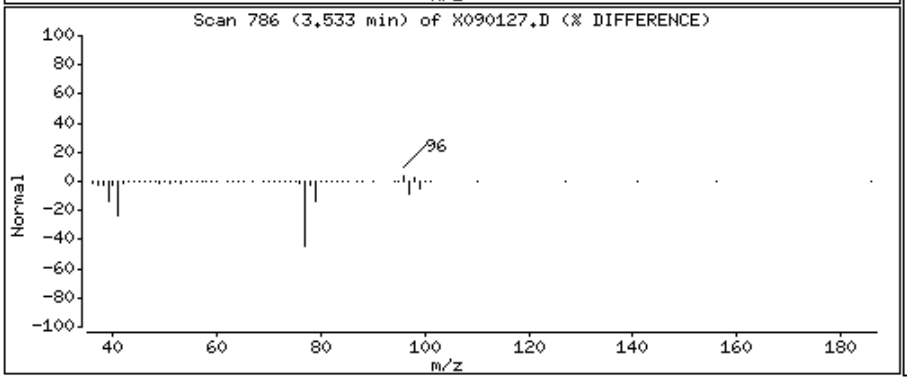
27 cis-1,2-Dichloroethene

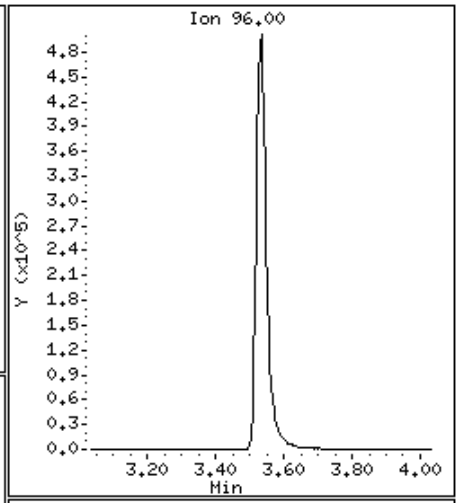
Concentration: 4752.16 ug/l

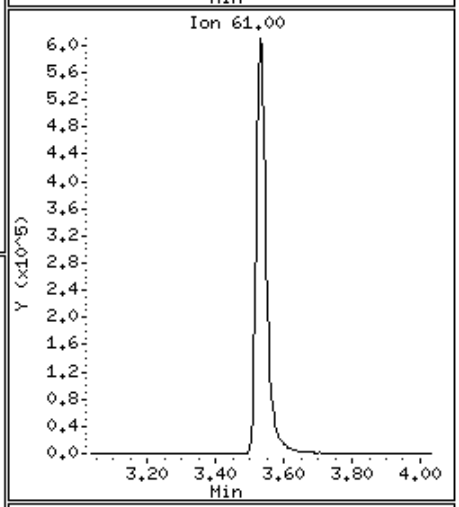


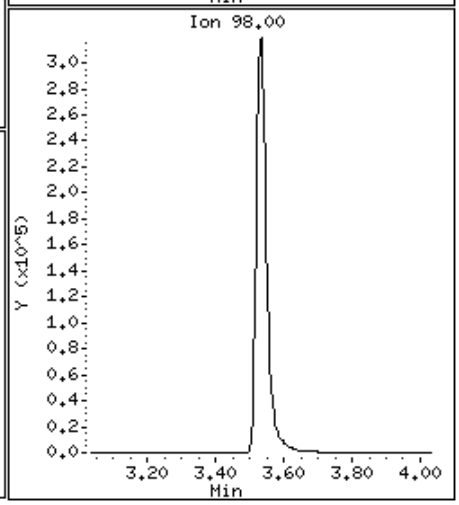












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090127.D Page 7

Date : 01-SEP-2022 19:18

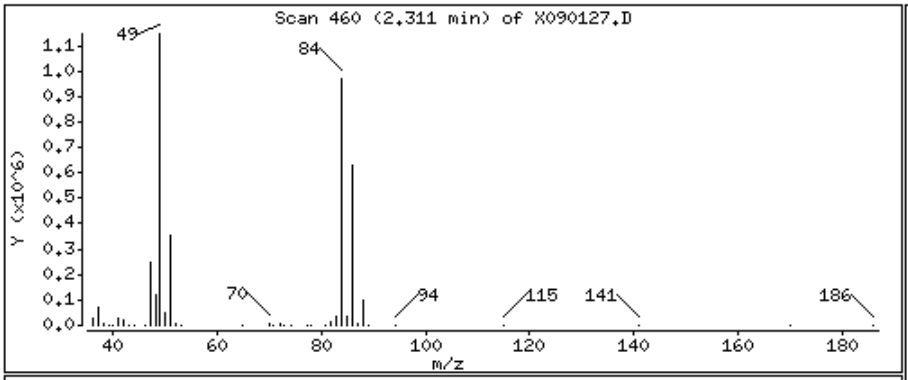
Client ID: HS22081514-08 Instrument: voa6.i

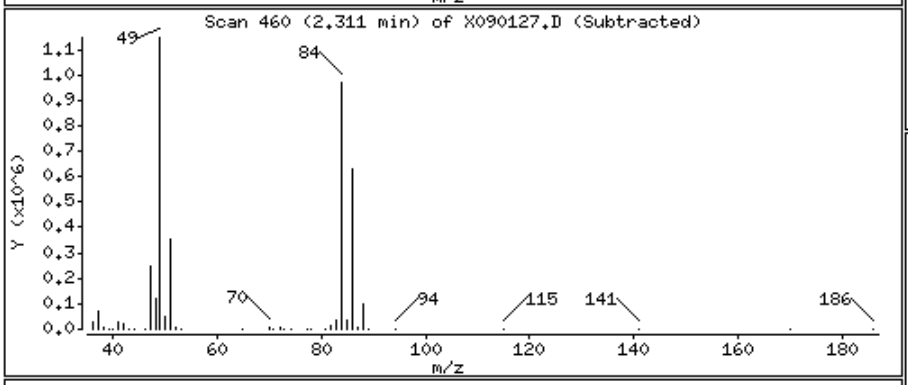
Sample Info: HS22081514-08;HS22081514-08;;;

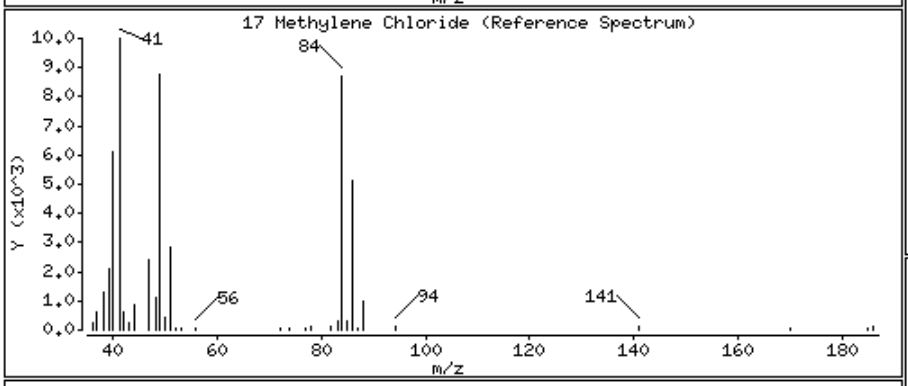
Purge Volume: 5.0 Operator: PC

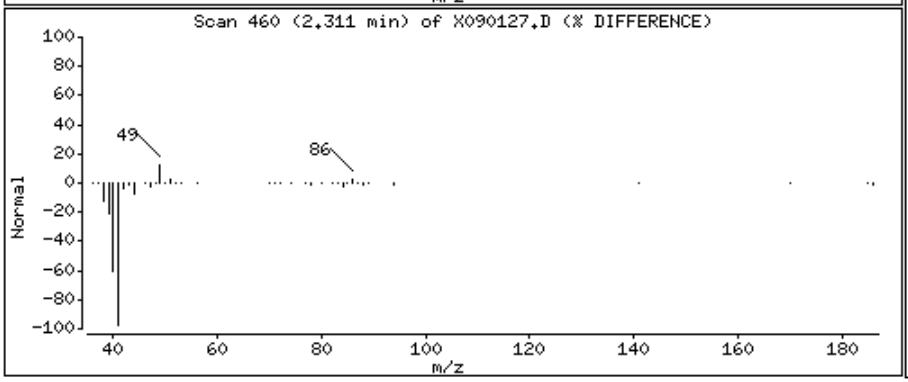
Column phase: DB624 Column diameter: 0.18

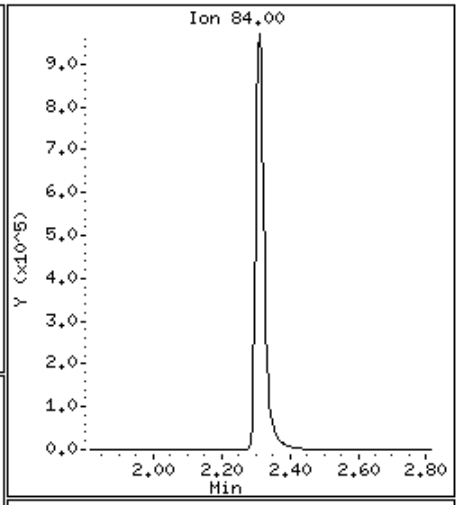
17 Methylene Chloride Concentration: 8500.44 ug/l

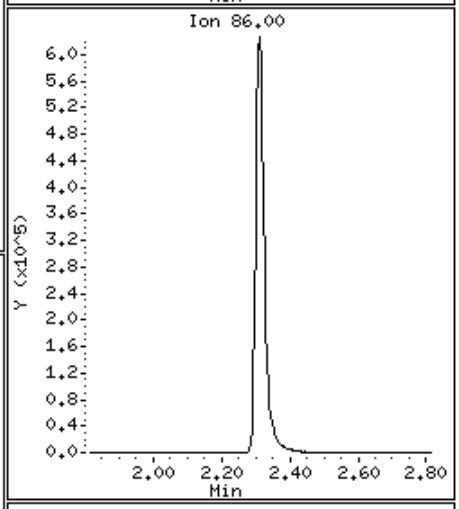


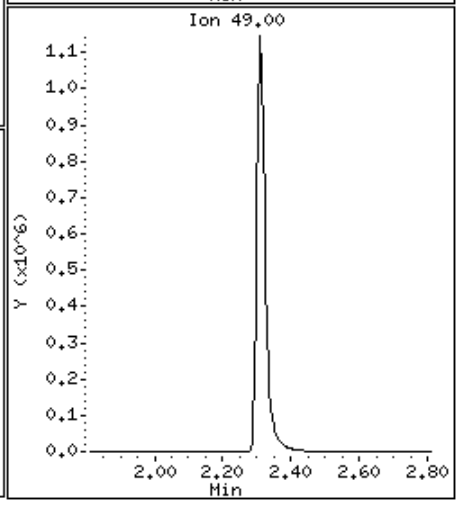












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090127.D Page 8

Date : 01-SEP-2022 19:18

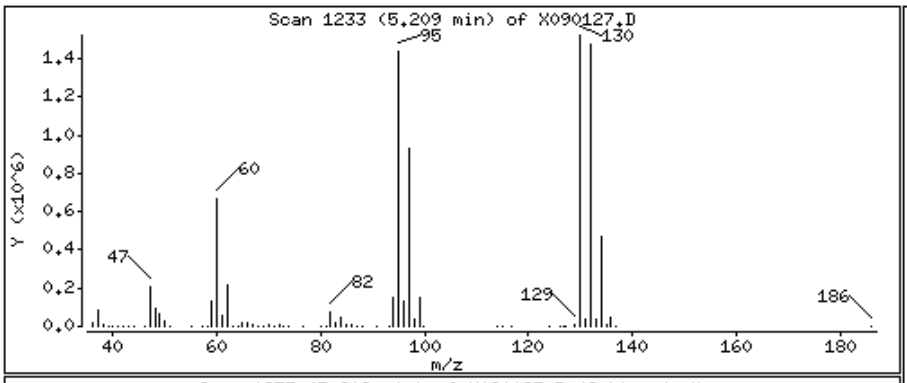
Client ID: HS22081514-08 Instrument: voa6.i

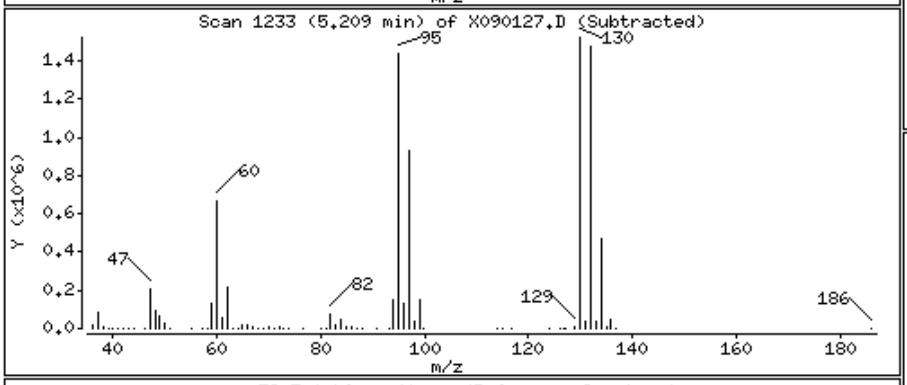
Sample Info: HS22081514-08;HS22081514-08;;;

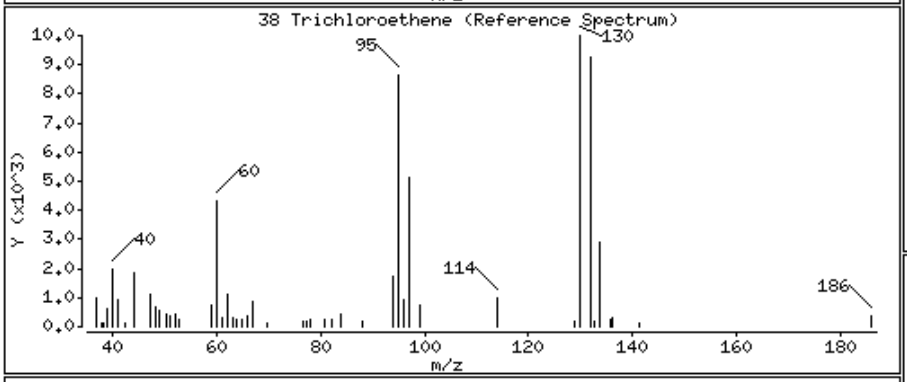
Purge Volume: 5.0 Operator: PC

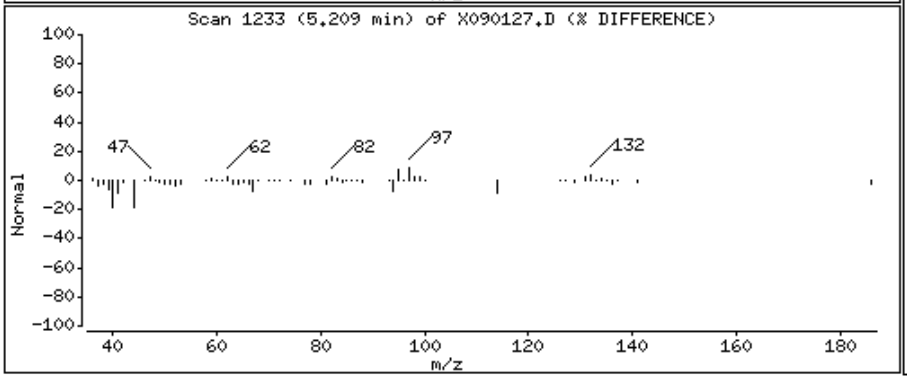
Column phase: DB624 Column diameter: 0.18

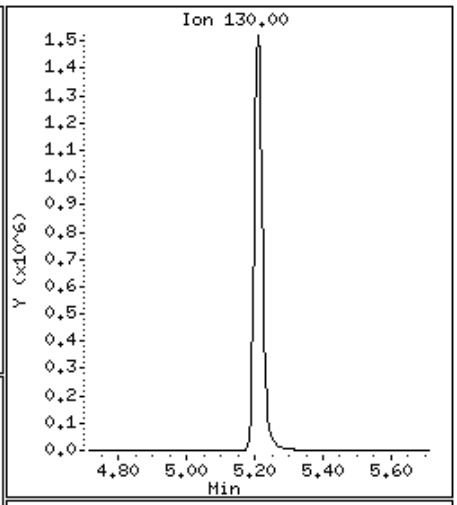
38 Trichloroethene Concentration: 11778.62 ug/l

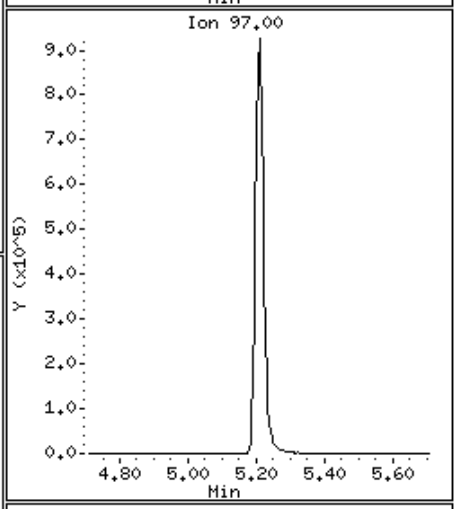


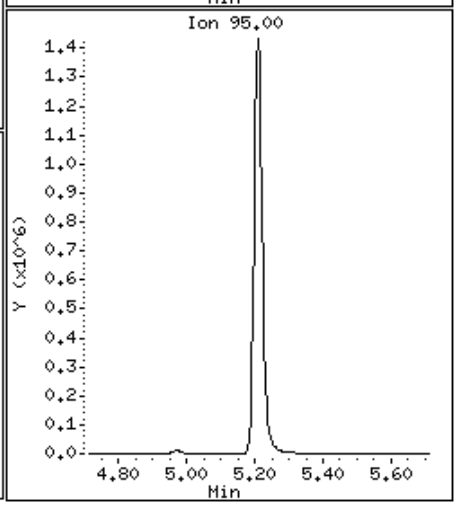












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090127.D

Date : 01-SEP-2022 19:18

Client ID: HS22081514-08

Instrument: voa6.i

Sample Info: HS22081514-08;HS22081514-08;;;

Purge Volume: 5.0

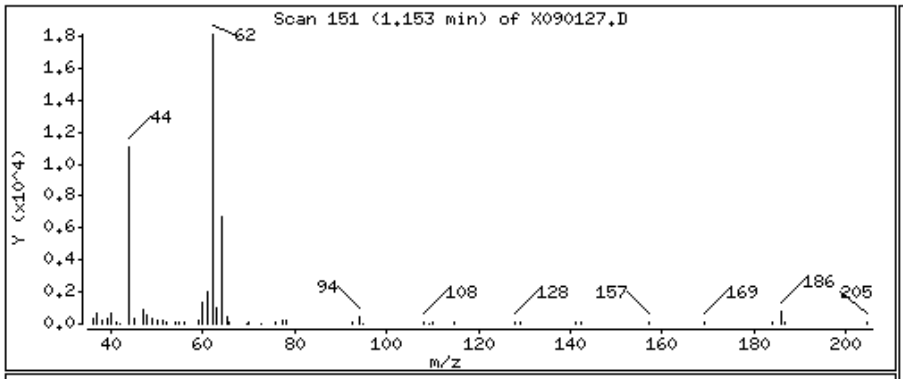
Operator: PC

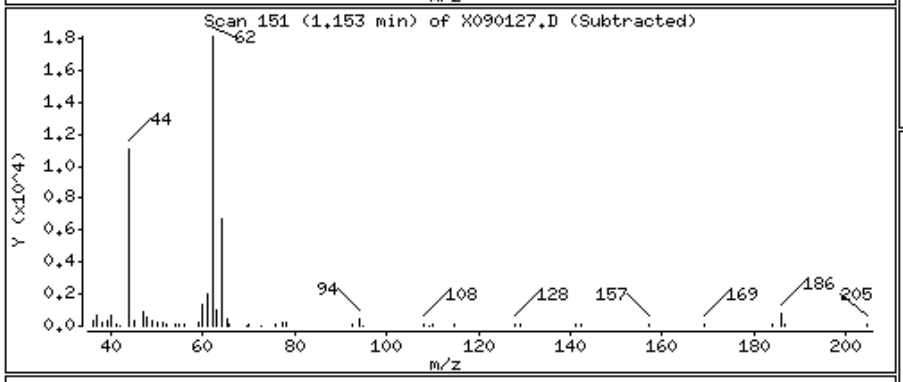
Column phase: DB624

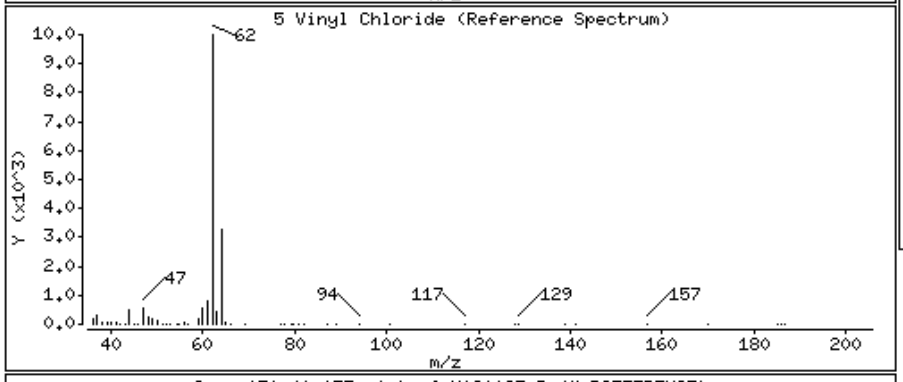
Column diameter: 0.18

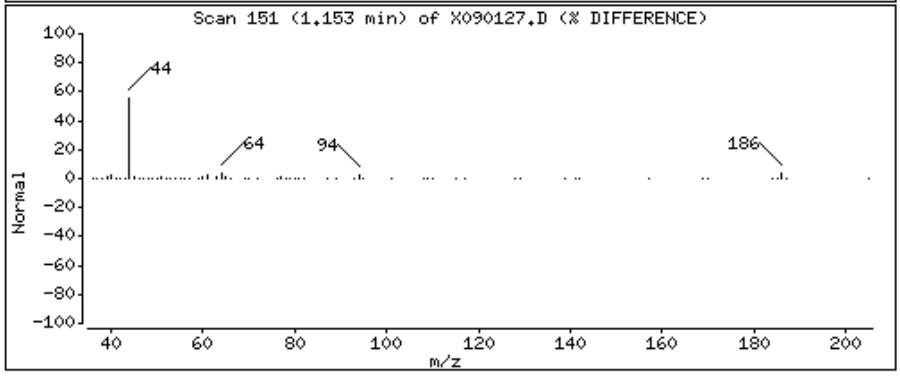
5 Vinyl Chloride

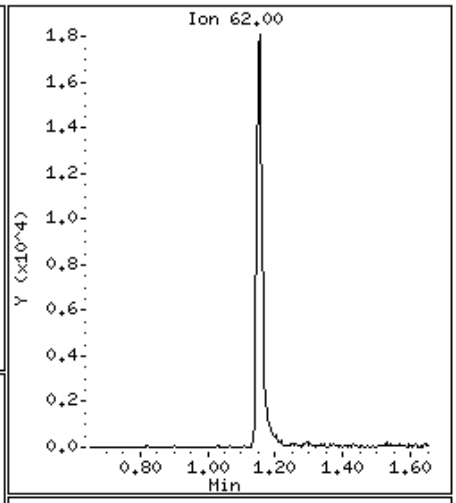
Concentration: 91.97 ug/l

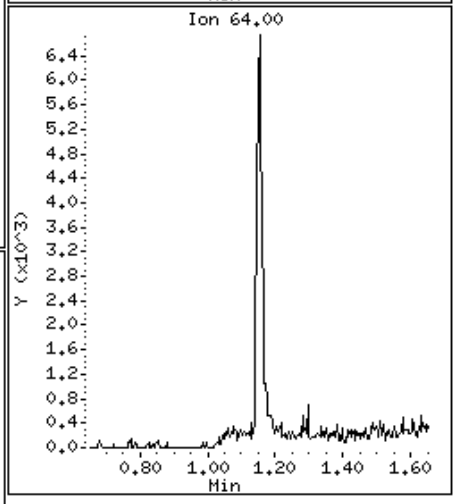












Data File : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090127.D
Inj Date : 01-SEP-2022 19:18
InstruID : voa6.i
LabSampID : HS22081514-08

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090128.D Page 1
Report Date: 09-Sep-2022 16:52

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090128.D
Lab Smp Id: HS22081514-08 Client Smp ID: HS22081514-08
Inj Date : 01-SEP-2022 19:39
Operator : PC Inst ID: voa6.i
Smp Info : HS22081514-08;HS22081514-08;;;
Misc Info : HS22052000V6;WATER;0;250;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\8260W.m
Meth Date : 09-Sep-2022 16:51 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 27
Dil Factor: 250.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	250.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
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	4.185	4.189	(1.000)	571285	50.0000	
* 36 1,4-Difluorobenzene	114	4.969	4.968	(1.000)	806571	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	674441	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.665	(1.000)	276628	50.0000	
$ 30 Dibromofluoromethane	113	4.106	4.106	(0.981)	251804	46.6604	46.66
$ 35 1,2-Dichloroethane-d4	65	4.477	4.477	(1.070)	271034	45.8780	45.87
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	922700	54.8330	54.83
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	273797	45.4179	45.41
27 cis-1,2-Dichloroethene	96	3.537	3.533	(0.845)	106678	18.7825	4695.63
17 Methylene Chloride	84	2.311	2.311	(0.552)	185514	35.0589	8764.71
38 Trichloroethene	130	5.208	5.208	(1.048)	267001	47.1595	11789.87
5 Vinyl Chloride	62	1.152	1.152	(0.275)	2606	0.43503	108.75(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).

01148243

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090128.D

Date : 01-SEP-2022 19:39

Client ID: HS22081514-08

Instrument: voa6.i

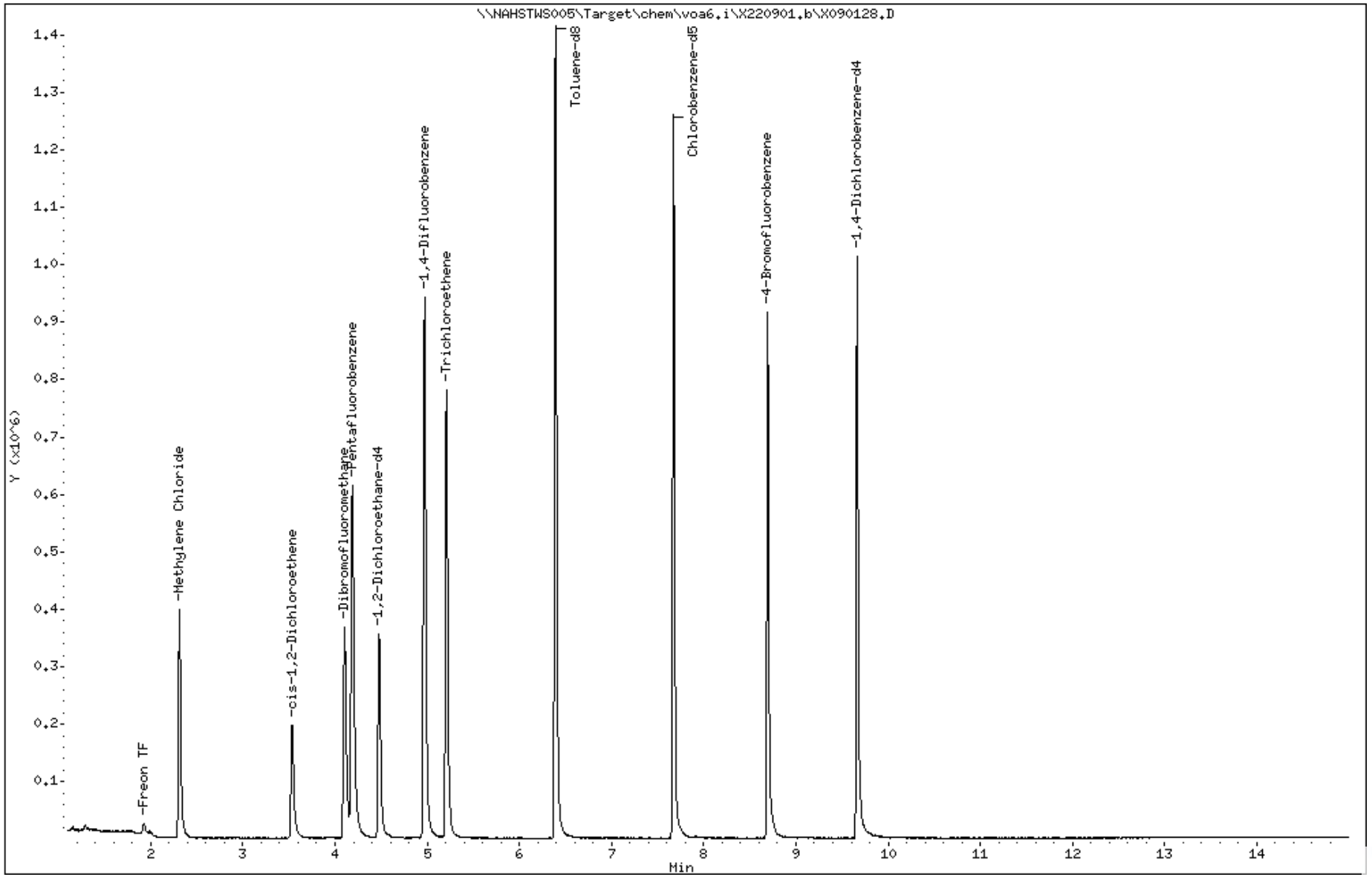
Sample Info: HS22081514-08;HS22081514-08;;;

Purge Volume: 5.0

Operator: PC

Column phase: DB624

Column diameter: 0.18



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Date : 01-SEP-2022 19:39

Client ID: HS22081514-08

Instrument: voa6.i

Sample Info: HS22081514-08;HS22081514-08;;;

Purge Volume: 5.0

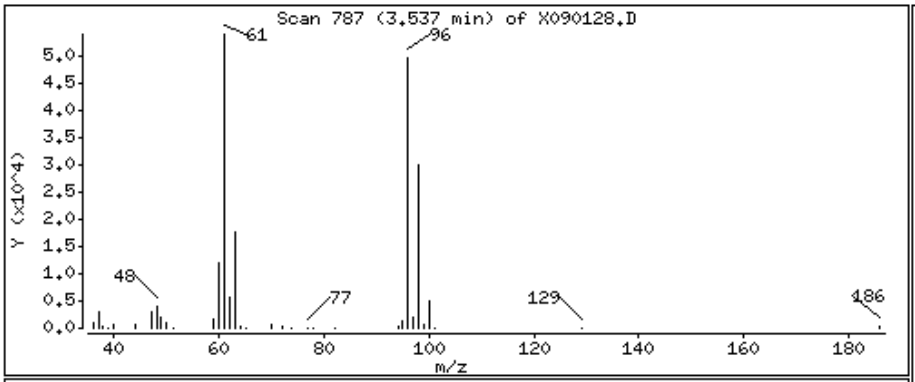
Operator: PC

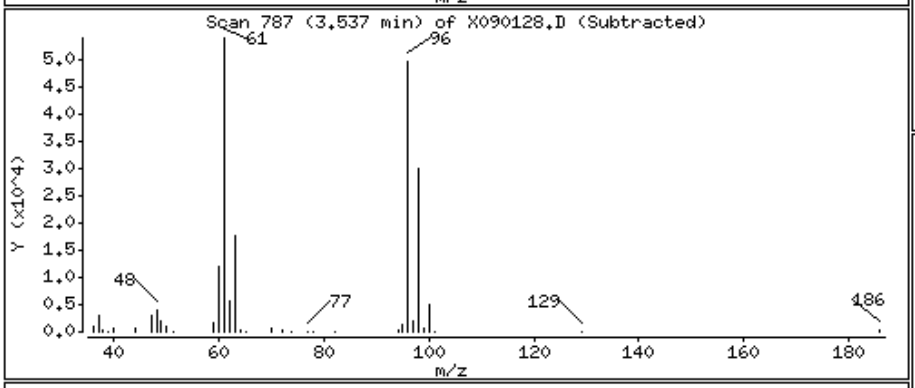
Column phase: DB624

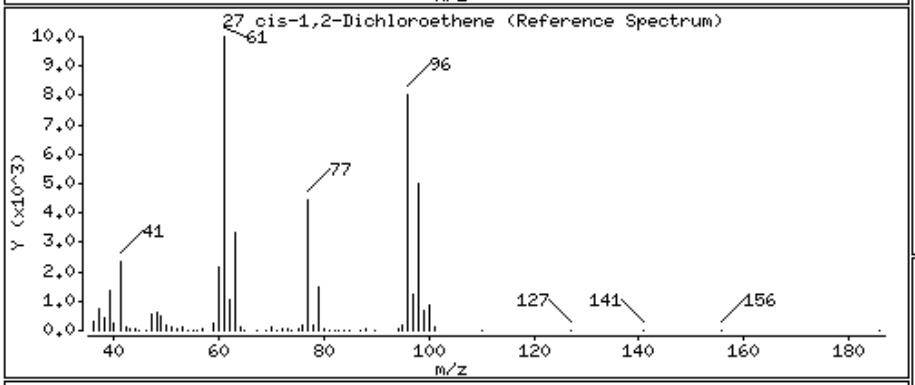
Column diameter: 0.18

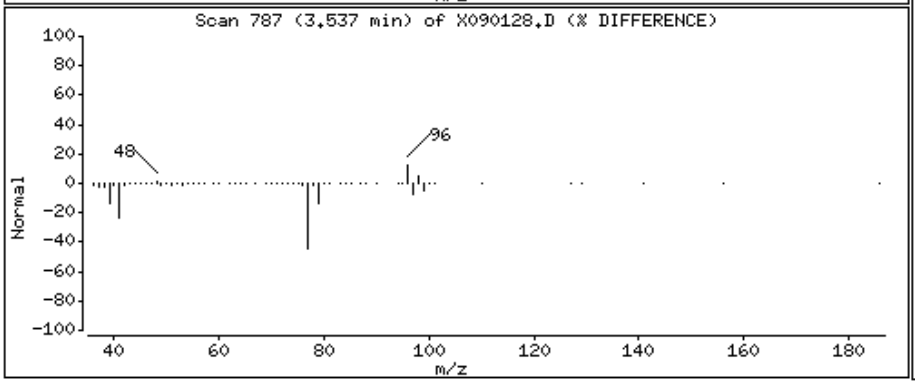
27 cis-1,2-Dichloroethene

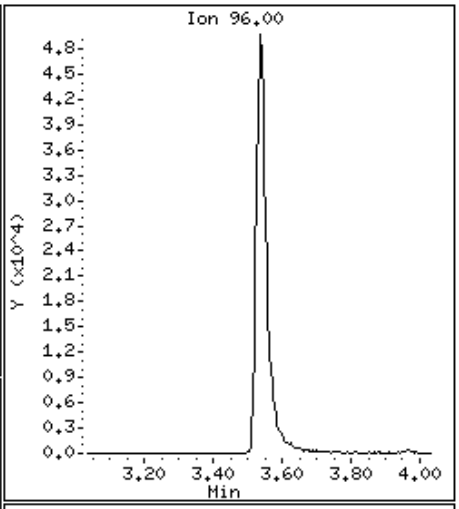
Concentration: 4695.63 ug/l

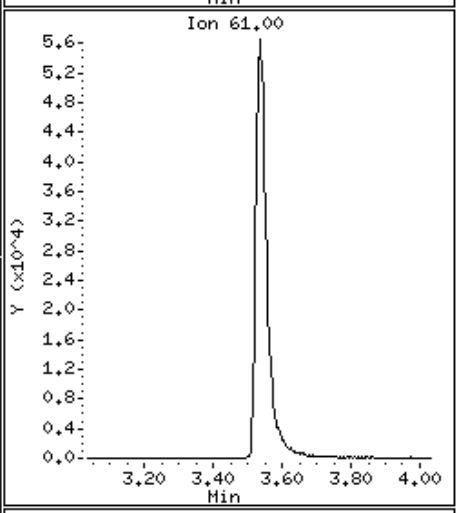


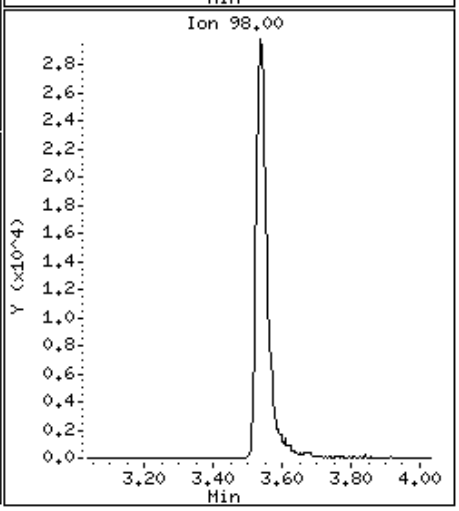












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090128.D Page 3

Date : 01-SEP-2022 19:39

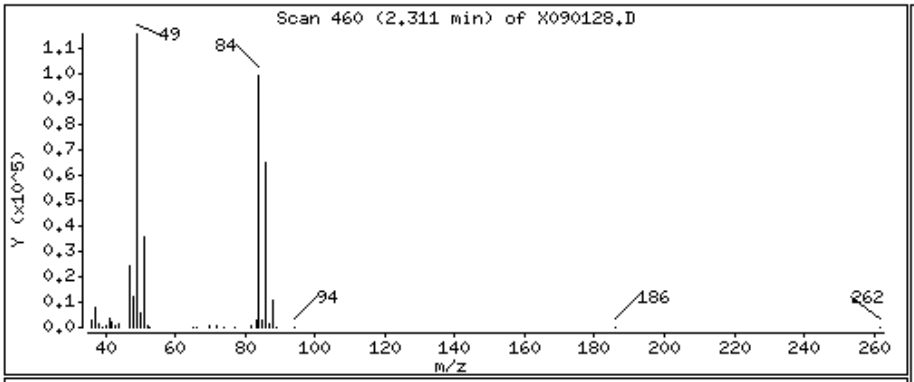
Client ID: HS22081514-08 Instrument: voa6.i

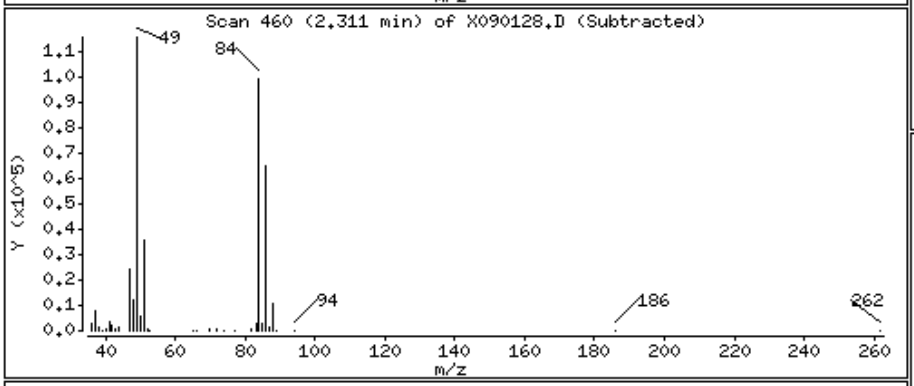
Sample Info: HS22081514-08;HS22081514-08;;;

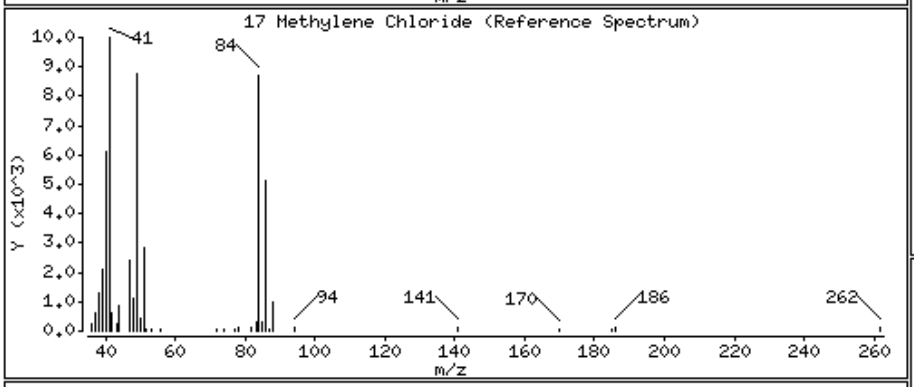
Purge Volume: 5.0 Operator: PC

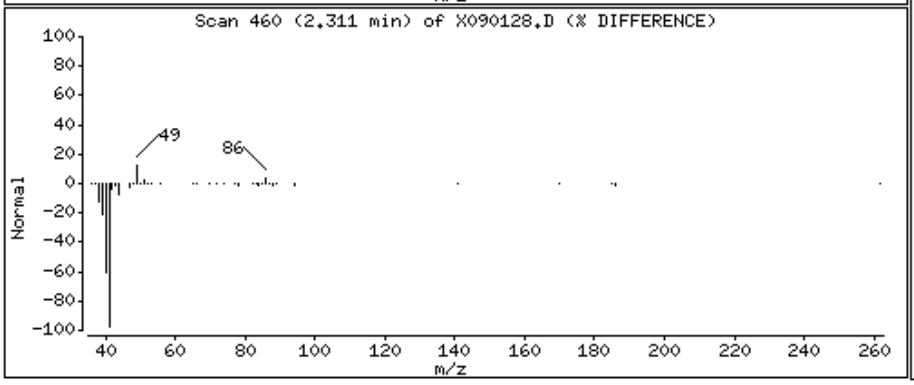
Column phase: DB624 Column diameter: 0.18

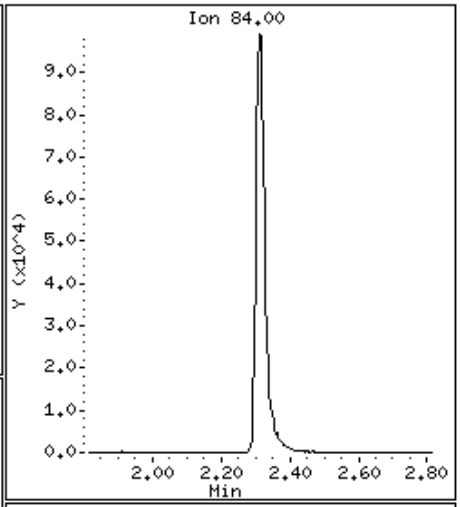
17 Methylene Chloride Concentration: 8764.71 ug/l

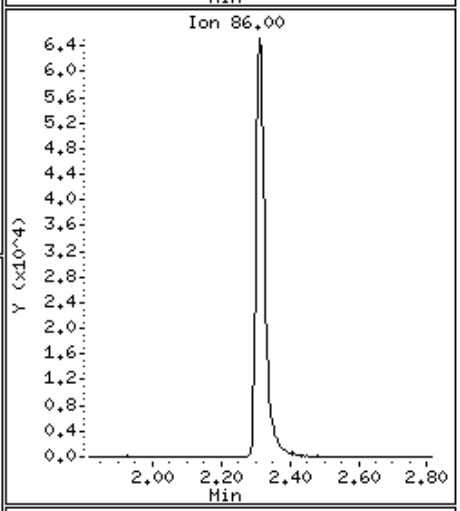


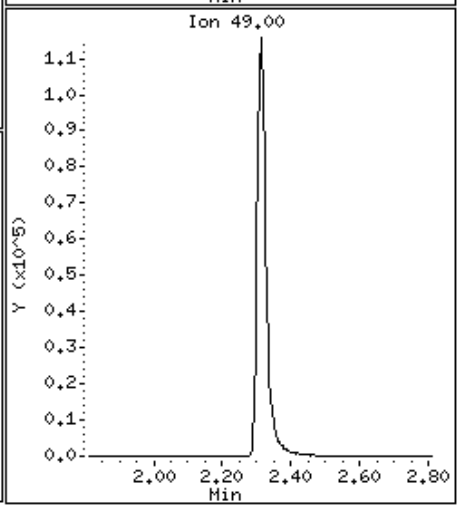












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090128.D

Date : 01-SEP-2022 19:39

Client ID: HS22081514-08

Instrument: voa6.i

Sample Info: HS22081514-08;HS22081514-08;;;

Purge Volume: 5.0

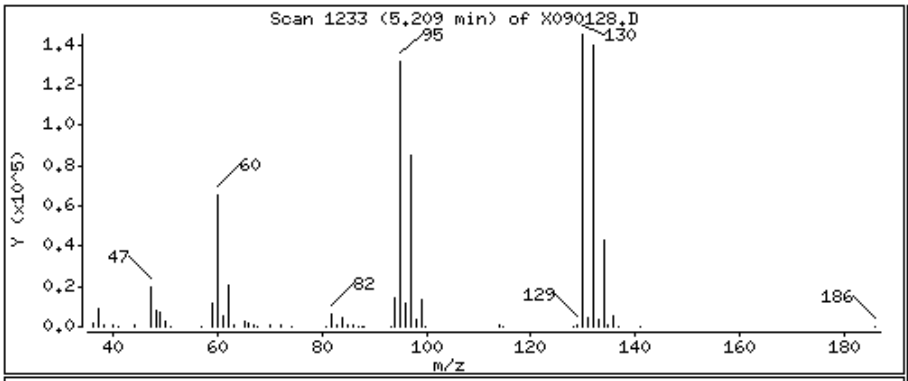
Operator: PC

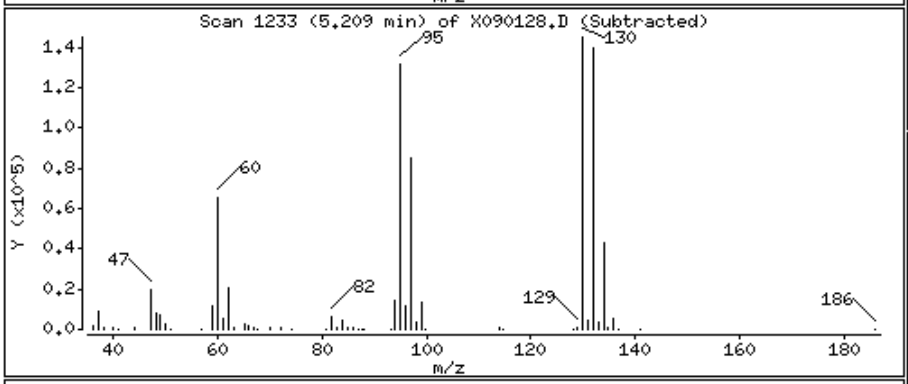
Column phase: DB624

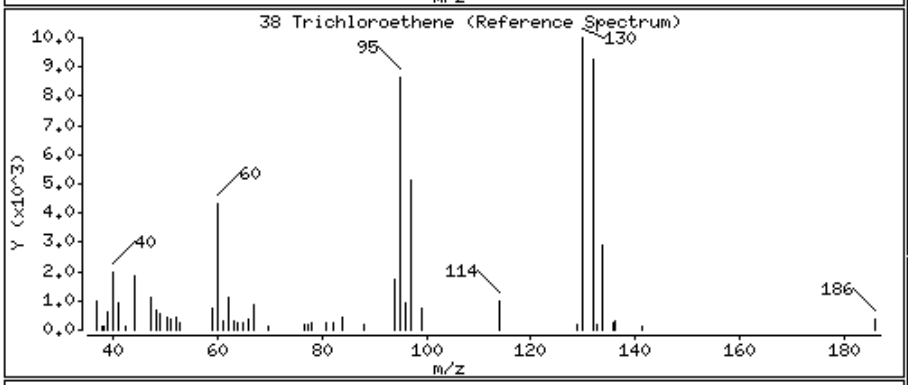
Column diameter: 0.18

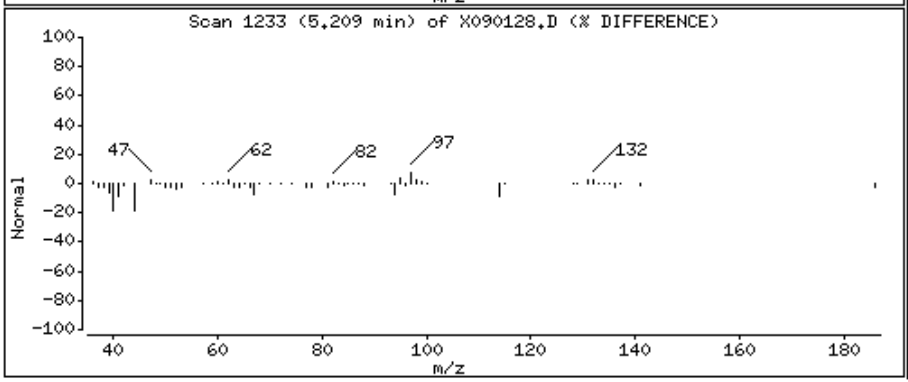
38 Trichloroethene

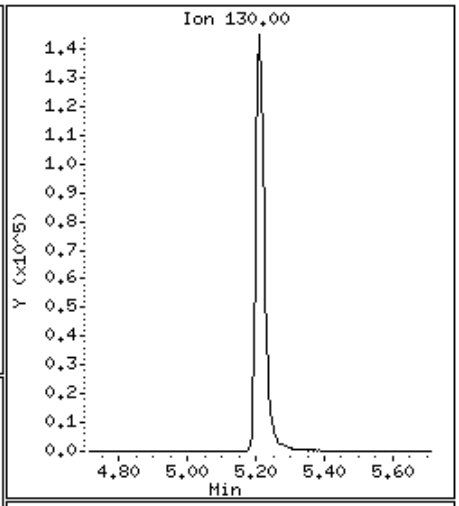
Concentration: 11789.87 ug/l

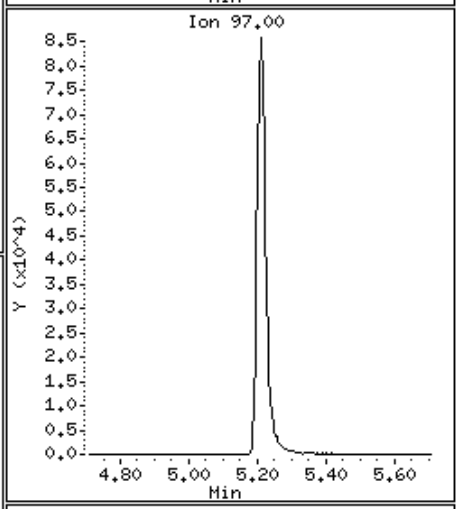


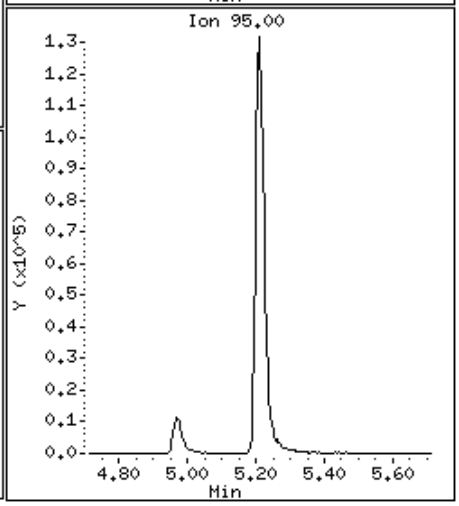












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090128.D Page 5

Date : 01-SEP-2022 19:39

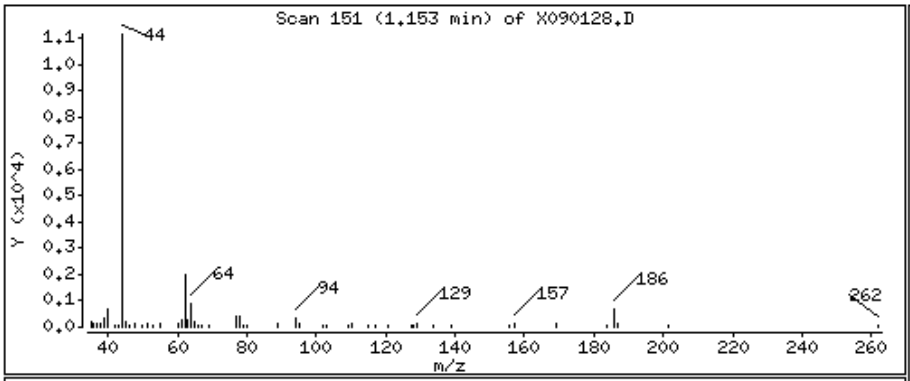
Client ID: HS22081514-08 Instrument: voa6.i

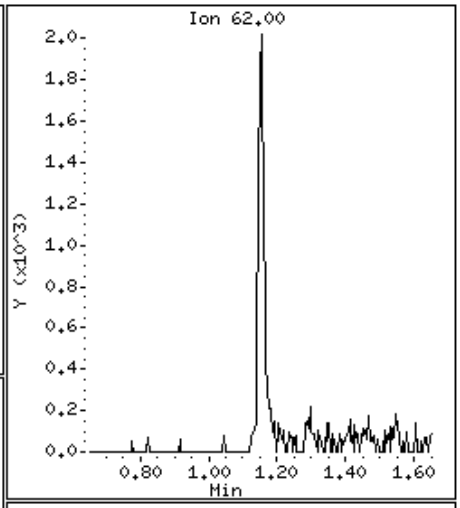
Sample Info: HS22081514-08;HS22081514-08;;;

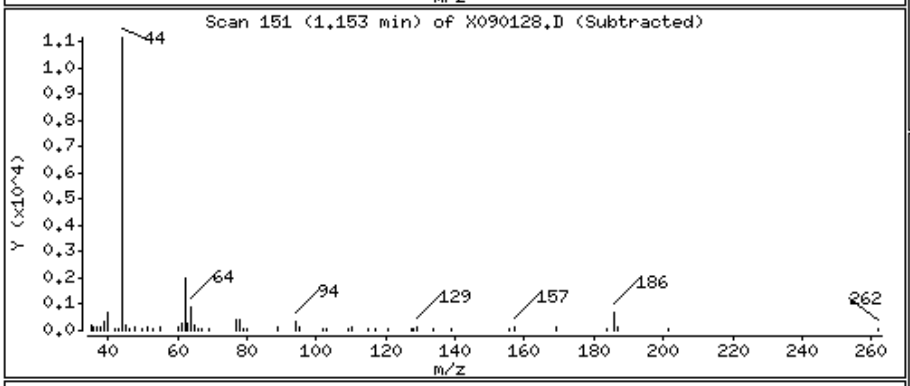
Purge Volume: 5.0 Operator: PC

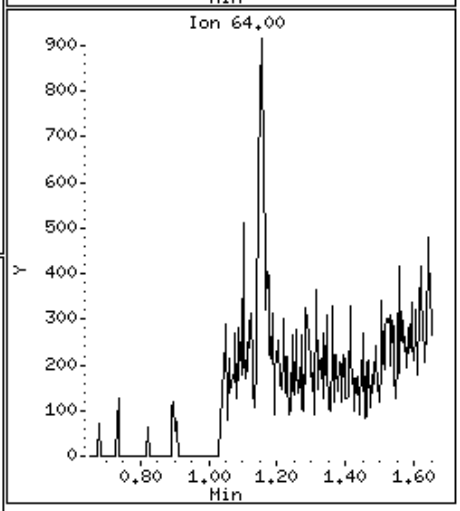
Column phase: DB624 Column diameter: 0.18

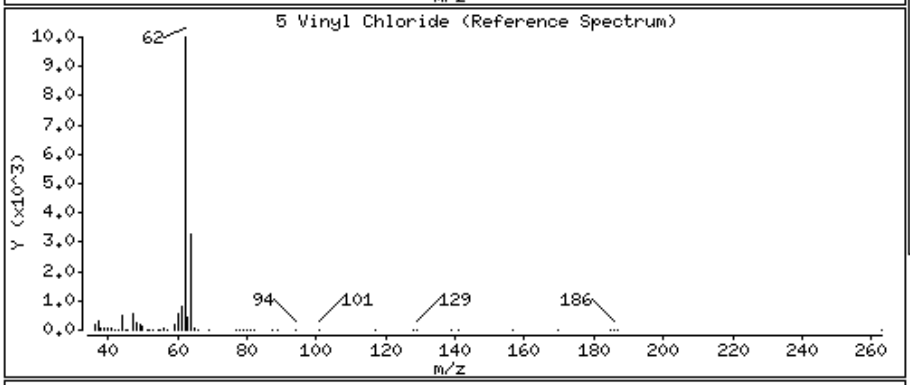
5 Vinyl Chloride Concentration: 108.75 ug/l

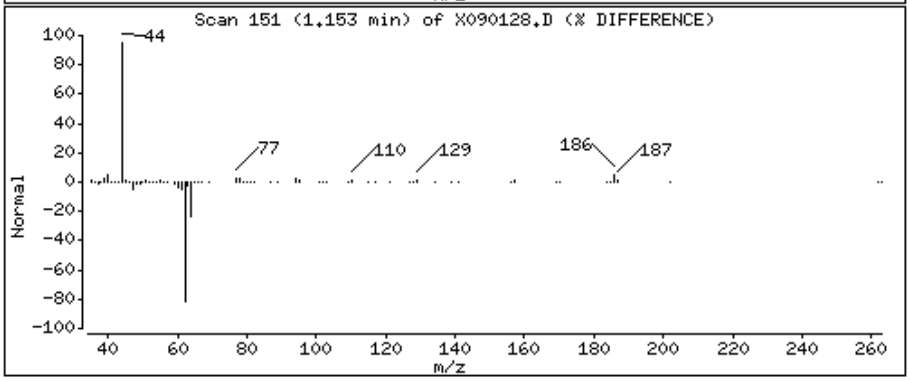












Data File : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090128.D
Inj Date : 01-SEP-2022 19:39
InstruID : voa6.i
LabSampID : HS22081514-08

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090129.D Page 1
Report Date: 09-Sep-2022 16:52

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090129.D
Lab Smp Id: HS22081514-12 Client Smp ID: HS22081514-12
Inj Date : 01-SEP-2022 20:00
Operator : PC Inst ID: voa6.i
Smp Info : HS22081514-12;HS22081514-12;;;
Misc Info : HS22052000V6;WATER;0;100;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\8260W.m
Meth Date : 09-Sep-2022 16:51 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 28
Dil Factor: 100.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	100.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
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	4.185	4.189	(1.000)	568081	50.0000	
* 36 1,4-Difluorobenzene	114	4.969	4.968	(1.000)	791447	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	681820	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.665	(1.000)	295441	50.0000	
$ 30 Dibromofluoromethane	113	4.106	4.106	(0.981)	251765	46.9203	46.92
$ 35 1,2-Dichloroethane-d4	65	4.478	4.477	(1.070)	268097	45.6350	45.63
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	915031	53.7888	53.78
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	278816	45.7559	45.75
22 1,1-Dichloroethane	63	2.929	2.929	(0.700)	10202	1.16653	116.65(a)
11 1,1-Dichloroethene	96	1.921	1.924	(0.459)	30891	6.51418	651.41
33 1,2-Dichloroethane	62	4.564	4.560	(0.919)	12630	1.81959	181.95(a)
29 Bromochloromethane	128	3.818	3.803	(0.912)	7702	2.40462	240.46(a)
28 Chloroform	83	3.919	3.911	(0.936)	9002	0.93946	93.94(a)
27 cis-1,2-Dichloroethene	96	3.533	3.533	(0.844)	753559	133.426	13342.56
17 Methylene Chloride	84	2.307	2.311	(0.551)	11158520	2172.66	217266.48(A)
38 Trichloroethene	130	5.208	5.208	(1.048)	3789167	682.057	68205.74(A)
5 Vinyl Chloride	62	1.152	1.152	(0.275)	32349	5.43057	543.05

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).

QC Flag Legend

A - Target compound detected but, quantitated amount
exceeded maximum amount.

01148252

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090129.D

Date : 01-SEP-2022 20:00

Client ID: HS22081514-12

Instrument: voa6.i

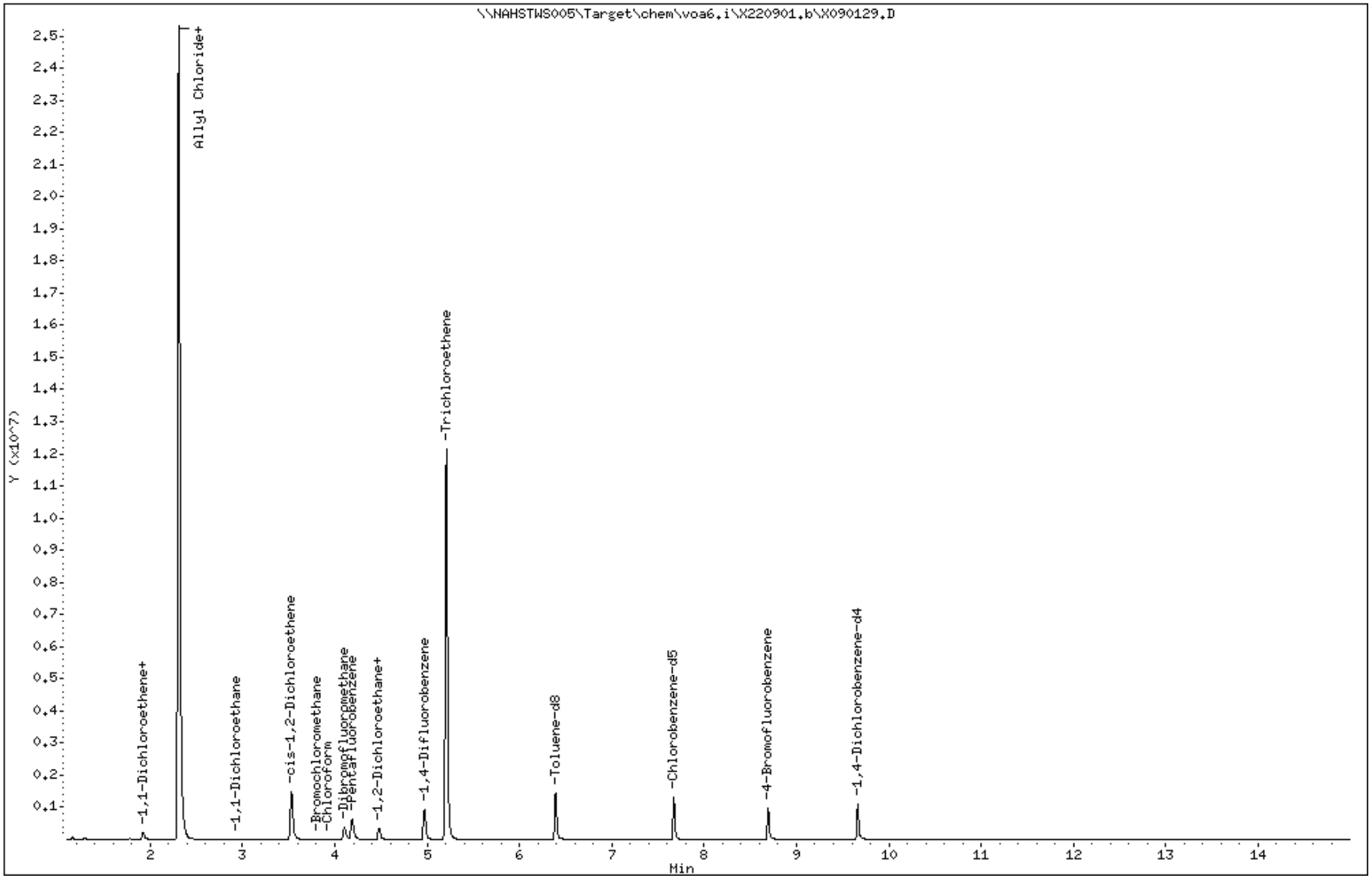
Sample Info: HS22081514-12;HS22081514-12;;;

Purge Volume: 5.0

Operator: PC

Column phase: DB624

Column diameter: 0.18



Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090129.D

Date : 01-SEP-2022 20:00

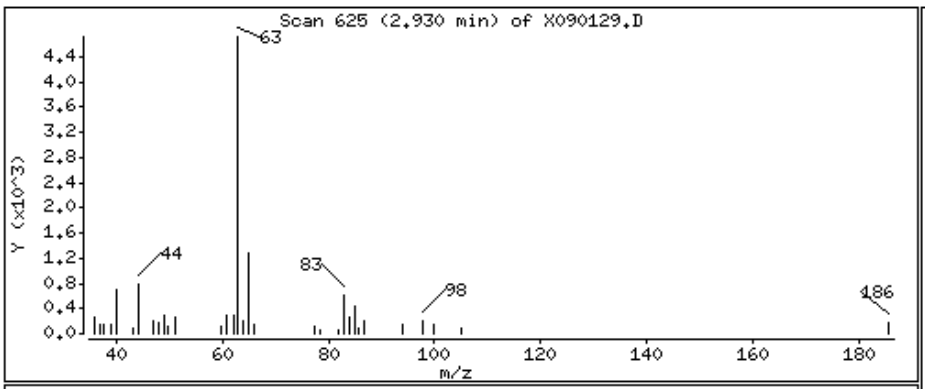
Client ID: HS22081514-12 Instrument: voa6.i

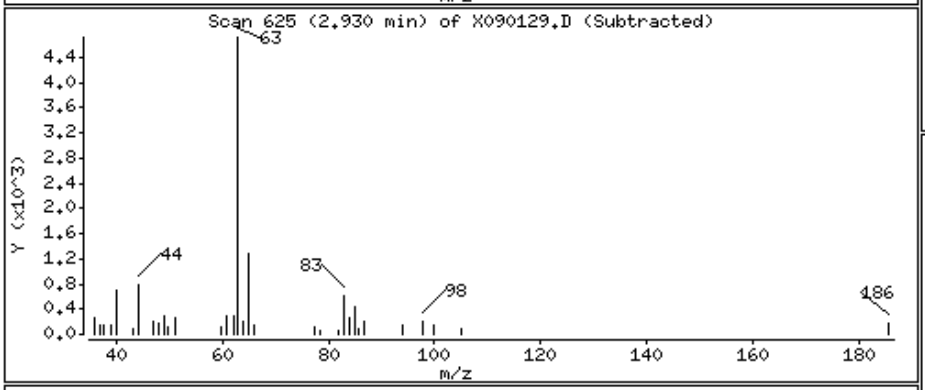
Sample Info: HS22081514-12;HS22081514-12;;;

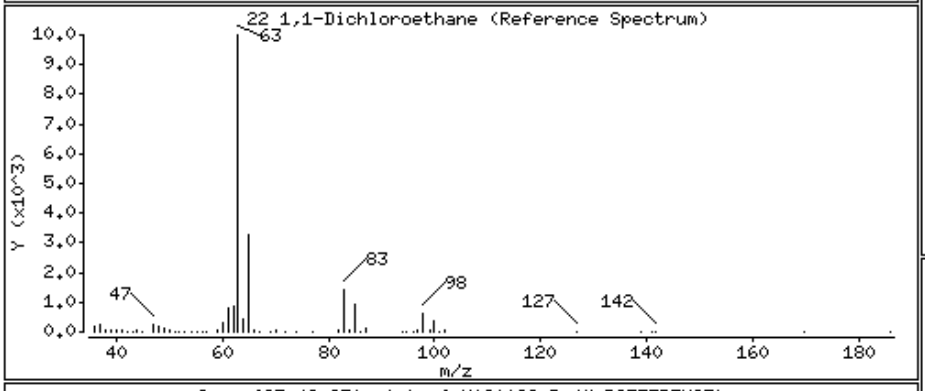
Purge Volume: 5.0 Operator: PC

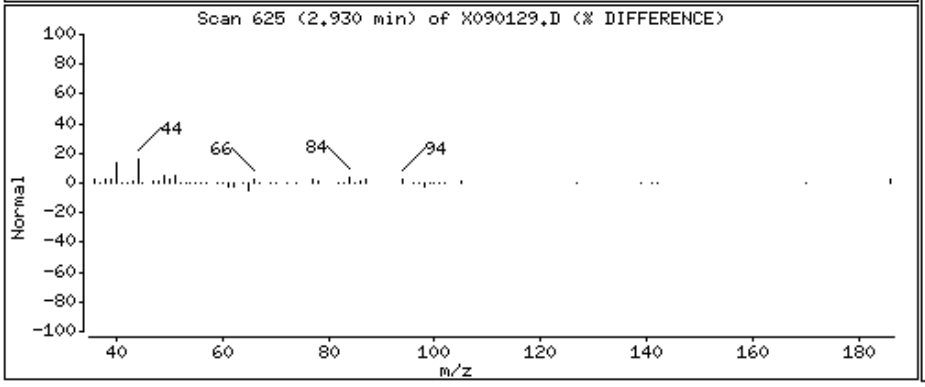
Column phase: DB624 Column diameter: 0.18

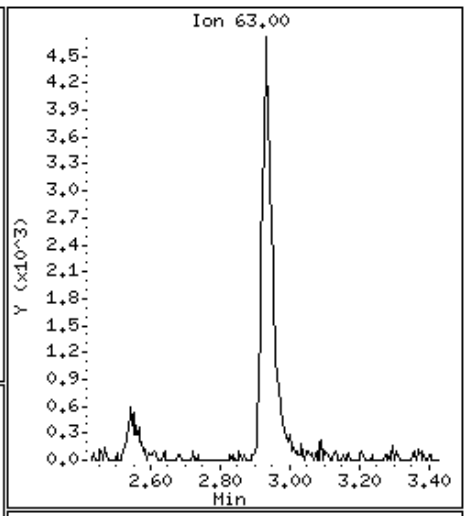
22 1,1-Dichloroethane Concentration: 116.65 ug/l

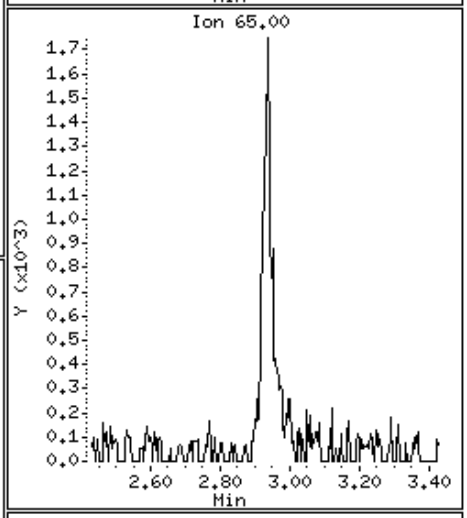


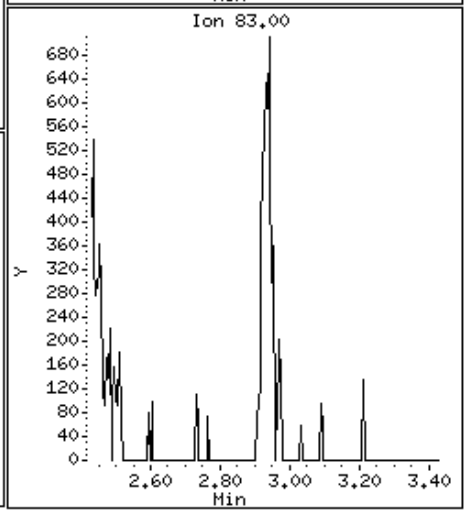












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090129.D

Date : 01-SEP-2022 20:00

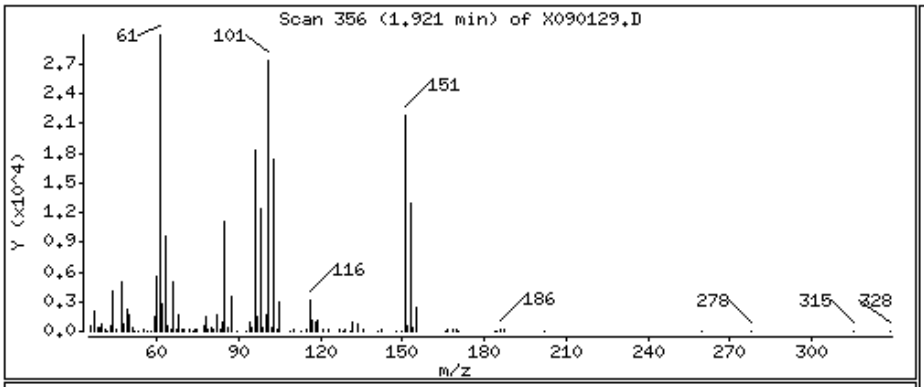
Client ID: HS22081514-12 Instrument: voa6.i

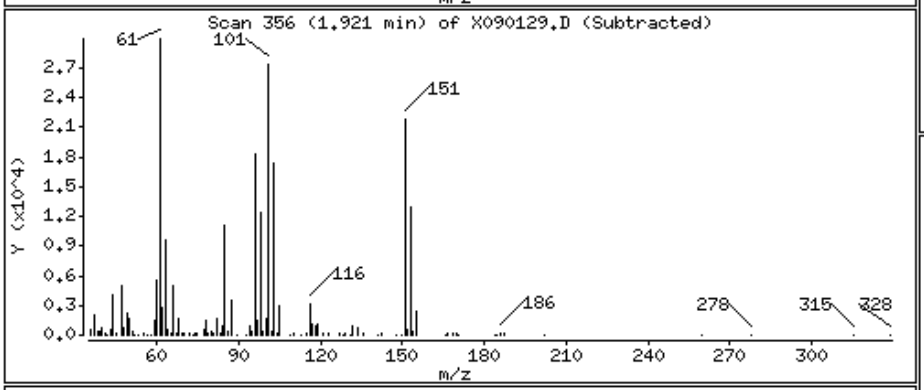
Sample Info: HS22081514-12;HS22081514-12;;;

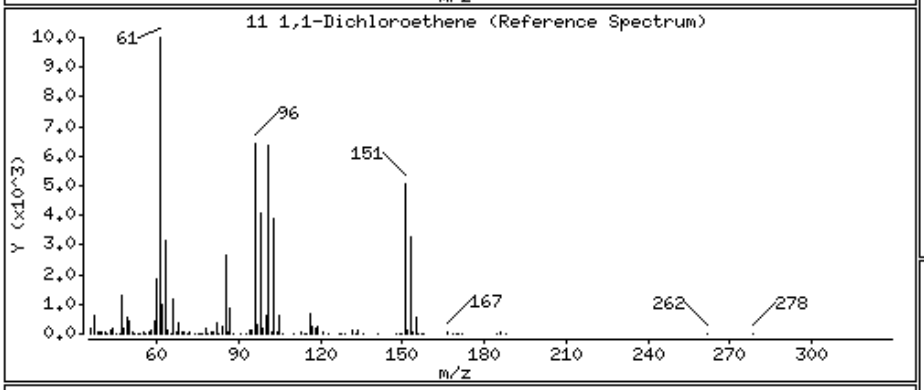
Purge Volume: 5.0 Operator: PC

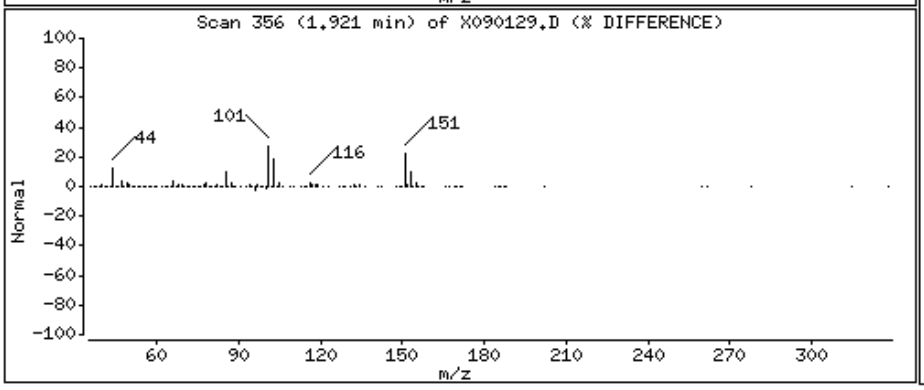
Column phase: DB624 Column diameter: 0.18

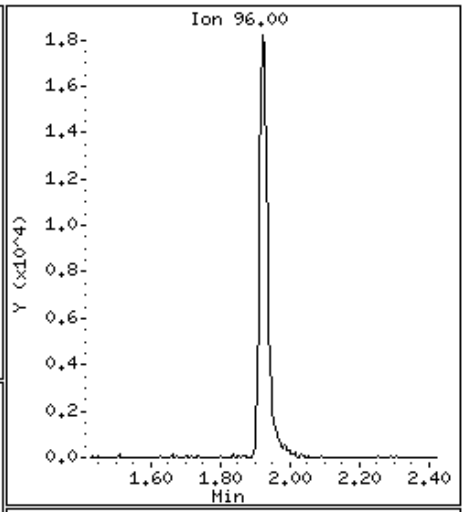
11 1,1-Dichloroethene Concentration: 651.41 ug/l

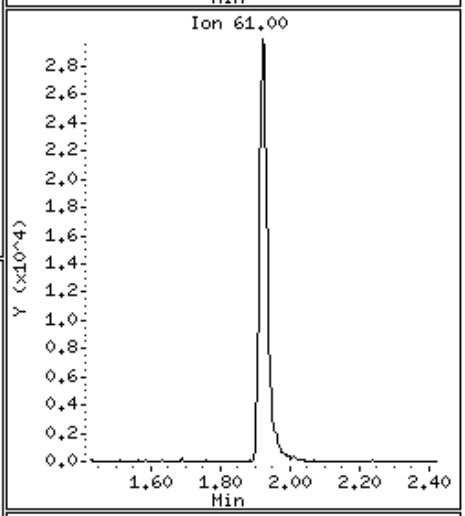


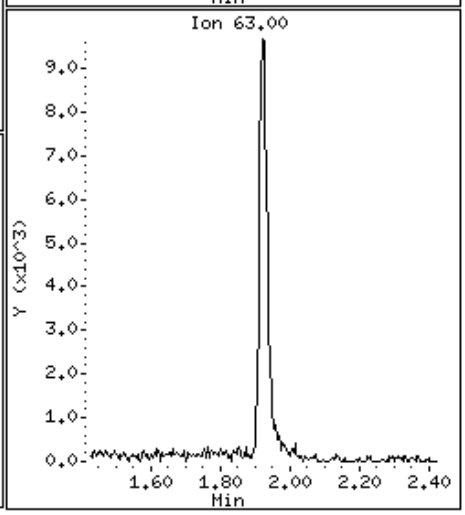












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090129.D Page 4

Date : 01-SEP-2022 20:00

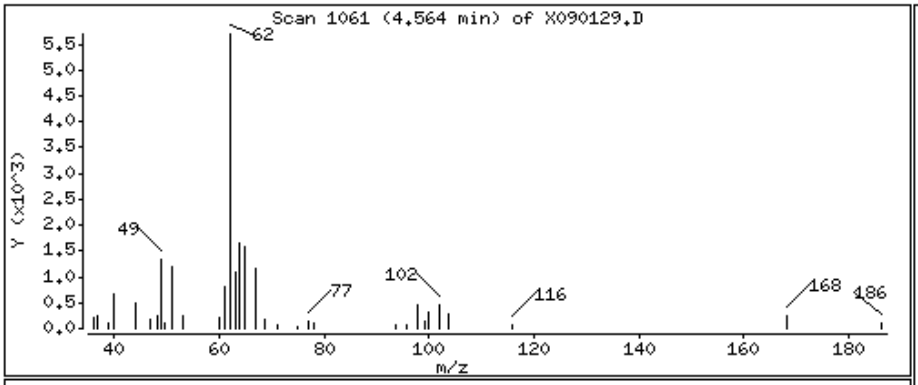
Client ID: HS22081514-12 Instrument: voa6.i

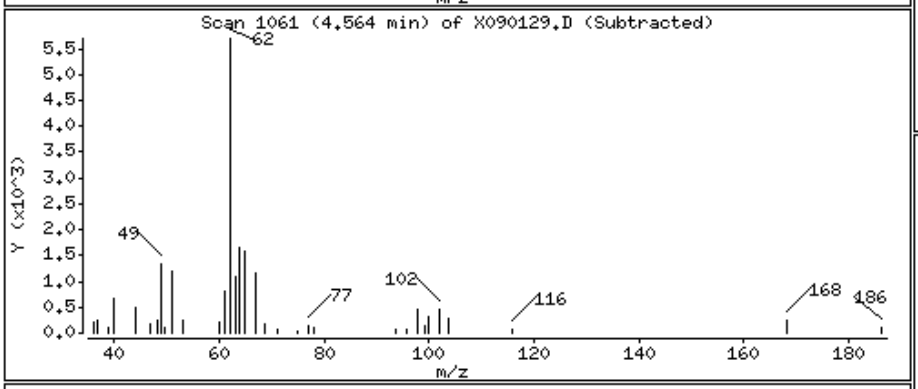
Sample Info: HS22081514-12;HS22081514-12;;;

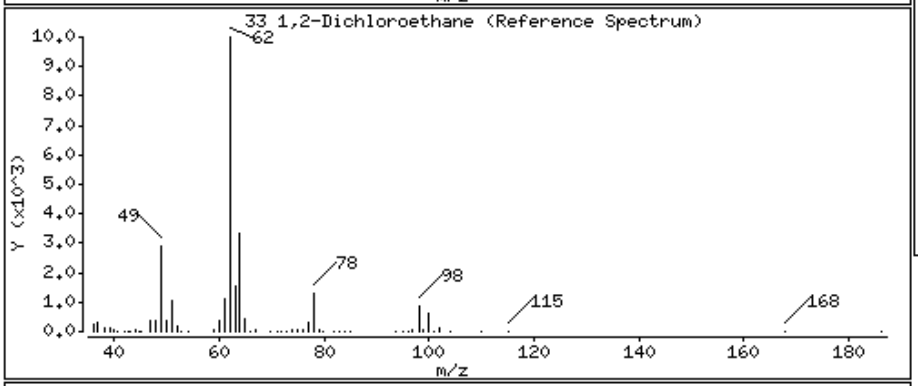
Purge Volume: 5.0 Operator: PC

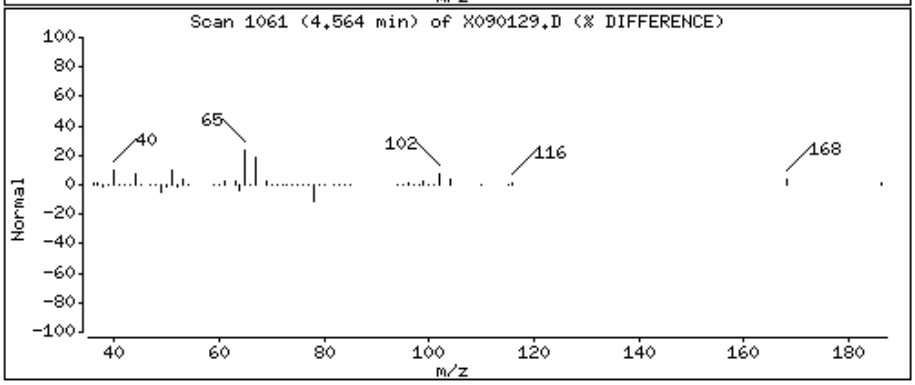
Column phase: DB624 Column diameter: 0.18

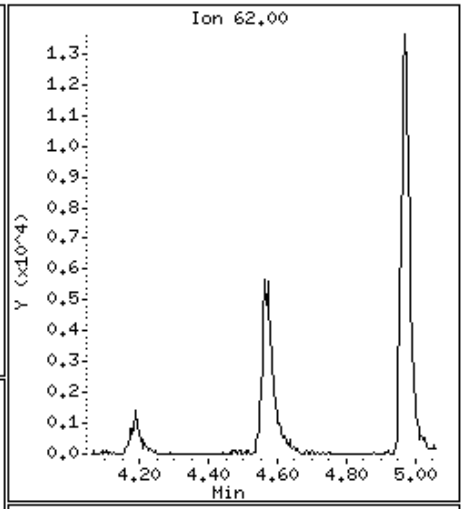
33 1,2-Dichloroethane Concentration: 181.95 ug/l

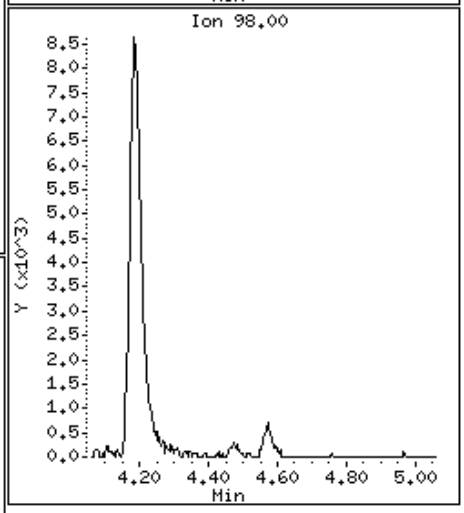












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090129.D Page 5

Date : 01-SEP-2022 20:00

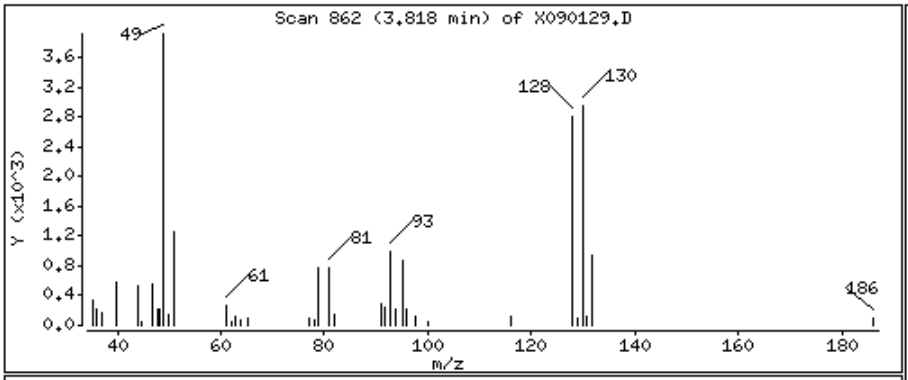
Client ID: HS22081514-12 Instrument: voa6.i

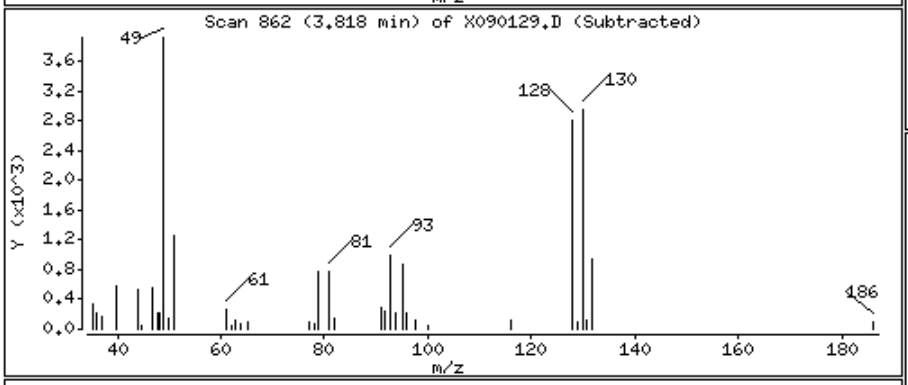
Sample Info: HS22081514-12;HS22081514-12;;;

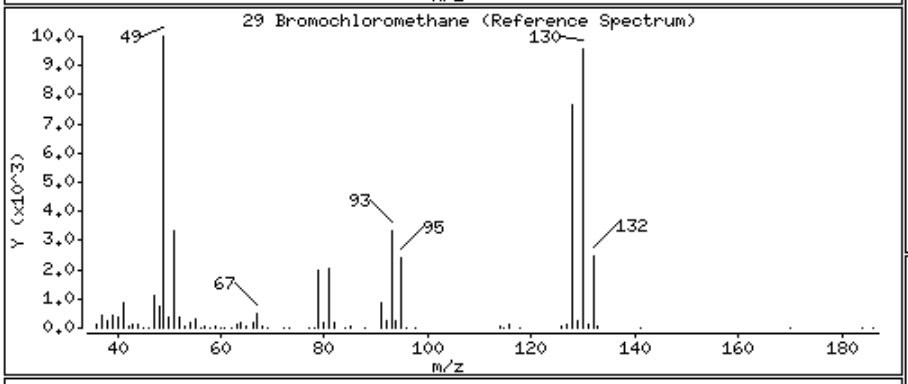
Purge Volume: 5.0 Operator: PC

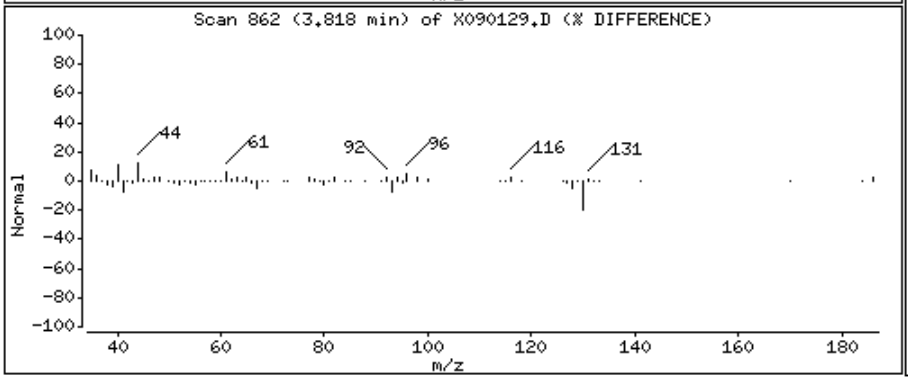
Column phase: DB624 Column diameter: 0.18

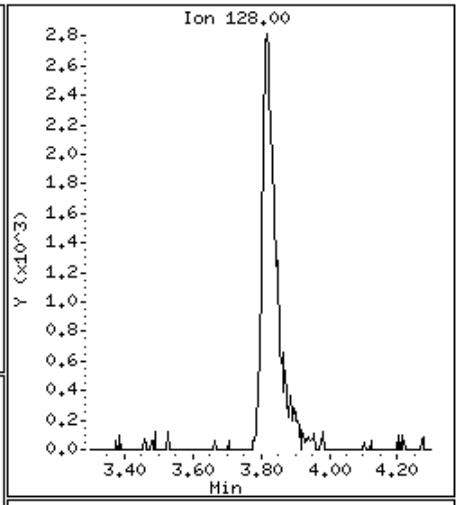
29 Bromochloromethane Concentration: 240.46 ug/l

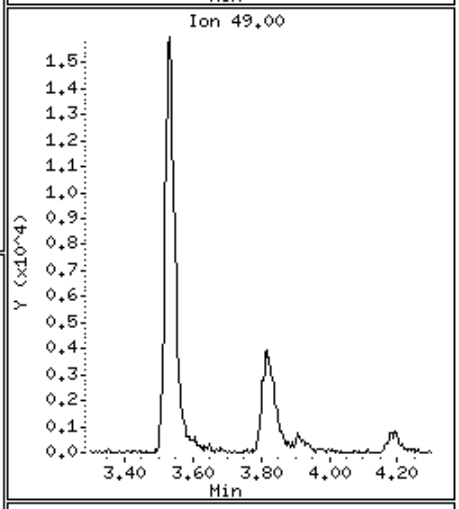


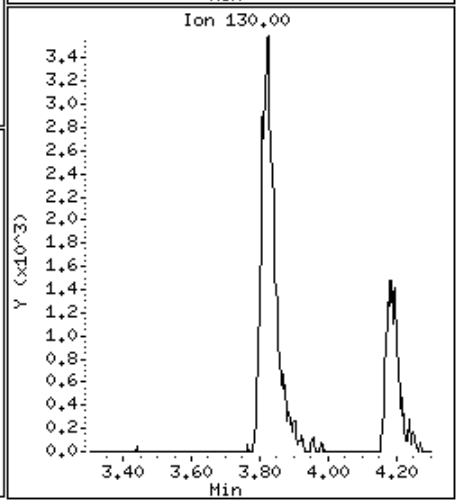












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090129.D Page 6

Date : 01-SEP-2022 20:00

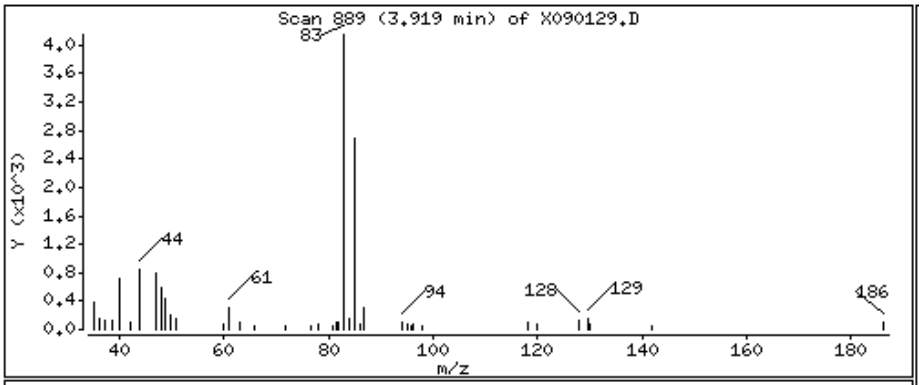
Client ID: HS22081514-12 Instrument: voa6.i

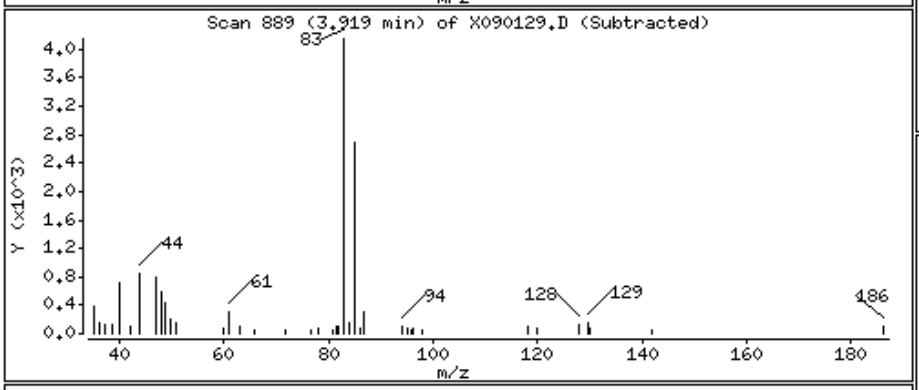
Sample Info: HS22081514-12;HS22081514-12;;;

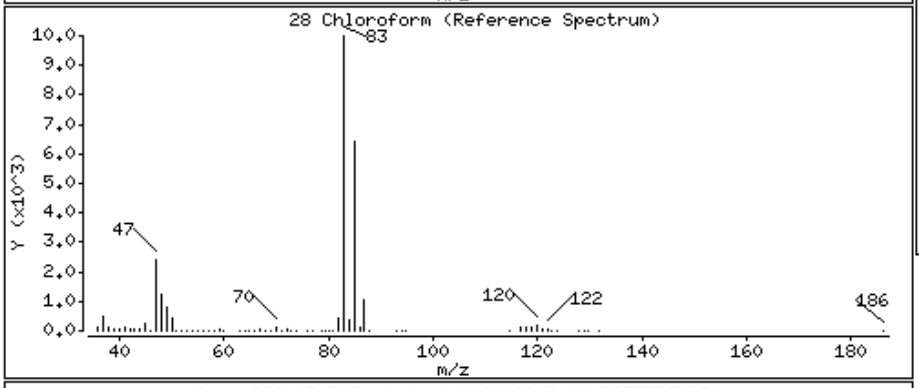
Purge Volume: 5.0 Operator: PC

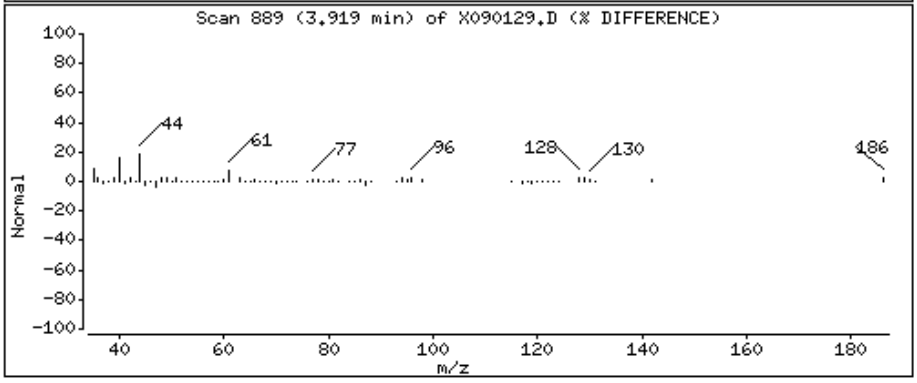
Column phase: DB624 Column diameter: 0.18

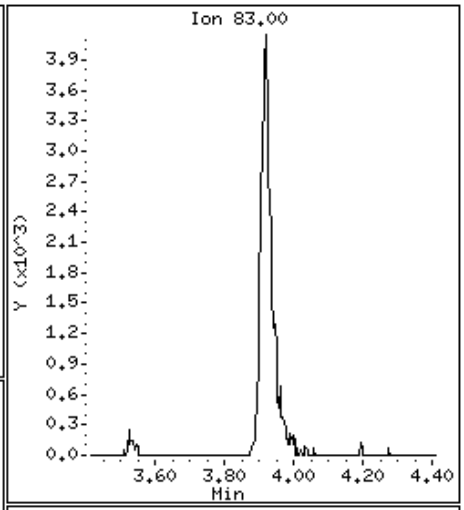
28 Chloroform Concentration: 93.94 ug/l

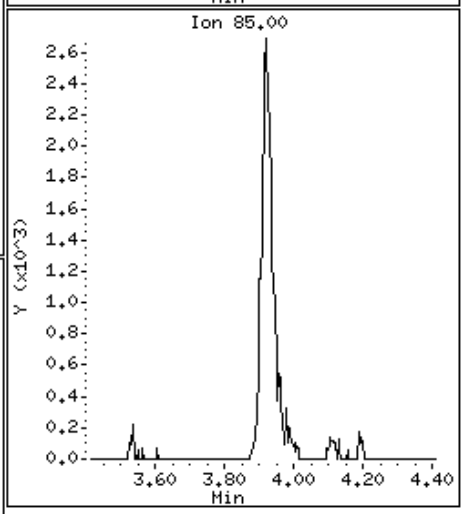












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090129.D

Date : 01-SEP-2022 20:00

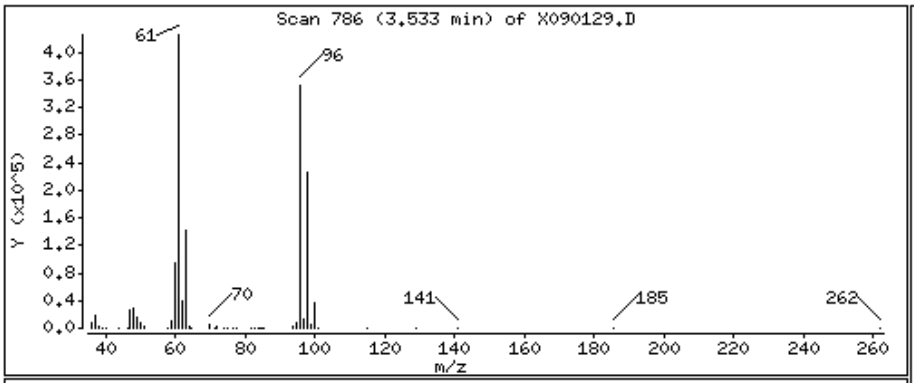
Client ID: HS22081514-12 Instrument: voa6.i

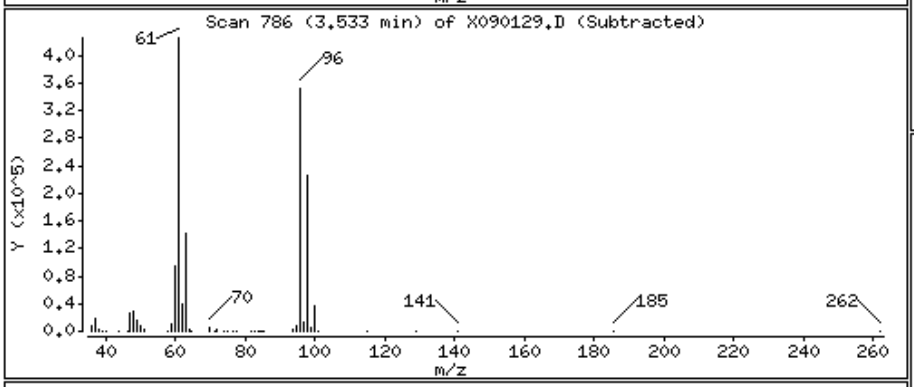
Sample Info: HS22081514-12;HS22081514-12;;;

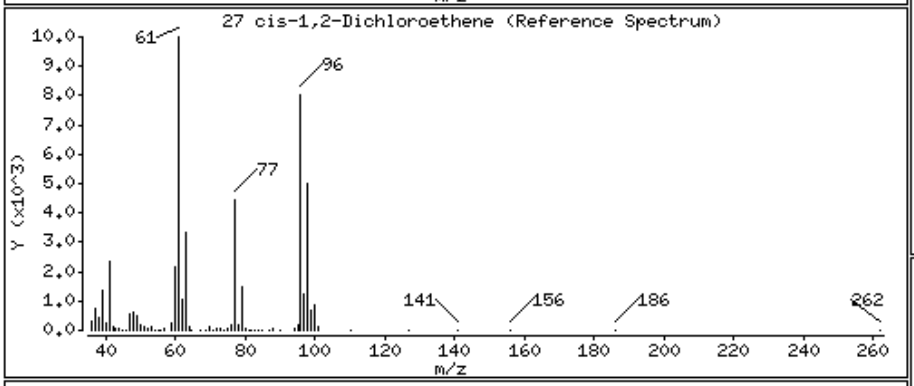
Purge Volume: 5.0 Operator: PC

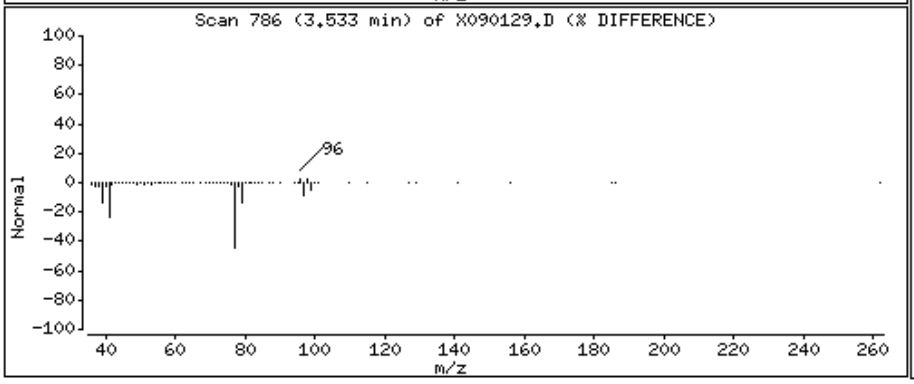
Column phase: DB624 Column diameter: 0.18

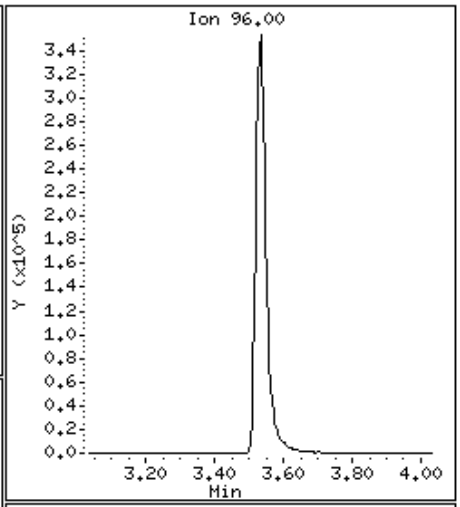
27 cis-1,2-Dichloroethene Concentration: 13342.56 ug/l

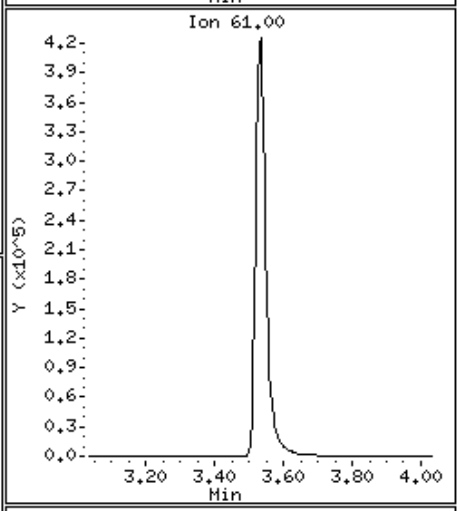


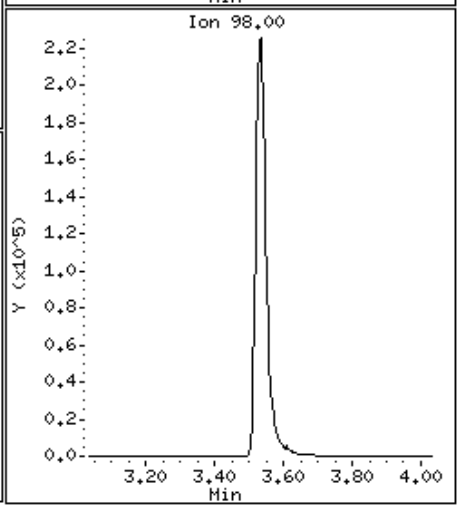












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090129.D Page 8

Date : 01-SEP-2022 20:00

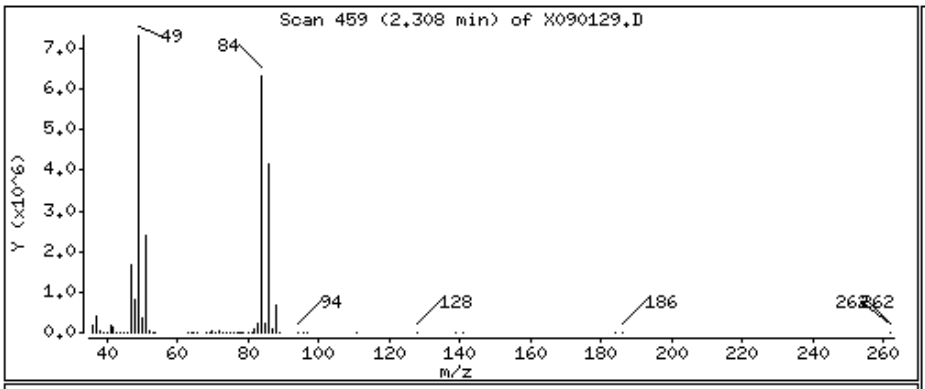
Client ID: HS22081514-12 Instrument: voa6.i

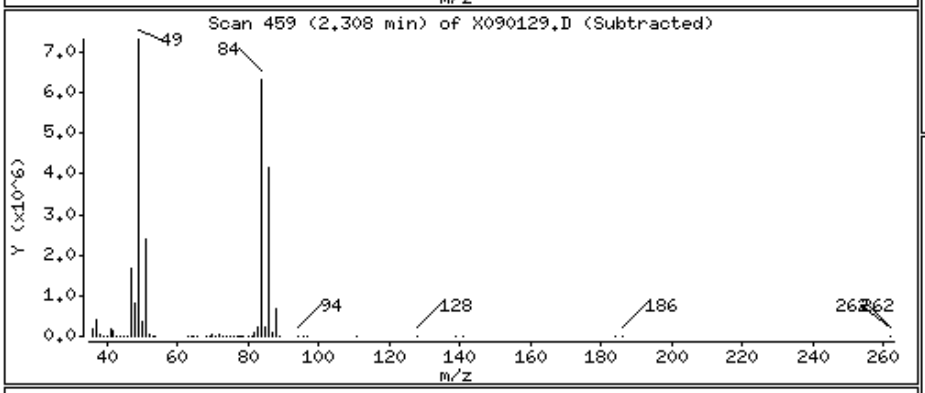
Sample Info: HS22081514-12;HS22081514-12;;;

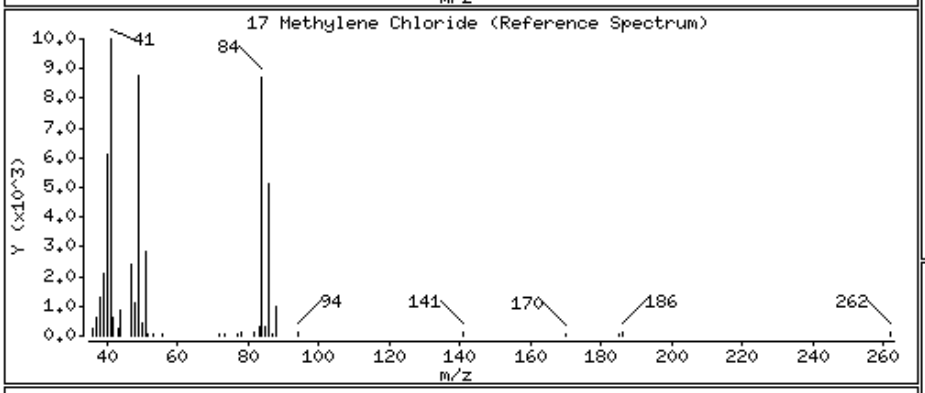
Purge Volume: 5.0 Operator: PC

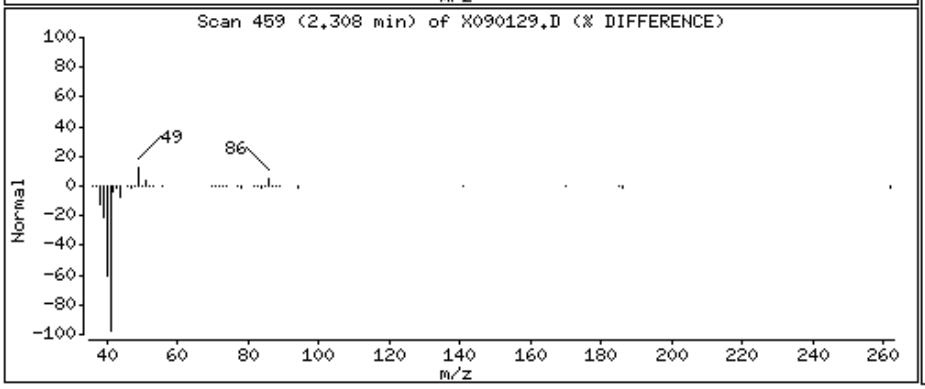
Column phase: DB624 Column diameter: 0.18

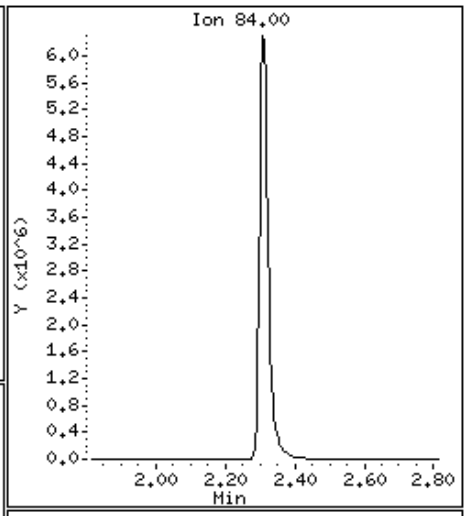
17 Methylene Chloride Concentration: 217266.48 ug/l

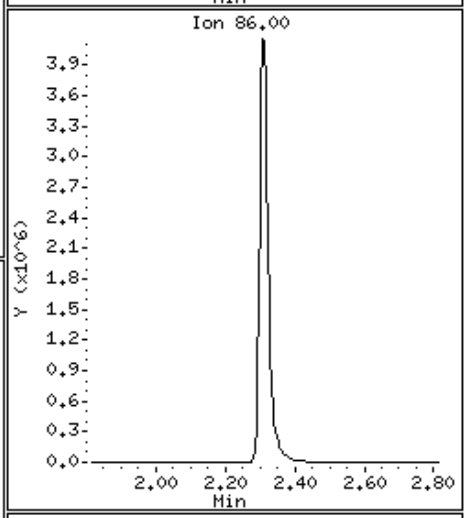


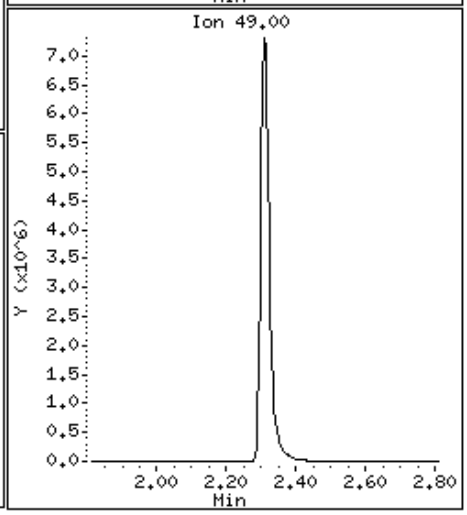












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090129.D Page 9

Date : 01-SEP-2022 20:00

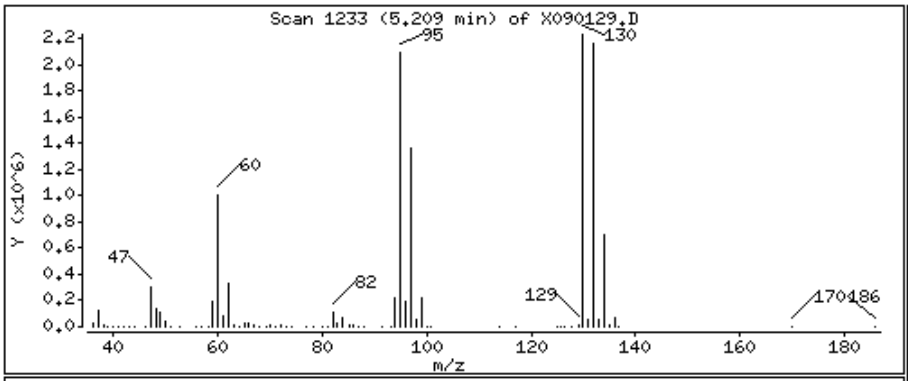
Client ID: HS22081514-12 Instrument: voa6.i

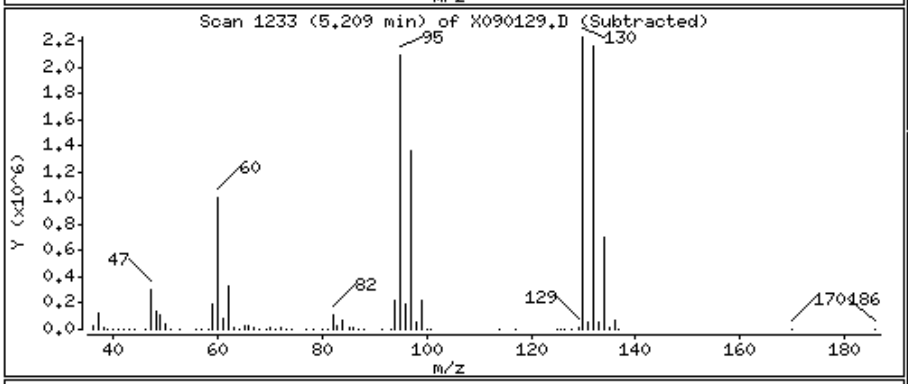
Sample Info: HS22081514-12;HS22081514-12;;;

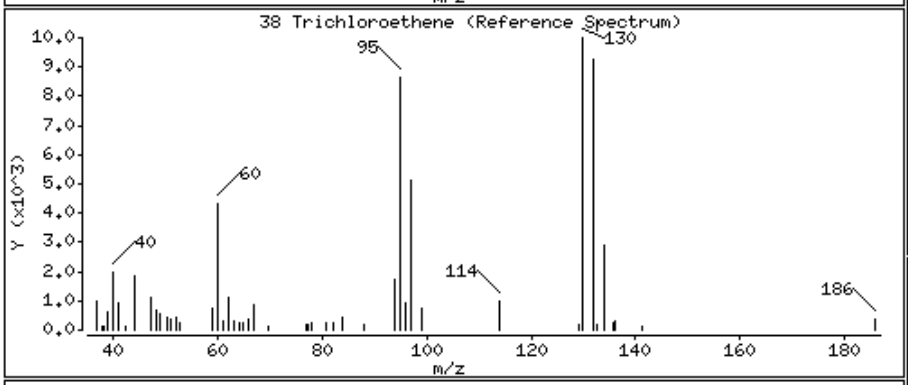
Purge Volume: 5.0 Operator: PC

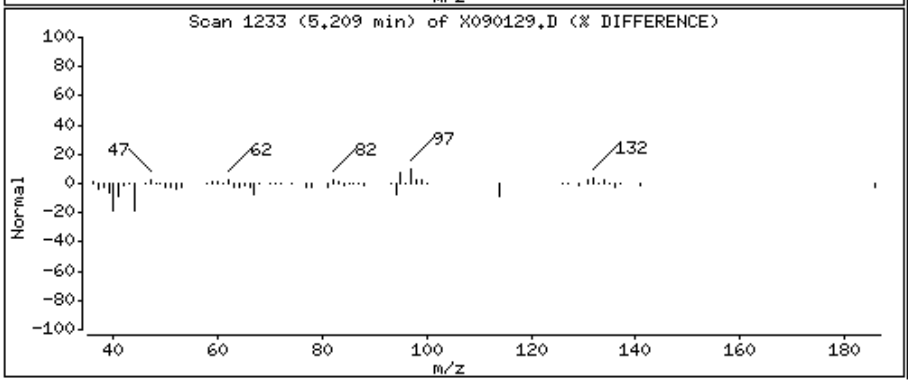
Column phase: DB624 Column diameter: 0.18

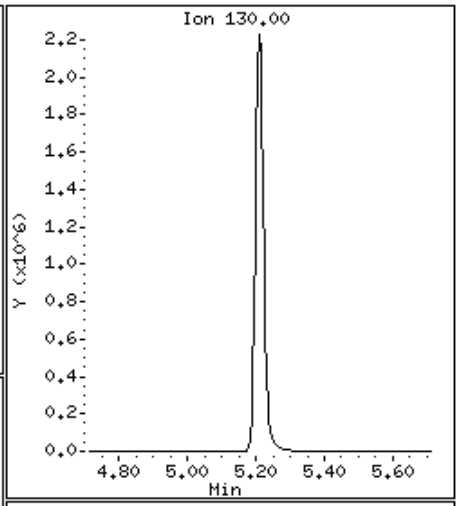
38 Trichloroethene Concentration: 68205.74 ug/l

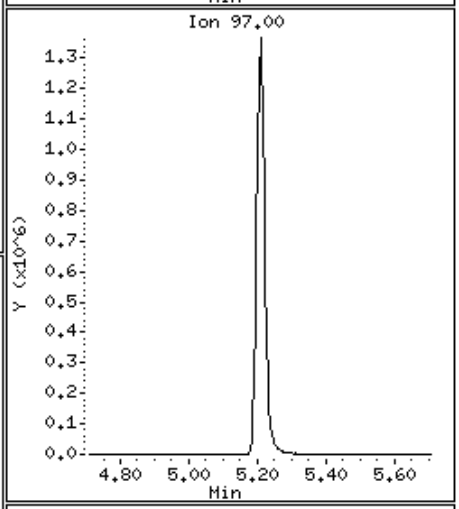


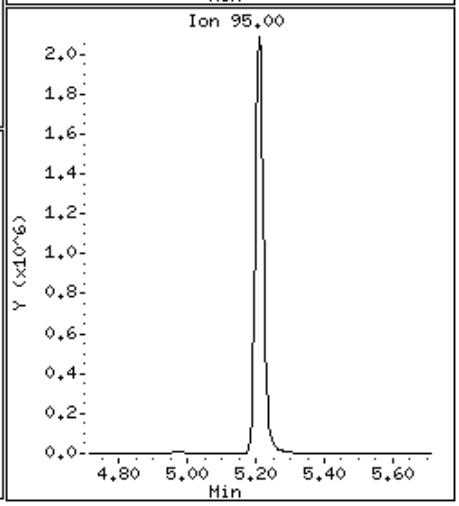












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Date : 01-SEP-2022 20:00

Client ID: HS22081514-12

Instrument: voa6.i

Sample Info: HS22081514-12;HS22081514-12;;;

Purge Volume: 5.0

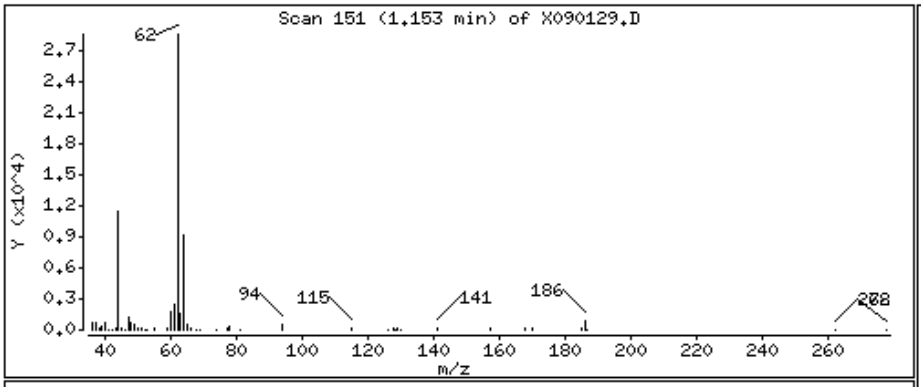
Operator: PC

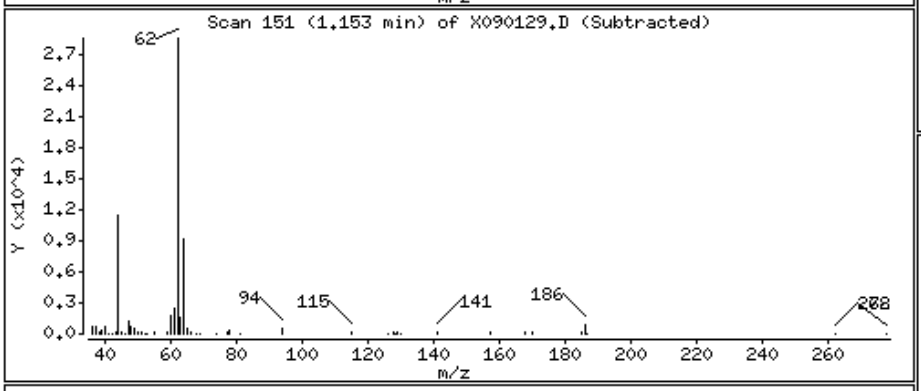
Column phase: DB624

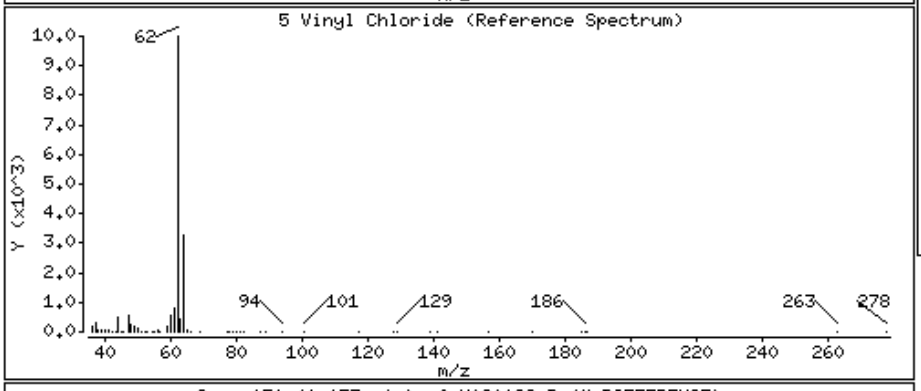
Column diameter: 0.18

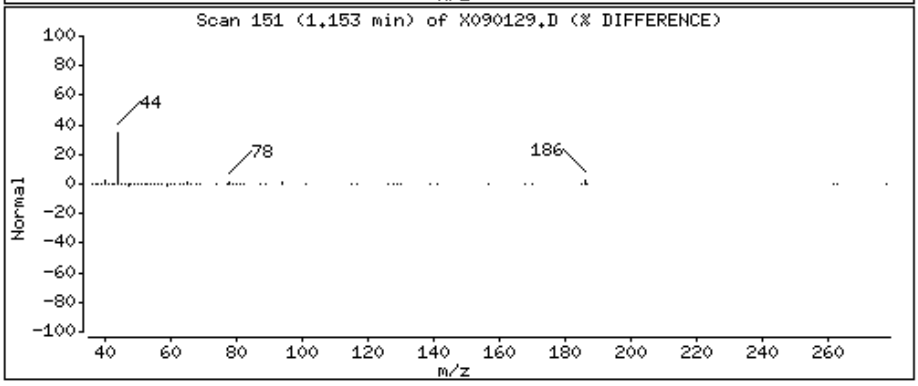
5 Vinyl Chloride

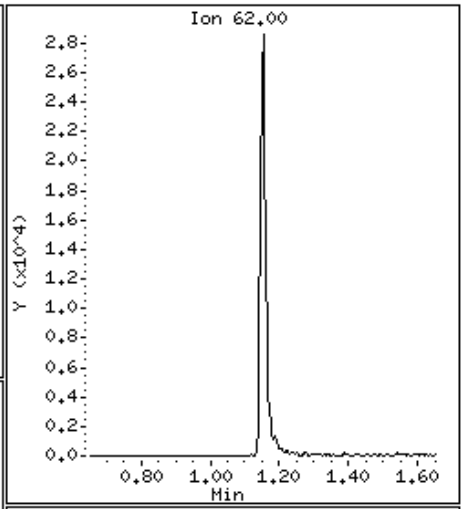
Concentration: 543.05 ug/l

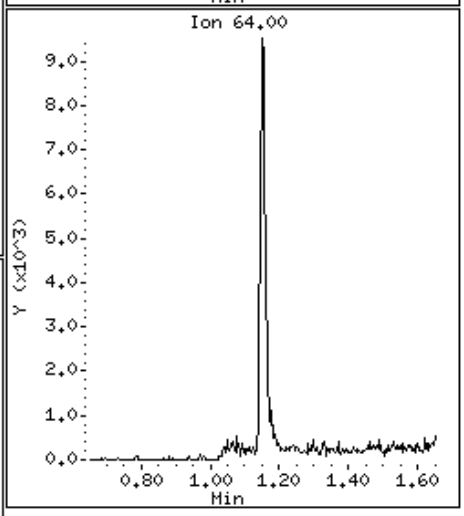












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Inj Date : 01-SEP-2022 20:00
InstruID : voa6.i
LabSampID : HS22081514-12

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090131.D Page 1
Report Date: 09-Sep-2022 16:52

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090131.D
Lab Smp Id: CCV-END Client Smp ID: CCV-END
Inj Date : 01-SEP-2022 20:42
Operator : PC Inst ID: voa6.i
Smp Info : CCV-END;CCV-END;2;;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\8260W.m
Meth Date : 09-Sep-2022 16:52 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 30 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.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
Cpnd Variable		Local Compound Variable

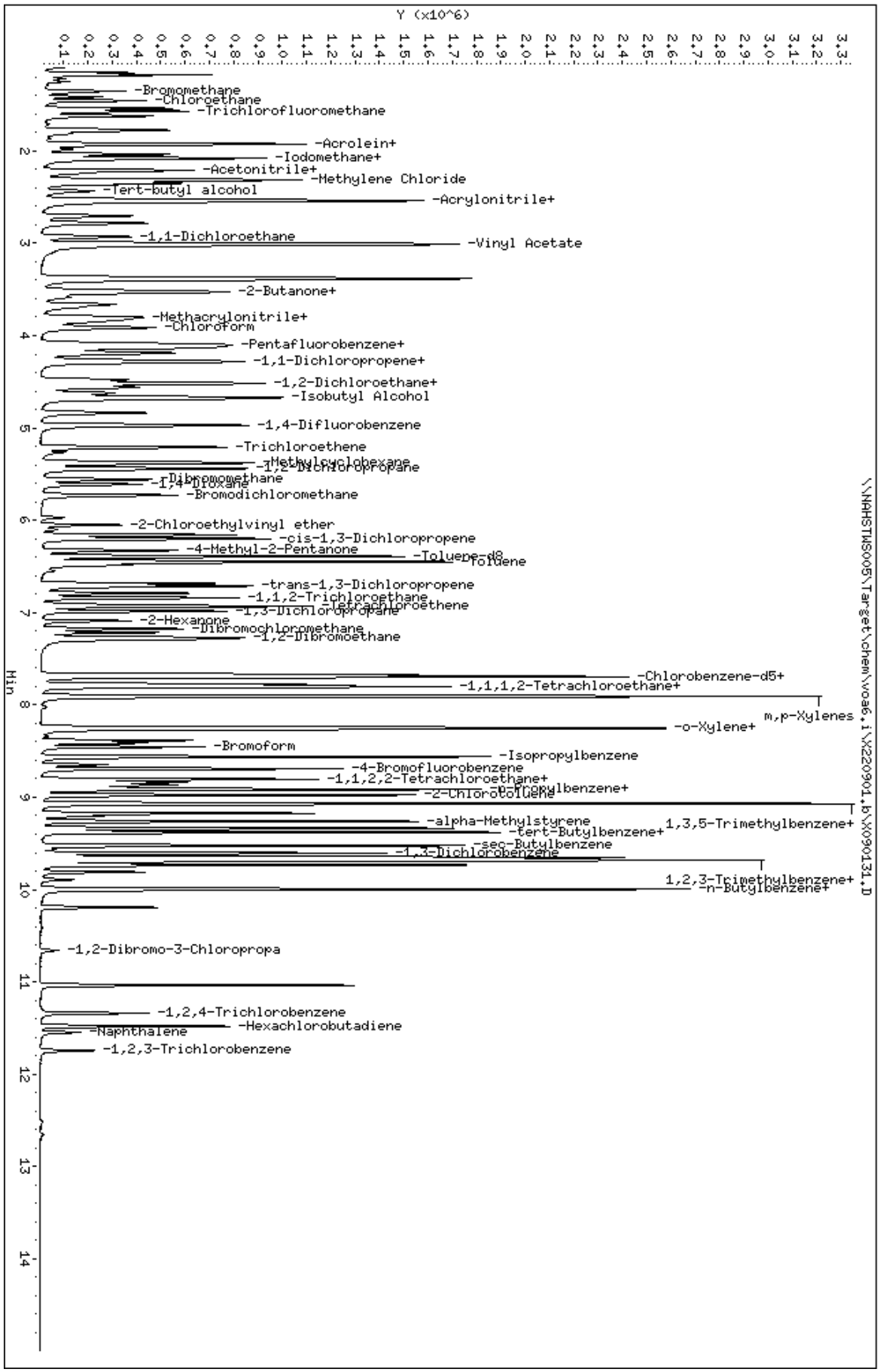
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.185	4.185	(1.000)	472248	50.0000	
* 36 1,4-Difluorobenzene	114	4.972	4.972	(1.000)	721372	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	685253	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	351354	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.980)	249649	50.0000	56.10
$ 35 1,2-Dichloroethane-d4	65	4.478	4.478	(1.070)	262517	50.0000	53.81
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	868084	50.0000	50.77
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	318726	50.0000	52.15
60 1,1,1,2-Tetrachloroethane	131	7.776	7.776	(1.014)	246504	50.0000	51.20
31 1,1,1-Trichloroethane	97	4.088	4.088	(0.977)	342374	50.0000	51.10
68 1,1,2,2-Tetrachloroethane	83	8.841	8.841	(0.915)	228091	50.0000	46.22
53 1,1,2-Trichloroethane	83	6.839	6.839	(0.892)	173902	50.0000	49.35
22 1,1-Dichloroethane	63	2.929	2.929	(0.700)	374399	50.0000	51.49
11 1,1-Dichloroethene	96	1.925	1.925	(0.460)	191769	50.0000	48.64
32 1,1-Dichloropropene	75	4.286	4.286	(0.862)	292068	50.0000	50.16
93 1,2,3-Trichlorobenzene	180	11.742	11.742	(1.215)	67361	50.0000	36.87
71 1,2,3-Trichloropropane	75	8.867	8.867	(0.918)	177799	50.0000	46.73(M)
90 1,2,4-Trichlorobenzene	180	11.341	11.341	(1.174)	127679	50.0000	39.89
79 1,2,4-Trimethylbenzene	105	9.381	9.381	(0.971)	830690	50.0000	49.28
89 1,2-Dibromo-3-Chloropropane	155	10.659	10.659	(1.103)	15696	50.0000	42.51

57	1,2-Dibromoethane	107	7.263	7.263 (0.947)	219899	50.0000	49.22
88	1,2-Dichlorobenzene	146	9.992	9.992 (1.034)	425279	50.0000	48.37

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
33	1,2-Dichloroethane	62	4.560	4.560	(0.917)	322350	50.0000	50.95
42	1,2-Dichloropropane	63	5.437	5.437	(1.093)	223995	50.0000	50.44
75	1,3,5-Trimethylbenzene	105	9.070	9.070	(0.939)	823961	50.0000	48.27
83	1,3-Dichlorobenzene	146	9.606	9.606	(0.994)	475343	50.0000	48.76
54	1,3-Dichloropropane	76	6.982	6.982	(0.910)	350180	50.0000	48.86
84	1,4-Dichlorobenzene	146	9.684	9.684	(1.002)	496991	50.0000	48.02
26	2,2-Dichloropropane	77	3.518	3.518	(0.841)	308782	50.0000	47.81
24	2-Butanone	43	3.585	3.585	(0.857)	116517	100.000	98.35
76	2-Chlorotoluene	91	8.976	8.976	(0.929)	702512	50.0000	46.64
52	2-Hexanone	43	7.090	7.090	(0.924)	204956	100.000	95.11
77	4-Chlorotoluene	91	9.070	9.070	(0.939)	806731	50.0000	47.99
82	p-Isopropyltoluene	119	9.651	9.651	(0.999)	849000	50.0000	49.53
45	4-Methyl-2-Pentanone	43	6.326	6.326	(0.825)	325142	100.000	97.37
10	Acetone	43	1.981	1.981	(0.473)	99831	100.000	100.39
37	Benzene	78	4.519	4.519	(0.909)	858273	50.0000	50.20
74	Bromobenzene	156	8.807	8.807	(0.912)	291172	50.0000	48.52
29	Bromochloromethane	128	3.799	3.799	(0.908)	133205	50.0000	50.02
39	Bromodichloromethane	83	5.730	5.730	(1.152)	311475	50.0000	51.12
66	Bromoform	173	8.414	8.414	(1.097)	153542	50.0000	46.31
6	Bromomethane	94	1.351	1.351	(0.323)	159243	50.0000	49.34
19	Carbon Disulfide	76	2.078	2.078	(0.497)	1090085	100.000	104.44
34	Carbon Tetrachloride	117	4.271	4.271	(0.859)	296291	50.0000	47.61
59	Chlorobenzene	112	7.698	7.698	(1.003)	653760	50.0000	50.31
7	Chloroethane	64	1.411	1.411	(0.337)	150591	50.0000	49.71
28	Chloroform	83	3.911	3.911	(0.935)	411299	50.0000	51.63
3	Chloromethane	50	1.089	1.089	(0.260)	253450	50.0000	57.95
27	cis-1,2-Dichloroethene	96	3.533	3.533	(0.844)	250039	50.0000	53.25
46	cis-1,3-Dichloropropene	75	6.157	6.157	(1.238)	375080	50.0000	50.12
55	Dibromochloromethane	129	7.177	7.177	(0.936)	249943	50.0000	49.14
44	Dibromomethane	93	5.553	5.553	(1.117)	150355	50.0000	50.47
2	Dichlorodifluoromethane	85	0.980	0.980	(0.234)	219867	50.0000	48.86
61	Ethylbenzene	106	7.803	7.803	(1.017)	329640	50.0000	50.22
91	Hexachlorobutadiene	225	11.480	11.480	(1.188)	129067	50.0000	43.67
67	Isopropylbenzene	105	8.564	8.564	(1.116)	1007546	50.0000	51.04
62	m,p-Xylenes	106	7.908	7.908	(1.031)	834315	100.000	102.19
17	Methylene Chloride	84	2.315	2.315	(0.553)	238637	50.0000	55.04
87	n-Butylbenzene	91	9.995	9.995	(1.035)	711702	50.0000	49.97
73	n-Propylbenzene	91	8.912	8.912	(0.922)	1148410	50.0000	49.54
92	Naphthalene	128	11.547	11.547	(1.195)	127090	50.0000	35.50
63	o-Xylene	106	8.245	8.245	(1.075)	398456	50.0000	50.20
81	sec-Butylbenzene	105	9.523	9.523	(0.986)	969040	50.0000	48.92
64	Styrene	104	8.260	8.260	(1.077)	677500	50.0000	51.83
78	tert-Butylbenzene	119	9.336	9.336	(0.966)	710237	50.0000	49.10
56	Tetrachloroethene	164	6.929	6.929	(0.903)	211082	50.0000	47.50
50	Toluene	91	6.449	6.449	(0.841)	944779	50.0000	49.04
20	trans-1,2-Dichloroethene	96	2.536	2.536	(0.606)	216077	50.0000	52.01
51	trans-1,3-Dichloropropene	75	6.682	6.682	(1.344)	312944	50.0000	50.49
38	Trichloroethene	130	5.212	5.212	(1.048)	255487	50.0000	50.45
8	Trichlorofluoromethane	101	1.569	1.569	(0.375)	367209	50.0000	49.37
5	Vinyl Chloride	62	1.152	1.152	(0.275)	241228	50.0000	48.71

QC Flag Legend

M - Compound response manually integrated.



Data File: \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090131.D
Date : 01-SEP-2022 20:42
Client ID: CCV-END
Sample Info: CCV-END;CCV-END;2;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File : \\NAHSTWS005\Target\chem\voa6.i\X220901.b\X090131.D
Inj Date : 01-SEP-2022 20:42
InstruID : voa6.i
LabSampID : CCV-END

1,2,3-Trichloropropane (96-18-4)

Reason Code:

BEFORE

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HEIGHT
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09-Sep-2022
16:48
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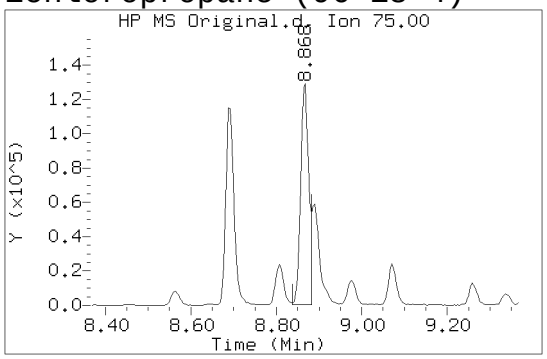
pham



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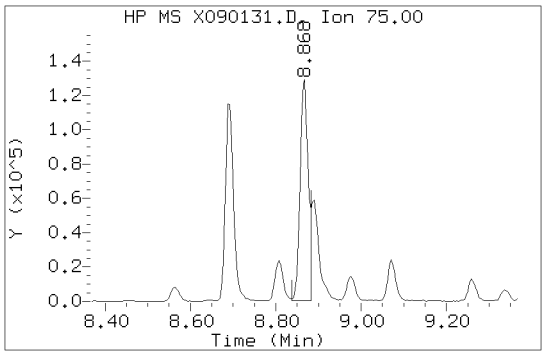

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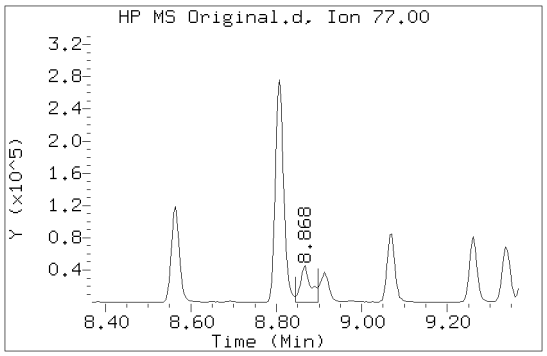

AFTER

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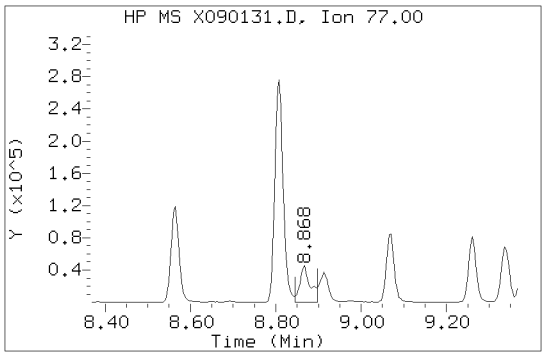


right solutions.
right partner.

Raw Data VOA6 416503

Workorder

HS22081514

Client

Bhate Environmental Associates, Inc.

Project

LHAAP ICT Wells

09/09/2022

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090301.D Page 1
Report Date: 03-Sep-2022 20:35

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090301.D
Lab Smp Id: BFB Client Smp ID: BFB
Inj Date : 03-SEP-2022 10:40
Operator : PC Inst ID: voa6.i
Smp Info : BFB;BFB;3;;BFB
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\bfb.m
Meth Date : 26-Jul-2022 15:17 Linh.Pham Quant Type: ISTD
Cal Date : Cal File:
Als bottle: 1 QC Sample: BFB
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.14 Sample Matrix: WATER
Processing Host: NAHSTW7051

Concentration Formula: Amt * DF * Uf * Vf * Vi * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vf	1.000	Volumetric correction factor
Vi	2.000	Injection Volume
Cpnd Variable		Local Compound Variable

					CONCENTRATIONS ON-COL (ug/L)	FINAL (ug/l)		
RT	EXP RT	REL RT	MASS	RESPONSE			TARGET RANGE	RATIO
1 bfb							CAS #: 460-00-4	
8.691	8.889	(0.000)	95	76856			0.00- 100.00	100.00
8.691	8.889	(0.000)	50	15250			15.00- 40.00	19.84
8.691	8.889	(0.000)	75	37664			30.00- 60.00	49.01
8.691	8.889	(0.000)	96	4951			5.00- 9.00	6.44
8.691	8.889	(0.000)	173	0	0.0	0.0	0.00- 2.00	0.00
8.691	8.889	(0.000)	174	69256			50.00- 0.00	90.11
8.691	8.889	(0.000)	175	5552			5.00- 9.00	8.02
8.691	8.889	(0.000)	176	67176			95.00- 101.00	97.00
8.691	8.889	(0.000)	177	4217			5.00- 9.00	6.28

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	19.84
75	30.00 - 60.00% of mass 95	49.01
96	5.00 - 9.00% of mass 95	6.44
173	Less than 2.00% of mass 174	0.00 (0.00)
174	Greater than 50.00% of mass 95	90.11
175	5.00 - 9.00% of mass 174	7.22 (8.02)
176	95.00 - 101.00% of mass 174	87.41 (97.00)
177	5.00 - 9.00% of mass 176	5.49 (6.28)

Data File: X090301.D
Spectrum: Scan 2160 (8.68)
Location of Maximum: 95.00
Number of points: 93

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	747	62.10	3791	92.00	2196	136.70	187
37.00	4170	63.00	3010	93.00	3535	140.90	607
38.00	4379	64.10	227	94.00	8951	142.00	127
39.00	1799	65.00	154	95.00	76856	142.80	707
39.90	764	66.90	212	96.00	4951	146.10	135
41.00	614	68.00	8289	97.10	157	146.90	75
42.00	921	69.00	8878	97.80	507	148.00	130
43.00	633	69.90	1006	102.90	58	148.80	62
44.00	1208	70.80	147	103.80	518	150.00	129
45.10	1142	71.90	305	104.80	195	153.10	129
47.00	963	73.00	3537	105.80	443	154.90	262
48.20	392	74.00	12883	106.80	138	156.80	231
49.00	3397	75.00	37664	114.80	170	159.00	54
50.00	15250	76.00	3626	116.10	153	160.90	76
51.10	4509	77.00	771	116.90	501	170.20	145
52.10	185	77.80	267	118.10	172	173.90	69256
52.90	218	78.90	3009	118.90	285	174.90	5552
54.00	126	79.90	755	120.10	89	175.90	67176
55.10	1697	80.80	2620	123.90	58	176.90	4217
56.00	1462	81.90	601	127.90	328	178.00	68
57.00	2587	83.00	232	128.90	104	186.10	122
58.00	205	86.90	3505	129.80	210		
60.00	765	87.90	3241	130.80	89		
61.00	3118	90.80	303	135.10	94		

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090301.D Page 1

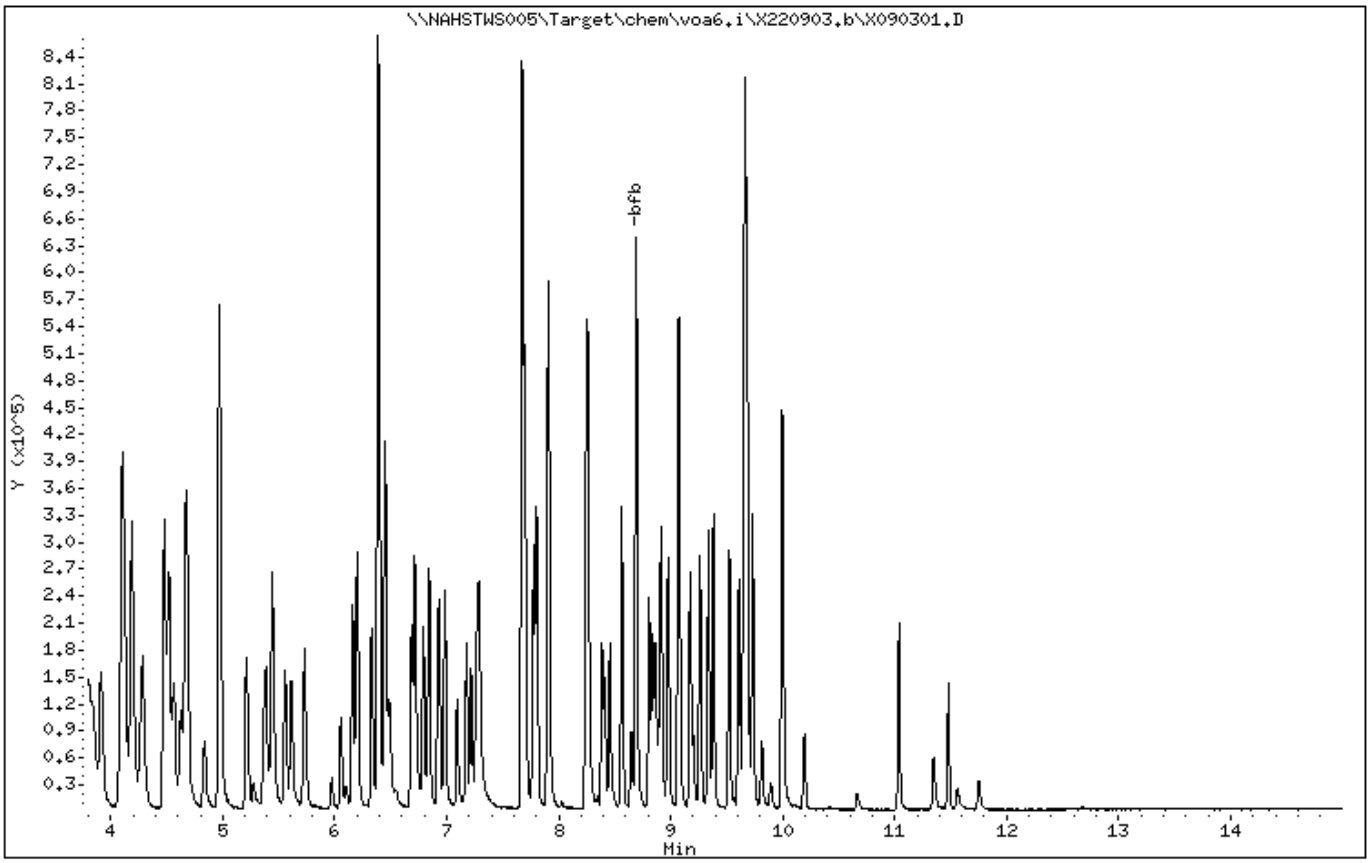
Date : 03-SEP-2022 10:40

Client ID: BFB Instrument: voa6.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0 Operator: PC

Column phase: DB624 Column diameter: 0.25



Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090301.D Page 2

Date : 03-SEP-2022 10:40

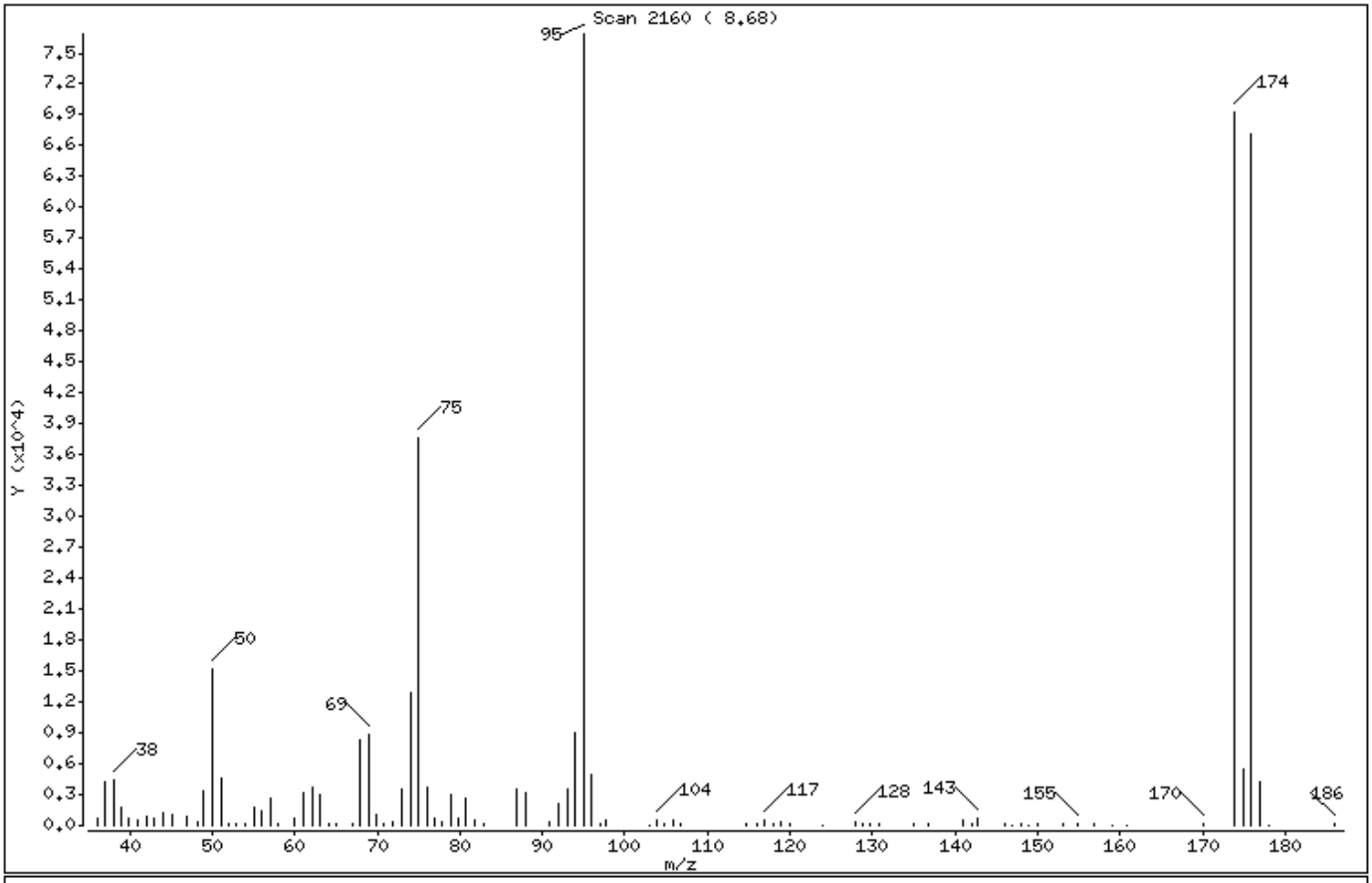
Client ID: BFB Instrument: voa6.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0 Operator: PC

Column phase: DB624 Column diameter: 0.25

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	19.84
75	30.00 - 60.00% of mass 95	49.01
96	5.00 - 9.00% of mass 95	6.44
173	Less than 2.00% of mass 174	0.00 (0.00)
174	Greater than 50.00% of mass 95	90.11
175	5.00 - 9.00% of mass 174	7.22 (8.02)
176	95.00 - 101.00% of mass 174	87.41 (97.00)
177	5.00 - 9.00% of mass 176	5.49 (6.28)

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090301.D

Date : 03-SEP-2022 10:40

Client ID: BFB

Instrument: voa6.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0

Operator: PC

Column phase: DB624

Column diameter: 0.25

Data File: X090301.D
Spectrum: Scan 2160 (8.68)
Location of Maximum: 95.00
Number of points: 93

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	747	62.10	3791	92.00	2196	136.70	187
37.00	4170	63.00	3010	93.00	3535	140.90	607
38.00	4379	64.10	227	94.00	8951	142.00	127
39.00	1799	65.00	154	95.00	76856	142.80	707
39.90	764	66.90	212	96.00	4951	146.10	135
41.00	614	68.00	8289	97.10	157	146.90	75
42.00	921	69.00	8878	97.80	507	148.00	130
43.00	633	69.90	1006	102.90	58	148.80	62
44.00	1208	70.80	147	103.80	518	150.00	129
45.10	1142	71.90	305	104.80	195	153.10	129
47.00	963	73.00	3537	105.80	443	154.90	262
48.20	392	74.00	12883	106.80	138	156.80	231
49.00	3397	75.00	37664	114.80	170	159.00	54
50.00	15250	76.00	3626	116.10	153	160.90	76
51.10	4509	77.00	771	116.90	501	170.20	145
52.10	185	77.80	267	118.10	172	173.90	69256
52.90	218	78.90	3009	118.90	285	174.90	5552
54.00	126	79.90	755	120.10	89	175.90	67176
55.10	1697	80.80	2620	123.90	58	176.90	4217
56.00	1462	81.90	601	127.90	328	178.00	68
57.00	2587	83.00	232	128.90	104	186.10	122
58.00	205	86.90	3505	129.80	210		
60.00	765	87.90	3241	130.80	89		
61.00	3118	90.80	303	135.10	94		

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090303.D Page 1
Report Date: 09-Sep-2022 16:34

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090303.D
Lab Smp Id: CCV Client Smp ID: CCV
Inj Date : 03-SEP-2022 11:22
Operator : PC Inst ID: voa6.i
Smp Info : CCV;CCV;2;;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\8260W.m
Meth Date : 09-Sep-2022 16:34 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 3 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.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
Cpnd Variable		Local Compound Variable

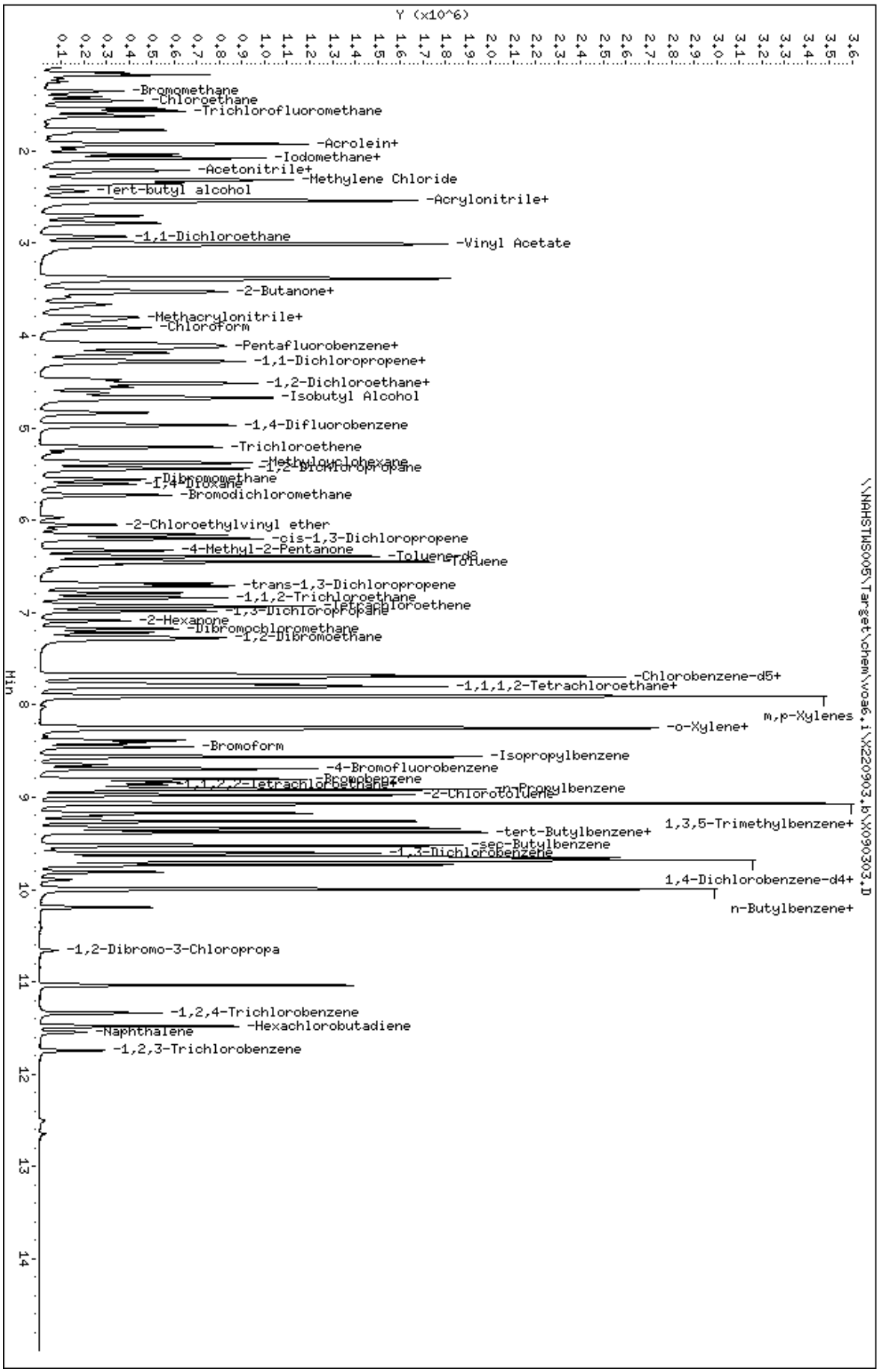
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.185	4.185	(1.000)	489339	50.0000	
* 36 1,4-Difluorobenzene	114	4.969	4.969	(1.000)	726198	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	682387	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	348654	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.980)	246447	50.0000	53.41
$ 35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.069)	264294	50.0000	52.27
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	871151	50.0000	51.16
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	312431	50.0000	51.32
60 1,1,1,2-Tetrachloroethane	131	7.776	7.776	(1.014)	253412	50.0000	52.85
31 1,1,1-Trichloroethane	97	4.088	4.088	(0.977)	365629	50.0000	52.67
68 1,1,2,2-Tetrachloroethane	83	8.841	8.841	(0.915)	232313	50.0000	47.44
53 1,1,2-Trichloroethane	83	6.839	6.839	(0.892)	173136	50.0000	49.34
22 1,1-Dichloroethane	63	2.929	2.929	(0.700)	381171	50.0000	50.59
11 1,1-Dichloroethene	96	1.925	1.925	(0.460)	203615	50.0000	49.84
32 1,1-Dichloropropene	75	4.286	4.286	(0.863)	315892	50.0000	53.89
93 1,2,3-Trichlorobenzene	180	11.742	11.742	(1.215)	83005	50.0000	45.79
71 1,2,3-Trichloropropane	75	8.863	8.863	(0.917)	186205	50.0000	49.31(M)
90 1,2,4-Trichlorobenzene	180	11.338	11.338	(1.173)	155760	50.0000	49.04
79 1,2,4-Trimethylbenzene	105	9.381	9.381	(0.971)	894089	50.0000	53.46
89 1,2-Dibromo-3-Chloropropane	155	10.659	10.659	(1.103)	17082	50.0000	46.42

57	1,2-Dibromoethane	107	7.263	7.263 (0.947)	221994	50.0000	49.90
88	1,2-Dichlorobenzene	146	9.992	9.992 (1.034)	454369	50.0000	52.08

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
33	1,2-Dichloroethane	62	4.560	4.560	(0.918)	325025	50.0000	51.03
42	1,2-Dichloropropane	63	5.437	5.437	(1.094)	231292	50.0000	51.74
75	1,3,5-Trimethylbenzene	105	9.066	9.066	(0.938)	891611	50.0000	52.64
83	1,3-Dichlorobenzene	146	9.606	9.606	(0.994)	506627	50.0000	52.37
54	1,3-Dichloropropane	76	6.982	6.982	(0.910)	359579	50.0000	50.38
84	1,4-Dichlorobenzene	146	9.684	9.684	(1.002)	532525	50.0000	51.85
26	2,2-Dichloropropane	77	3.514	3.514	(0.840)	362557	50.0000	54.20
24	2-Butanone	43	3.585	3.585	(0.857)	127975	100.000	104.24
76	2-Chlorotoluene	91	8.976	8.976	(0.929)	743940	50.0000	49.77
52	2-Hexanone	43	7.087	7.087	(0.924)	218551	100.000	101.85
77	4-Chlorotoluene	91	9.070	9.070	(0.939)	867753	50.0000	52.02
82	p-Isopropyltoluene	119	9.651	9.651	(0.999)	930901	50.0000	54.73
45	4-Methyl-2-Pentanone	43	6.329	6.329	(0.825)	335641	100.000	100.94
10	Acetone	43	1.981	1.981	(0.473)	120832	100.000	118.28
37	Benzene	78	4.515	4.515	(0.909)	888638	50.0000	51.64
74	Bromobenzene	156	8.807	8.807	(0.912)	298862	50.0000	50.19
29	Bromochloromethane	128	3.799	3.799	(0.908)	132367	50.0000	47.97
39	Bromodichloromethane	83	5.730	5.730	(1.153)	318060	50.0000	51.86
66	Bromoform	173	8.410	8.410	(1.096)	159966	50.0000	48.39
6	Bromomethane	94	1.347	1.347	(0.322)	172662	50.0000	51.69
19	Carbon Disulfide	76	2.078	2.078	(0.497)	1164904	100.000	107.72
34	Carbon Tetrachloride	117	4.271	4.271	(0.860)	318931	50.0000	50.91
59	Chlorobenzene	112	7.694	7.694	(1.003)	671138	50.0000	51.87
7	Chloroethane	64	1.411	1.411	(0.337)	159539	50.0000	50.83
28	Chloroform	83	3.911	3.911	(0.935)	424486	50.0000	51.42
3	Chloromethane	50	1.085	1.085	(0.259)	245288	50.0000	54.13
27	cis-1,2-Dichloroethene	96	3.533	3.533	(0.844)	256210	50.0000	52.66
46	cis-1,3-Dichloropropene	75	6.157	6.157	(1.239)	398178	50.0000	52.85
55	Dibromochloromethane	129	7.177	7.177	(0.936)	255865	50.0000	50.51
44	Dibromomethane	93	5.553	5.553	(1.118)	151089	50.0000	50.37
2	Dichlorodifluoromethane	85	0.980	0.980	(0.234)	229207	50.0000	49.16
61	Ethylbenzene	106	7.803	7.803	(1.017)	349608	50.0000	53.48
91	Hexachlorobutadiene	225	11.480	11.480	(1.188)	143585	50.0000	48.95
67	Isopropylbenzene	105	8.564	8.564	(1.116)	1079159	50.0000	54.90
62	m,p-Xylenes	106	7.908	7.908	(1.031)	881301	100.000	108.40
17	Methylene Chloride	84	2.311	2.311	(0.552)	239603	50.0000	53.30
87	n-Butylbenzene	91	9.996	9.996	(1.035)	809475	50.0000	57.28
73	n-Propylbenzene	91	8.912	8.912	(0.922)	1255613	50.0000	54.59
92	Naphthalene	128	11.547	11.547	(1.195)	159860	50.0000	44.99
63	o-Xylene	106	8.245	8.245	(1.075)	413540	50.0000	52.32
81	sec-Butylbenzene	105	9.523	9.523	(0.986)	1066311	50.0000	54.25
64	Styrene	104	8.260	8.260	(1.077)	701292	50.0000	53.88
78	tert-Butylbenzene	119	9.336	9.336	(0.966)	764711	50.0000	53.27
56	Tetrachloroethene	164	6.929	6.929	(0.903)	228815	50.0000	51.71
50	Toluene	91	6.449	6.449	(0.841)	990119	50.0000	51.61
20	trans-1,2-Dichloroethene	96	2.536	2.536	(0.606)	225023	50.0000	52.27
51	trans-1,3-Dichloropropene	75	6.682	6.682	(1.345)	329843	50.0000	52.86
38	Trichloroethene	130	5.209	5.209	(1.048)	263895	50.0000	51.76
8	Trichlorofluoromethane	101	1.569	1.569	(0.375)	399591	50.0000	51.85
5	Vinyl Chloride	62	1.152	1.152	(0.275)	253782	50.0000	49.45

QC Flag Legend

M - Compound response manually integrated.



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Client ID: CCV
Sample Info: CCV;CCV;2;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090303.D
Inj Date : 03-SEP-2022 11:22
InstruID : voa6.i
LabSampID : CCV

1,2,3-Trichloropropane (96-18-4)

Reason Code:

BEFORE

MASS
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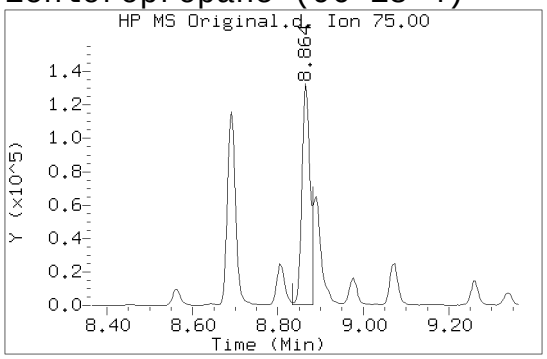
656280
09-Sep-2022
16:31
linh
pham



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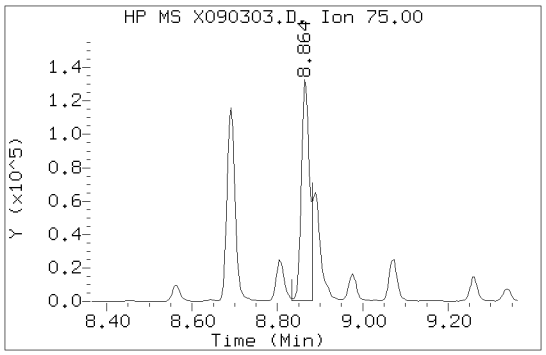

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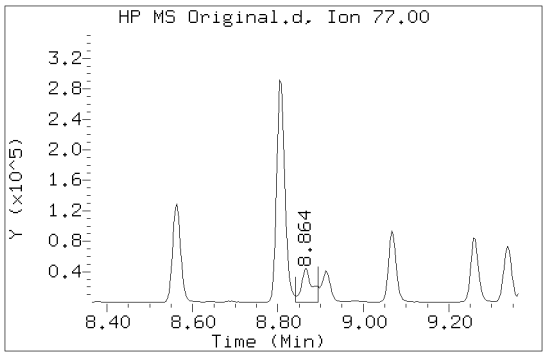

AFTER

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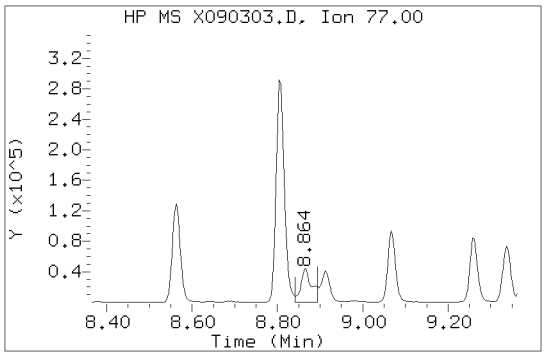
pham



Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090304.D Page 1
Report Date: 03-Sep-2022 20:36

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090304.D
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Smp Info : CCB;CCB;;;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa6.i\X220903.b\8260W.m
Meth Date : 03-Sep-2022 20:33 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 4
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 8260_GB.sub
Target Version: 4.14
Processing Host: NAHSTWS005

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
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	4.185	4.185	(1.000)	571137	50.0000	
$ 30 Dibromofluoromethane	113	4.106	4.103	(0.981)	249812	46.2977	46.29
$ 35 1,2-Dichloroethane-d4	65	4.481	4.474	(1.071)	269353	45.6033	45.60
* 36 1,4-Difluorobenzene	114	4.972	4.969	(1.000)	782205	50.0000	
* 47 Chlorobenzene-d5	117	7.675	7.671	(1.000)	666567	50.0000	
$ 48 Toluene-d8	98	6.389	6.389	(0.832)	905709	54.4591	54.45
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.132)	270107	45.3336	45.33
* 70 1,4-Dichlorobenzene-d4	152	9.665	9.662	(1.000)	286254	50.0000	

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090305.D Page 1
Report Date: 09-Sep-2022 16:34

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090305.D
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Operator : PC Inst ID: voa6.i
Smp Info : VLCSW-220903;VLCSW-220903;3;;LCS
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\8260W.m
Meth Date : 09-Sep-2022 16:34 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 5 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.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
Cpnd Variable		Local Compound Variable

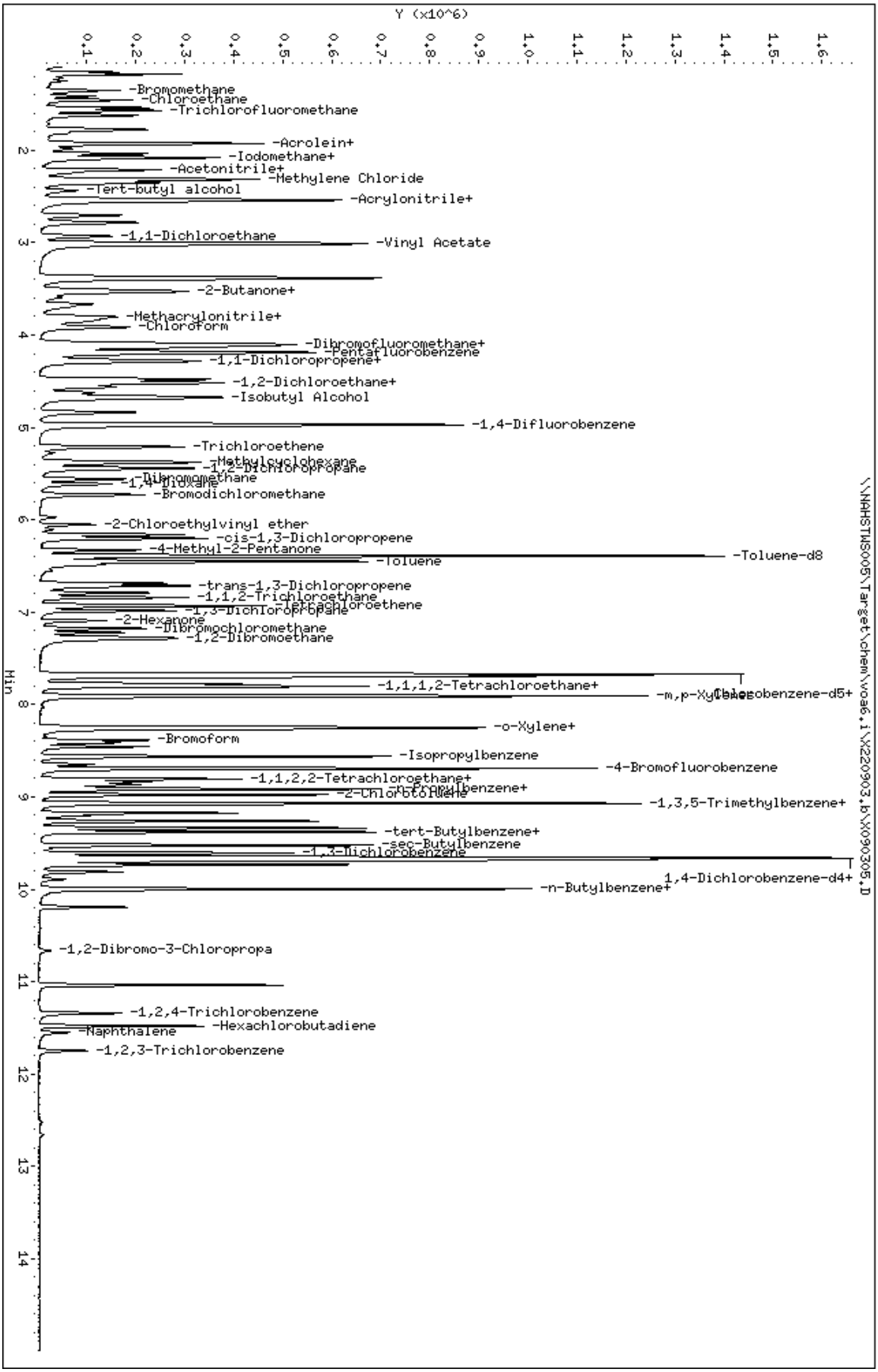
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.189	4.185	(1.000)	497797	50.0000	
* 36 1,4-Difluorobenzene	114	4.972	4.969	(1.000)	727544	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	664973	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.662	(1.000)	321199	50.0000	
$ 30 Dibromofluoromethane	113	4.106	4.103	(0.980)	240418	51.1970	51.19
$ 35 1,2-Dichloroethane-d4	65	4.478	4.474	(1.069)	260768	50.6907	50.69
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	835776	50.3746	50.37
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	293385	49.4317	49.43
60 1,1,1,2-Tetrachloroethane	131	7.776	7.776	(1.014)	91524	19.5906	19.59
31 1,1,1-Trichloroethane	97	4.091	4.088	(0.977)	137700	19.4993	19.49
68 1,1,2,2-Tetrachloroethane	83	8.841	8.841	(0.915)	83454	18.4995	18.49
53 1,1,2-Trichloroethane	83	6.839	6.839	(0.892)	65588	19.1835	19.18
22 1,1-Dichloroethane	63	2.933	2.929	(0.700)	149817	19.5492	19.54
11 1,1-Dichloroethene	96	1.925	1.925	(0.460)	77514	18.6537	18.65
32 1,1-Dichloropropene	75	4.286	4.286	(0.862)	118206	20.1312	20.13
93 1,2,3-Trichlorobenzene	180	11.746	11.742	(1.215)	30711	18.3923	18.39
71 1,2,3-Trichloropropane	75	8.867	8.863	(0.917)	62426	17.9477	17.94(M)
90 1,2,4-Trichlorobenzene	180	11.341	11.338	(1.173)	54404	18.5966	18.59
79 1,2,4-Trimethylbenzene	105	9.381	9.381	(0.971)	312552	20.2864	20.28
89 1,2-Dibromo-3-Chloropropane	155	10.667	10.659	(1.104)	5886	18.0493	18.04

57	1,2-Dibromoethane	107	7.263	7.263 (0.947)	81472	18.7935	18.79
88	1,2-Dichlorobenzene	146	9.996	9.992 (1.034)	157388	19.5828	19.58

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
33	1,2-Dichloroethane	62	4.564	4.560	(0.918)	120814	18.9343	18.93
42	1,2-Dichloropropane	63	5.441	5.437	(1.094)	88791	19.8277	19.82
75	1,3,5-Trimethylbenzene	105	9.070	9.066	(0.938)	323492	20.7342	20.73
83	1,3-Dichlorobenzene	146	9.606	9.606	(0.994)	179774	20.1726	20.17
54	1,3-Dichloropropane	76	6.982	6.982	(0.910)	134119	19.2849	19.28
84	1,4-Dichlorobenzene	146	9.684	9.684	(1.002)	188058	19.8771	19.87
26	2,2-Dichloropropane	77	3.522	3.514	(0.841)	137930	20.1175	20.11
24	2-Butanone	43	3.589	3.585	(0.857)	42429	33.9757	33.97
76	2-Chlorotoluene	91	8.976	8.976	(0.929)	277256	20.1380	20.13
52	2-Hexanone	43	7.090	7.087	(0.924)	78138	37.3694	37.36
77	4-Chlorotoluene	91	9.073	9.070	(0.939)	309060	20.1116	20.11
82	p-Isopropyltoluene	119	9.651	9.651	(0.998)	333100	21.2609	21.26
45	4-Methyl-2-Pentanone	43	6.329	6.329	(0.825)	118360	36.5290	36.52
10	Acetone	43	1.985	1.981	(0.474)	48116	42.6483	42.64
37	Benzene	78	4.519	4.515	(0.909)	337475	19.5751	19.57
74	Bromobenzene	156	8.807	8.807	(0.911)	110271	20.1029	20.10
29	Bromochloromethane	128	3.807	3.799	(0.909)	52546	18.7215	18.72
39	Bromodichloromethane	83	5.730	5.730	(1.152)	119652	19.4734	19.47
66	Bromoform	173	8.414	8.410	(1.097)	54772	17.8049	17.80
6	Bromomethane	94	1.351	1.347	(0.323)	69394	19.5941	19.59
19	Carbon Disulfide	76	2.078	2.078	(0.496)	446515	40.5884	40.58
34	Carbon Tetrachloride	117	4.271	4.271	(0.859)	121327	19.3328	19.33
59	Chlorobenzene	112	7.694	7.694	(1.003)	253073	20.0715	20.07
7	Chloroethane	64	1.411	1.411	(0.337)	60626	18.9880	18.98
28	Chloroform	83	3.915	3.911	(0.935)	162430	19.3448	19.34
3	Chloromethane	50	1.089	1.085	(0.260)	94445	20.5227	20.52
27	cis-1,2-Dichloroethene	96	3.537	3.533	(0.844)	97665	19.7342	19.73
46	cis-1,3-Dichloropropene	75	6.161	6.157	(1.239)	145859	19.3254	19.32
55	Dibromochloromethane	129	7.177	7.177	(0.936)	94356	19.1177	19.11
44	Dibromomethane	93	5.557	5.553	(1.118)	57185	19.0326	19.03
2	Dichlorodifluoromethane	85	0.980	0.980	(0.234)	84866	17.7838	17.78
61	Ethylbenzene	106	7.803	7.803	(1.017)	128999	20.2529	20.25
91	Hexachlorobutadiene	225	11.480	11.480	(1.188)	55518	20.5486	20.54
67	Isopropylbenzene	105	8.564	8.564	(1.116)	394438	20.5932	20.59
62	m,p-Xylenes	106	7.908	7.908	(1.031)	326635	41.2288	41.22
17	Methylene Chloride	84	2.311	2.311	(0.552)	95833	20.4284	20.42
87	n-Butylbenzene	91	9.996	9.996	(1.034)	283833	21.8024	21.80
73	n-Propylbenzene	91	8.916	8.912	(0.922)	456403	21.5393	21.53
92	Naphthalene	128	11.551	11.547	(1.195)	58943	18.0103	18.01
63	o-Xylene	106	8.245	8.245	(1.075)	154263	20.0295	20.02
81	sec-Butylbenzene	105	9.523	9.523	(0.985)	386457	21.3430	21.34
64	Styrene	104	8.260	8.260	(1.077)	253211	19.9644	19.96
78	tert-Butylbenzene	119	9.336	9.336	(0.966)	275503	20.8348	20.83
56	Tetrachloroethene	164	6.929	6.929	(0.903)	87305	20.2469	20.24
50	Toluene	91	6.449	6.449	(0.841)	375319	20.0784	20.07
20	trans-1,2-Dichloroethene	96	2.539	2.536	(0.606)	84607	19.3203	19.32
51	trans-1,3-Dichloropropene	75	6.685	6.682	(1.344)	119648	19.1419	19.14
38	Trichloroethene	130	5.212	5.209	(1.048)	100303	19.6406	19.64
8	Trichlorofluoromethane	101	1.569	1.569	(0.375)	149454	19.0658	19.06
5	Vinyl Chloride	62	1.152	1.152	(0.275)	96949	18.5731	18.57

QC Flag Legend

M - Compound response manually integrated.



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Instrument: voa6.i
Operator: PC
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Inj Date : 03-SEP-2022 12:04
InstruID : voa6.i
LabSampID : VLCSW-220903

1,2,3-Trichloropropane (96-18-4)

Reason Code:

BEFORE

MASS
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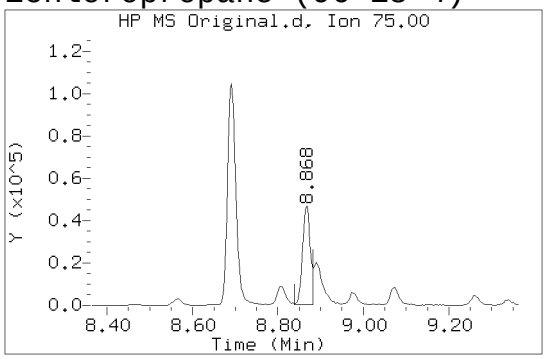
09-Sep-2022
16:31
linh
pham



AFTER

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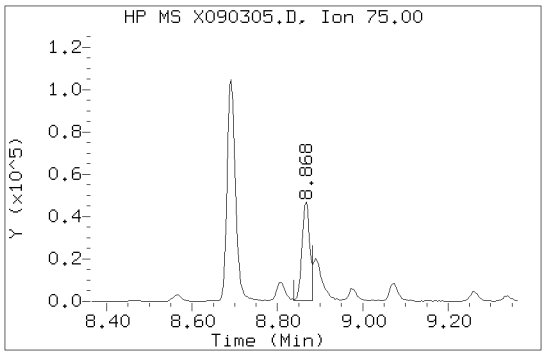

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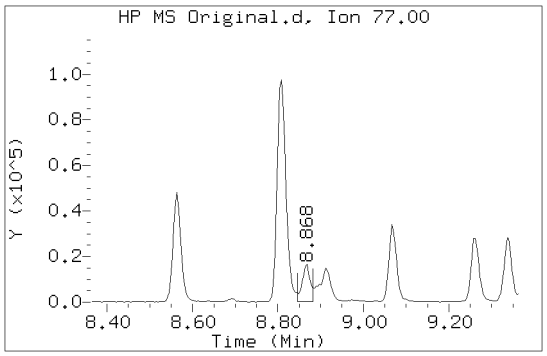

AFTER

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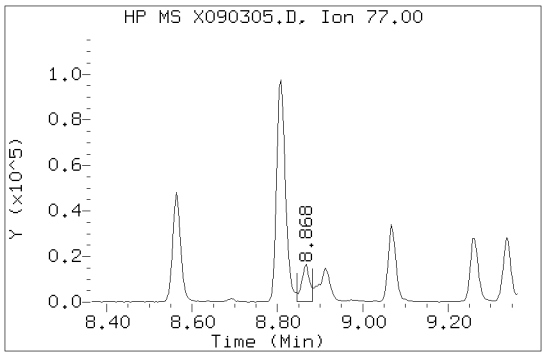

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090308.D Page 1
Report Date: 09-Sep-2022 16:34

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090308.D
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Comment   :
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Meth Date : 09-Sep-2022 16:34 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 8 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.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
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	4.185	4.185	(1.000)	561867	50.0000	
* 36 1,4-Difluorobenzene	114	4.972	4.969	(1.000)	776346	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	656155	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.662	(1.000)	287597	50.0000	
$ 30 Dibromofluoromethane	113	4.106	4.103	(0.981)	244872	46.1283	46.12
$ 35 1,2-Dichloroethane-d4	65	4.477	4.474	(1.070)	264263	45.4788	45.47
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	895775	54.7165	54.71
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	272255	46.4389	46.43

01148290

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090308.D

Date : 03-SEP-2022 13:07

Client ID: VBLKW-220903

Instrument: voa6.i

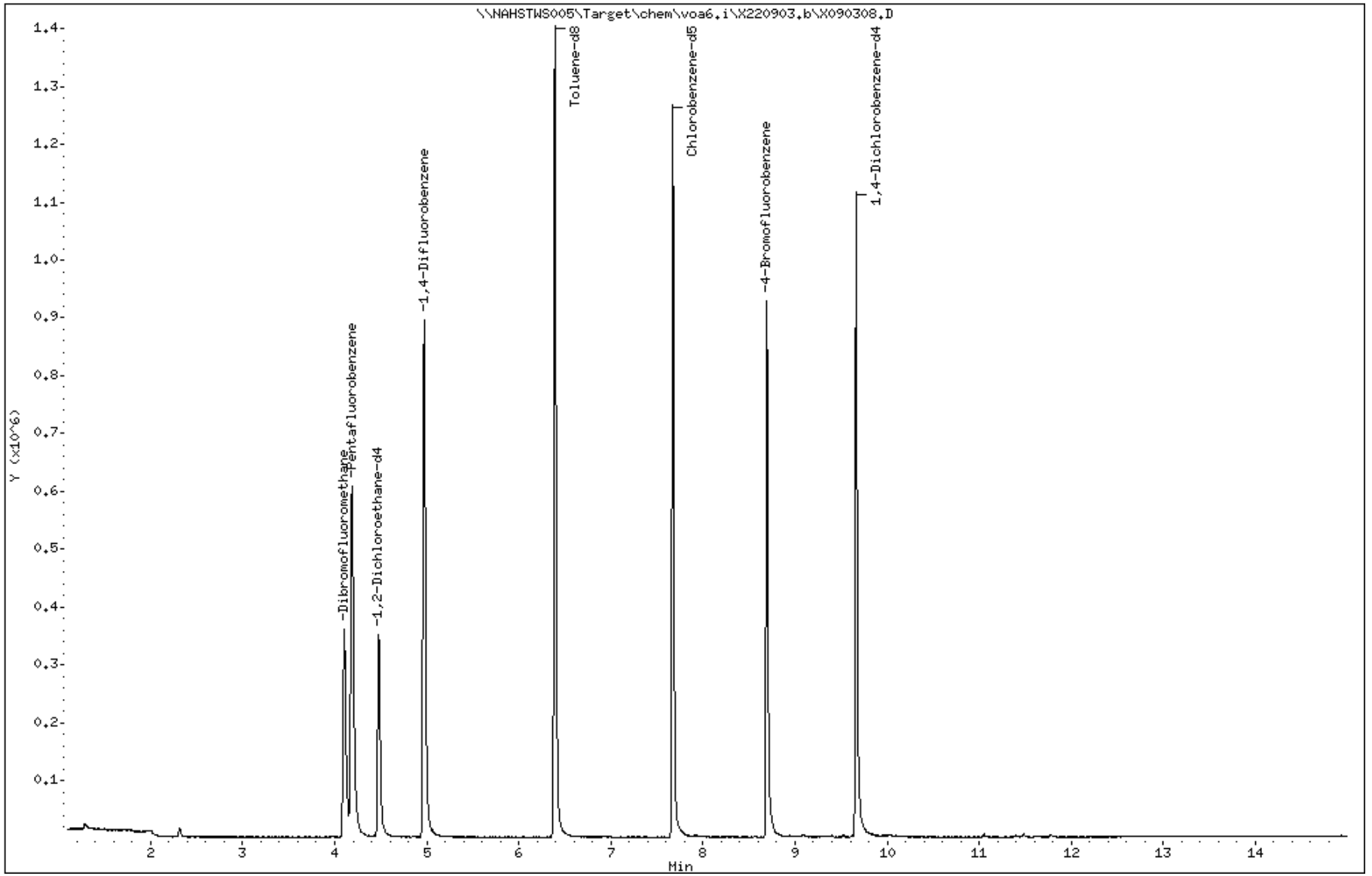
Sample Info: VBLKW-220903;VBLKW-220903;3;;BLANK

Purge Volume: 5.0

Operator: PC

Column phase: DB624

Column diameter: 0.18



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Inj Date : 03-SEP-2022 13:07
InstruID : voa6.i
LabSampID : VBLKW-220903

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090311.D Page 1
Report Date: 09-Sep-2022 16:34

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090311.D
Lab Smp Id: HS22090111-01MS Client Smp ID: HS22090111-01MS
Inj Date : 03-SEP-2022 14:10
Operator : PC Inst ID: voa6.i
Smp Info : HS22090111-01MS;HS22090111-01MS;3;;MS
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\8260W.m
Meth Date : 09-Sep-2022 16:34 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 11 QC Sample: MS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.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
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	4.189	4.185	(1.000)	569616	50.0000	
* 36 1,4-Difluorobenzene	114	4.968	4.969	(1.000)	791626	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	681408	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.665	9.662	(1.000)	315238	50.0000	
$ 30 Dibromofluoromethane	113	4.102	4.103	(0.979)	257574	47.8883	47.88
$ 35 1,2-Dichloroethane-d4	65	4.477	4.474	(1.069)	270186	45.8684	45.86
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	918779	54.0417	54.04
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	291856	47.9640	47.96
60 1,1,1,2-Tetrachloroethane	131	7.776	7.776	(1.014)	98199	20.5124	20.51
31 1,1,1-Trichloroethane	97	4.091	4.088	(0.977)	157014	19.4309	19.43
68 1,1,2,2-Tetrachloroethane	83	8.841	8.841	(0.915)	88441	19.9757	19.97
53 1,1,2-Trichloroethane	83	6.843	6.839	(0.892)	71976	20.5441	20.54
22 1,1-Dichloroethane	63	2.929	2.929	(0.699)	165165	18.8345	18.83
11 1,1-Dichloroethene	96	1.921	1.925	(0.459)	91095	19.1580	19.15
32 1,1-Dichloropropene	75	4.286	4.286	(0.863)	132034	20.6659	20.66
93 1,2,3-Trichlorobenzene	180	11.746	11.742	(1.215)	25169	15.3583	15.35
71 1,2,3-Trichloropropane	75	8.867	8.863	(0.917)	66460	19.4689	19.46(M)
90 1,2,4-Trichlorobenzene	180	11.341	11.338	(1.173)	51451	17.9197	17.91
79 1,2,4-Trimethylbenzene	105	9.381	9.381	(0.971)	336227	22.2357	22.23
89 1,2-Dibromo-3-Chloropropane	155	10.663	10.659	(1.103)	5732	17.9145	17.91

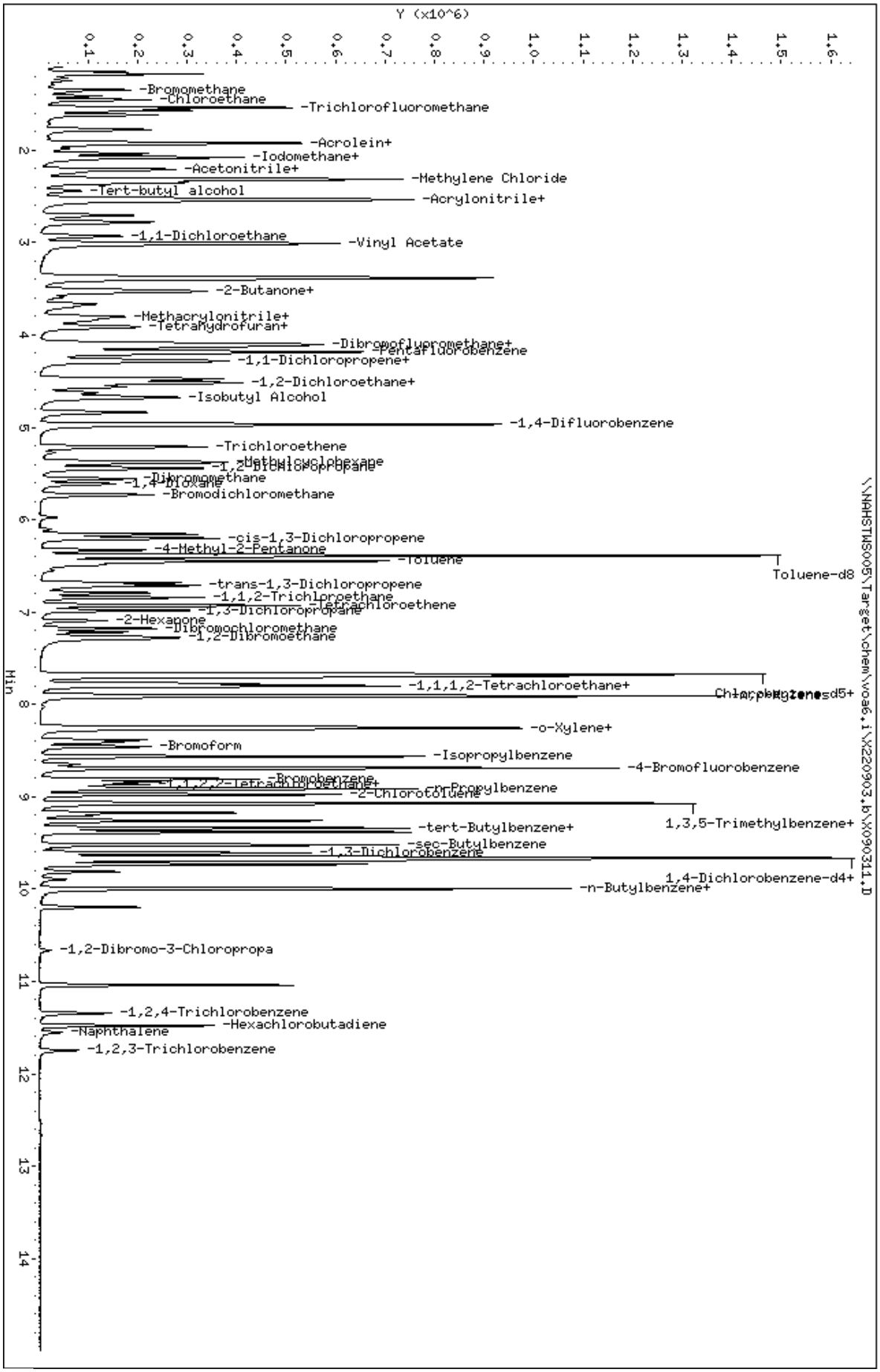
57	1,2-Dibromoethane	107	7.263	7.263 (0.947)	89276	20.0970	20.09
88	1,2-Dichlorobenzene	146	9.995	9.992 (1.034)	166145	21.0633	21.06

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090311.D Page 2
Report Date: 09-Sep-2022 16:34

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
33	1,2-Dichloroethane	62	4.564	4.560	(0.919)	130589	18.8095	18.80
42	1,2-Dichloropropane	63	5.441	5.437	(1.095)	93797	19.2500	19.25
75	1,3,5-Trimethylbenzene	105	9.069	9.066	(0.938)	346581	22.6342	22.63
83	1,3-Dichlorobenzene	146	9.605	9.606	(0.994)	190519	21.7825	21.78
54	1,3-Dichloropropane	76	6.985	6.982	(0.911)	143471	20.1321	20.13
84	1,4-Dichlorobenzene	146	9.684	9.684	(1.002)	194703	20.9686	20.96
26	2,2-Dichloropropane	77	3.514	3.514	(0.839)	151793	19.3385	19.33
24	2-Butanone	43	3.596	3.585	(0.859)	43370	30.3504	30.35
76	2-Chlorotoluene	91	8.976	8.976	(0.929)	290656	21.5105	21.51
52	2-Hexanone	43	7.090	7.087	(0.924)	76365	35.6406	35.64
77	4-Chlorotoluene	91	9.073	9.070	(0.939)	330721	21.9281	21.92
82	p-Isopropyltoluene	119	9.650	9.651	(0.998)	355832	23.1413	23.14
45	4-Methyl-2-Pentanone	43	6.329	6.329	(0.825)	131217	39.5203	39.52
10	Acetone	43	1.981	1.981	(0.473)	37357	27.0073	27.00
37	Benzene	78	4.519	4.515	(0.909)	372240	19.8438	19.84
74	Bromobenzene	156	8.807	8.807	(0.911)	118457	22.0036	22.00
29	Bromochloromethane	128	3.803	3.799	(0.908)	56204	17.5000	17.50
39	Bromodichloromethane	83	5.729	5.730	(1.153)	129084	19.3078	19.30
66	Bromoform	173	8.410	8.410	(1.096)	57480	18.2048	18.20
6	Bromomethane	94	1.347	1.347	(0.322)	79209	19.5421	19.54
19	Carbon Disulfide	76	2.078	2.078	(0.496)	494509	39.2835	39.28
34	Carbon Tetrachloride	117	4.271	4.271	(0.860)	138082	20.2215	20.22
59	Chlorobenzene	112	7.697	7.694	(1.003)	274425	21.2400	21.23
7	Chloroethane	64	1.411	1.411	(0.337)	67139	18.3766	18.37
28	Chloroform	83	3.915	3.911	(0.935)	177657	18.4905	18.49
3	Chloromethane	50	1.085	1.085	(0.259)	100314	19.0535	19.05
27	cis-1,2-Dichloroethene	96	3.533	3.533	(0.843)	106721	18.8452	18.84
46	cis-1,3-Dichloropropene	75	6.161	6.157	(1.240)	159524	19.4250	19.42
55	Dibromochloromethane	129	7.180	7.177	(0.936)	100806	19.9319	19.93
44	Dibromomethane	93	5.561	5.553	(1.119)	61631	18.8519	18.85
2	Dichlorodifluoromethane	85	0.980	0.980	(0.234)	91080	16.6688	16.66
61	Ethylbenzene	106	7.802	7.803	(1.017)	141038	21.6090	21.60
91	Hexachlorobutadiene	225	11.480	11.480	(1.188)	58183	21.9422	21.94
67	Isopropylbenzene	105	8.563	8.564	(1.116)	434199	22.1223	22.12
62	m,p-Xylenes	106	7.907	7.908	(1.031)	359047	44.2269	44.22
17	Methylene Chloride	84	2.311	2.311	(0.552)	102927	19.1206	19.12
87	n-Butylbenzene	91	9.995	9.996	(1.034)	306122	23.9592	23.95
73	n-Propylbenzene	91	8.912	8.912	(0.922)	500725	24.0779	24.07
92	Naphthalene	128	11.551	11.547	(1.195)	42885	13.3515	13.35
63	o-Xylene	106	8.245	8.245	(1.075)	169650	21.4960	21.49
81	sec-Butylbenzene	105	9.523	9.523	(0.985)	419371	23.5987	23.59
64	Styrene	104	8.263	8.260	(1.077)	273022	21.0072	21.00
78	tert-Butylbenzene	119	9.339	9.336	(0.966)	303638	23.3967	23.39
56	Tetrachloroethene	164	6.929	6.929	(0.903)	98654	22.3270	22.32
50	Toluene	91	6.449	6.449	(0.841)	408871	21.3458	21.34
20	trans-1,2-Dichloroethene	96	2.536	2.536	(0.605)	97684	19.4940	19.49
51	trans-1,3-Dichloropropene	75	6.685	6.682	(1.346)	126578	18.6114	18.61
38	Trichloroethene	130	5.212	5.209	(1.049)	114123	20.5377	20.53
8	Trichlorofluoromethane	101	1.568	1.569	(0.375)	178744	19.9274	19.92
5	Vinyl Chloride	62	1.152	1.152	(0.275)	107882	18.0618	18.06

QC Flag Legend

M - Compound response manually integrated.



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Sample Info: HS220901l1-01MS;HS220901l1-01MS;3;;MS
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090311.D
Inj Date : 03-SEP-2022 14:10
InstruID : voa6.i
LabSampID : HS22090111-01MS

1,2,3-Trichloropropane (96-18-4)

Reason Code:

BEFORE

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HEIGHT
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09-Sep-2022
16:31
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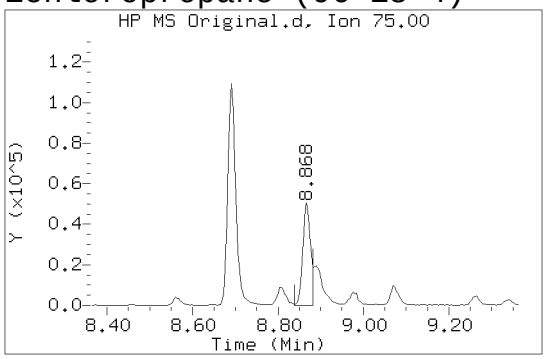

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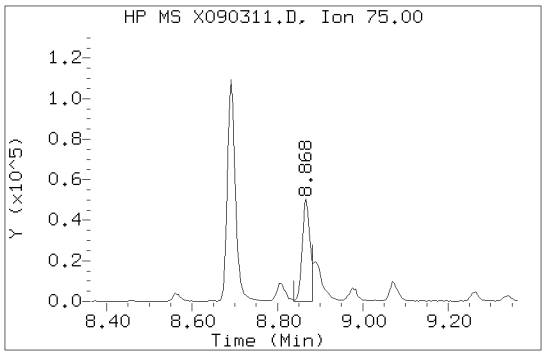

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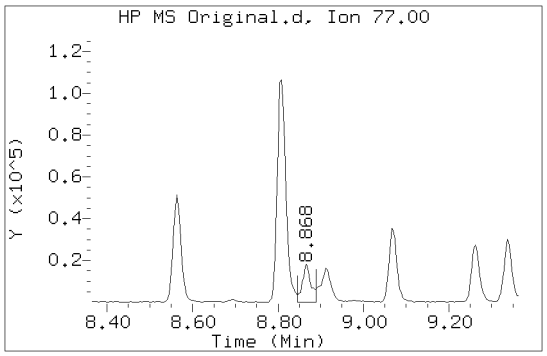

AFTER

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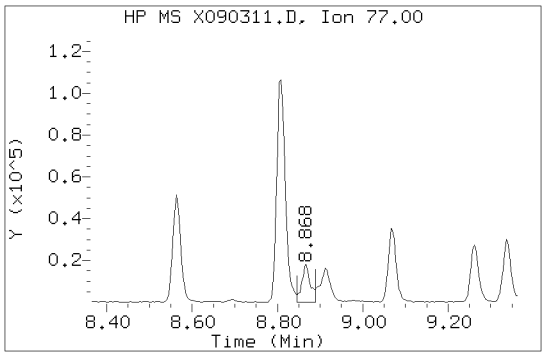

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Report Date: 09-Sep-2022 16:34

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090312.D
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Inj Date : 03-SEP-2022 14:31
Operator : PC Inst ID: voa6.i
Smp Info : HS22090111-01MSD;HS22090111-01MSD;3;;MSD
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\8260W.m
Meth Date : 09-Sep-2022 16:34 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 11 QC Sample: MSD
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.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
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	4.185	4.185	(1.000)	570781	50.0000	
* 36 1,4-Difluorobenzene	114	4.968	4.969	(1.000)	790278	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	690655	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.665	9.662	(1.000)	329221	50.0000	
$ 30 Dibromofluoromethane	113	4.102	4.103	(0.980)	255145	47.3316	47.33
$ 35 1,2-Dichloroethane-d4	65	4.477	4.474	(1.070)	266575	45.1579	45.15
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	916044	53.1595	53.15
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	301029	48.8236	48.82
60 1,1,1,2-Tetrachloroethane	131	7.776	7.776	(1.014)	100064	20.6222	20.62
31 1,1,1-Trichloroethane	97	4.087	4.088	(0.977)	154763	19.1133	19.11
68 1,1,2,2-Tetrachloroethane	83	8.841	8.841	(0.915)	95763	20.7108	20.71
53 1,1,2-Trichloroethane	83	6.843	6.839	(0.892)	73388	20.6667	20.66
22 1,1-Dichloroethane	63	2.929	2.929	(0.700)	161627	18.3935	18.39
11 1,1-Dichloroethene	96	1.925	1.925	(0.460)	89855	18.8587	18.85
32 1,1-Dichloropropene	75	4.286	4.286	(0.863)	136259	21.3636	21.36
93 1,2,3-Trichlorobenzene	180	11.746	11.742	(1.215)	34061	19.9015	19.90
71 1,2,3-Trichloropropane	75	8.863	8.863	(0.917)	69189	19.4074	19.40
90 1,2,4-Trichlorobenzene	180	11.341	11.338	(1.173)	61924	20.6513	20.65
79 1,2,4-Trimethylbenzene	105	9.381	9.381	(0.971)	346164	21.9205	21.92
89 1,2-Dibromo-3-Chloropropane	155	10.659	10.659	(1.103)	6361	18.9941	18.99

57	1,2-Dibromoethane	107	7.263	7.263 (0.947)	92345	20.5096	20.50
88	1,2-Dichlorobenzene	146	9.995	9.992 (1.034)	172778	20.9739	20.97

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090312.D Page 2
Report Date: 09-Sep-2022 16:34

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
33	1,2-Dichloroethane	62	4.564	4.560	(0.919)	132386	19.1009	19.10
42	1,2-Dichloropropane	63	5.441	5.437	(1.095)	95714	19.6770	19.67
75	1,3,5-Trimethylbenzene	105	9.069	9.066	(0.938)	352835	22.0639	22.06
83	1,3-Dichlorobenzene	146	9.605	9.606	(0.994)	197811	21.6557	21.65
54	1,3-Dichloropropane	76	6.985	6.982	(0.911)	147117	20.3673	20.36
84	1,4-Dichlorobenzene	146	9.684	9.684	(1.002)	205070	21.1470	21.14
26	2,2-Dichloropropane	77	3.518	3.514	(0.841)	153072	19.4633	19.46
24	2-Butanone	43	3.593	3.585	(0.858)	47802	33.3837	33.38
76	2-Chlorotoluene	91	8.976	8.976	(0.929)	293518	20.7997	20.79
52	2-Hexanone	43	7.090	7.087	(0.924)	85714	39.4683	39.46
77	4-Chlorotoluene	91	9.073	9.070	(0.939)	336893	21.3886	21.38
82	p-Isopropyltoluene	119	9.650	9.651	(0.998)	369191	22.9903	22.99
45	4-Methyl-2-Pentanone	43	6.329	6.329	(0.825)	139234	41.3734	41.37
10	Acetone	43	1.984	1.981	(0.474)	39578	28.8984	28.89
37	Benzene	78	4.515	4.515	(0.909)	375852	20.0705	20.07
74	Bromobenzene	156	8.807	8.807	(0.911)	120170	21.3738	21.37
29	Bromochloromethane	128	3.799	3.799	(0.908)	57510	17.8701	17.87
39	Bromodichloromethane	83	5.729	5.730	(1.153)	131456	19.6961	19.69
66	Bromoform	173	8.413	8.410	(1.097)	60640	18.8981	18.89
6	Bromomethane	94	1.347	1.347	(0.322)	75007	18.3923	18.39
19	Carbon Disulfide	76	2.078	2.078	(0.497)	489377	38.7964	38.79
34	Carbon Tetrachloride	117	4.267	4.271	(0.859)	137198	20.1263	20.12
59	Chlorobenzene	112	7.697	7.694	(1.003)	274431	20.9561	20.95
7	Chloroethane	64	1.411	1.411	(0.337)	67071	18.3205	18.32
28	Chloroform	83	3.911	3.911	(0.935)	177885	18.4765	18.47
3	Chloromethane	50	1.085	1.085	(0.259)	101819	19.2992	19.29
27	cis-1,2-Dichloroethene	96	3.533	3.533	(0.844)	107397	18.9258	18.92
46	cis-1,3-Dichloropropene	75	6.157	6.157	(1.239)	161839	19.7405	19.74
55	Dibromochloromethane	129	7.176	7.177	(0.936)	102250	19.9467	19.94
44	Dibromomethane	93	5.557	5.553	(1.118)	63501	19.4570	19.45
2	Dichlorodifluoromethane	85	0.980	0.980	(0.234)	89000	16.2505	16.25
61	Ethylbenzene	106	7.802	7.803	(1.017)	144494	21.8421	21.84
91	Hexachlorobutadiene	225	11.480	11.480	(1.188)	62796	22.6761	22.67
67	Isopropylbenzene	105	8.563	8.564	(1.116)	441045	22.1702	22.17
62	m,p-Xylenes	106	7.907	7.908	(1.031)	363209	44.1406	44.14
17	Methylene Chloride	84	2.311	2.311	(0.552)	104445	19.3741	19.37
87	n-Butylbenzene	91	9.995	9.996	(1.034)	314139	23.5424	23.54
73	n-Propylbenzene	91	8.916	8.912	(0.922)	501711	23.1007	23.10
92	Naphthalene	128	11.551	11.547	(1.195)	61014	18.1888	18.18
63	o-Xylene	106	8.245	8.245	(1.075)	168840	21.1070	21.10
81	sec-Butylbenzene	105	9.523	9.523	(0.985)	430410	23.1912	23.19
64	Styrene	104	8.263	8.260	(1.077)	279163	21.1922	21.19
78	tert-Butylbenzene	119	9.339	9.336	(0.966)	308424	22.7561	22.75
56	Tetrachloroethene	164	6.933	6.929	(0.904)	99238	22.1585	22.15
50	Toluene	91	6.449	6.449	(0.841)	409568	21.0959	21.09
20	trans-1,2-Dichloroethene	96	2.539	2.536	(0.607)	95155	18.9505	18.95
51	trans-1,3-Dichloropropene	75	6.685	6.682	(1.346)	132825	19.5632	19.56
38	Trichloroethene	130	5.212	5.209	(1.049)	113348	20.4330	20.43
8	Trichlorofluoromethane	101	1.568	1.569	(0.375)	173559	19.3098	19.30
5	Vinyl Chloride	62	1.152	1.152	(0.275)	108725	18.1658	18.16

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090312.D
Date : 03-SEP-2022 14:31
Client ID: HS22090111-01HSD
Sample Info: HS22090111-01HSD;HS22090111-01HSD;3;;HSD
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090312.D
Inj Date : 03-SEP-2022 14:31
InstruID : voa6.i
LabSampID : HS22090111-01MSD

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090313.D Page 1
Report Date: 09-Sep-2022 16:34

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090313.D
Lab Smp Id: HS22081514-12 Client Smp ID: HS22081514-12
Inj Date : 03-SEP-2022 14:52
Operator : PC Inst ID: voa6.i
Smp Info : HS22081514-12;HS22081514-12;;;
Misc Info : HS22052000V6;WATER;0;2000;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\8260W.m
Meth Date : 09-Sep-2022 16:34 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 12
Dil Factor: 2000.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	2000.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
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	4.189	4.185	(1.000)	553418	50.0000	
* 36 1,4-Difluorobenzene	114	4.968	4.969	(1.000)	768757	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	646426	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.665	9.662	(1.000)	284787	50.0000	
$ 30 Dibromofluoromethane	113	4.102	4.103	(0.979)	246743	47.2071	47.20
$ 35 1,2-Dichloroethane-d4	65	4.477	4.474	(1.069)	262391	45.8487	45.84
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	880088	54.5673	54.56
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	264756	45.8288	45.82
27 cis-1,2-Dichloroethene	96	3.540	3.533	(0.845)	40652	7.38858	14777.16
17 Methylene Chloride	84	2.311	2.311	(0.552)	198142	38.7439	77487.82
38 Trichloroethene	130	5.208	5.209	(1.048)	139539	25.8586	51717.26

01148304

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090313.D

Date : 03-SEP-2022 14:52

Client ID: HS22081514-12

Instrument: voa6.i

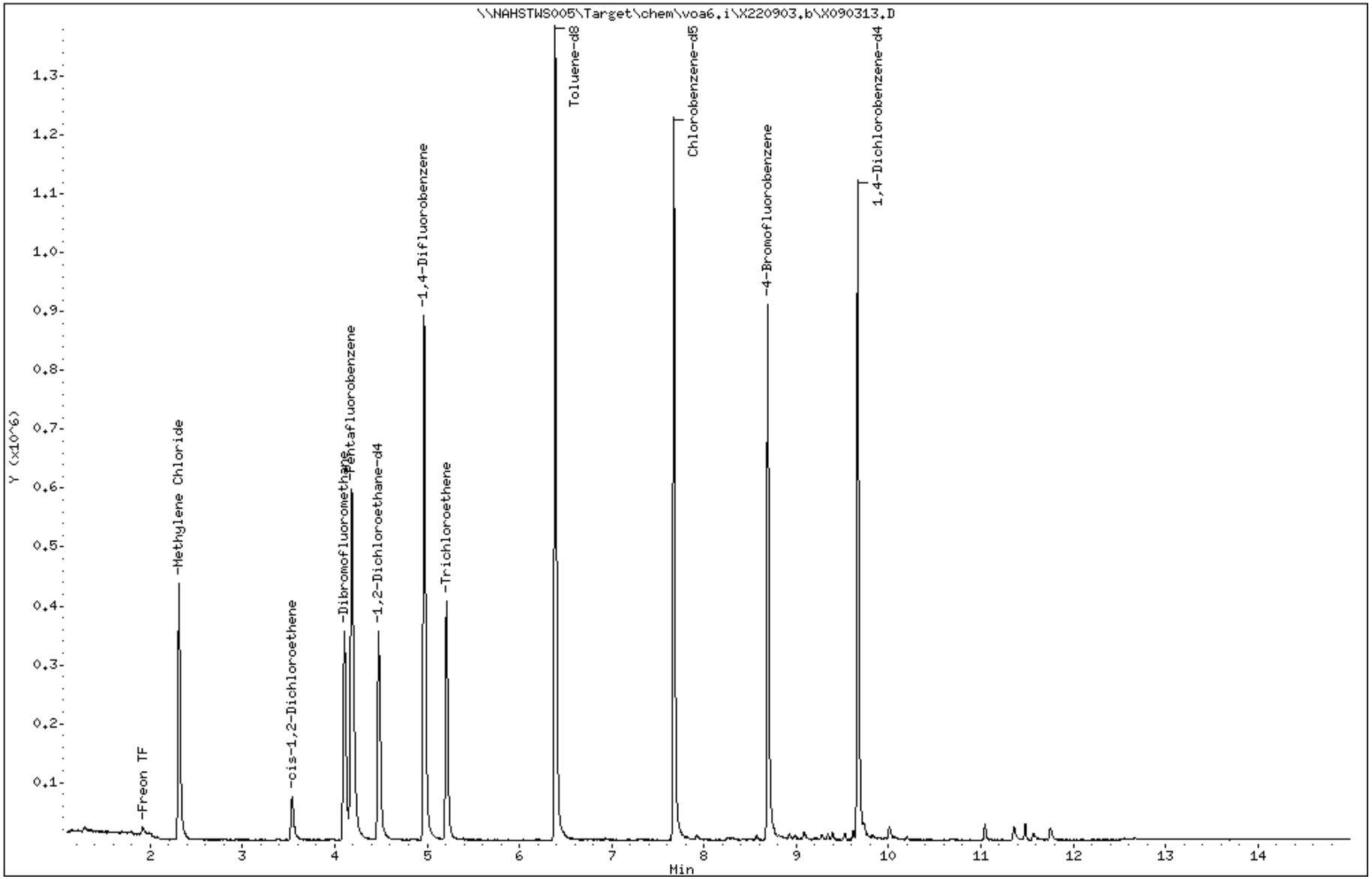
Sample Info: HS22081514-12;HS22081514-12;;;

Purge Volume: 5.0

Operator: PC

Column phase: DB624

Column diameter: 0.18



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Date : 03-SEP-2022 14:52

Client ID: HS22081514-12

Instrument: voa6.i

Sample Info: HS22081514-12;HS22081514-12;;;

Purge Volume: 5.0

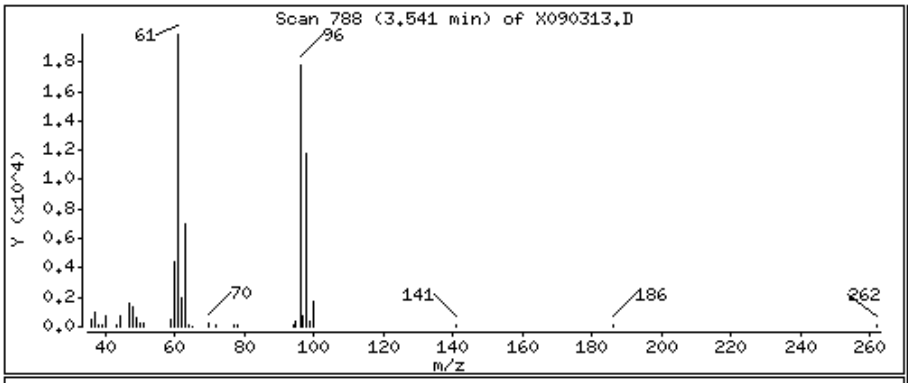
Operator: PC

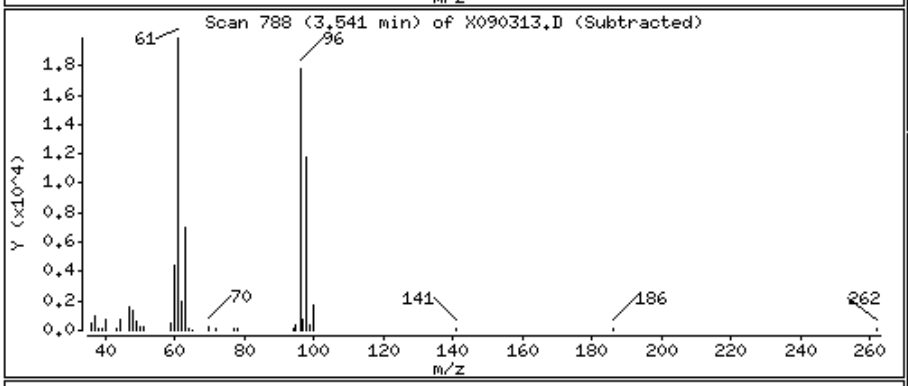
Column phase: DB624

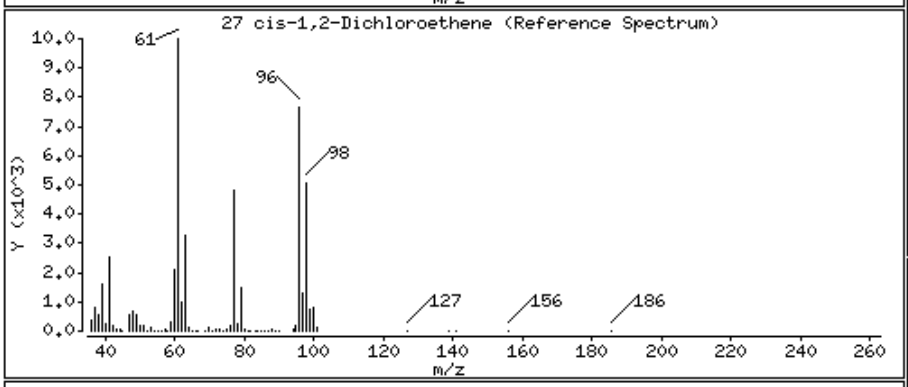
Column diameter: 0.18

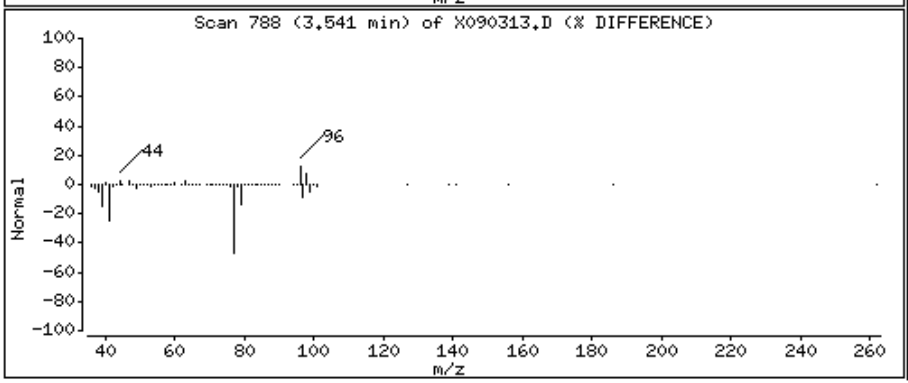
27 cis-1,2-Dichloroethene

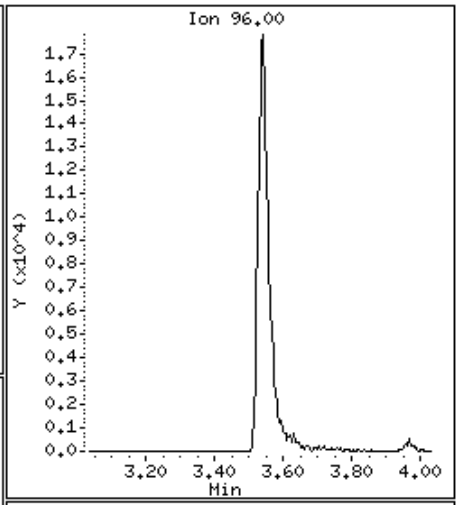
Concentration: 14777.16 ug/l

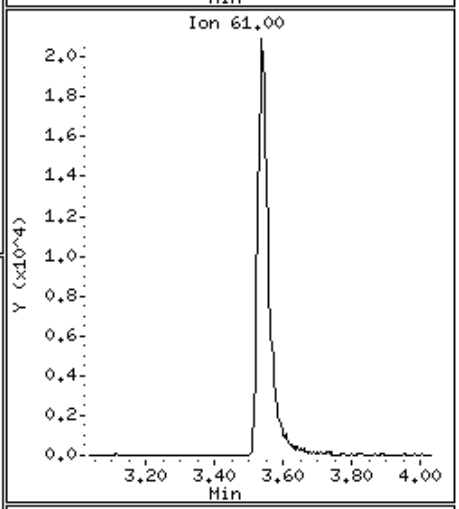


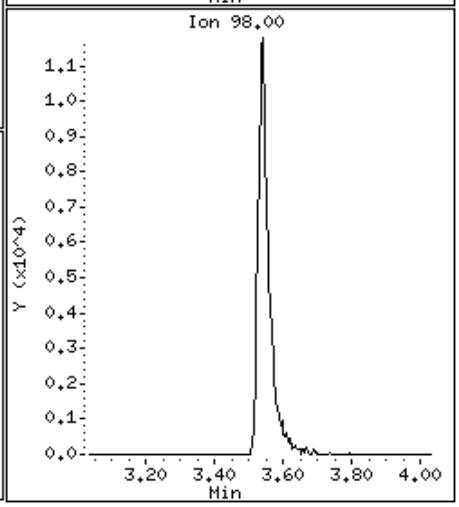












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090313.D Page 3

Date : 03-SEP-2022 14:52

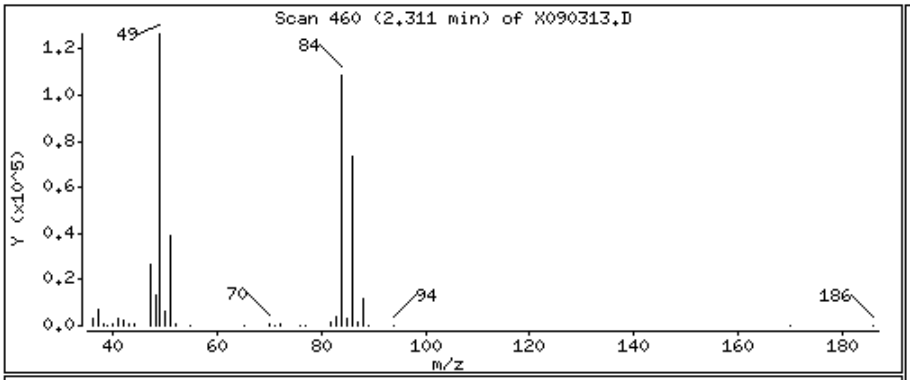
Client ID: HS22081514-12 Instrument: voa6.i

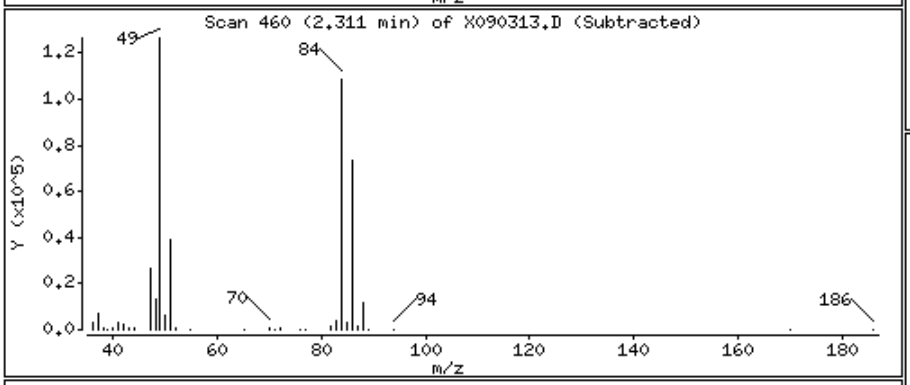
Sample Info: HS22081514-12;HS22081514-12;;;

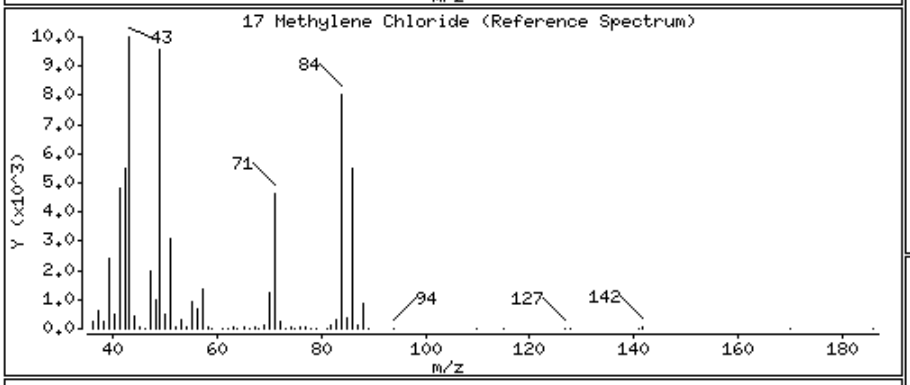
Purge Volume: 5.0 Operator: PC

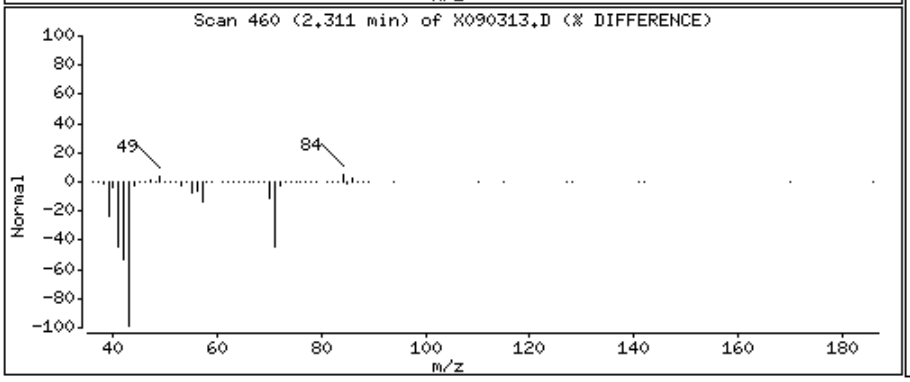
Column phase: DB624 Column diameter: 0.18

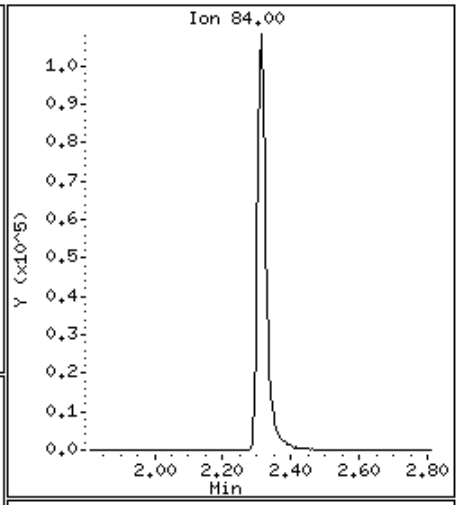
17 Methylene Chloride Concentration: 77487.82 ug/l

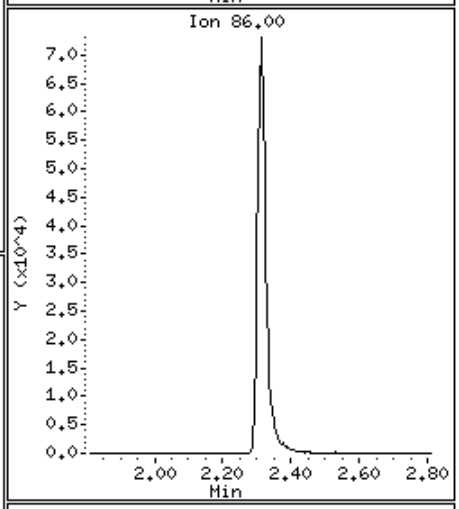


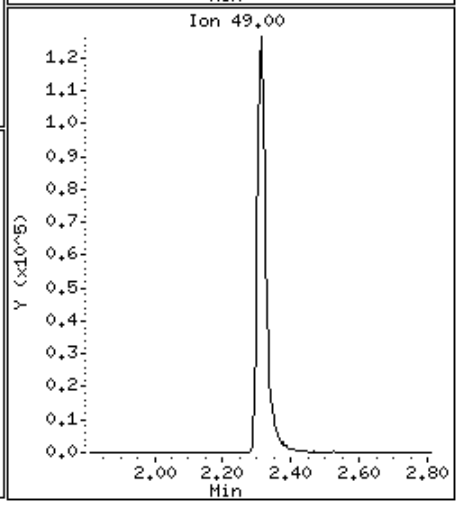












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090313.D Page 4

Date : 03-SEP-2022 14:52

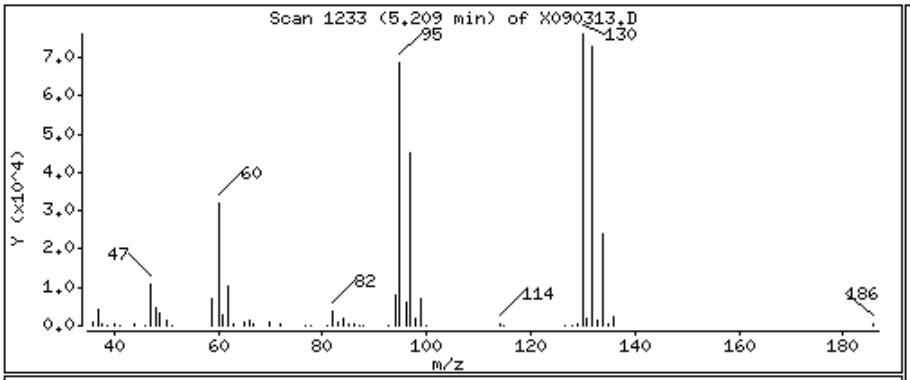
Client ID: HS22081514-12 Instrument: voa6.i

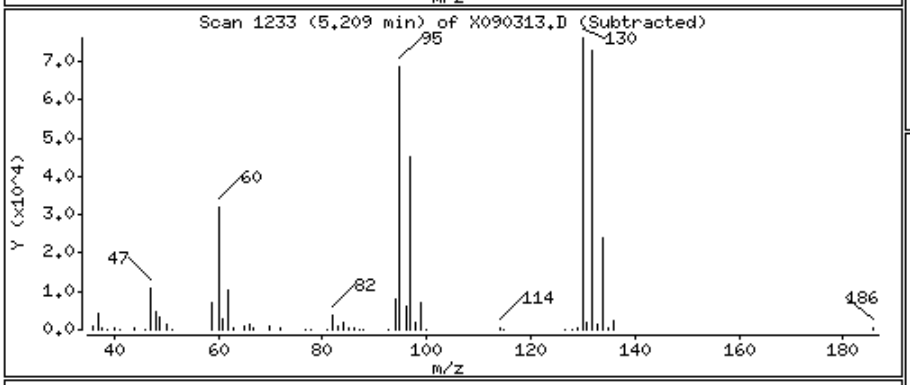
Sample Info: HS22081514-12;HS22081514-12;;;

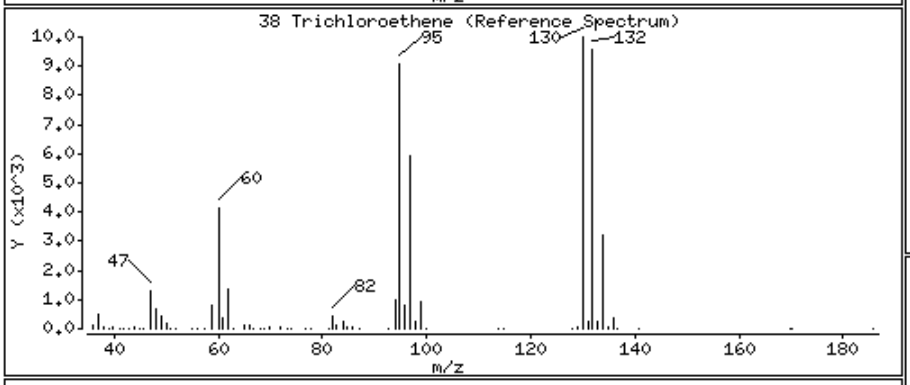
Purge Volume: 5.0 Operator: PC

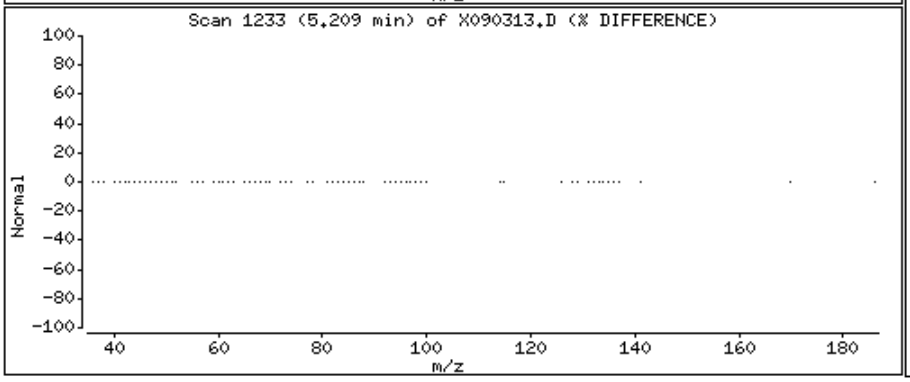
Column phase: DB624 Column diameter: 0.18

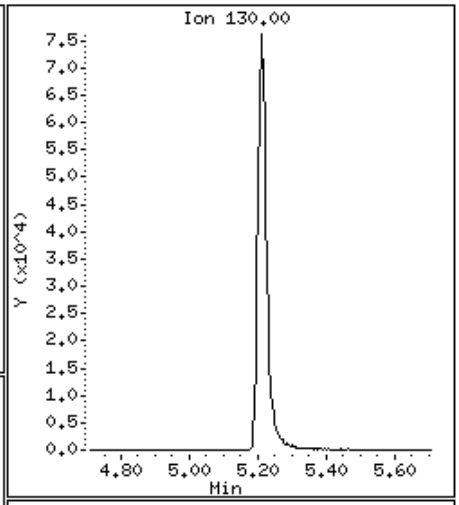
38 Trichloroethene Concentration: 51717.26 ug/l

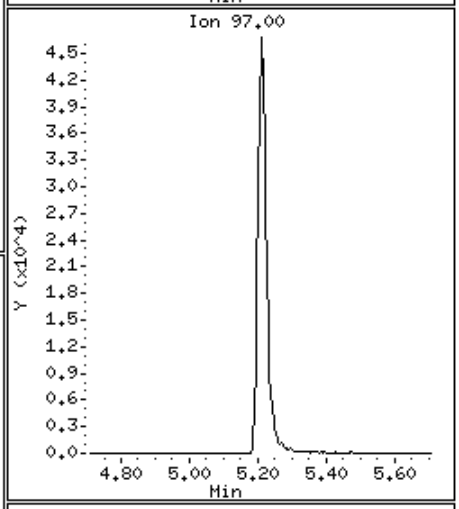


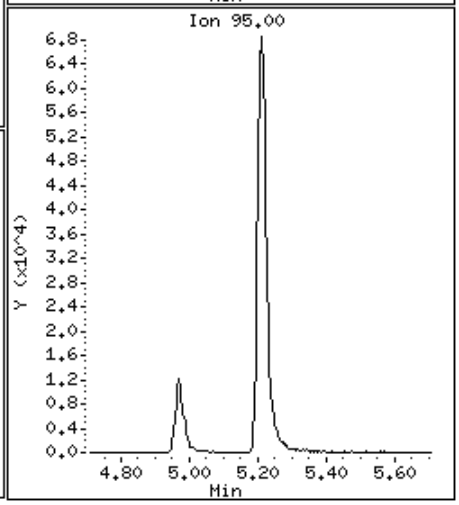












Data File : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090313.D
Inj Date : 03-SEP-2022 14:52
InstruID : voa6.i
LabSampID : HS22081514-12

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090314.D Page 1
Report Date: 09-Sep-2022 16:34

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090314.D
Lab Smp Id: HS22081514-01 Client Smp ID: HS22081514-01
Inj Date : 03-SEP-2022 15:14
Operator : PC Inst ID: voa6.i
Smp Info : HS22081514-01;HS22081514-01;;;
Misc Info : HS22052000V6;WATER;0;5;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\8260W.m
Meth Date : 09-Sep-2022 16:34 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 13
Dil Factor: 5.00000
Integrator: HP RTE Compound Sublist: bhate.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
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	4.185	4.185	(1.000)	554817	50.0000	
* 36 1,4-Difluorobenzene	114	4.969	4.969	(1.000)	773702	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	665922	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.662	(1.000)	291853	50.0000	
$ 30 Dibromofluoromethane	113	4.106	4.103	(0.981)	249993	47.7160	47.71
$ 35 1,2-Dichloroethane-d4	65	4.478	4.474	(1.070)	266983	46.5383	46.53
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	888221	53.4593	53.45
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	275881	46.3660	46.36
33 1,2-Dichloroethane	62	4.564	4.560	(0.919)	32678	4.81586	24.07(a)
27 cis-1,2-Dichloroethene	96	3.537	3.533	(0.845)	74023	13.4199	67.09
38 Trichloroethene	130	5.209	5.209	(1.048)	471436	86.8057	434.02
5 Vinyl Chloride	62	1.152	1.152	(0.275)	2435	0.41855	2.09(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).

01148310

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090314.D

Page 1

Date : 03-SEP-2022 15:14

Client ID: HS22081514-01

Instrument: voa6.i

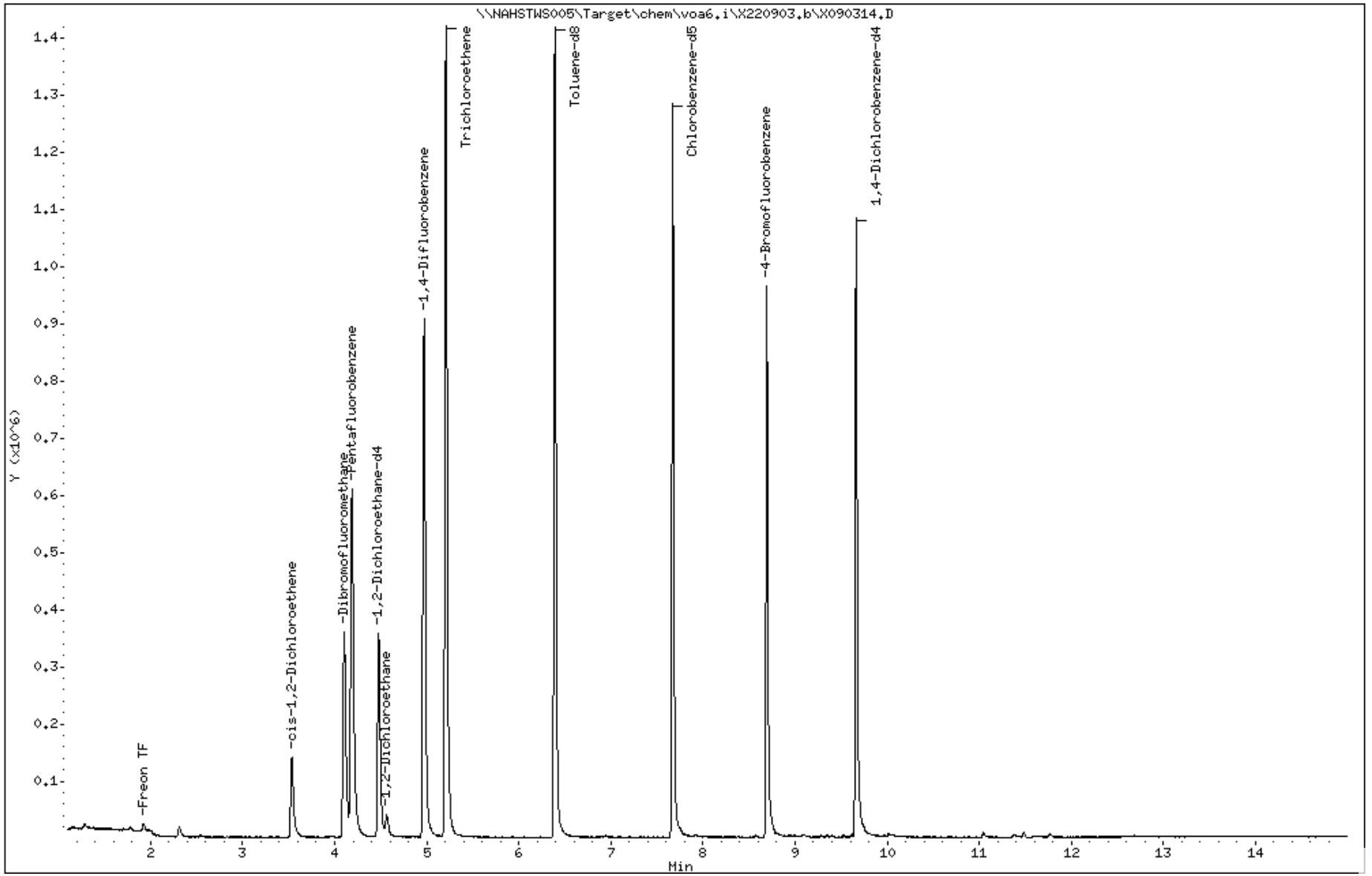
Sample Info: HS22081514-01;HS22081514-01;;;

Purge Volume: 5.0

Operator: PC

Column phase: DB624

Column diameter: 0.18



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Date : 03-SEP-2022 15:14

Client ID: HS22081514-01

Instrument: voa6.i

Sample Info: HS22081514-01;HS22081514-01;;;

Purge Volume: 5.0

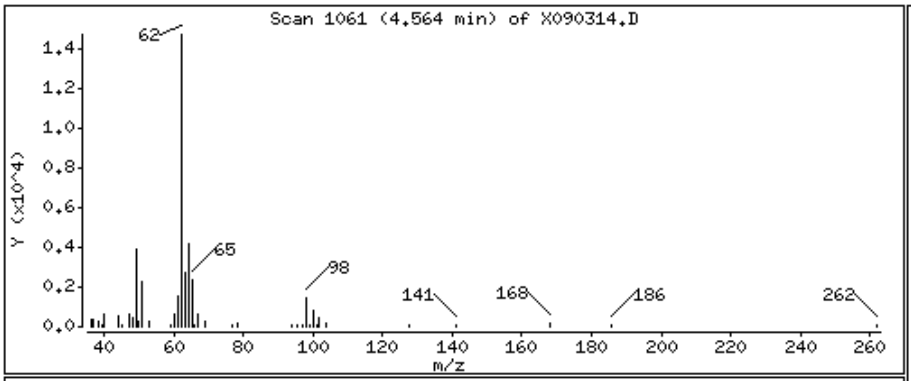
Operator: PC

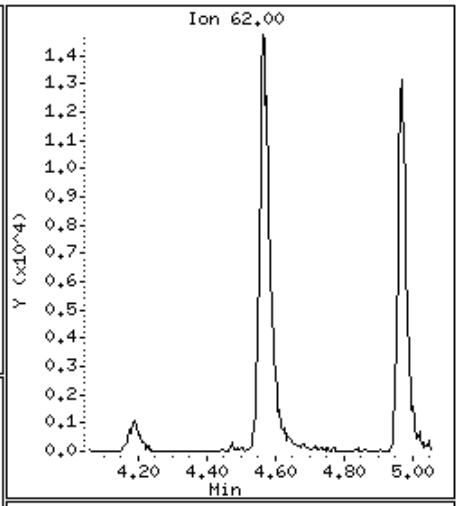
Column phase: DB624

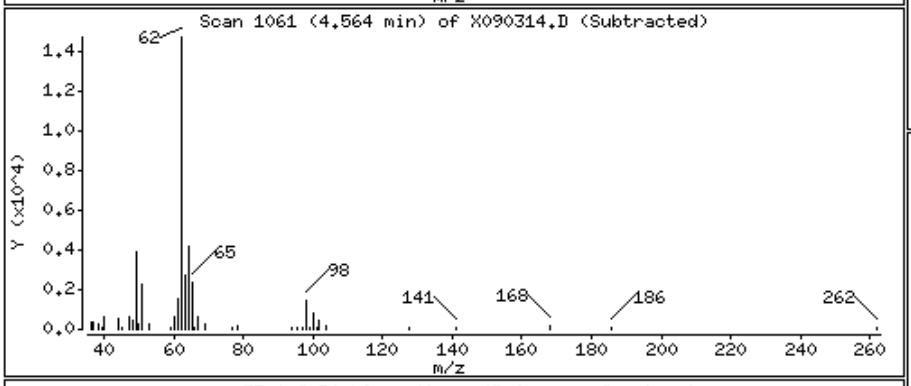
Column diameter: 0.18

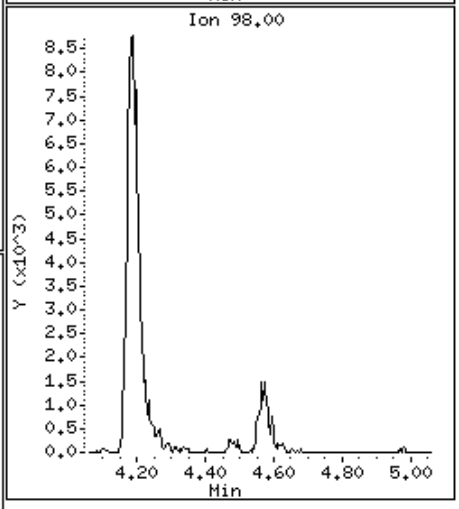
33 1,2-Dichloroethane

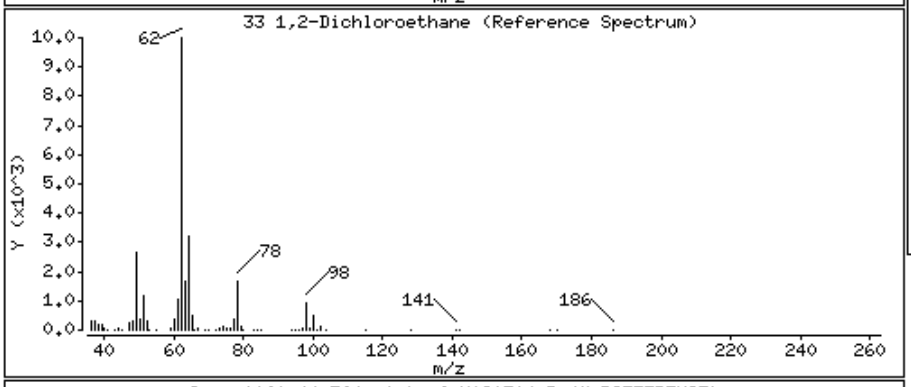
Concentration: 24.07 ug/l

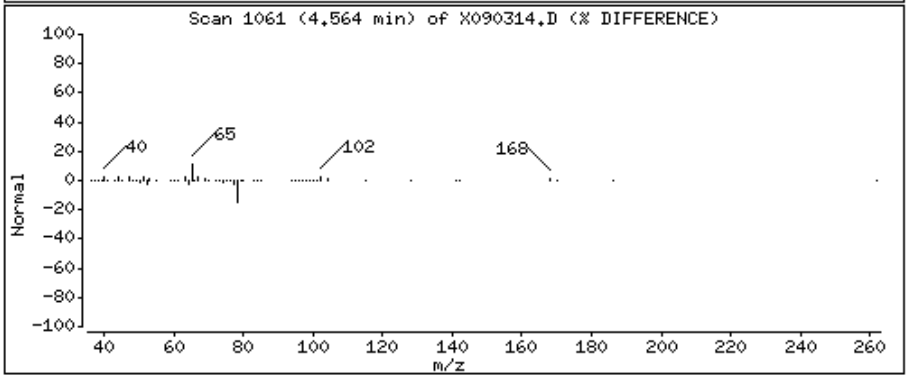












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090314.D

Date : 03-SEP-2022 15:14

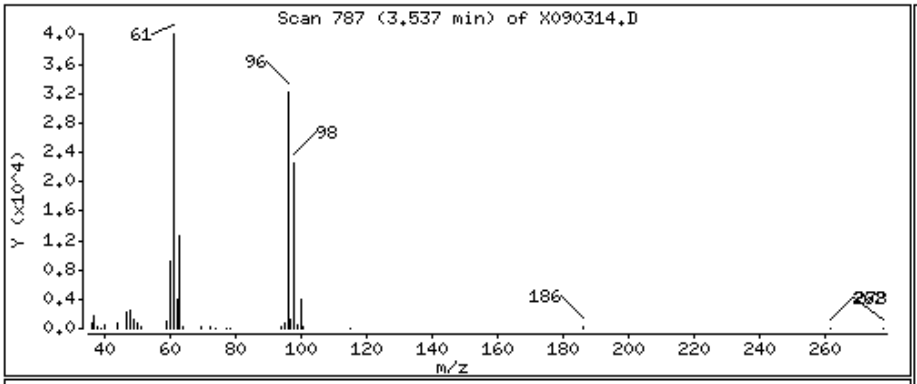
Client ID: HS22081514-01 Instrument: voa6.i

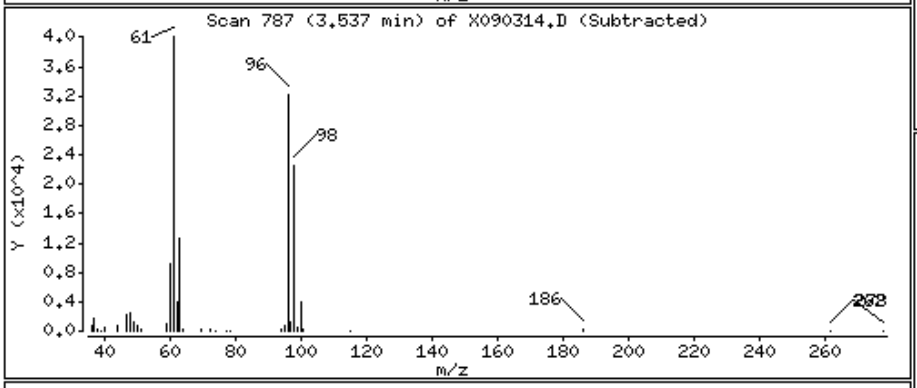
Sample Info: HS22081514-01;HS22081514-01;;;

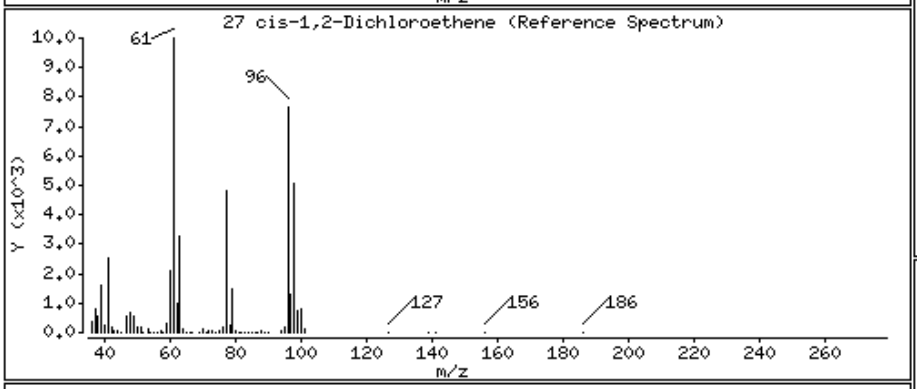
Purge Volume: 5.0 Operator: PC

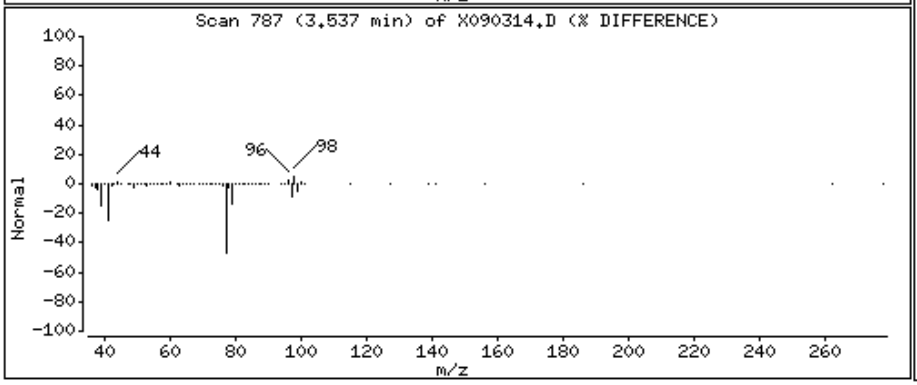
Column phase: DB624 Column diameter: 0.18

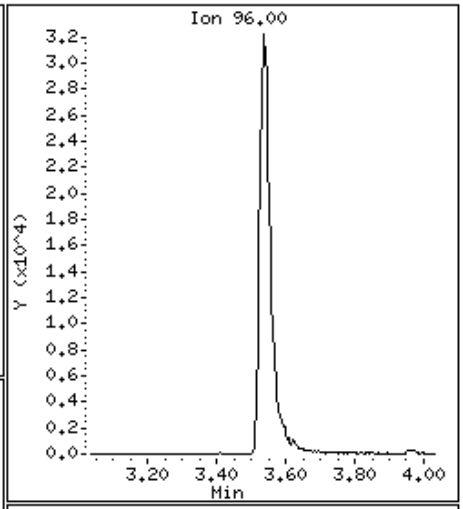
27 cis-1,2-Dichloroethene Concentration: 67.09 ug/l

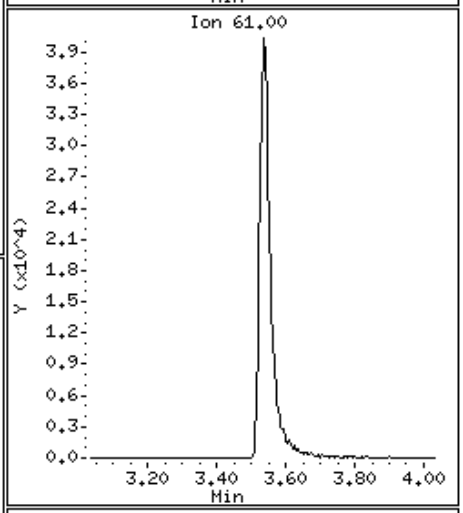


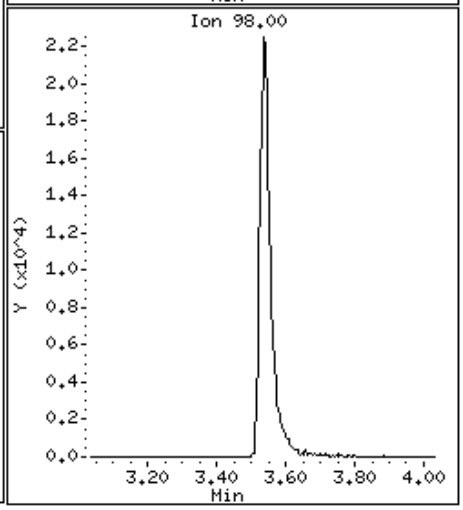












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090314.D Page 4

Date : 03-SEP-2022 15:14

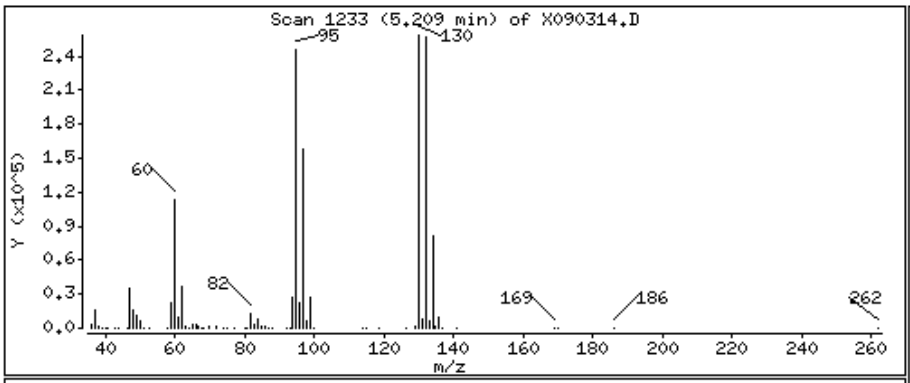
Client ID: HS22081514-01 Instrument: voa6.i

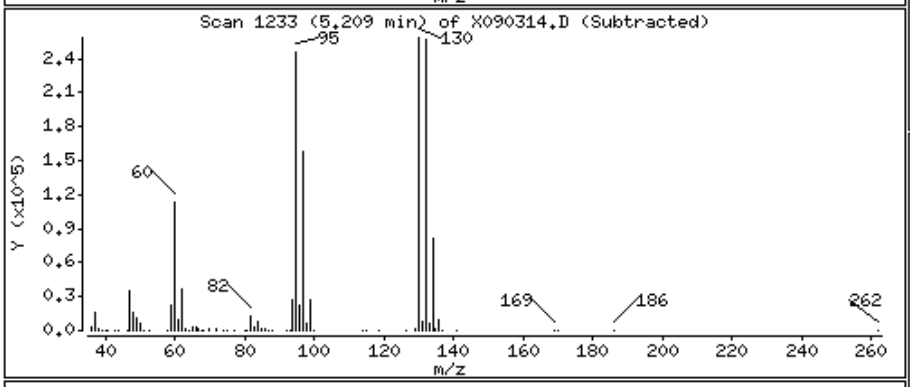
Sample Info: HS22081514-01;HS22081514-01;;;

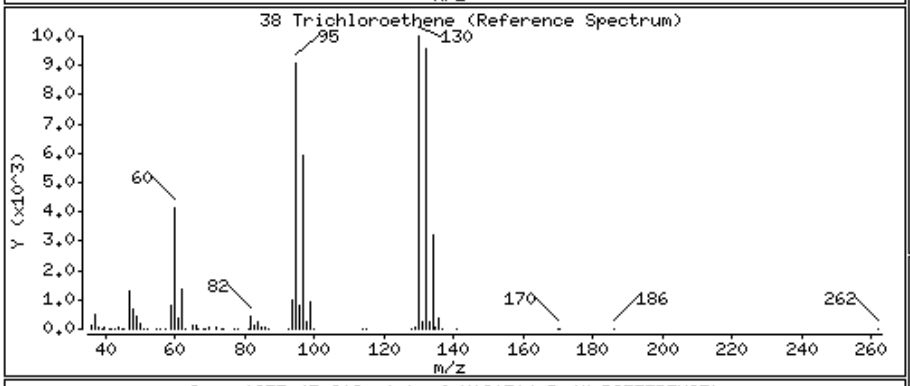
Purge Volume: 5.0 Operator: PC

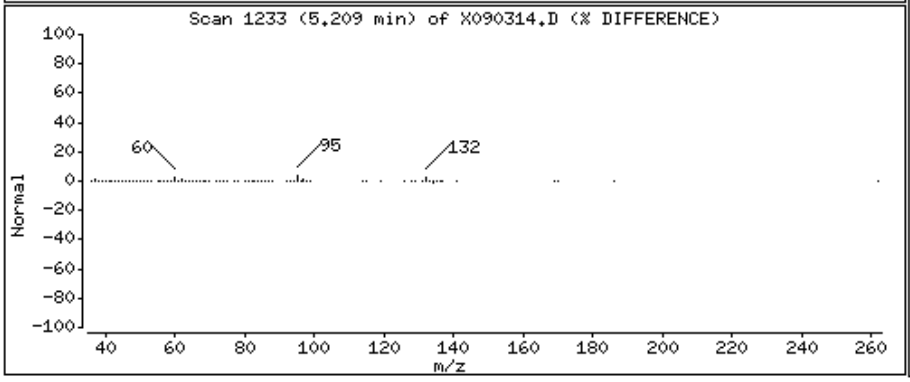
Column phase: DB624 Column diameter: 0.18

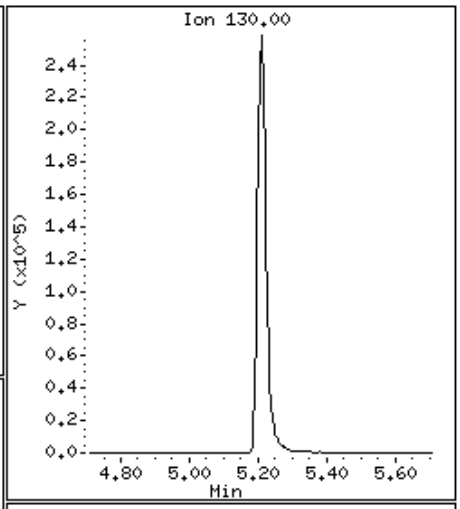
38 Trichloroethene Concentration: 434.02 ug/l

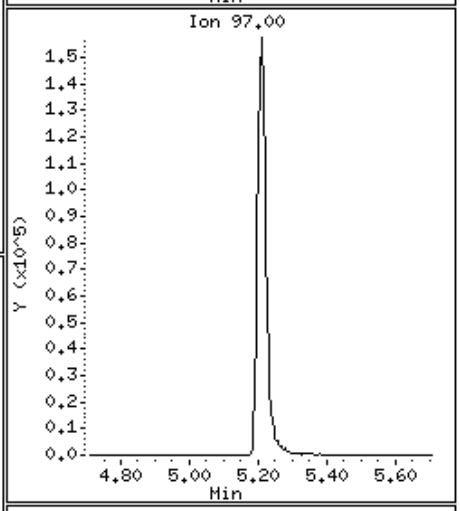


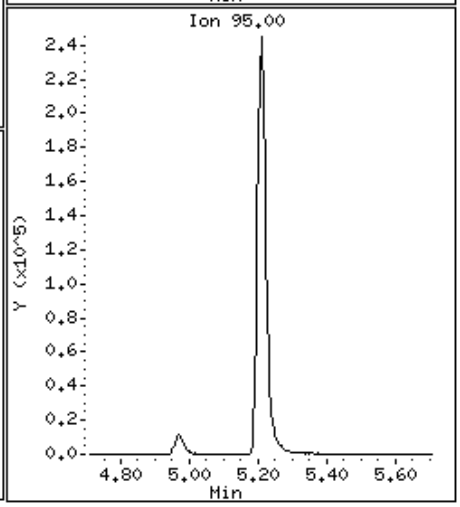












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090314.D Page 5

Date : 03-SEP-2022 15:14

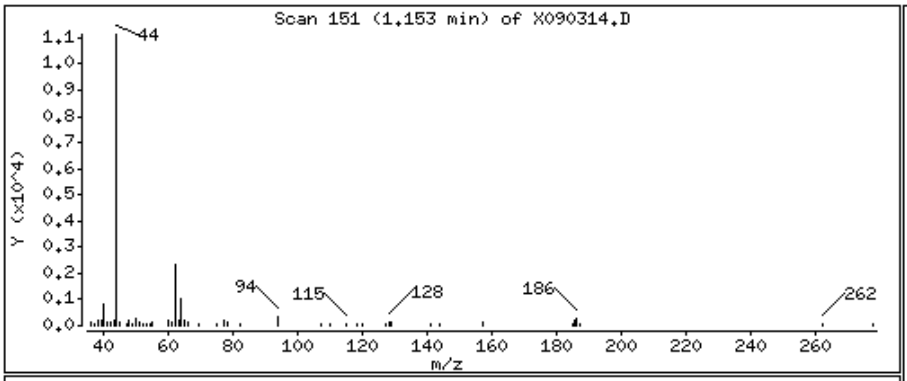
Client ID: HS22081514-01 Instrument: voa6.i

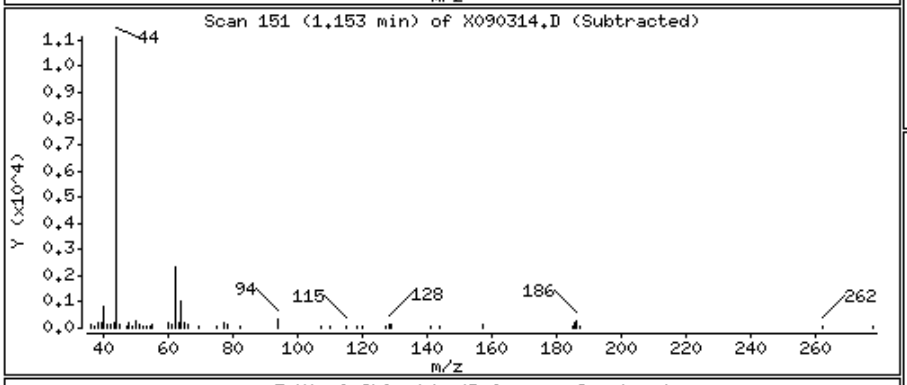
Sample Info: HS22081514-01;HS22081514-01;;;

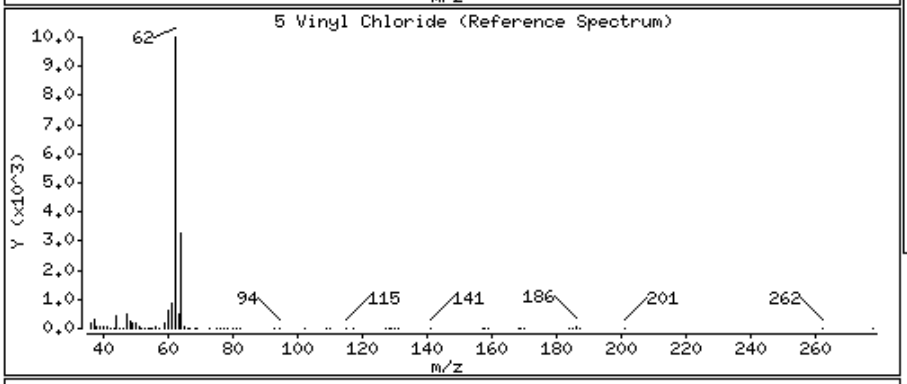
Purge Volume: 5.0 Operator: PC

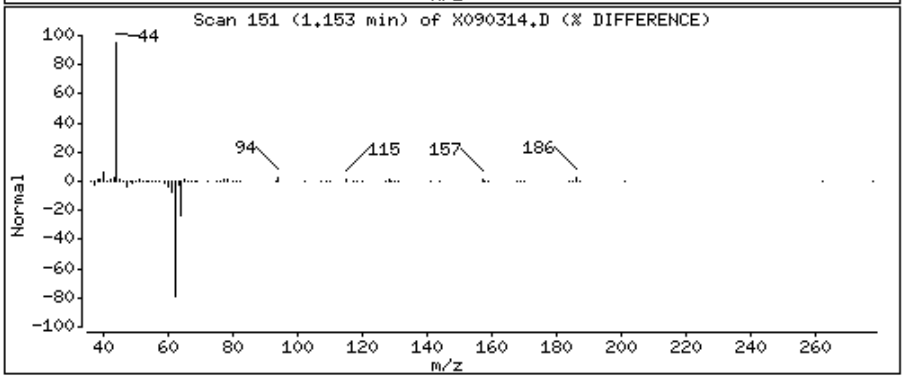
Column phase: DB624 Column diameter: 0.18

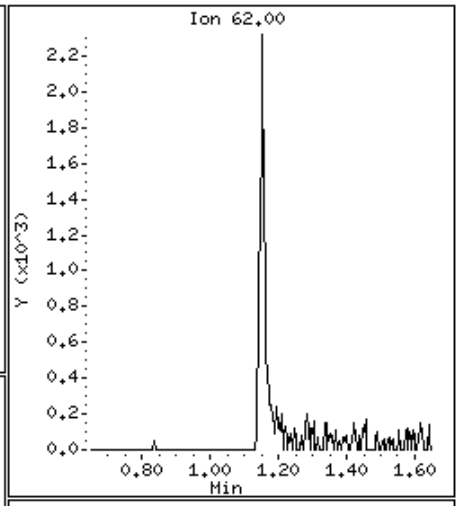
5 Vinyl Chloride Concentration: 2.09 ug/l

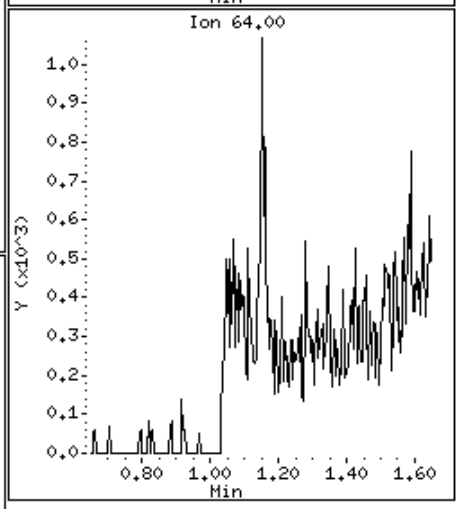












Data File : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090314.D
Inj Date : 03-SEP-2022 15:14
InstruID : voa6.i
LabSampID : HS22081514-01

NO MANUAL INTEGRATIONS

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090317.D
Lab Smp Id: HS22081514-14 Client Smp ID: HS22081514-14
Inj Date : 03-SEP-2022 16:17
Operator : PC Inst ID: voa6.i
Smp Info : HS22081514-14;HS22081514-14;;;
Misc Info : HS22052000V6;WATER;0;5;
Comment :
Method : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\8260W.m
Meth Date : 09-Sep-2022 16:34 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 16
Dil Factor: 5.00000
Integrator: HP RTE Compound Sublist: bhate.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
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	4.185	4.185	(1.000)	551630	50.0000	
* 36 1,4-Difluorobenzene	114	4.972	4.969	(1.000)	770563	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	655065	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.665	9.662	(1.000)	278857	50.0000	
$ 30 Dibromofluoromethane	113	4.106	4.103	(0.981)	245153	47.0526	47.05
$ 35 1,2-Dichloroethane-d4	65	4.481	4.474	(1.071)	267991	46.9871	46.98
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	874331	53.4955	53.49
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	267331	45.6613	45.66
33 1,2-Dichloroethane	62	4.564	4.560	(0.918)	57502	8.50876	42.54
27 cis-1,2-Dichloroethene	96	3.536	3.533	(0.845)	117187	21.3680	106.84
38 Trichloroethene	130	5.208	5.209	(1.047)	1035388	191.423	957.11

01148317

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090317.D

Date : 03-SEP-2022 16:17

Client ID: HS22081514-14

Instrument: voa6.i

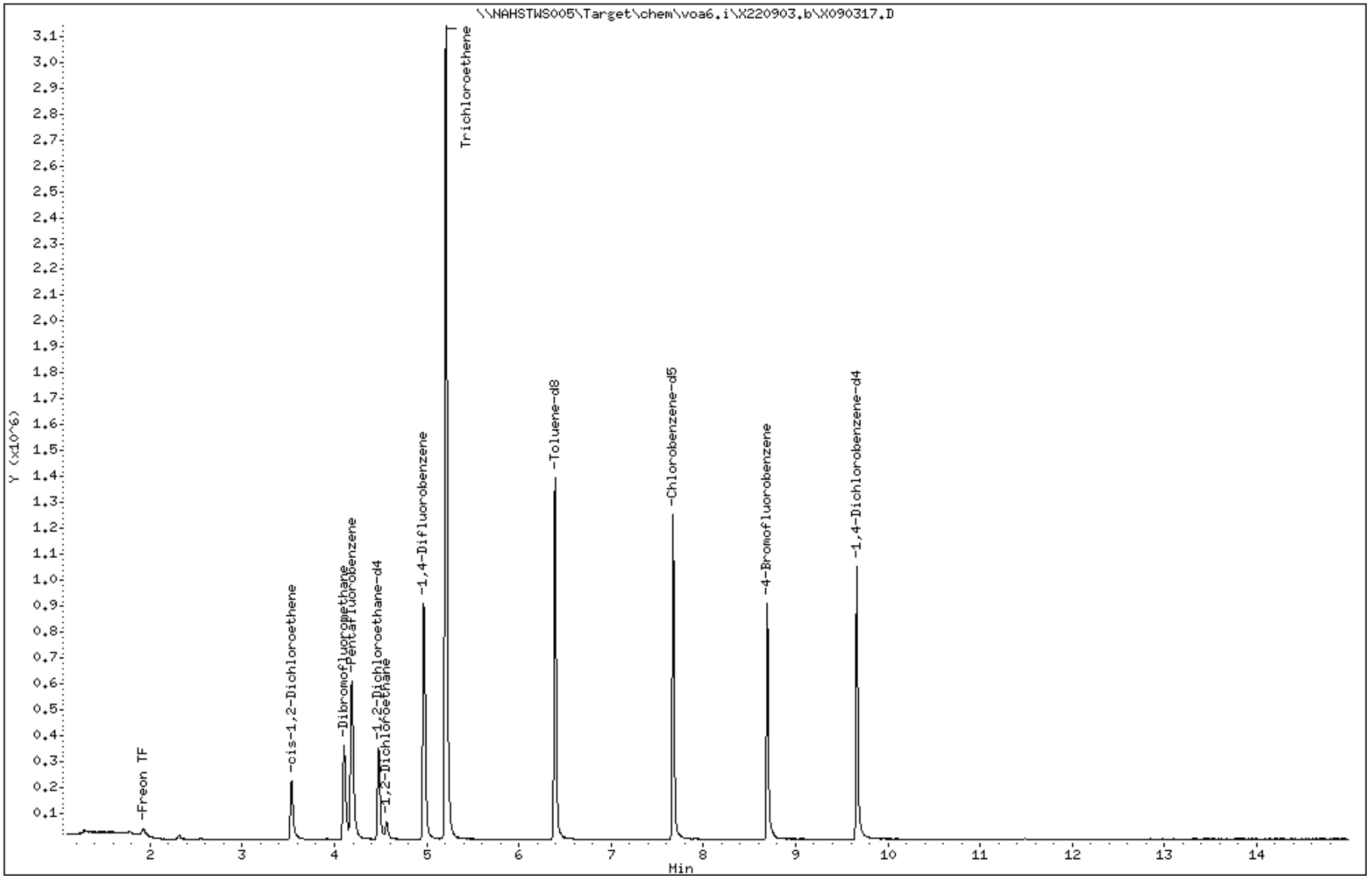
Sample Info: HS22081514-14;HS22081514-14;;;

Purge Volume: 5.0

Operator: PC

Column phase: DB624

Column diameter: 0.18



Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090317.D Page 2

Date : 03-SEP-2022 16:17

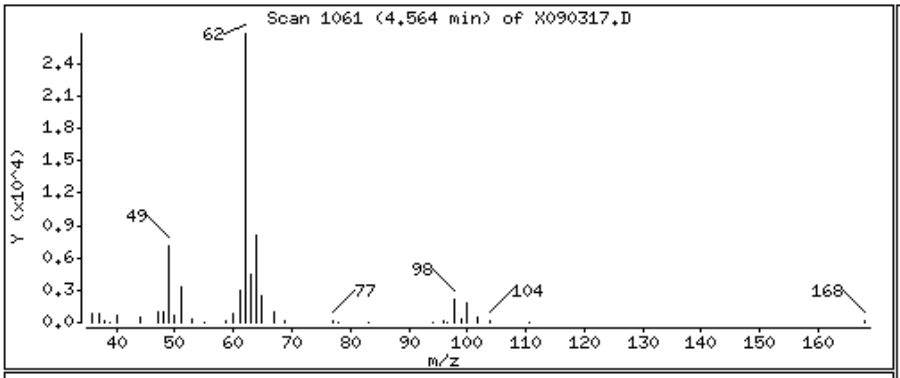
Client ID: HS22081514-14 Instrument: voa6.i

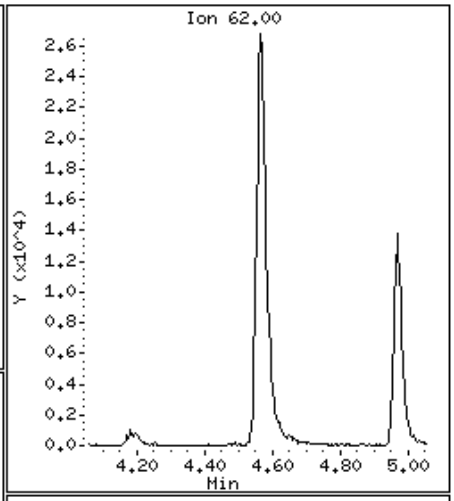
Sample Info: HS22081514-14;HS22081514-14;;;

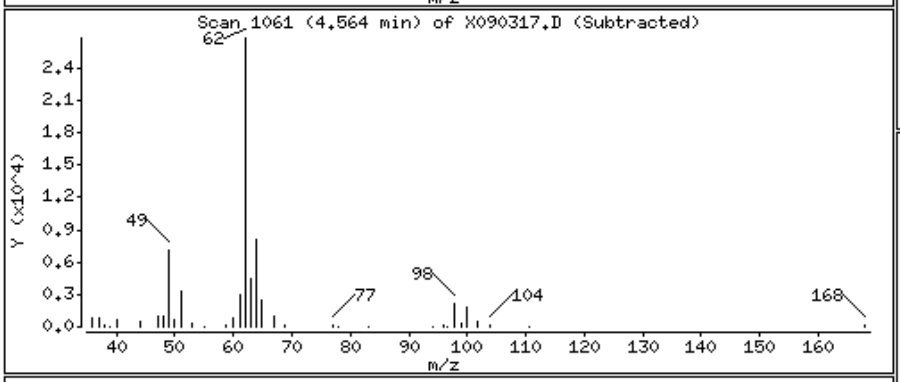
Purge Volume: 5.0 Operator: PC

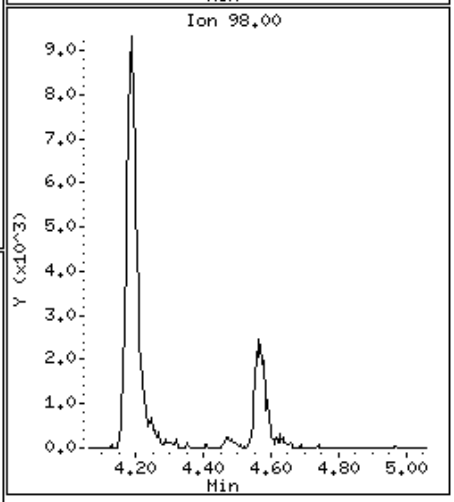
Column phase: DB624 Column diameter: 0.18

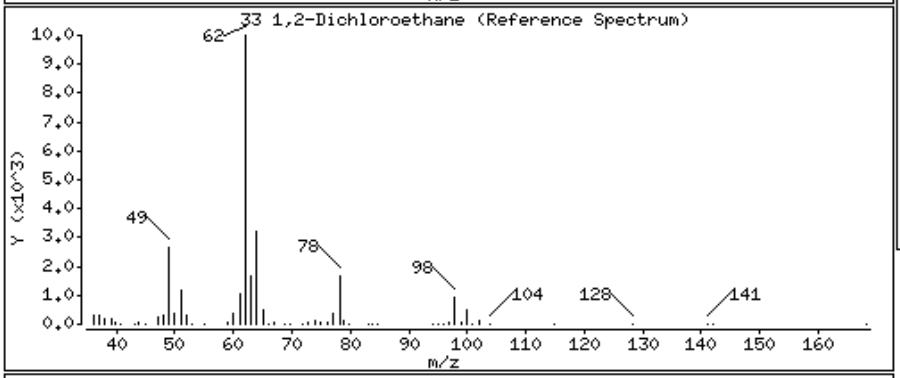
33 1,2-Dichloroethane Concentration: 42.54 ug/l

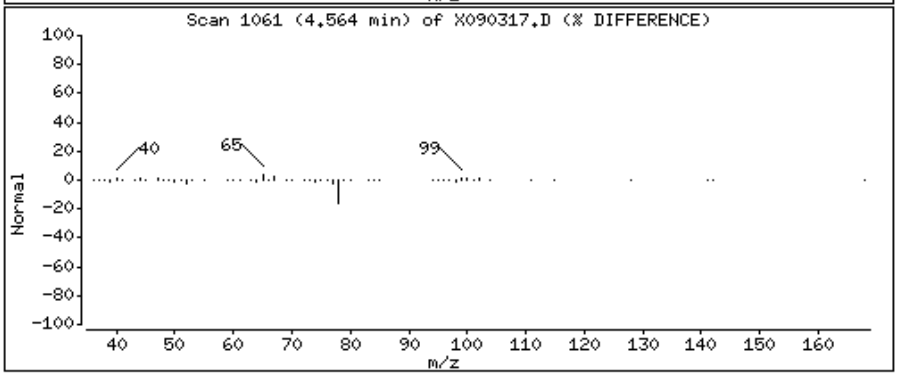












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090317.D Page 3

Date : 03-SEP-2022 16:17

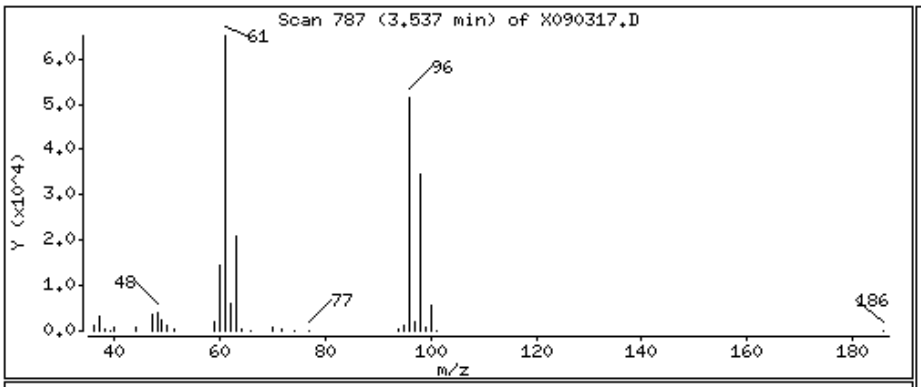
Client ID: HS22081514-14 Instrument: voa6.i

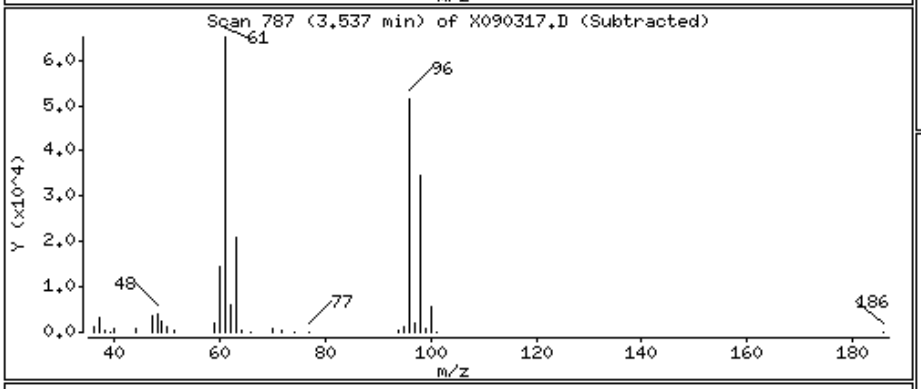
Sample Info: HS22081514-14;HS22081514-14;;;

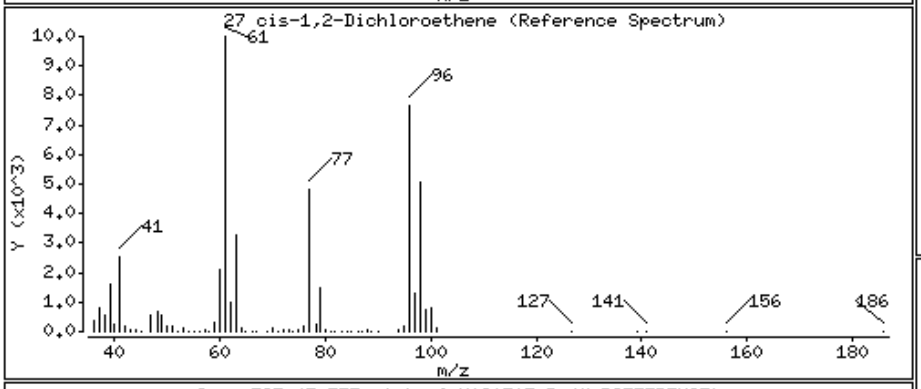
Purge Volume: 5.0 Operator: PC

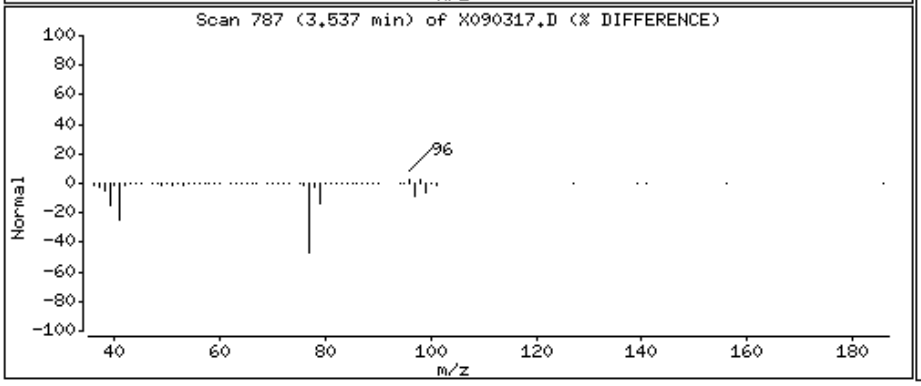
Column phase: DB624 Column diameter: 0.18

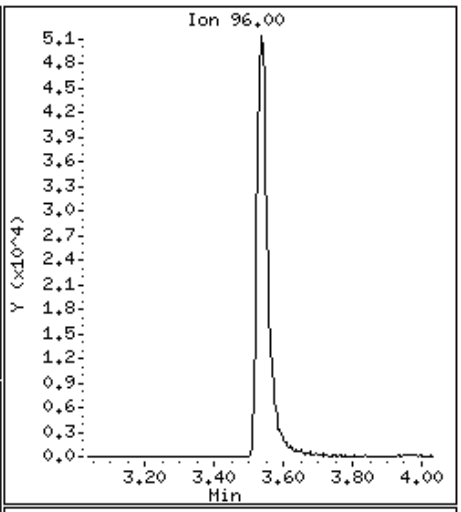
27 cis-1,2-Dichloroethene Concentration: 106.84 ug/l

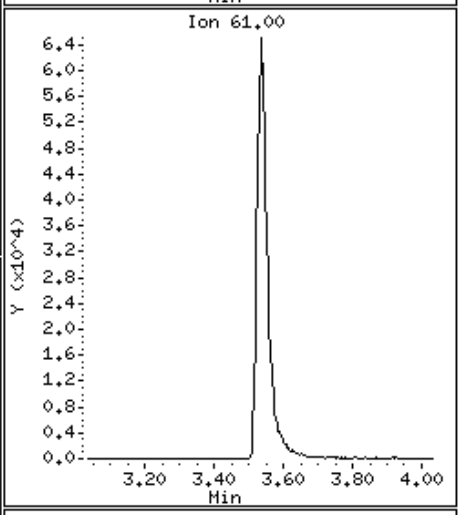


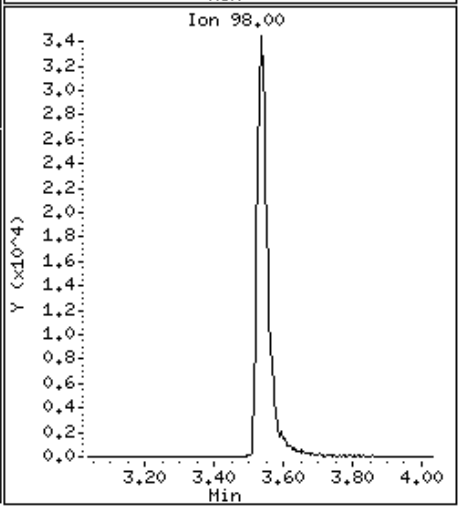












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090317.D Page 4

Date : 03-SEP-2022 16:17

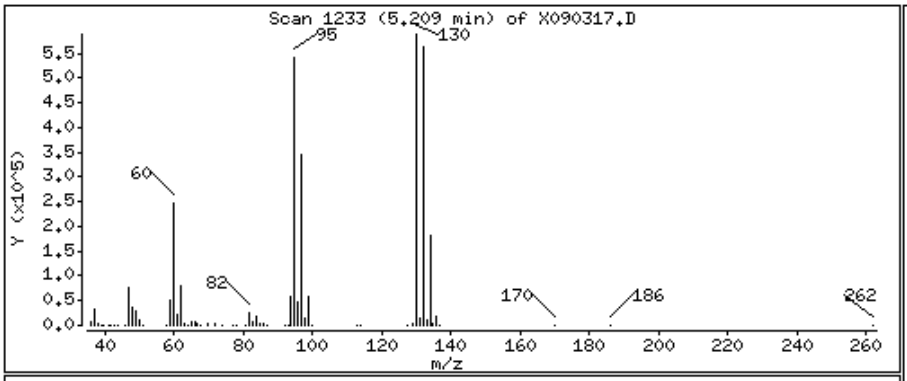
Client ID: HS22081514-14 Instrument: voa6.i

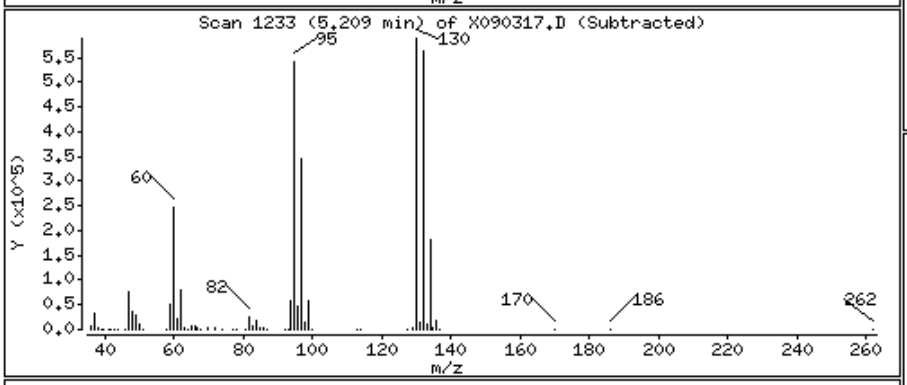
Sample Info: HS22081514-14;HS22081514-14;;;

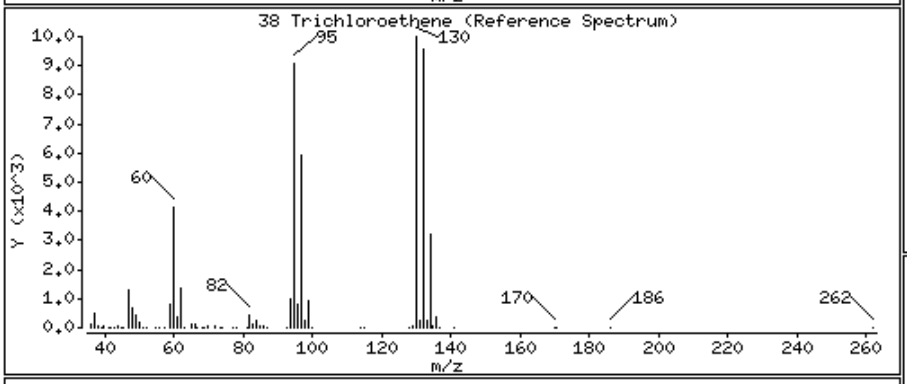
Purge Volume: 5.0 Operator: PC

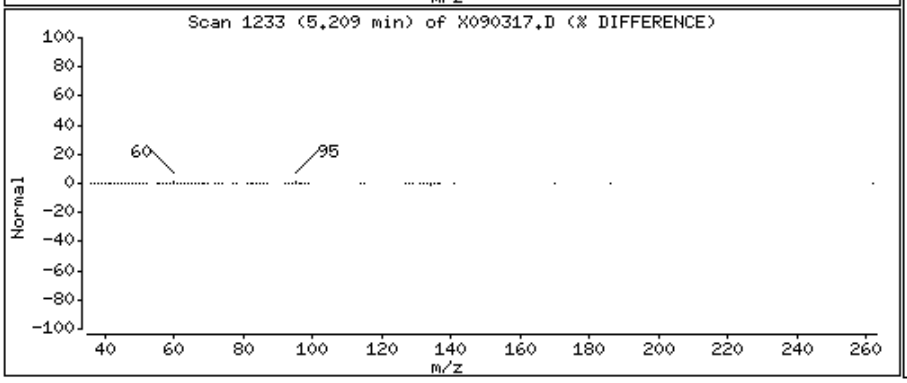
Column phase: DB624 Column diameter: 0.18

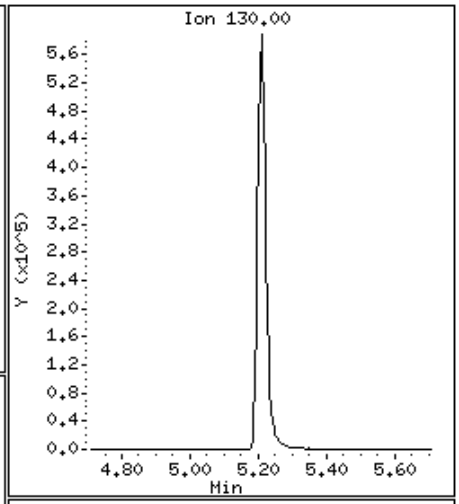
38 Trichloroethene Concentration: 957.11 ug/l

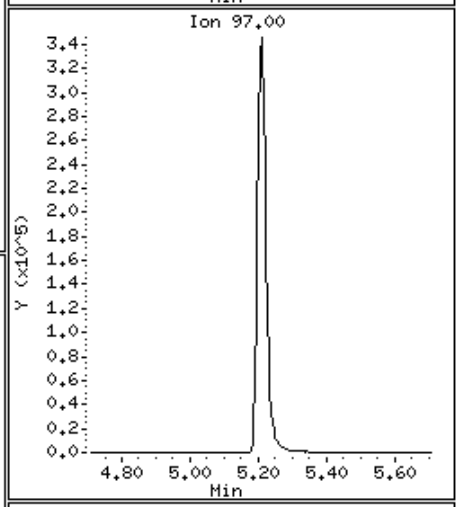


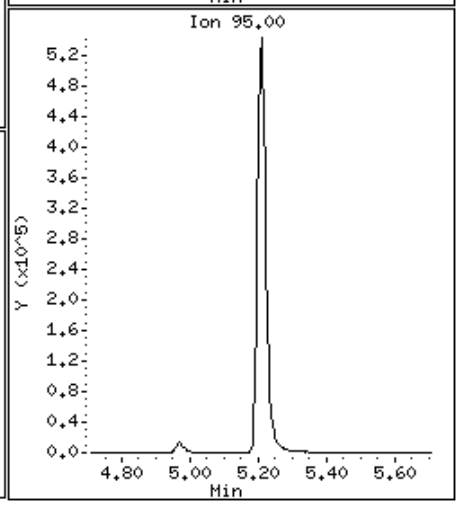












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Inj Date : 03-SEP-2022 16:17
InstruID : voa6.i
LabSampID : HS22081514-14

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090318.D Page 1
Report Date: 09-Sep-2022 16:34

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090318.D
Lab Smp Id: HS22081514-09 Client Smp ID: HS22081514-09
Inj Date : 03-SEP-2022 16:38
Operator : PC Inst ID: voa6.i
Smp Info : HS22081514-09;HS22081514-09;;;
Misc Info : HS22052000V6;WATER;0;10;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\8260W.m
Meth Date : 09-Sep-2022 16:34 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 17
Dil Factor: 10.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7056

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
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	4.185	4.185	(1.000)	549450	50.0000	
* 36 1,4-Difluorobenzene	114	4.968	4.969	(1.000)	768229	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	663138	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.662	(1.000)	289812	50.0000	
$ 30 Dibromofluoromethane	113	4.106	4.103	(0.981)	243533	46.9252	46.92
$ 35 1,2-Dichloroethane-d4	65	4.477	4.474	(1.070)	259565	45.6812	45.68
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	884837	53.4792	53.47
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	276265	46.6300	46.63
33 1,2-Dichloroethane	62	4.567	4.560	(0.919)	4977	0.73870	7.38(a)
28 Chloroform	83	3.915	3.911	(0.936)	5759	0.62140	6.21(a)
27 cis-1,2-Dichloroethene	96	3.540	3.533	(0.846)	19471	3.56445	35.64(a)
38 Trichloroethene	130	5.208	5.209	(1.048)	735103	136.319	1363.19

QC Flag Legend

a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).

01148323

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090318.D

Date : 03-SEP-2022 16:38

Client ID: HS22081514-09

Instrument: voa6.i

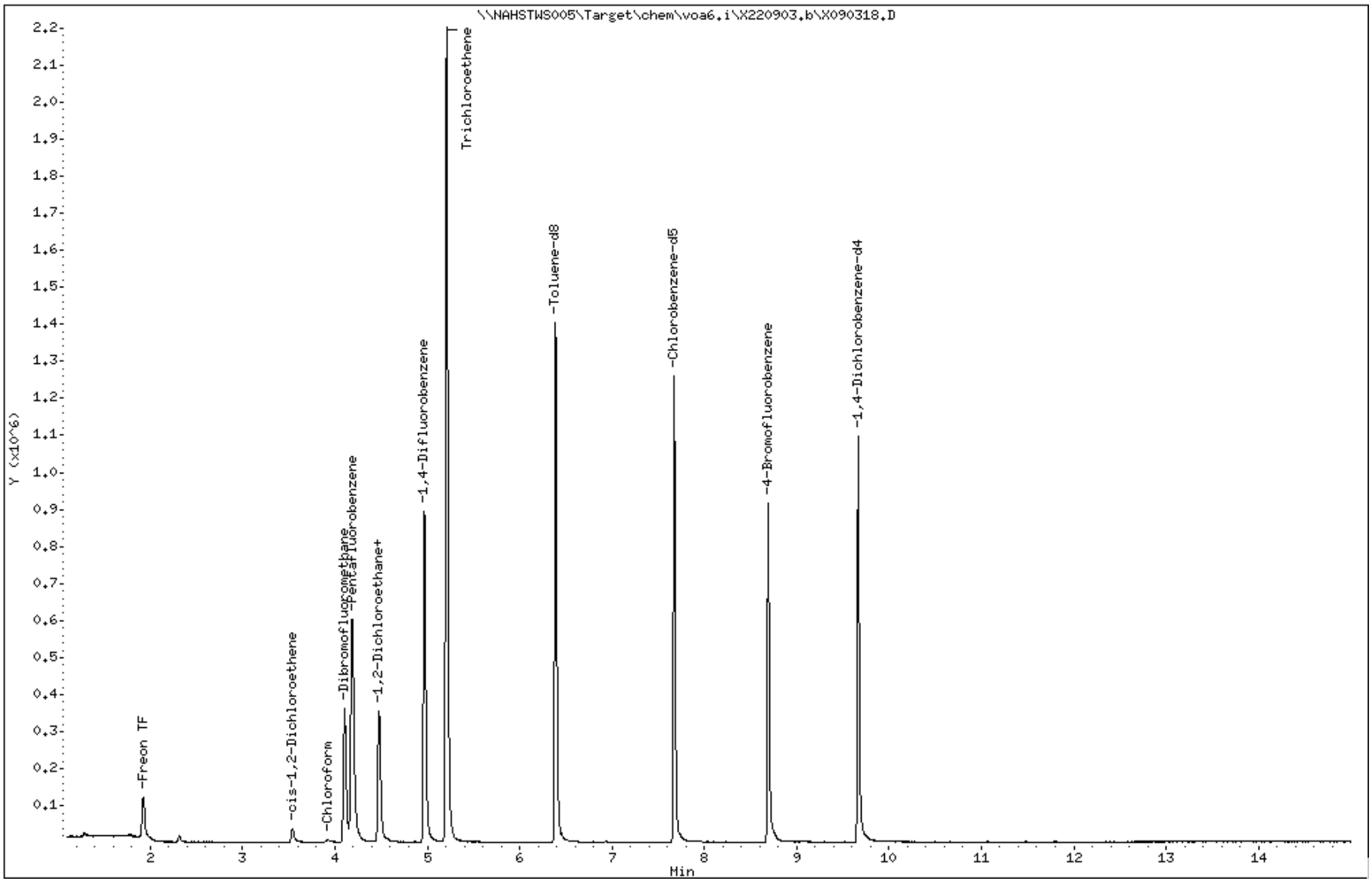
Sample Info: HS22081514-09;HS22081514-09;;;

Purge Volume: 5.0

Operator: PC

Column phase: DB624

Column diameter: 0.18



Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090318.D

Date : 03-SEP-2022 16:38

Client ID: HS22081514-09

Instrument: voa6.i

Sample Info: HS22081514-09;HS22081514-09;;;

Purge Volume: 5.0

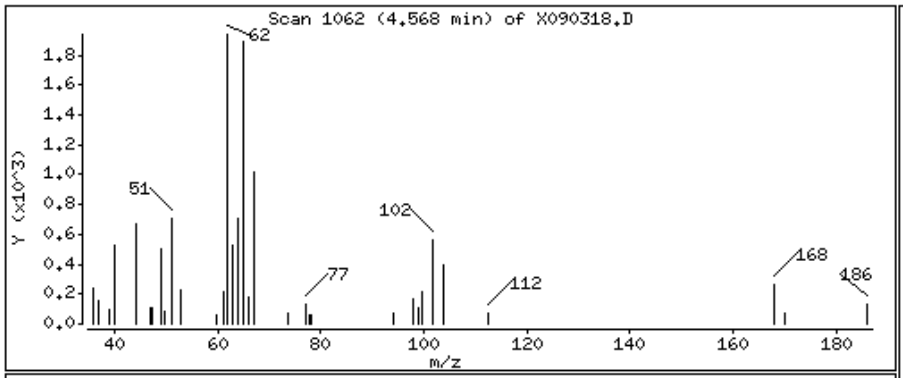
Operator: PC

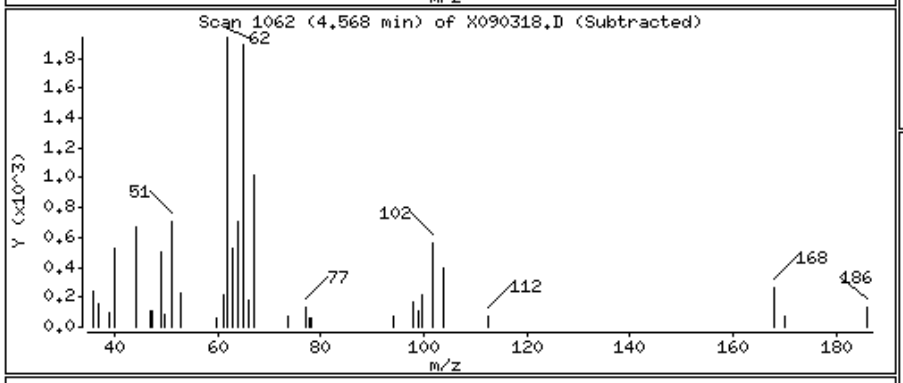
Column phase: DB624

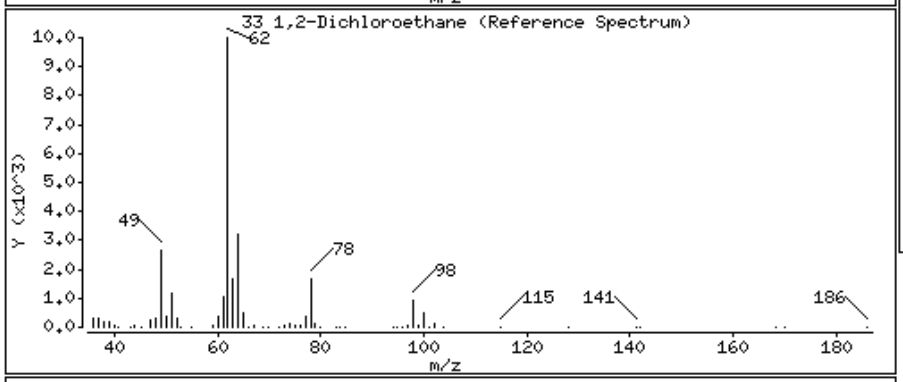
Column diameter: 0.18

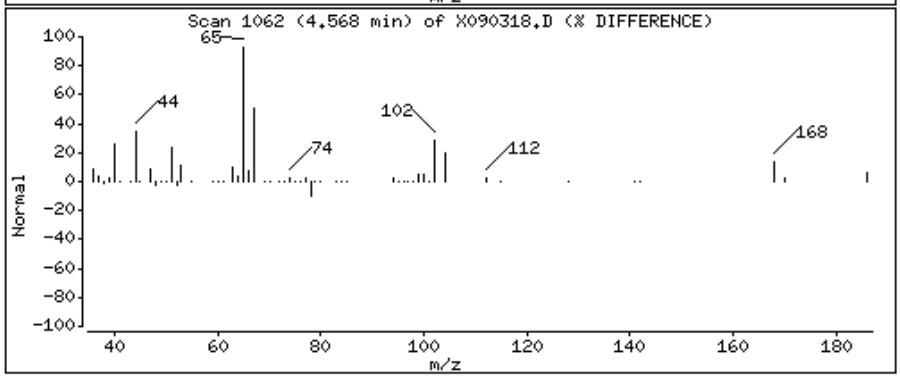
33 1,2-Dichloroethane

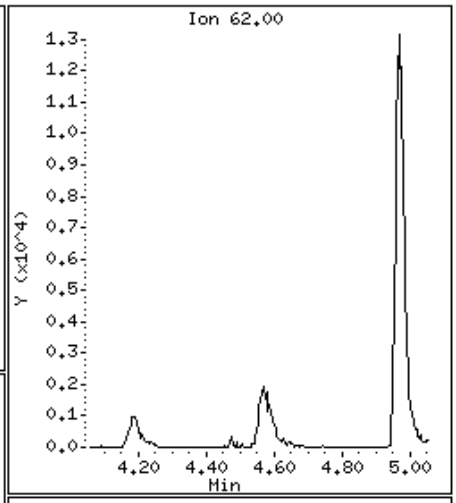
Concentration: 7.38 ug/l

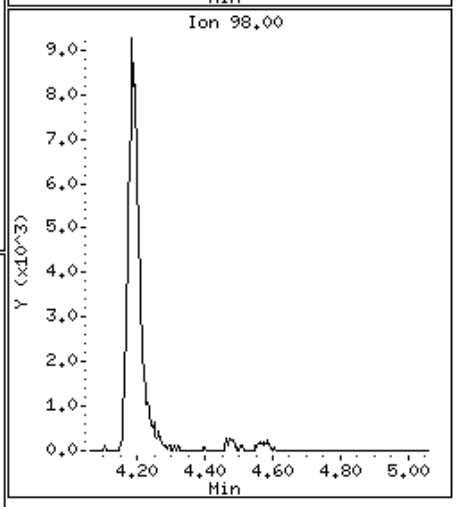












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090318.D

Date : 03-SEP-2022 16:38

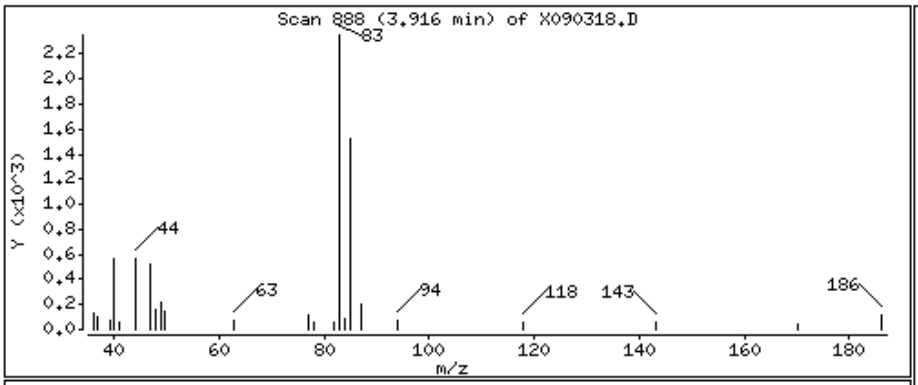
Client ID: HS22081514-09 Instrument: voa6.i

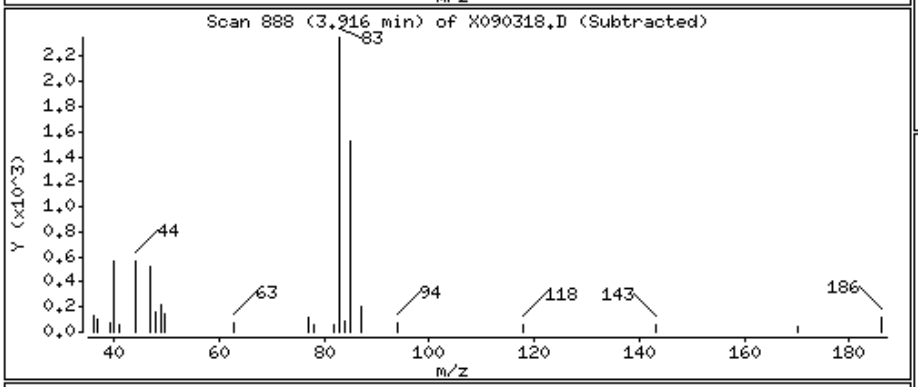
Sample Info: HS22081514-09;HS22081514-09;;;

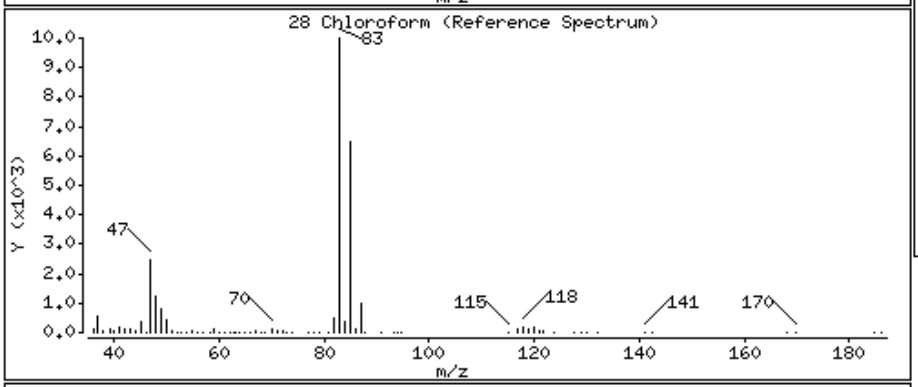
Purge Volume: 5.0 Operator: PC

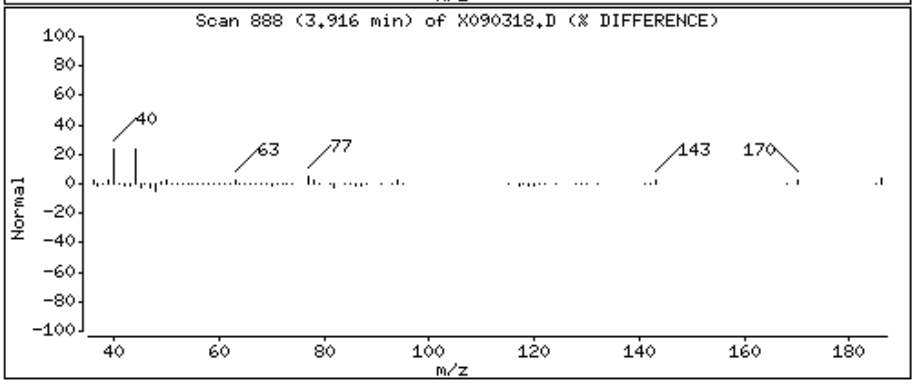
Column phase: DB624 Column diameter: 0.18

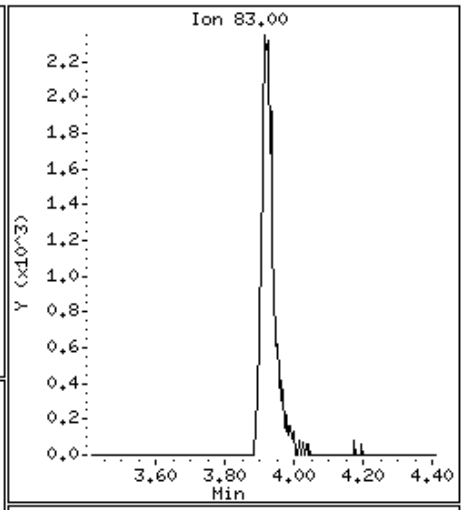
28 Chloroform Concentration: 6.21 ug/l

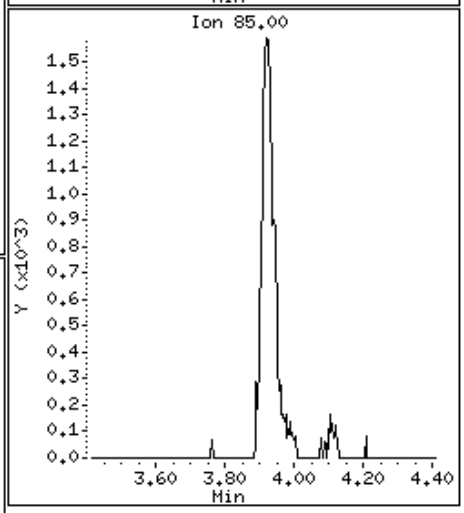












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090318.D Page 4

Date : 03-SEP-2022 16:38

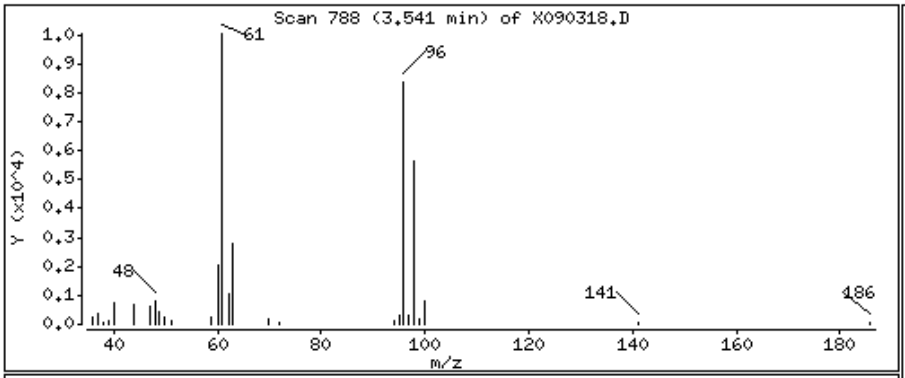
Client ID: HS22081514-09 Instrument: voa6.i

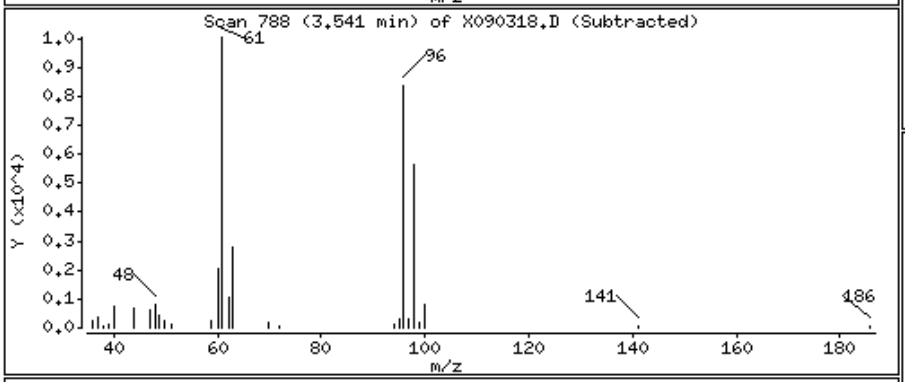
Sample Info: HS22081514-09;HS22081514-09;;;

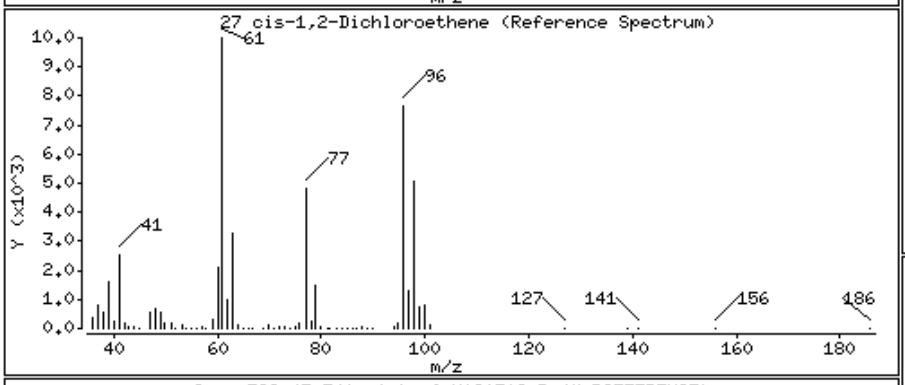
Purge Volume: 5.0 Operator: PC

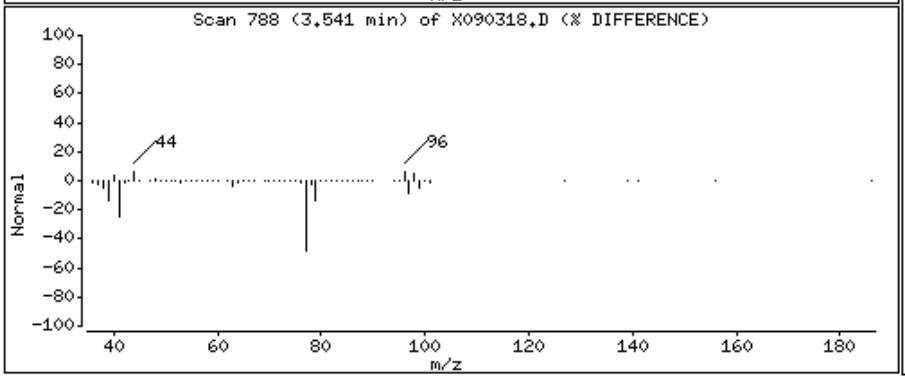
Column phase: DB624 Column diameter: 0.18

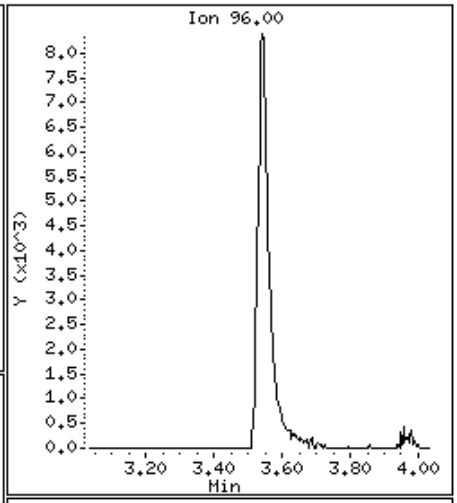
27 cis-1,2-Dichloroethene Concentration: 35.64 ug/l

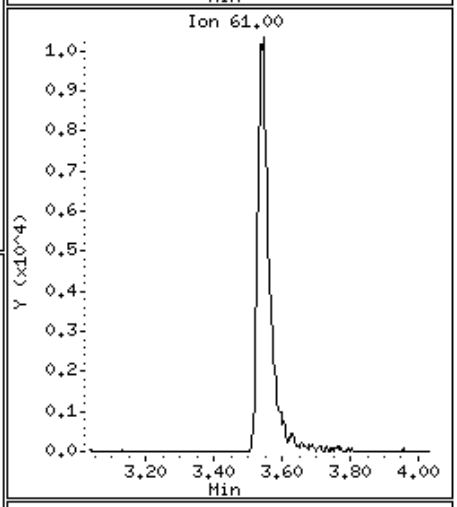


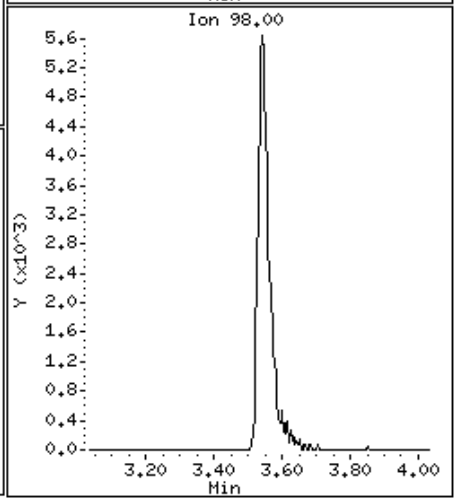












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090318.D Page 5

Date : 03-SEP-2022 16:38

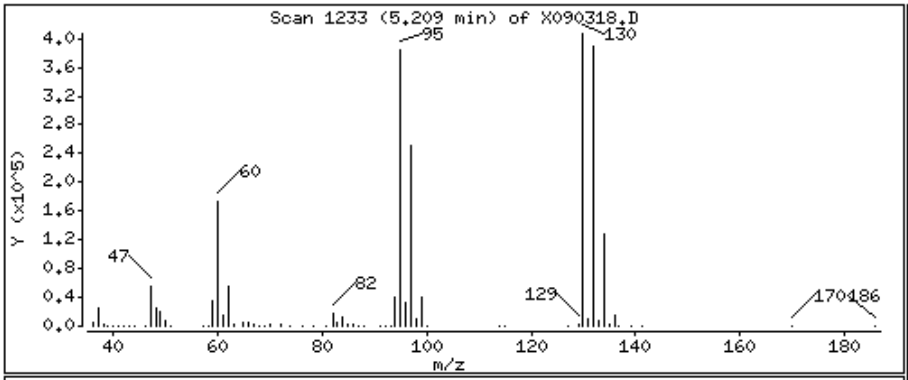
Client ID: HS22081514-09 Instrument: voa6.i

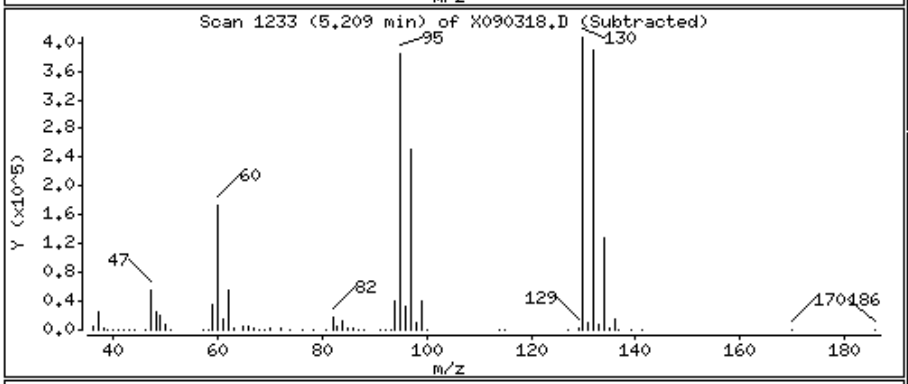
Sample Info: HS22081514-09;HS22081514-09;;;

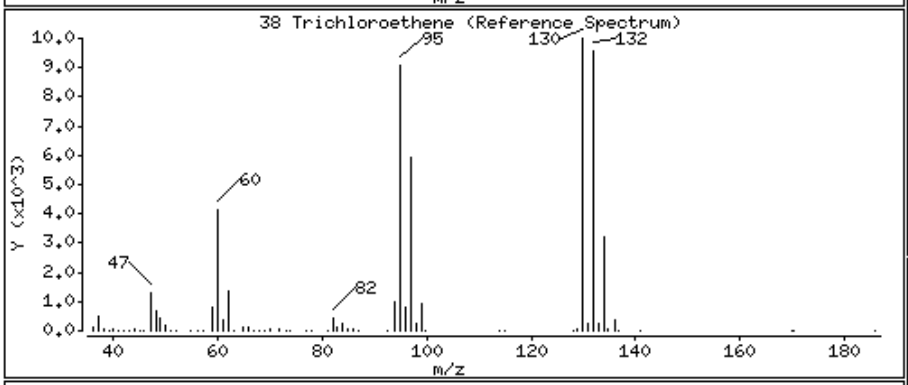
Purge Volume: 5.0 Operator: PC

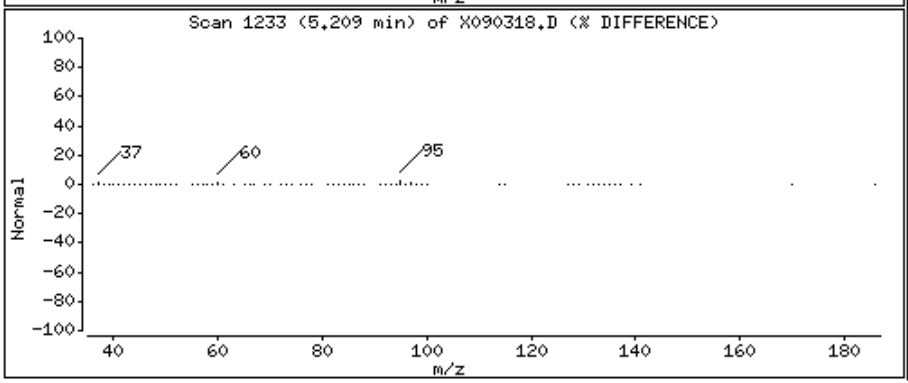
Column phase: DB624 Column diameter: 0.18

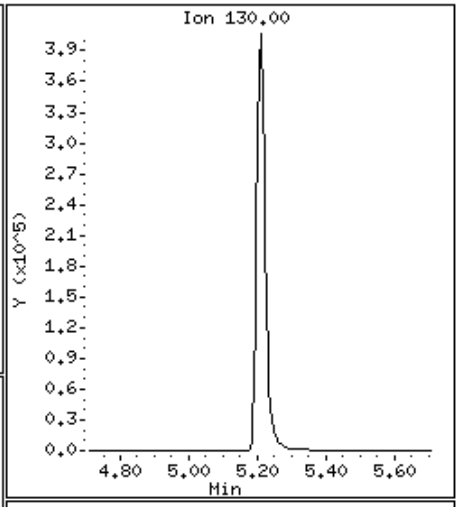
38 Trichloroethene Concentration: 1363.19 ug/l

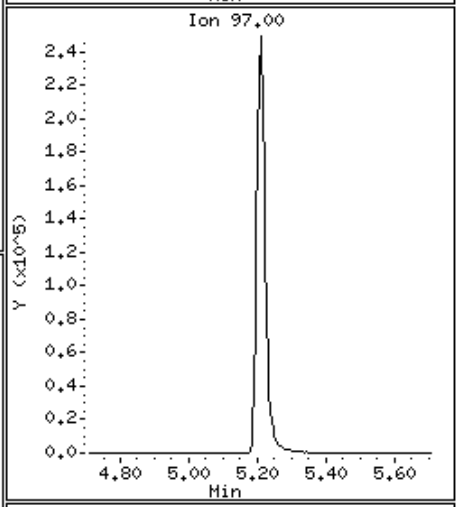


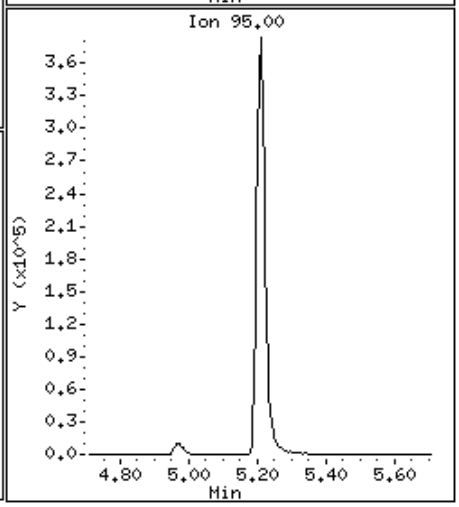












Data File : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090318.D
Inj Date : 03-SEP-2022 16:38
InstruID : voa6.i
LabSampID : HS22081514-09

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090319.D Page 1
Report Date: 09-Sep-2022 16:34

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090319.D
Lab Smp Id: HS22081514-13 Client Smp ID: HS22081514-13
Inj Date : 03-SEP-2022 16:59
Operator : PC Inst ID: voa6.i
Smp Info : HS22081514-13;HS22081514-13;;;
Misc Info : HS22052000V6;WATER;0;10;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\8260W.m
Meth Date : 09-Sep-2022 16:34 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 18
Dil Factor: 10.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7056

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
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	4.185	4.185	(1.000)	559814	50.0000	
* 36 1,4-Difluorobenzene	114	4.968	4.969	(1.000)	771957	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	656013	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.665	9.662	(1.000)	284521	50.0000	
$ 30 Dibromofluoromethane	113	4.102	4.103	(0.980)	250295	47.3416	47.34
$ 35 1,2-Dichloroethane-d4	65	4.477	4.474	(1.070)	266774	46.0836	46.08
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	892680	54.5392	54.53
$ 69 4-Bromofluorobenzene	95	8.695	8.691	(1.133)	271174	46.2614	46.26
22 1,1-Dichloroethane	63	2.937	2.929	(0.702)	7570	0.87836	8.78(a)
11 1,1-Dichloroethene	96	1.925	1.925	(0.460)	11209	2.39862	23.98(a)
33 1,2-Dichloroethane	62	4.564	4.560	(0.919)	48753	7.20112	72.01
27 cis-1,2-Dichloroethene	96	3.533	3.533	(0.844)	262980	47.2510	472.51
38 Trichloroethene	130	5.208	5.209	(1.048)	2048717	378.084	3780.83(A)
5 Vinyl Chloride	62	1.152	1.152	(0.275)	6641	1.13132	11.31(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.

01148331

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090319.D

Date : 03-SEP-2022 16:59

Client ID: HS22081514-13

Instrument: voa6.i

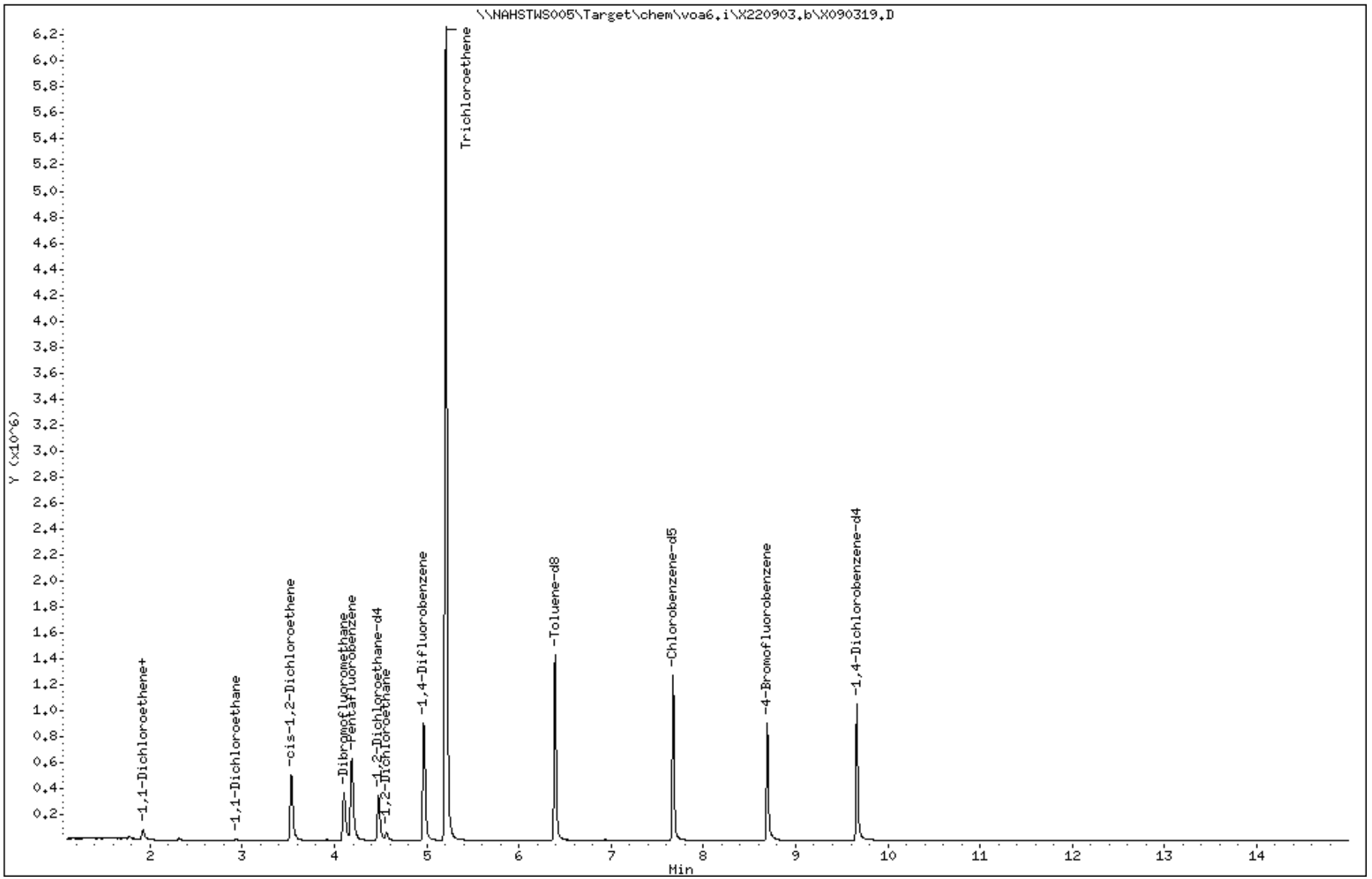
Sample Info: HS22081514-13;HS22081514-13;;;

Purge Volume: 5.0

Operator: PC

Column phase: DB624

Column diameter: 0.18



Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090319.D

Date : 03-SEP-2022 16:59

Client ID: HS22081514-13

Instrument: voa6.i

Sample Info: HS22081514-13;HS22081514-13;;;

Purge Volume: 5.0

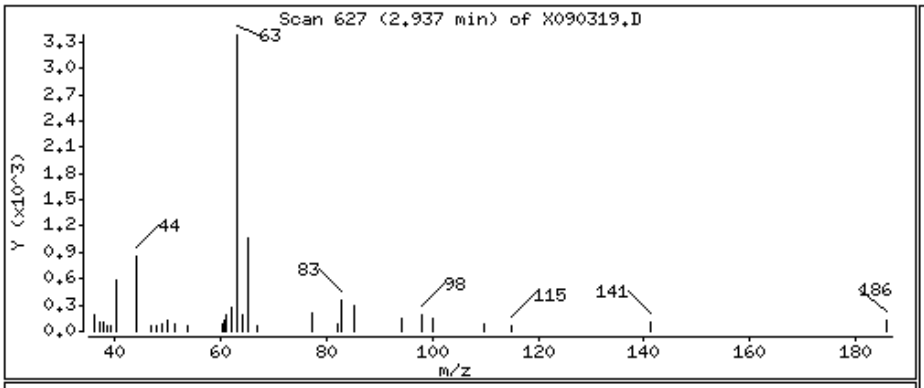
Operator: PC

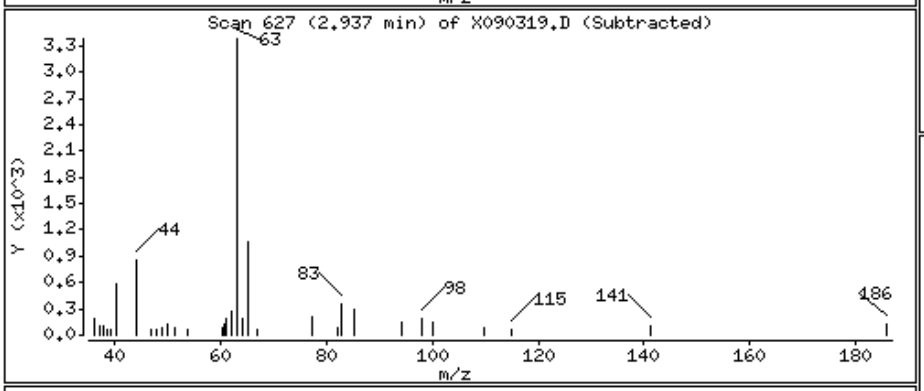
Column phase: DB624

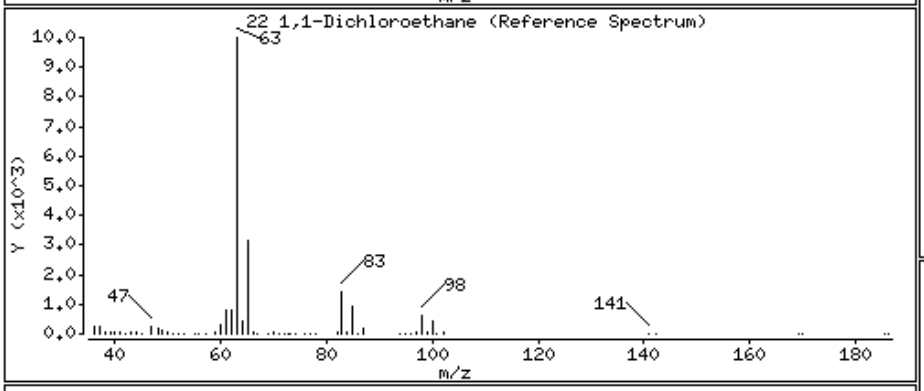
Column diameter: 0.18

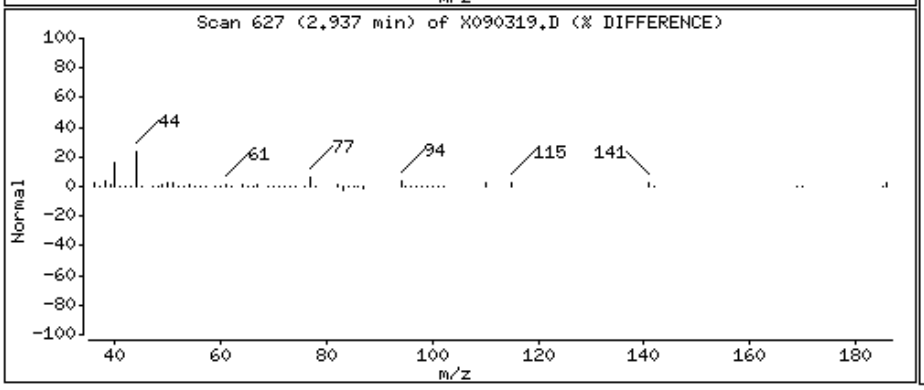
22 1,1-Dichloroethane

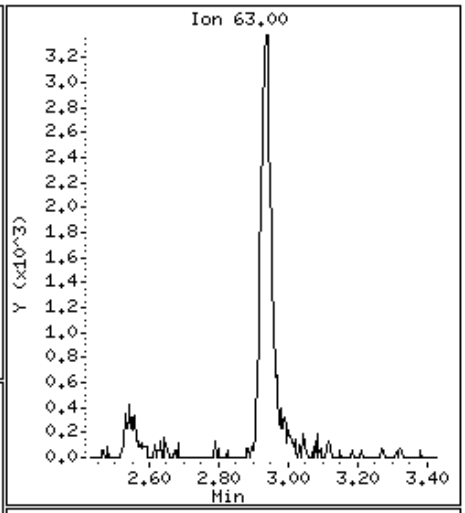
Concentration: 8.78 ug/l

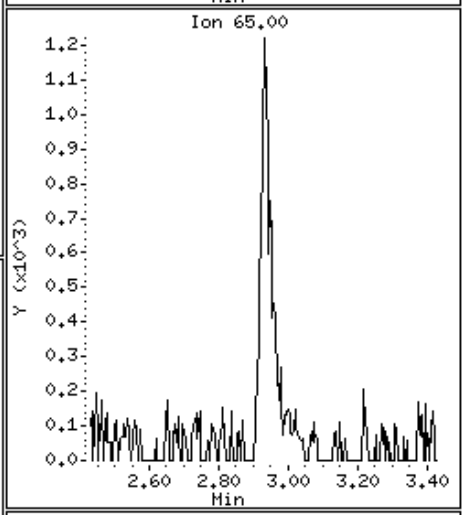


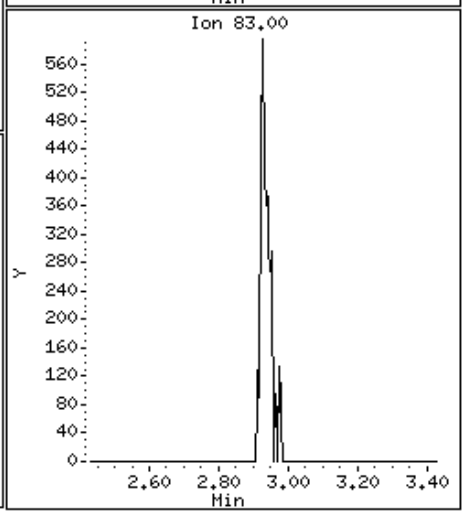












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090319.D

Date : 03-SEP-2022 16:59

Client ID: HS22081514-13

Instrument: voa6.i

Sample Info: HS22081514-13;HS22081514-13;;;

Purge Volume: 5.0

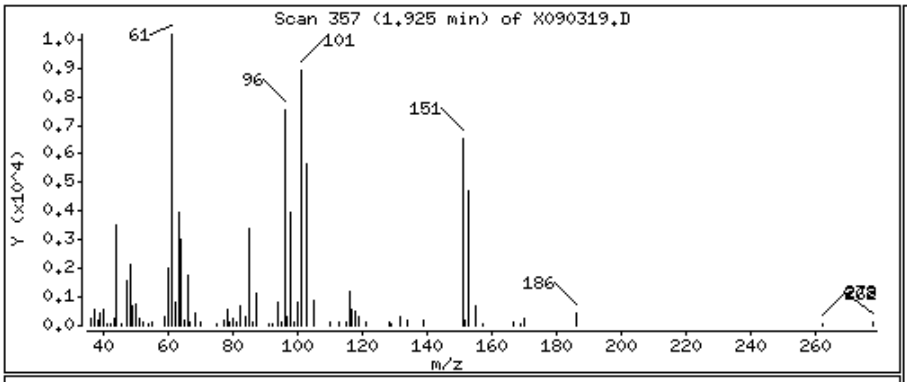
Operator: PC

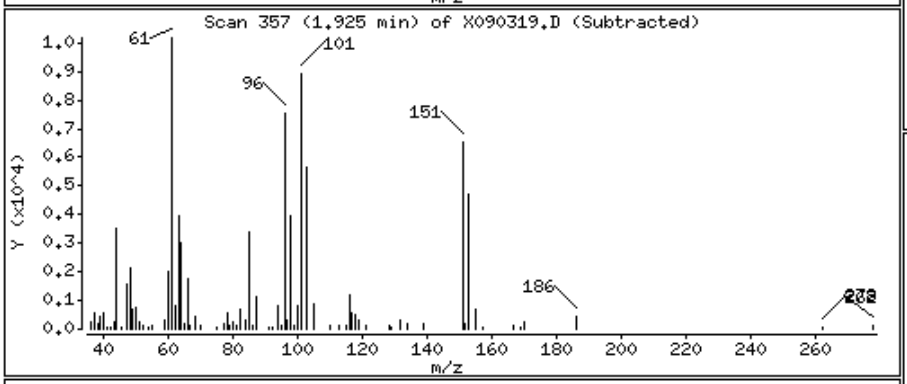
Column phase: DB624

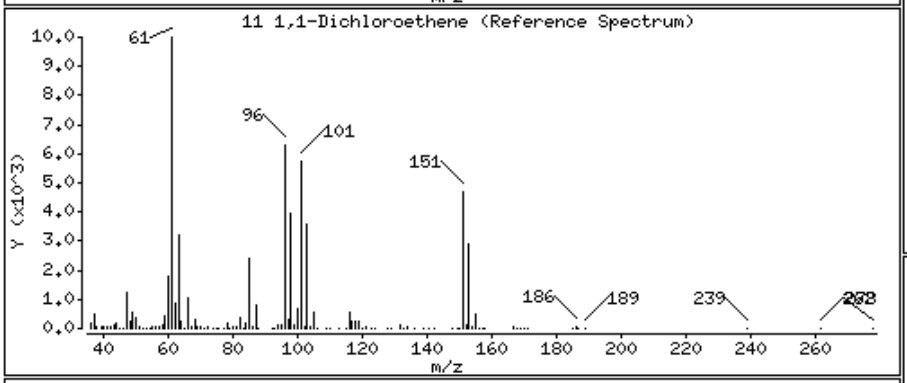
Column diameter: 0.18

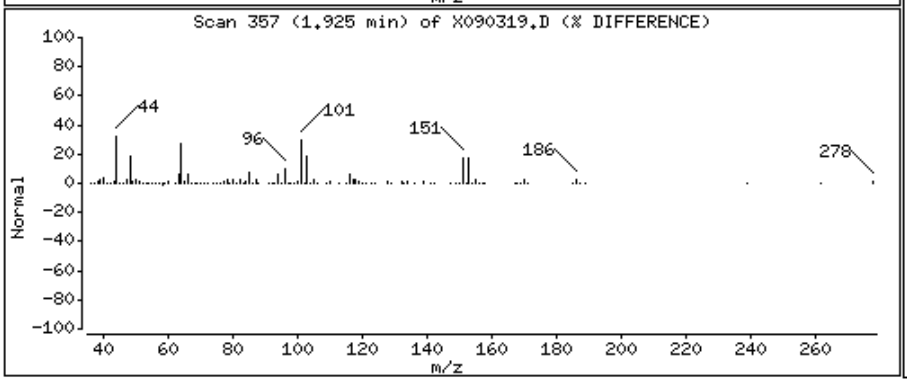
11 1,1-Dichloroethene

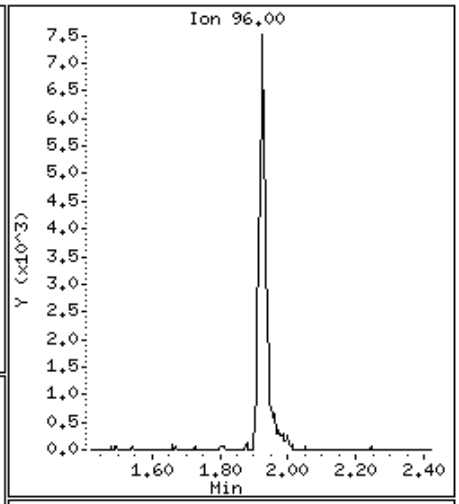
Concentration: 23.98 ug/l

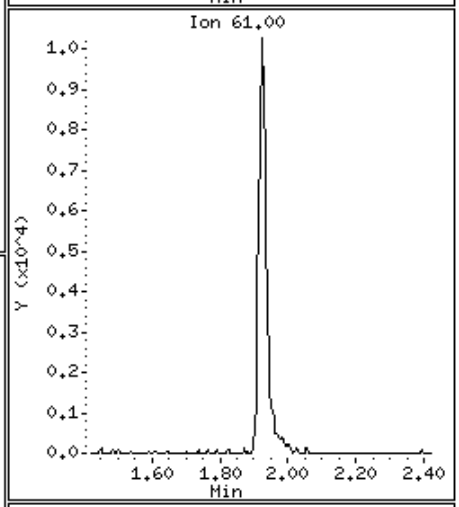


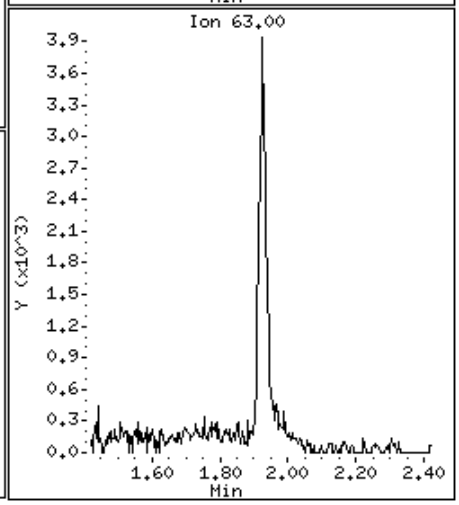












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090319.D

Date : 03-SEP-2022 16:59

Client ID: HS22081514-13

Instrument: voa6.i

Sample Info: HS22081514-13;HS22081514-13;;;

Purge Volume: 5.0

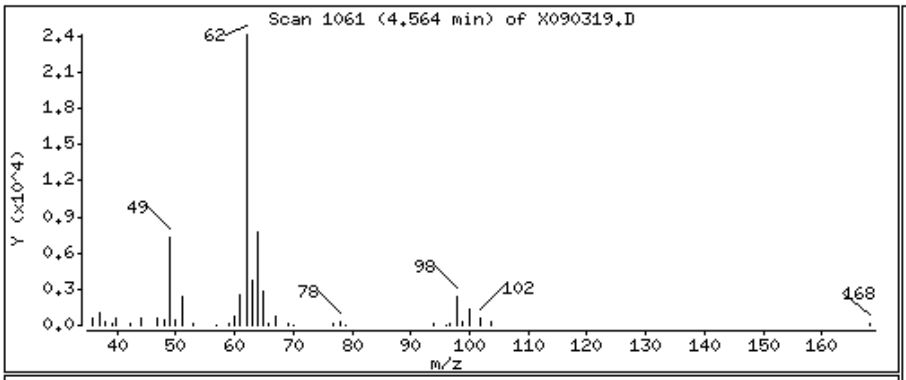
Operator: PC

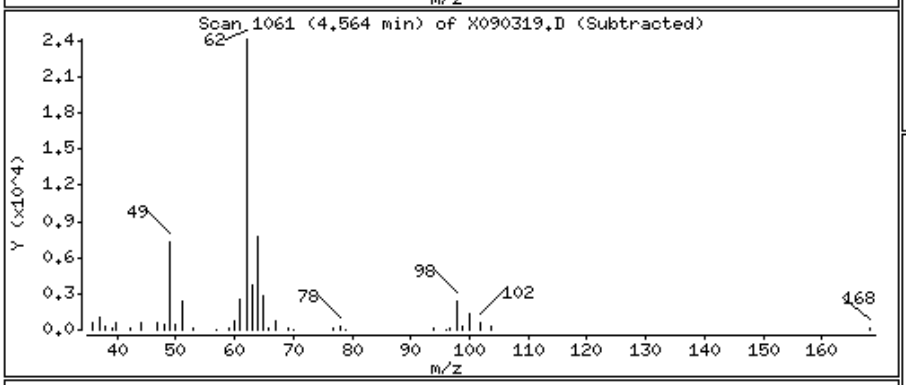
Column phase: DB624

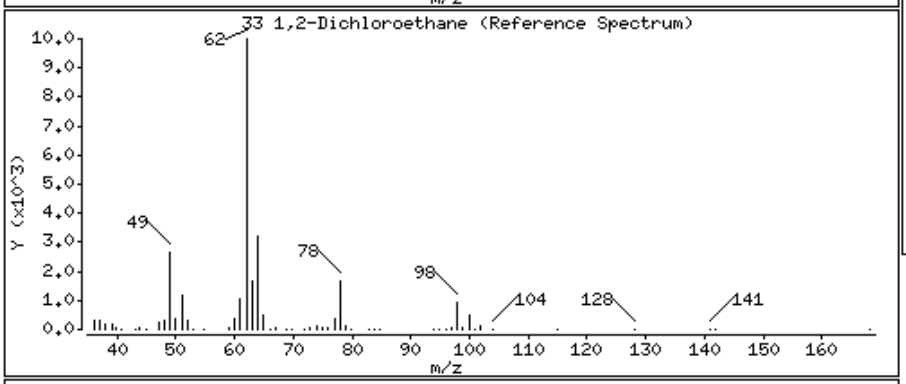
Column diameter: 0.18

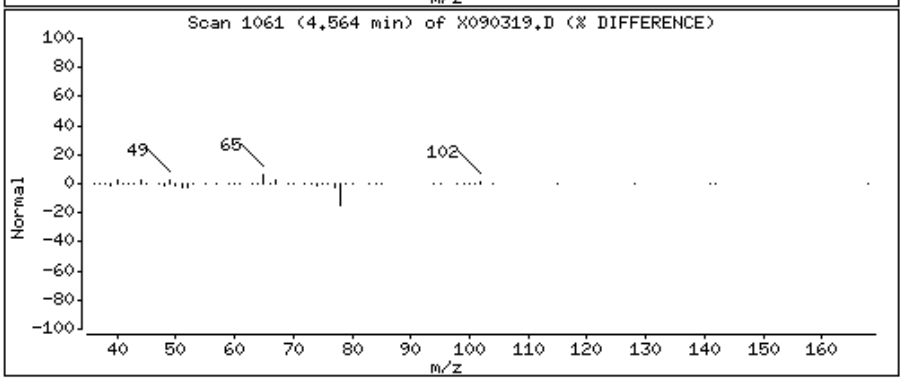
33 1,2-Dichloroethane

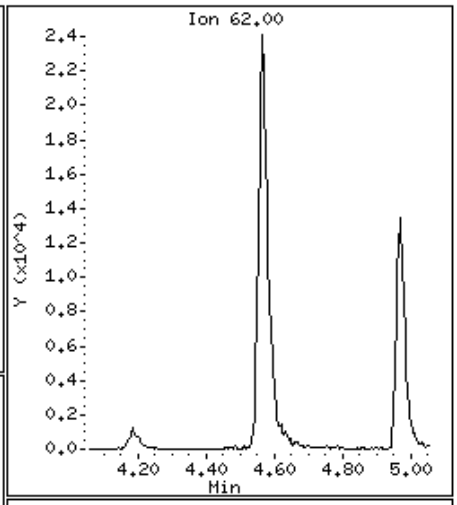
Concentration: 72.01 ug/l

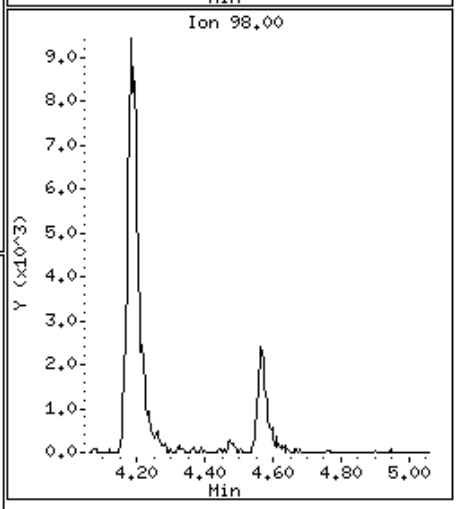












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090319.D Page 5

Date : 03-SEP-2022 16:59

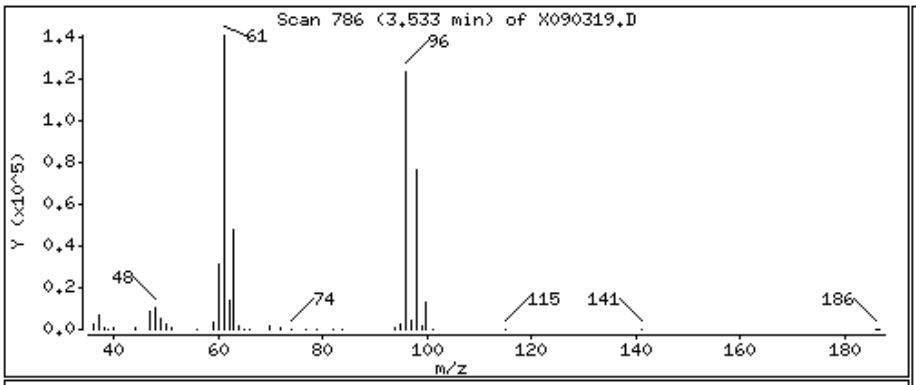
Client ID: HS22081514-13 Instrument: voa6.i

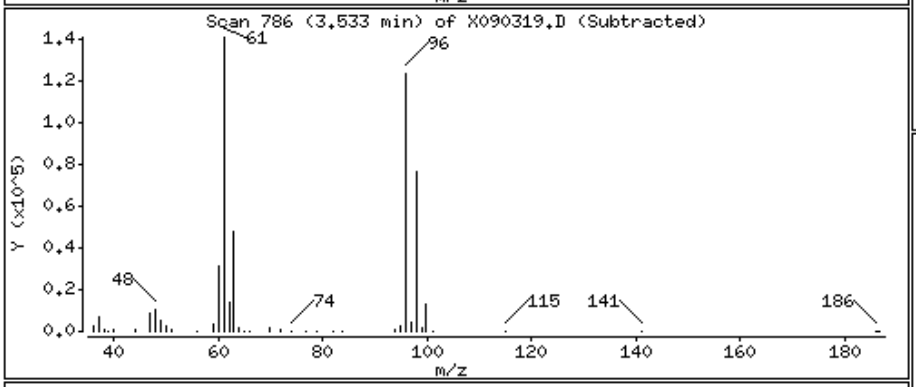
Sample Info: HS22081514-13;HS22081514-13;;;

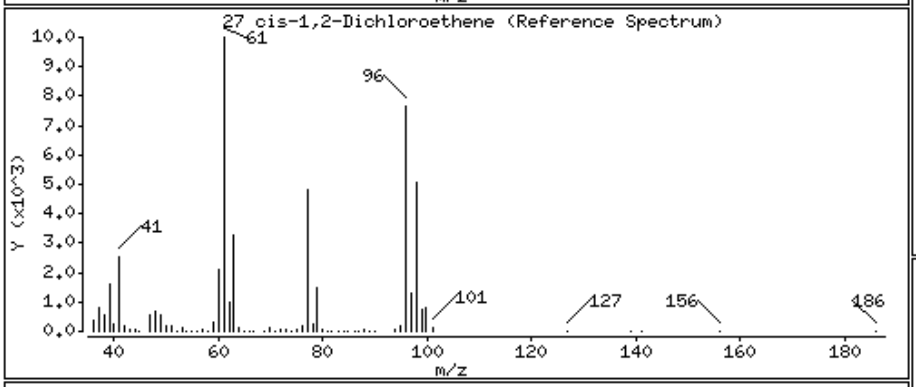
Purge Volume: 5.0 Operator: PC

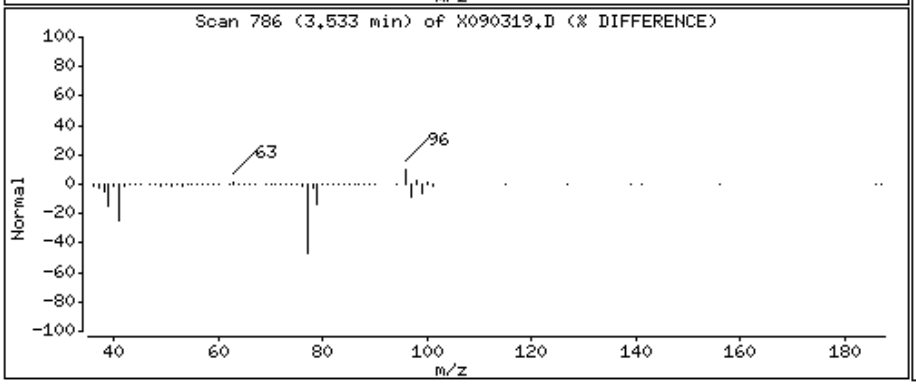
Column phase: DB624 Column diameter: 0.18

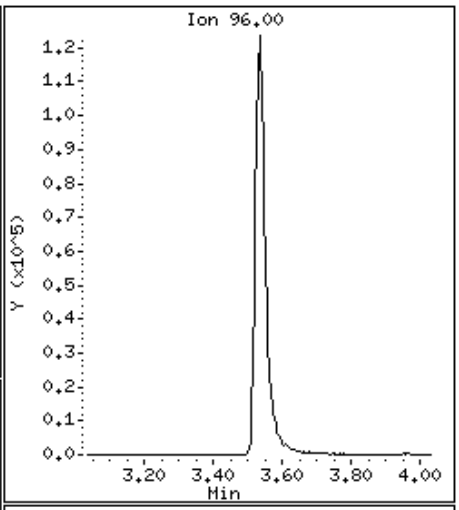
27 cis-1,2-Dichloroethene Concentration: 472.51 ug/l

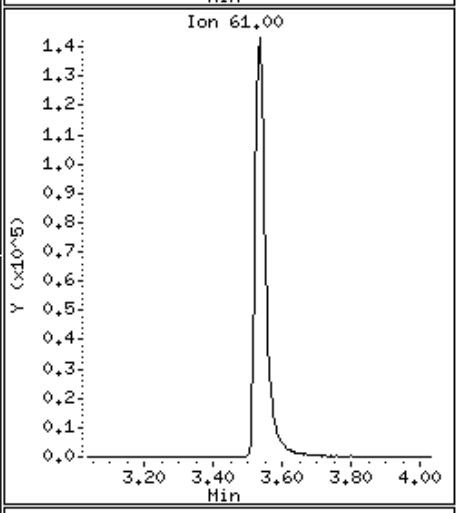


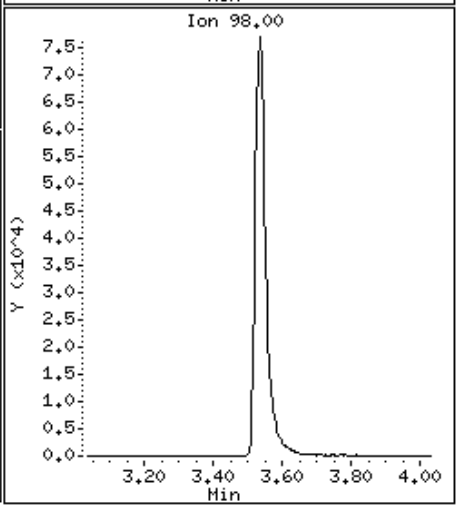












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090319.D

Date : 03-SEP-2022 16:59

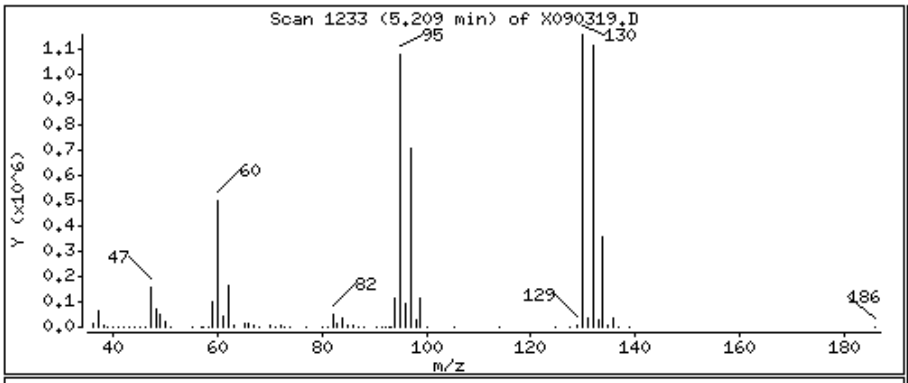
Client ID: HS22081514-13 Instrument: voa6.i

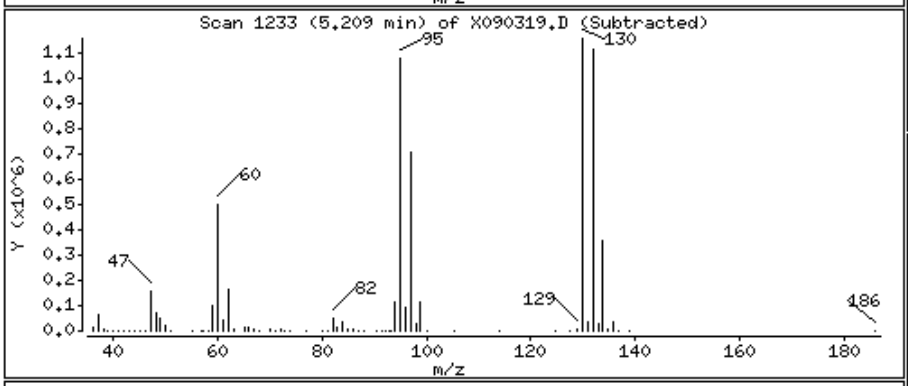
Sample Info: HS22081514-13;HS22081514-13;;;

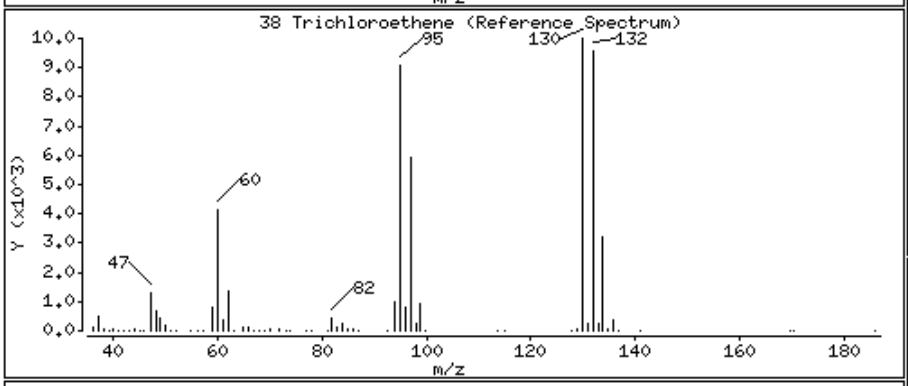
Purge Volume: 5.0 Operator: PC

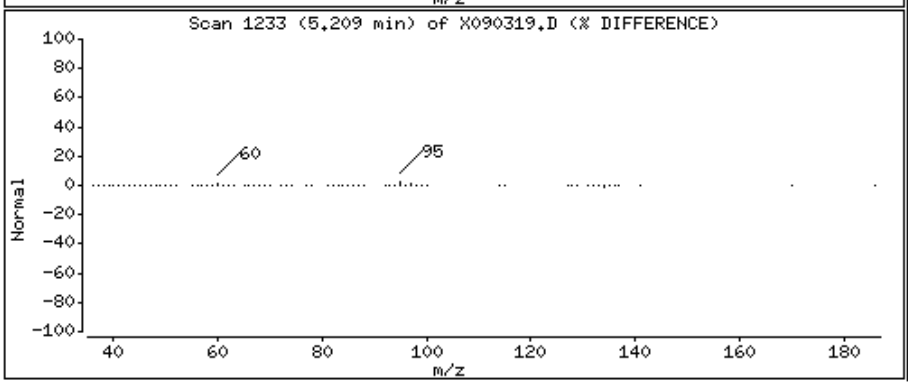
Column phase: DB624 Column diameter: 0.18

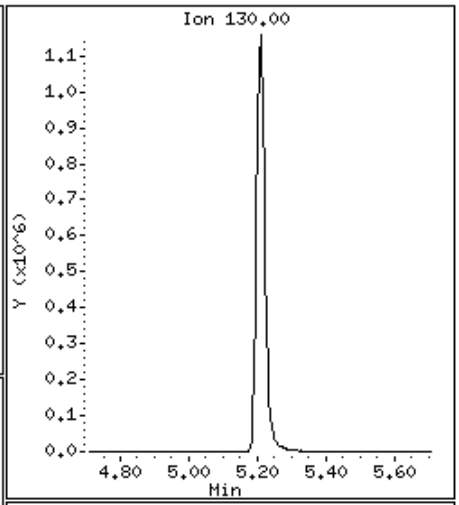
38 Trichloroethene Concentration: 3780.83 ug/l

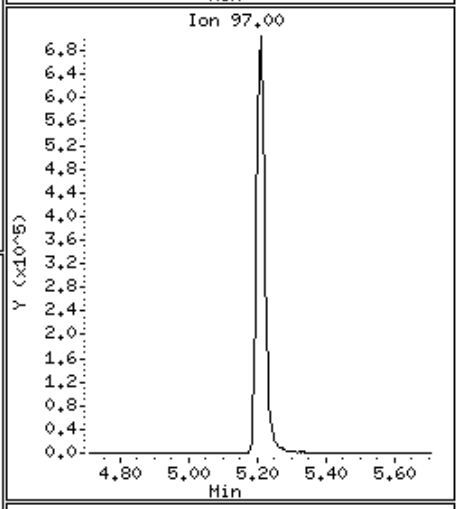


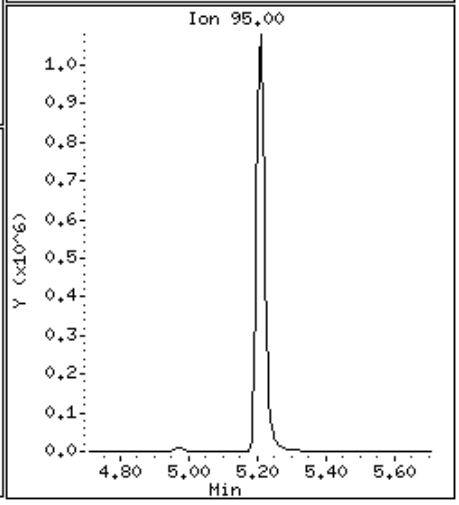












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090319.D Page 7

Date : 03-SEP-2022 16:59

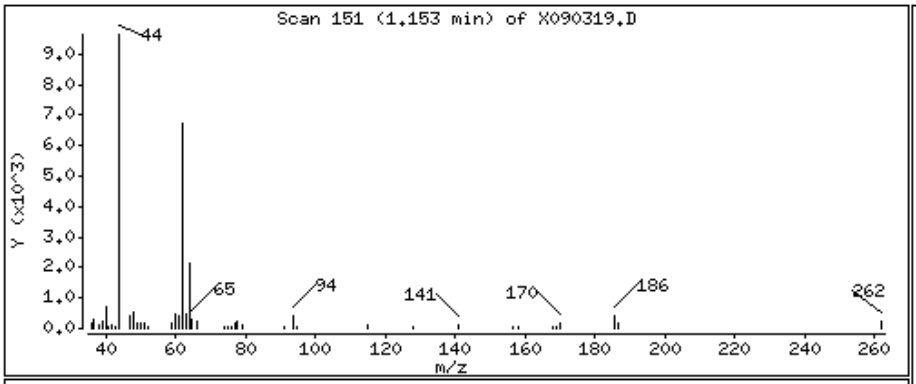
Client ID: HS22081514-13 Instrument: voa6.i

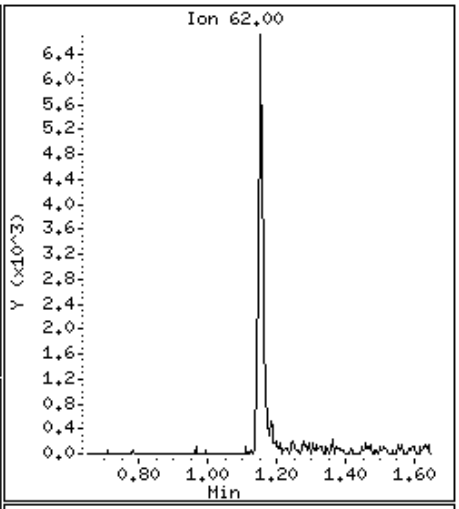
Sample Info: HS22081514-13;HS22081514-13;;;

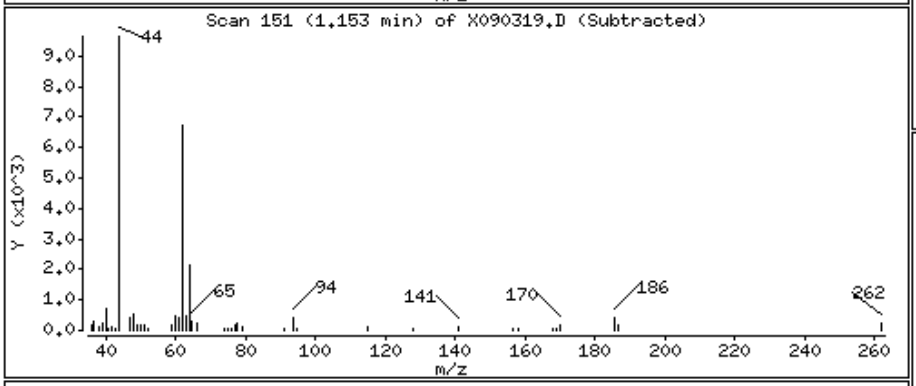
Purge Volume: 5.0 Operator: PC

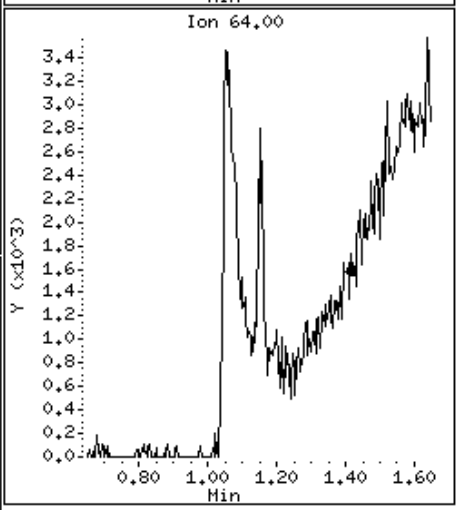
Column phase: DB624 Column diameter: 0.18

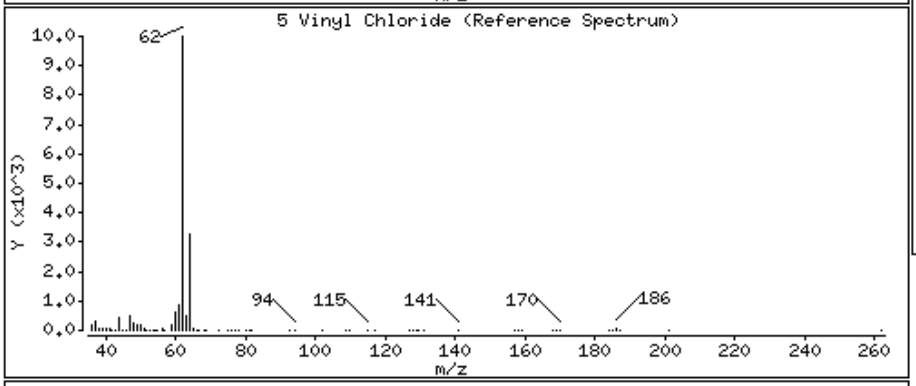
5 Vinyl Chloride Concentration: 11.31 ug/l

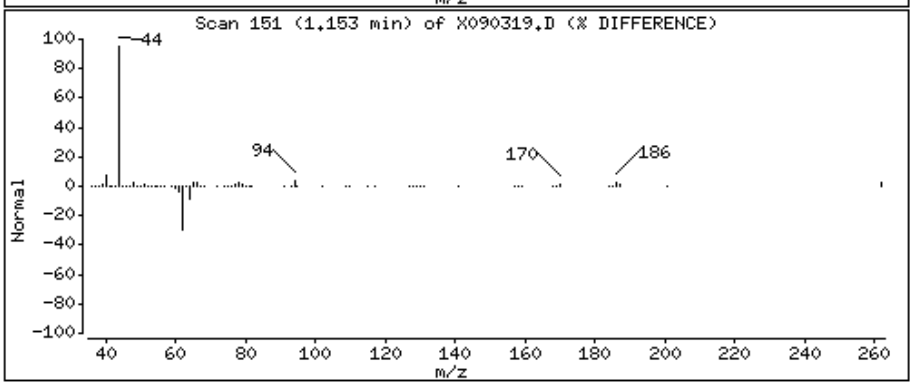












Data File : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090319.D
Inj Date : 03-SEP-2022 16:59
InstruID : voa6.i
LabSampID : HS22081514-13

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090320.D Page 1
Report Date: 09-Sep-2022 16:34

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090320.D
Lab Smp Id: HS22081514-15 Client Smp ID: HS22081514-15
Inj Date : 03-SEP-2022 17:20
Operator : PC Inst ID: voa6.i
Smp Info : HS22081514-15;HS22081514-15;;;
Misc Info : HS22052000V6;WATER;0;10;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\8260W.m
Meth Date : 09-Sep-2022 16:34 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 19
Dil Factor: 10.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7056

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
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	4.185	4.185	(1.000)	561700	50.0000	
* 36 1,4-Difluorobenzene	114	4.968	4.969	(1.000)	771520	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	659928	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.665	9.662	(1.000)	304036	50.0000	
$ 30 Dibromofluoromethane	113	4.102	4.103	(0.980)	245054	46.1771	46.17
$ 35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.069)	267303	46.0195	46.01
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	889139	54.0006	54.00
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	278103	47.1781	47.17
22 1,1-Dichloroethane	63	2.937	2.929	(0.702)	3740	0.43250	4.32(a)
33 1,2-Dichloroethane	62	4.567	4.560	(0.919)	29187	4.31354	43.13(a)
27 cis-1,2-Dichloroethene	96	3.533	3.533	(0.844)	683282	122.357	1223.56
17 Methylene Chloride	84	2.314	2.311	(0.553)	10841	1.26142	12.61(a)
38 Trichloroethene	130	5.208	5.209	(1.048)	1106136	204.249	2042.49(A)
5 Vinyl Chloride	62	1.152	1.152	(0.275)	32361	5.49430	54.94

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.

01148341

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090320.D

Page 1

Date : 03-SEP-2022 17:20

Client ID: HS22081514-15

Instrument: voa6.i

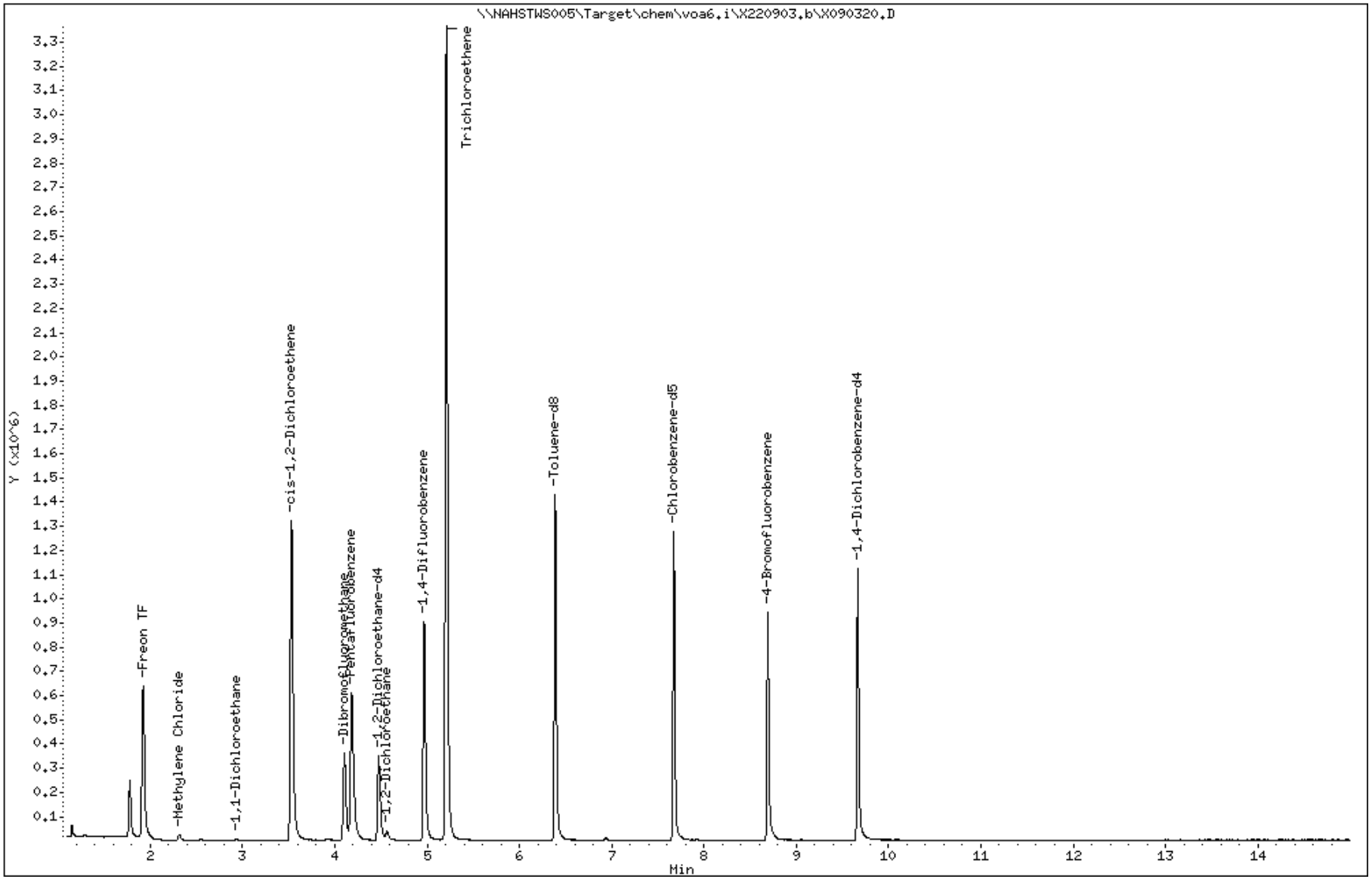
Sample Info: HS22081514-15;HS22081514-15;;;

Purge Volume: 5.0

Operator: PC

Column phase: DB624

Column diameter: 0.18



Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090320.D

Date : 03-SEP-2022 17:20

Client ID: HS22081514-15

Instrument: voa6.i

Sample Info: HS22081514-15;HS22081514-15;;;

Purge Volume: 5.0

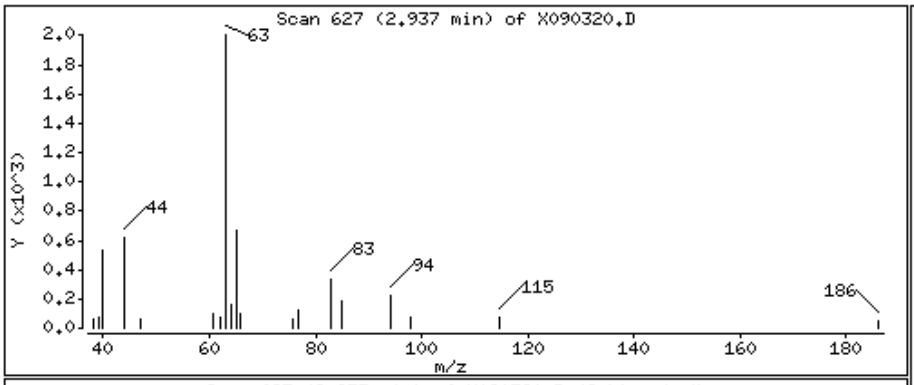
Operator: PC

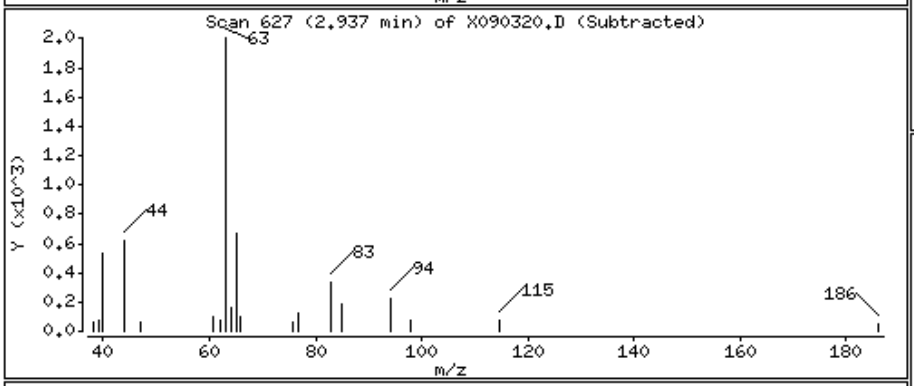
Column phase: DB624

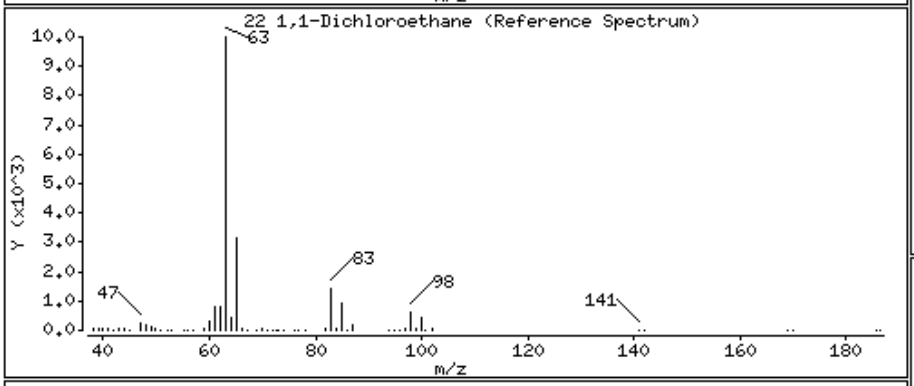
Column diameter: 0.18

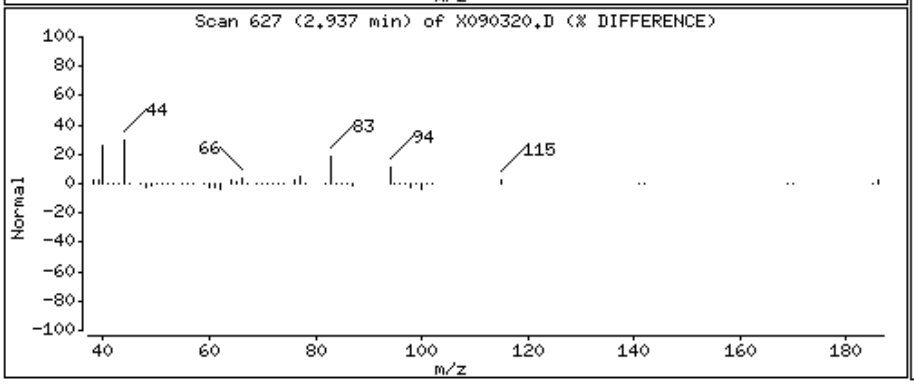
22 1,1-Dichloroethane

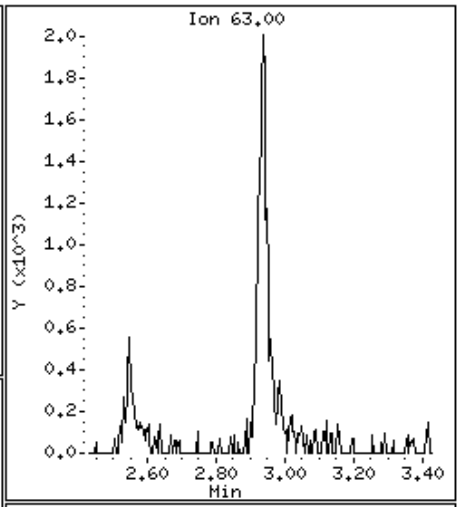
Concentration: 4.32 ug/l

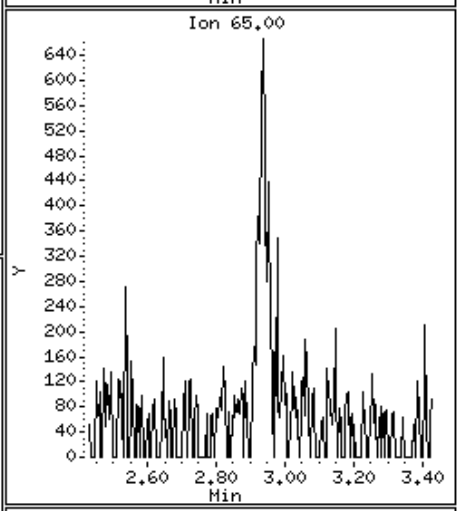


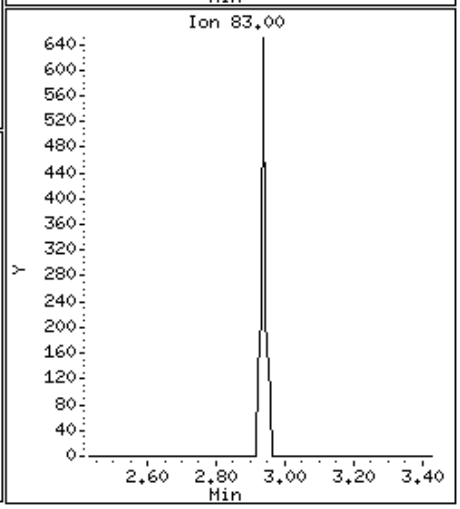












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090320.D

Date : 03-SEP-2022 17:20

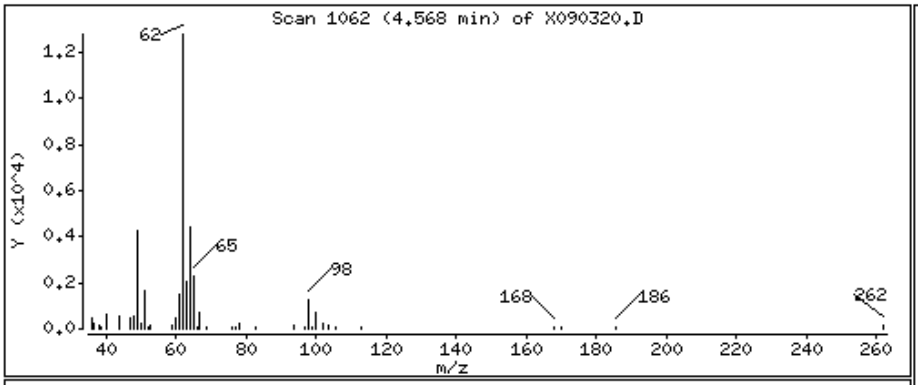
Client ID: HS22081514-15 Instrument: voa6.i

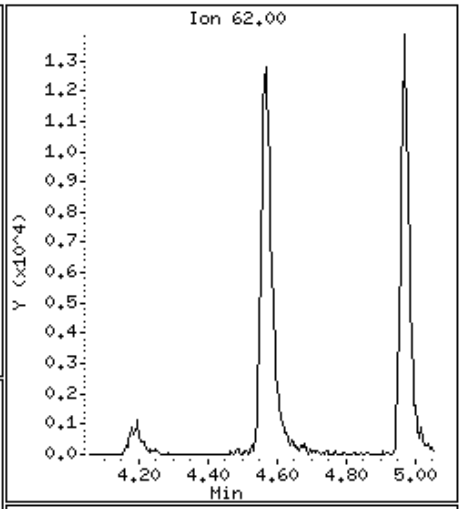
Sample Info: HS22081514-15;HS22081514-15;;;

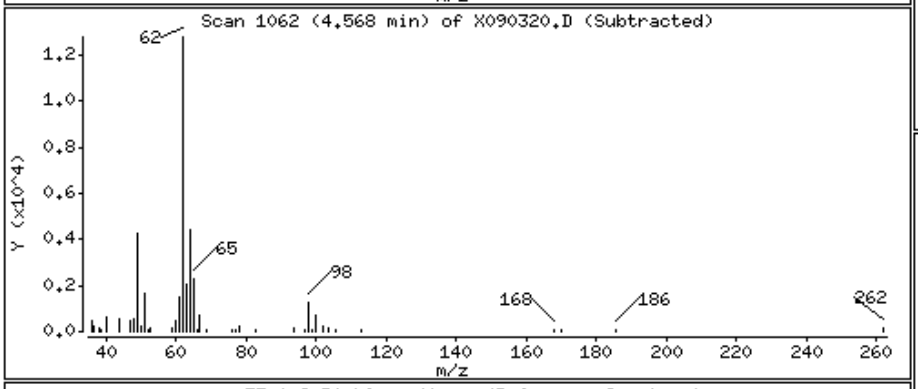
Purge Volume: 5.0 Operator: PC

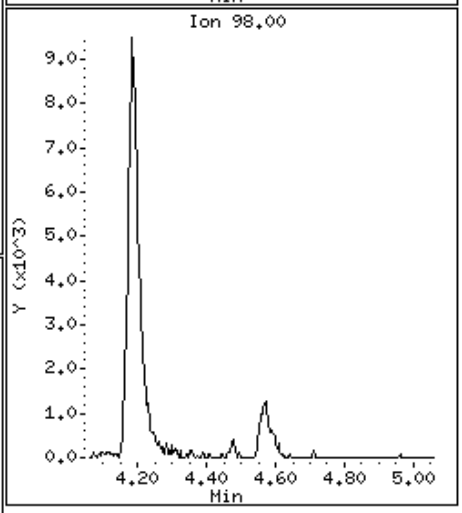
Column phase: DB624 Column diameter: 0.18

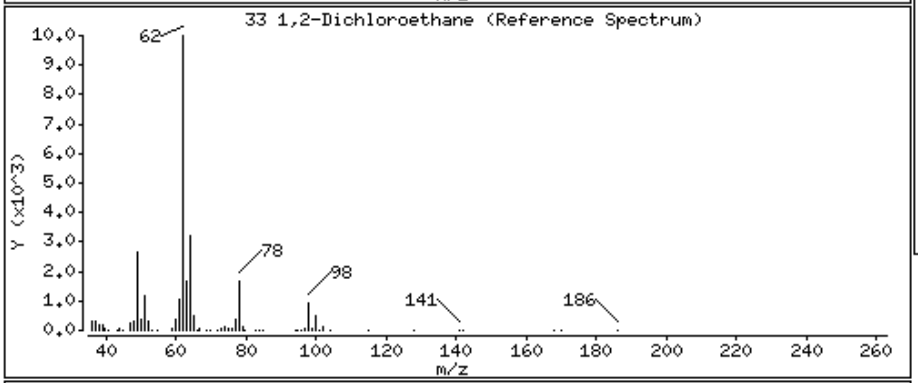
33 1,2-Dichloroethane Concentration: 43.13 ug/l

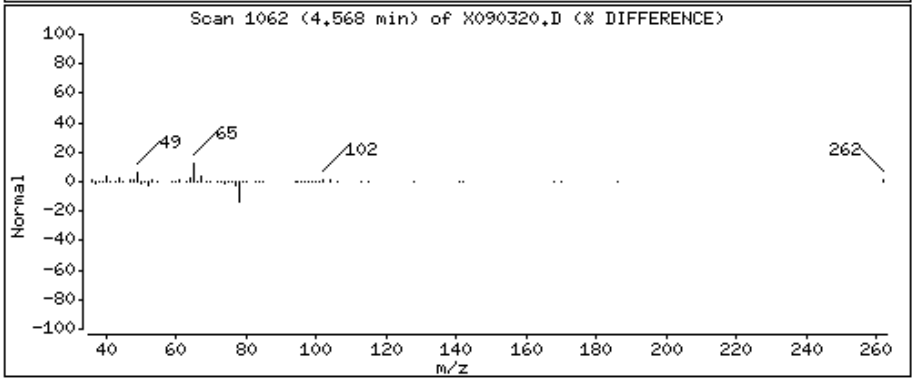












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090320.D

Date : 03-SEP-2022 17:20

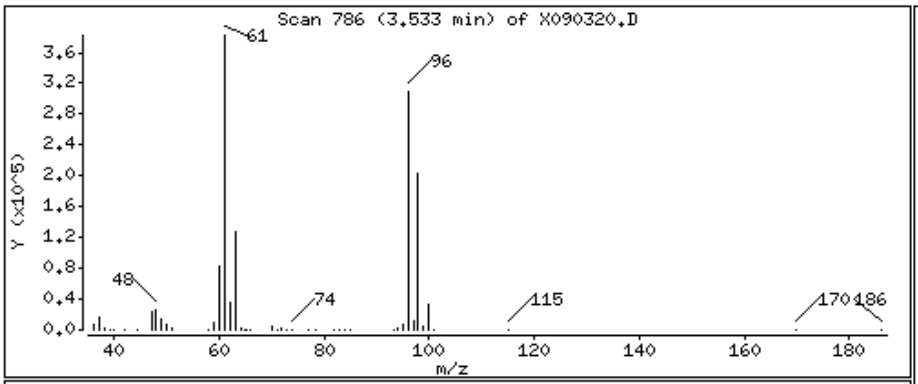
Client ID: HS22081514-15 Instrument: voa6.i

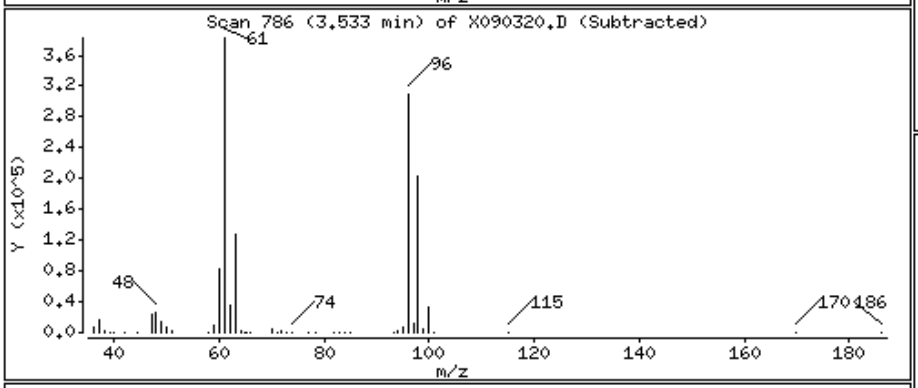
Sample Info: HS22081514-15;HS22081514-15;;;

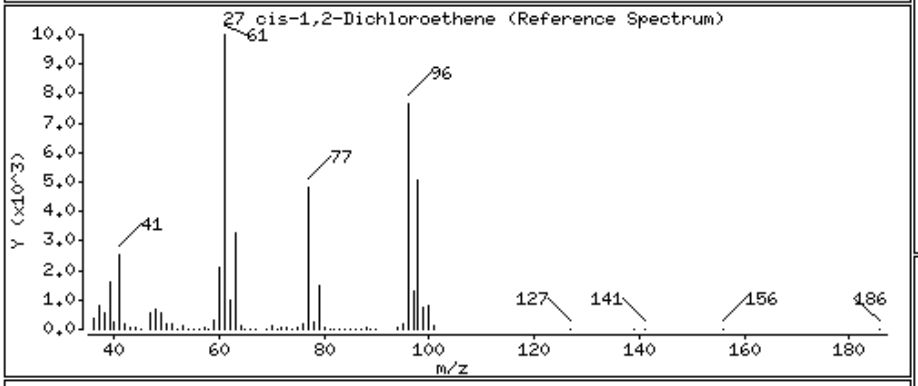
Purge Volume: 5.0 Operator: PC

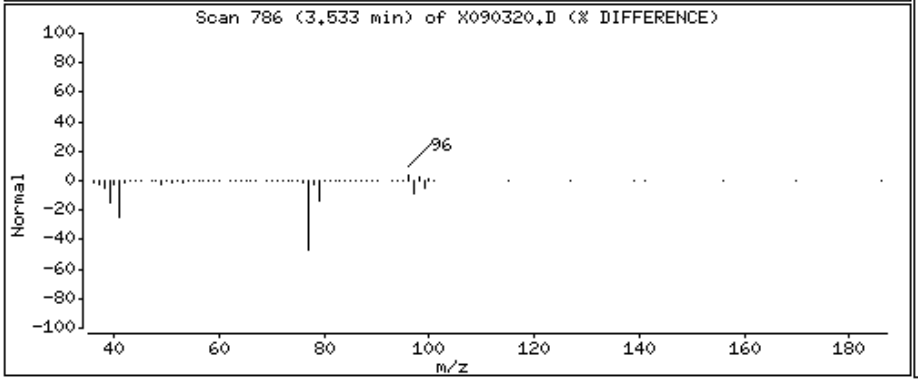
Column phase: DB624 Column diameter: 0.18

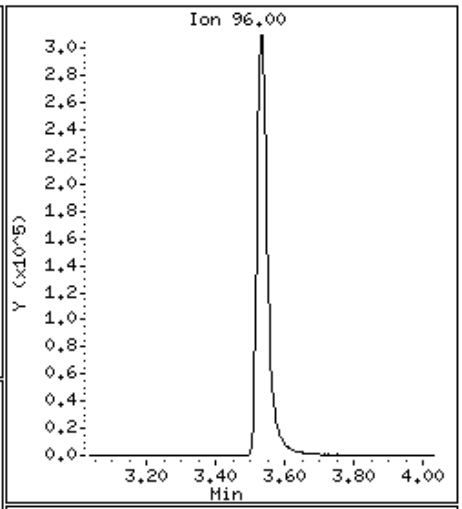
27 cis-1,2-Dichloroethene Concentration: 1223.56 ug/l

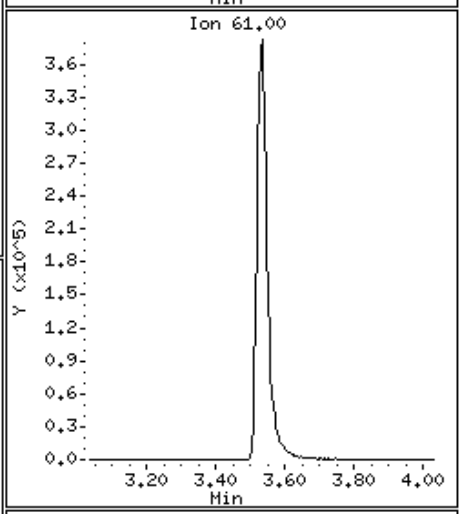


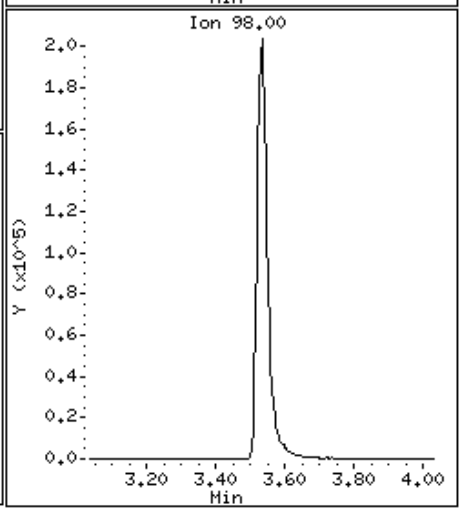












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090320.D Page 5

Date : 03-SEP-2022 17:20

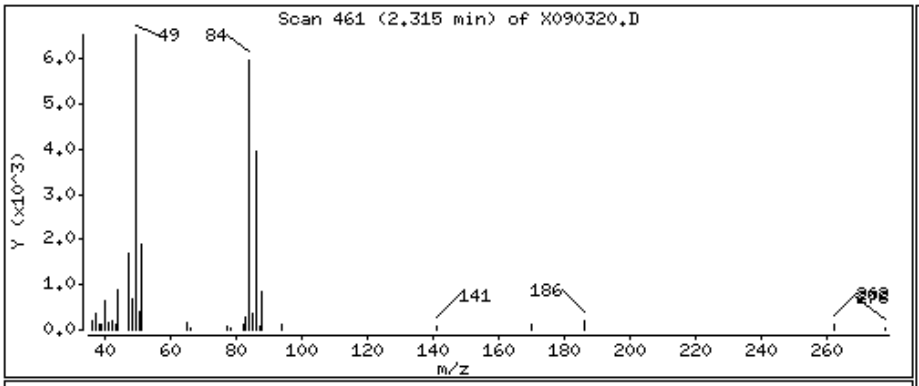
Client ID: HS22081514-15 Instrument: voa6.i

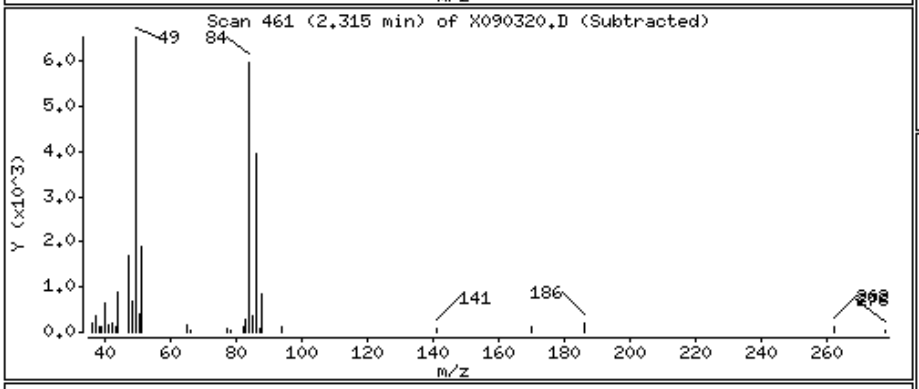
Sample Info: HS22081514-15;HS22081514-15;;;

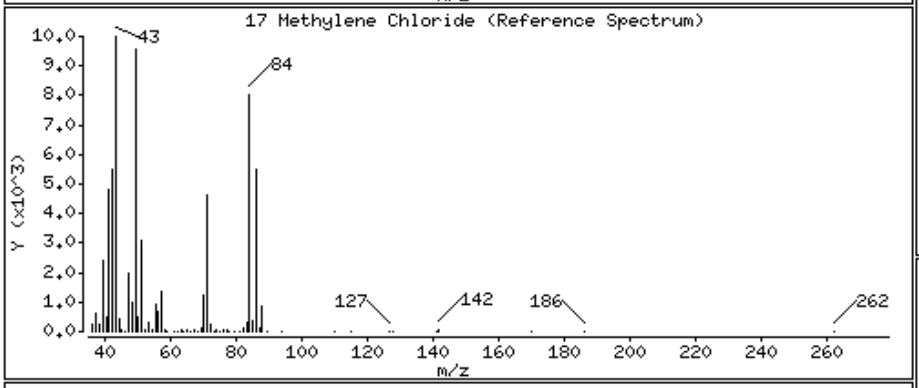
Purge Volume: 5.0 Operator: PC

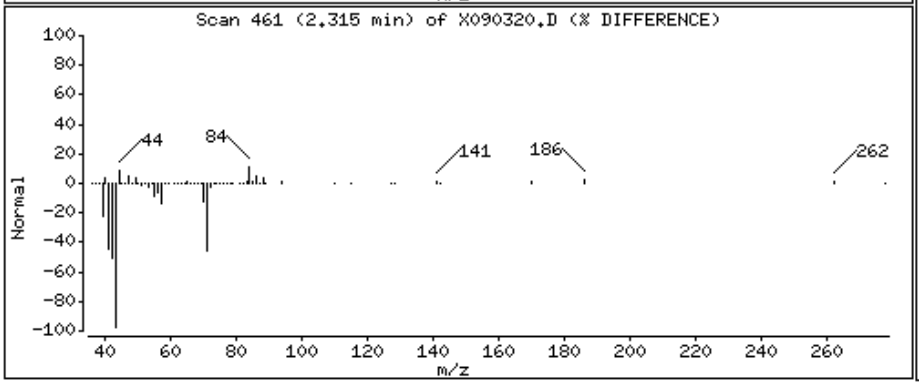
Column phase: DB624 Column diameter: 0.18

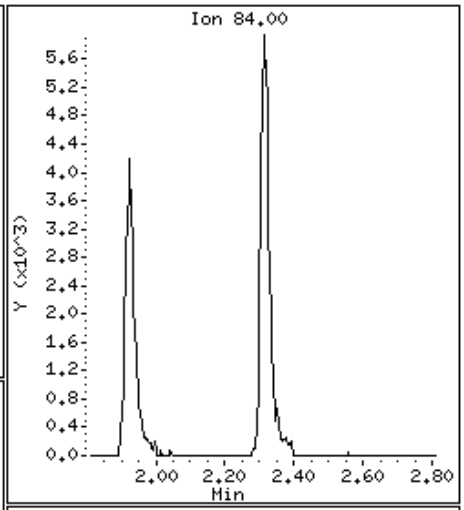
17 Methylene Chloride Concentration: 12.61 ug/l

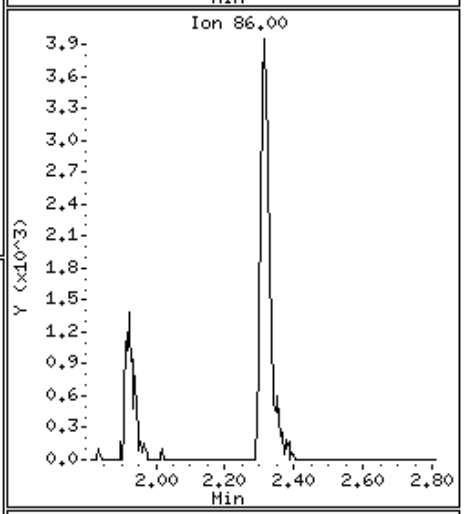


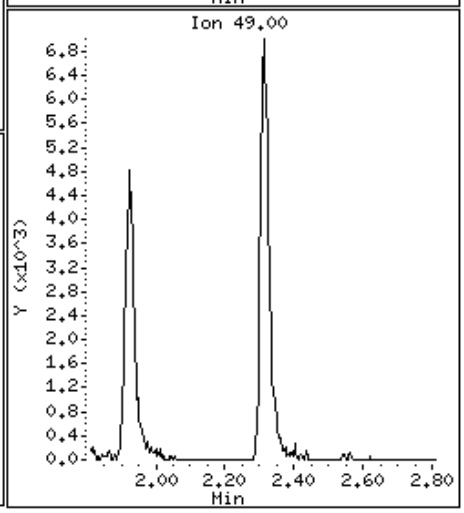












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090320.D Page 6

Date : 03-SEP-2022 17:20

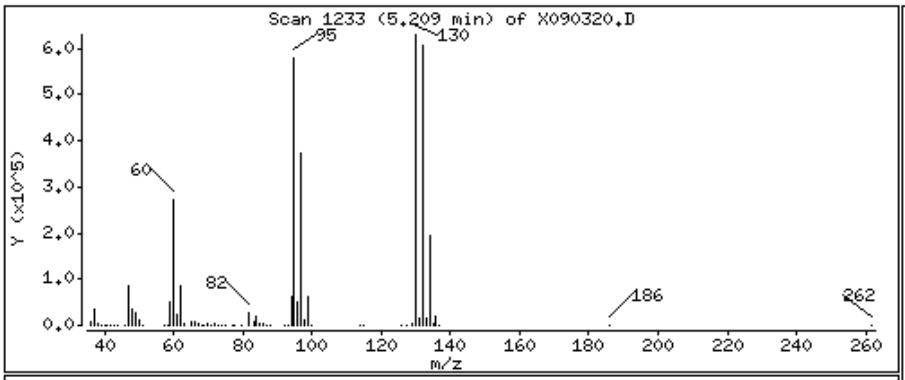
Client ID: HS22081514-15 Instrument: voa6.i

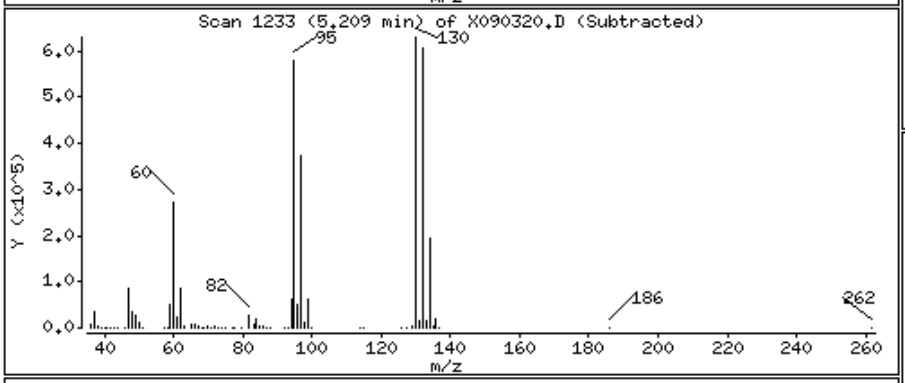
Sample Info: HS22081514-15;HS22081514-15;;;

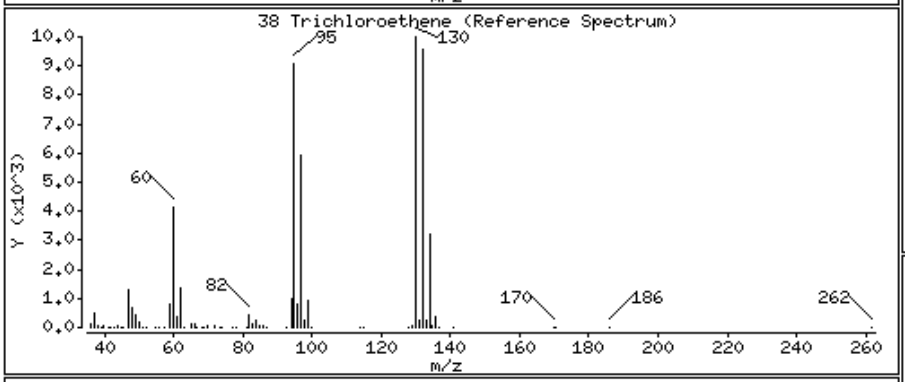
Purge Volume: 5.0 Operator: PC

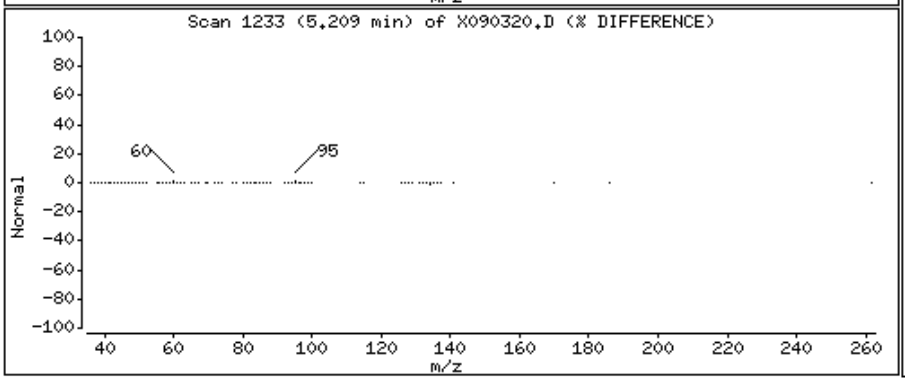
Column phase: DB624 Column diameter: 0.18

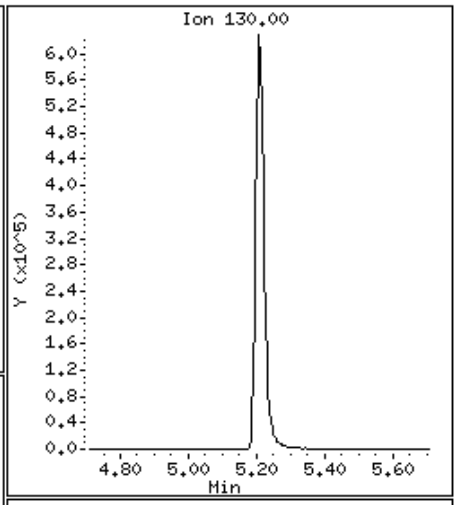
38 Trichloroethene Concentration: 2042.49 ug/l

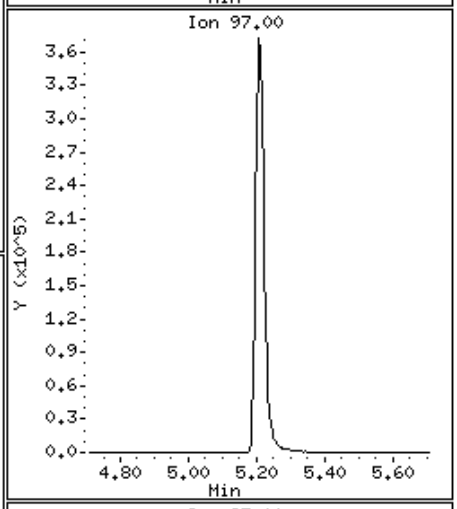


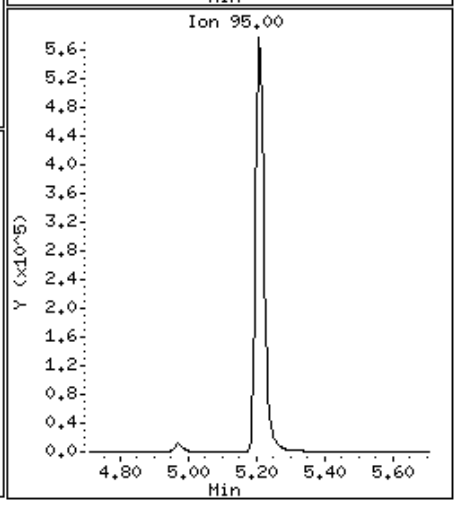












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090320.D Page 7

Date : 03-SEP-2022 17:20

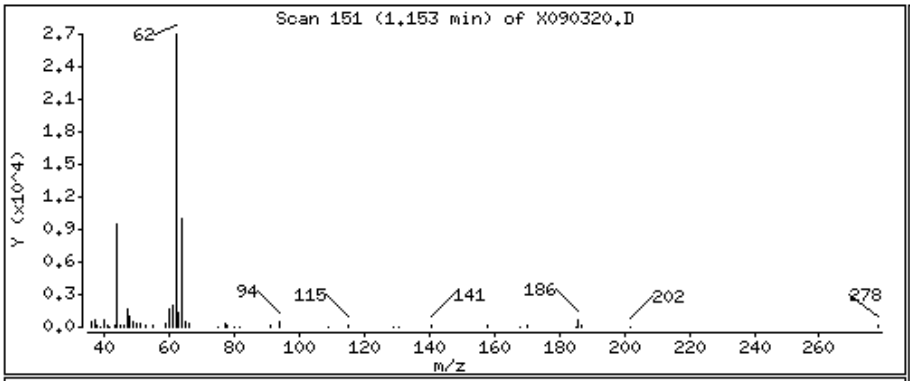
Client ID: HS22081514-15 Instrument: voa6.i

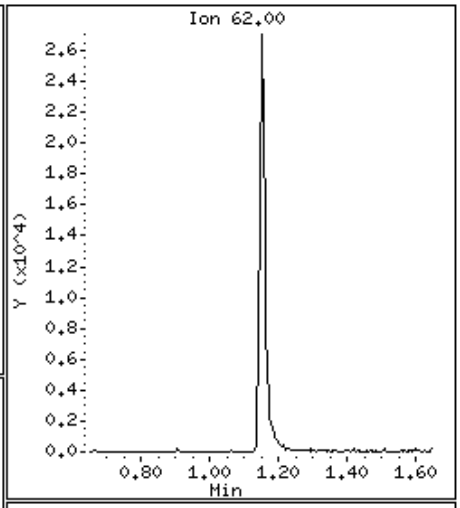
Sample Info: HS22081514-15;HS22081514-15;;;

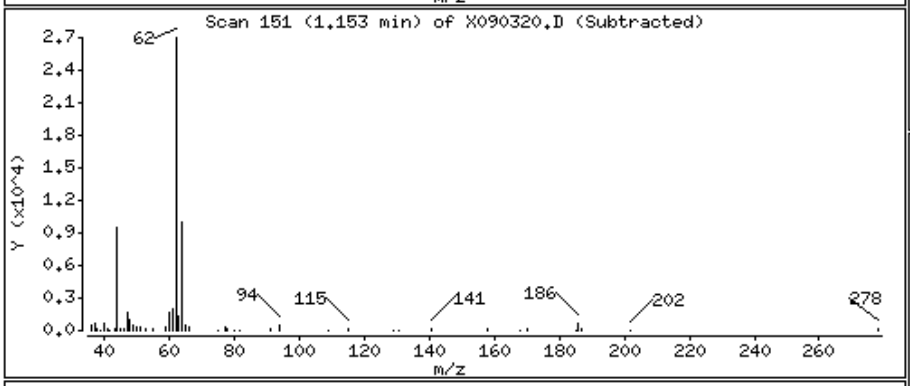
Purge Volume: 5.0 Operator: PC

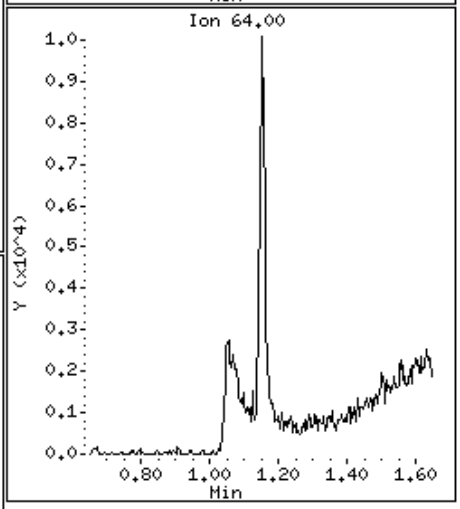
Column phase: DB624 Column diameter: 0.18

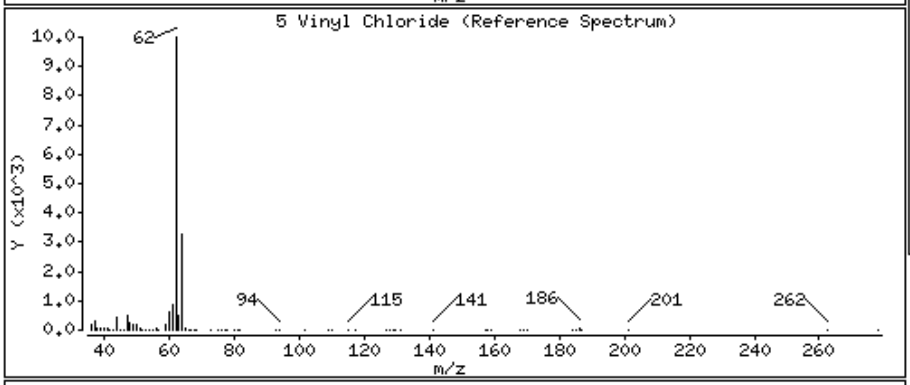
5 Vinyl Chloride Concentration: 54.94 ug/l

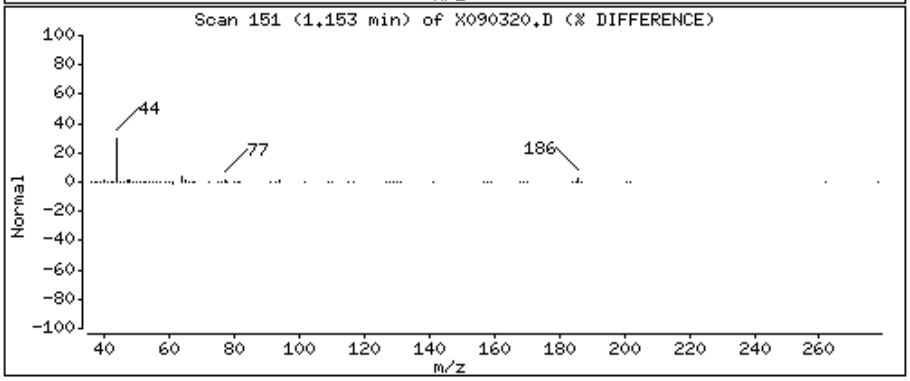












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Inj Date : 03-SEP-2022 17:20
InstruID : voa6.i
LabSampID : HS22081514-15

NO MANUAL INTEGRATIONS

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090321.D
Lab Smp Id: HS22081514-23 Client Smp ID: HS22081514-23
Inj Date : 03-SEP-2022 17:41
Operator : PC Inst ID: voa6.i
Smp Info : HS22081514-23;HS22081514-23;;;
Misc Info : HS22052000V6;WATER;0;10;
Comment :
Method : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\8260W.m
Meth Date : 09-Sep-2022 16:34 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 20
Dil Factor: 10.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7056

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
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	4.185	4.185	(1.000)	562899	50.0000	
* 36 1,4-Difluorobenzene	114	4.969	4.969	(1.000)	774088	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	652266	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.662	(1.000)	285700	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.980)	245006	46.0680	46.06
$ 35 1,2-Dichloroethane-d4	65	4.478	4.474	(1.070)	264573	45.4485	45.44
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	898877	55.2333	55.23
$ 69 4-Bromofluorobenzene	95	8.695	8.691	(1.133)	269202	46.1876	46.18
27 cis-1,2-Dichloroethene	96	3.540	3.533	(0.846)	15066	2.69215	26.92(a)
38 Trichloroethene	130	5.209	5.209	(1.048)	689612	126.915	1269.15

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).

01148350

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090321.D

Date : 03-SEP-2022 17:41

Client ID: HS22081514-23

Instrument: voa6.i

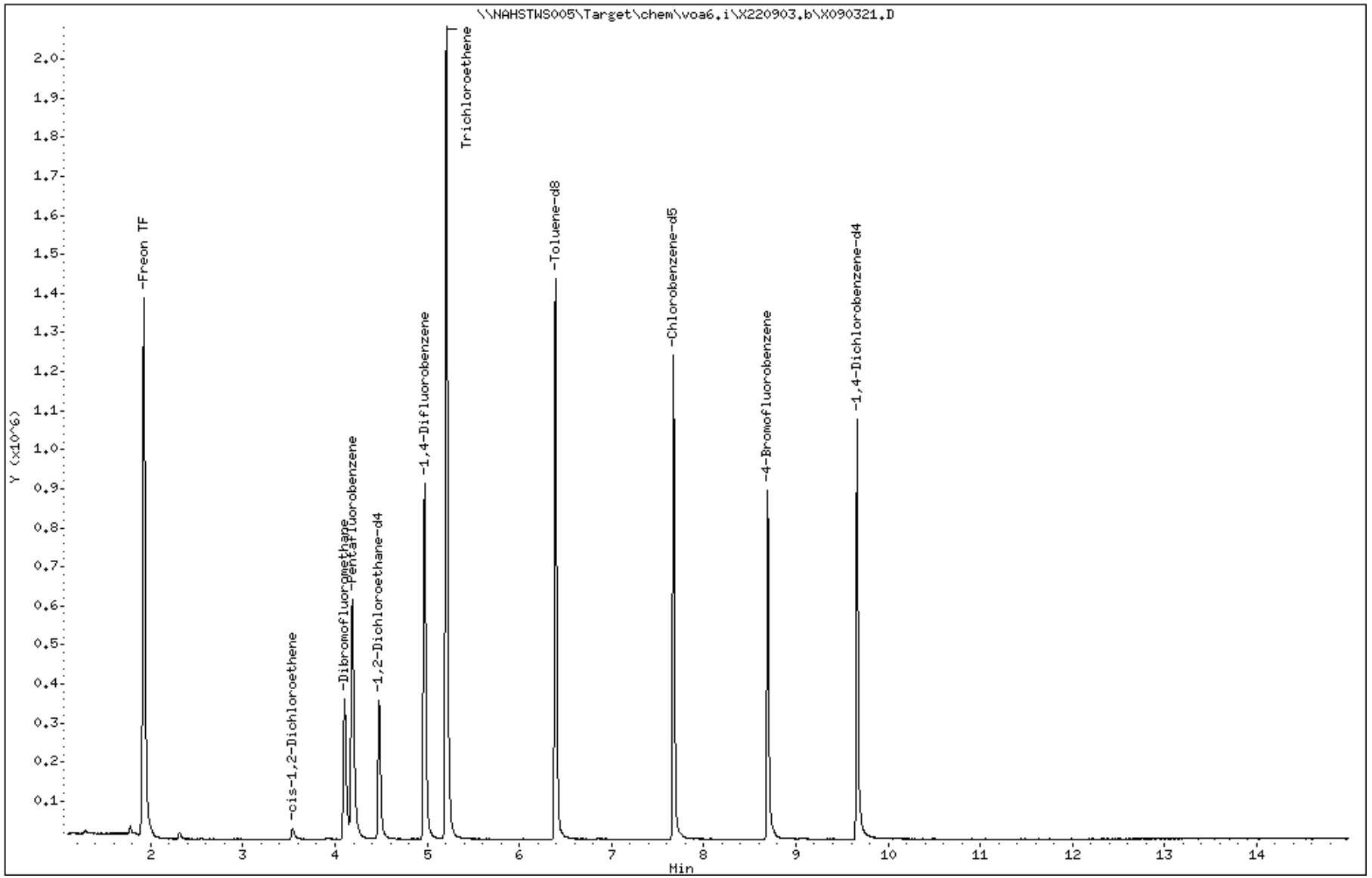
Sample Info: HS22081514-23;HS22081514-23;;;

Purge Volume: 5.0

Operator: PC

Column phase: DB624

Column diameter: 0.18



Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090321.D Page 2

Date : 03-SEP-2022 17:41

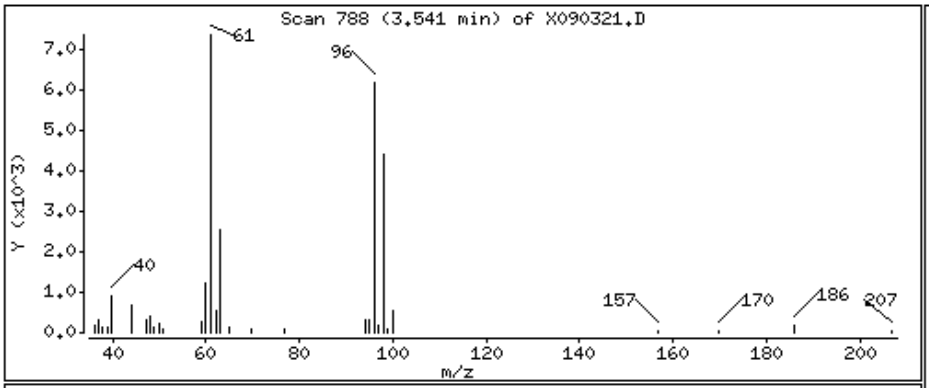
Client ID: HS22081514-23 Instrument: voa6.i

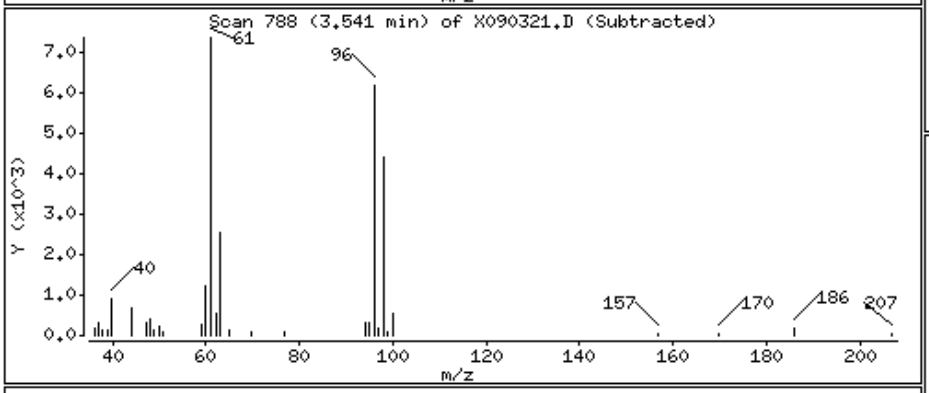
Sample Info: HS22081514-23;HS22081514-23;;;

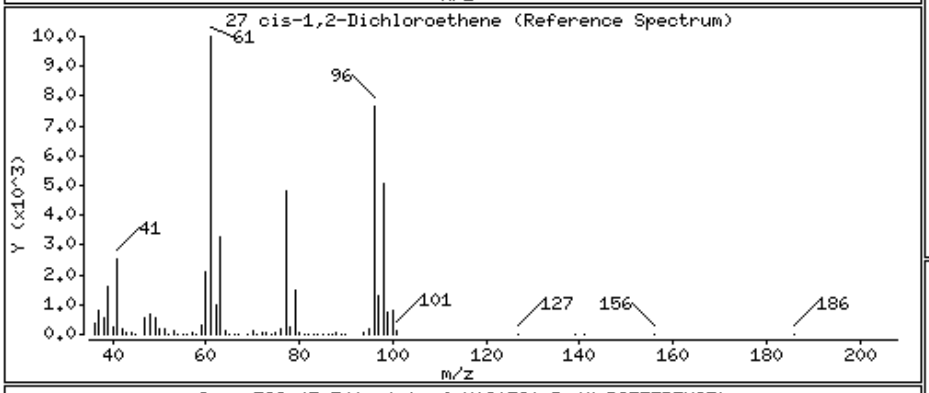
Purge Volume: 5.0 Operator: PC

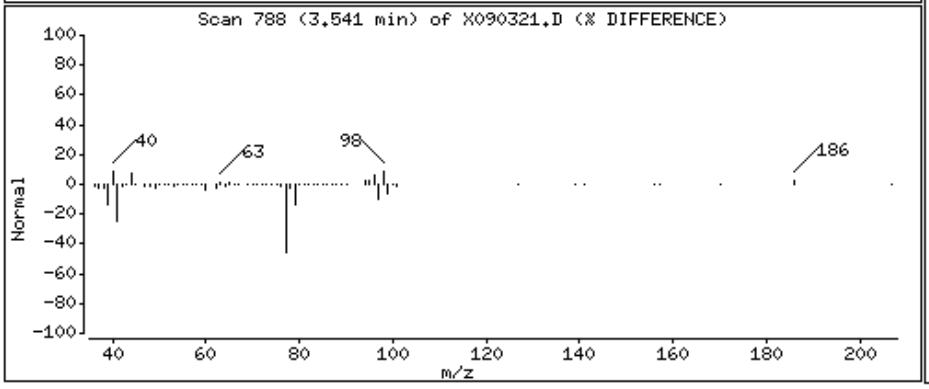
Column phase: DB624 Column diameter: 0.18

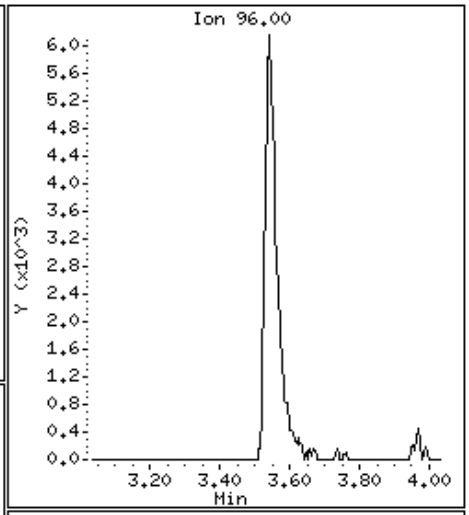
27 cis-1,2-Dichloroethene Concentration: 26.92 ug/l

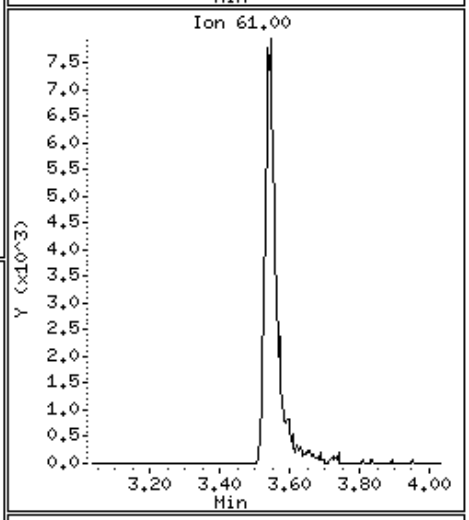


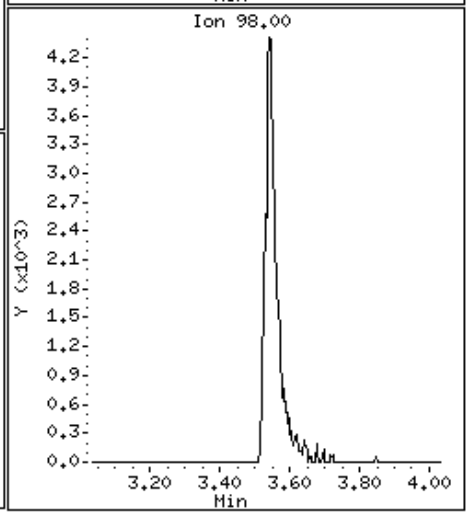












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090321.D Page 3

Date : 03-SEP-2022 17:41

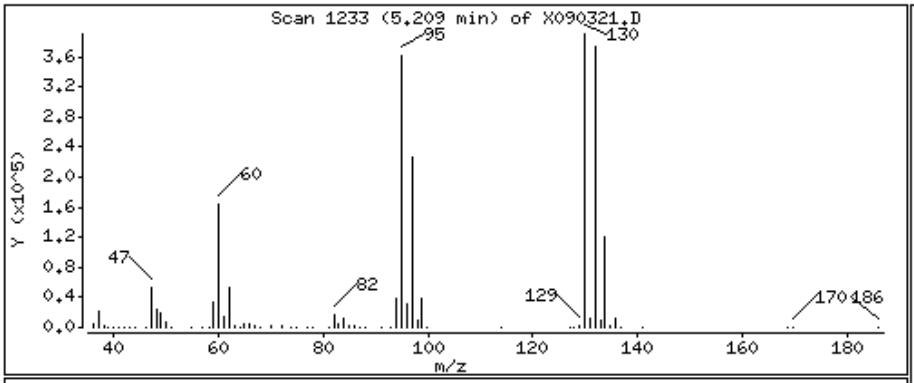
Client ID: HS22081514-23 Instrument: voa6.i

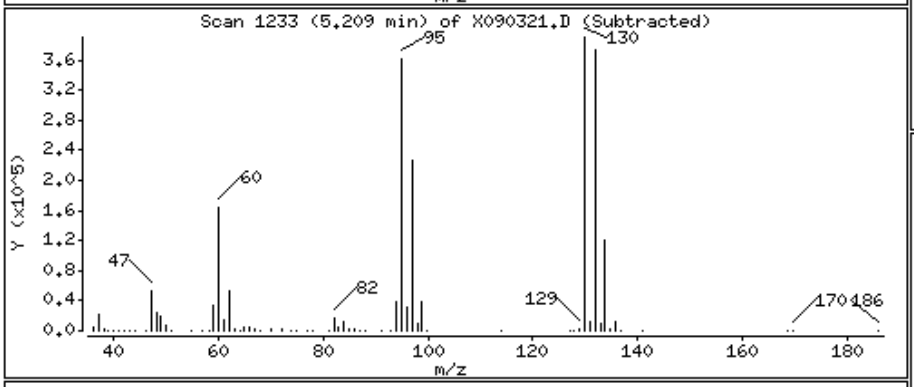
Sample Info: HS22081514-23;HS22081514-23;;;

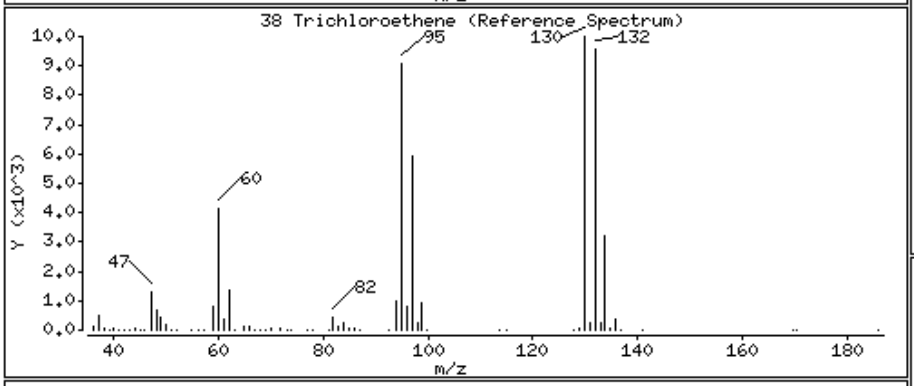
Purge Volume: 5.0 Operator: PC

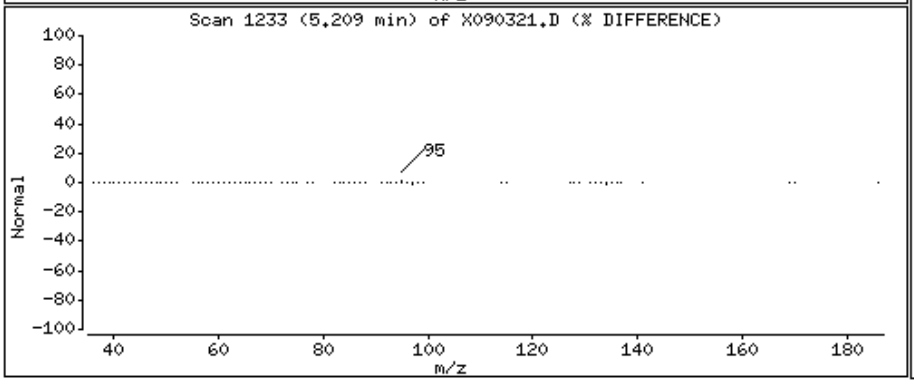
Column phase: DB624 Column diameter: 0.18

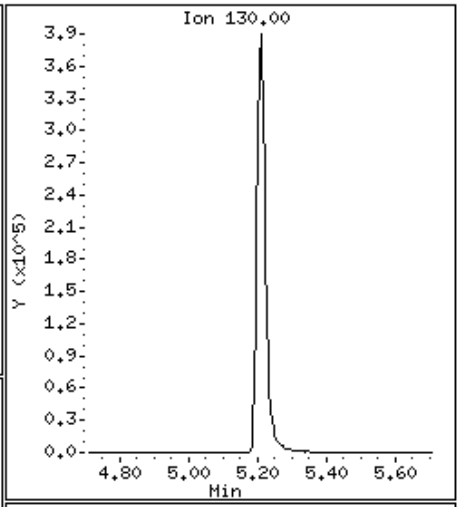
38 Trichloroethene Concentration: 1269.15 ug/l

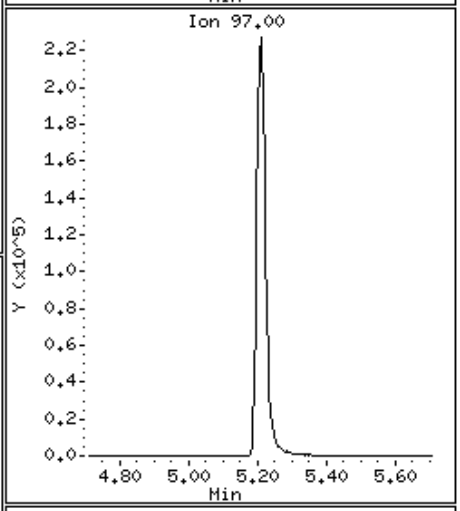


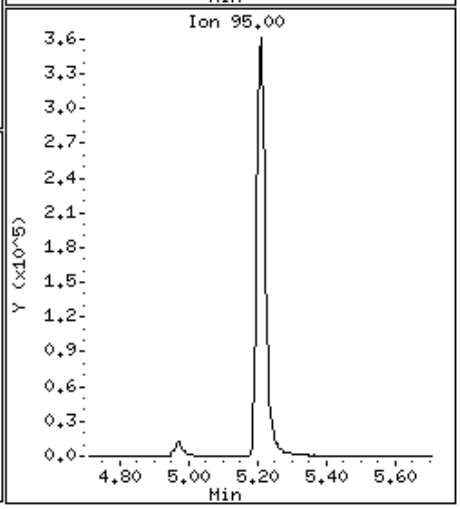












Data File : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090321.D
Inj Date : 03-SEP-2022 17:41
InstruID : voa6.i
LabSampID : HS22081514-23

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090322.D Page 1
Report Date: 09-Sep-2022 16:34

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090322.D
Lab Smp Id: HS22081514-21 Client Smp ID: HS22081514-21
Inj Date : 03-SEP-2022 18:02
Operator : PC Inst ID: voa6.i
Smp Info : HS22081514-21;HS22081514-21;;;
Misc Info : HS22052000V6;WATER;0;10;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\8260W.m
Meth Date : 09-Sep-2022 16:34 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 21
Dil Factor: 10.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7056

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
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	4.185	4.185	(1.000)	555798	50.0000	
* 36 1,4-Difluorobenzene	114	4.968	4.969	(1.000)	775675	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	667818	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.665	9.662	(1.000)	295389	50.0000	
$ 30 Dibromofluoromethane	113	4.106	4.103	(0.981)	246434	46.9421	46.94
$ 35 1,2-Dichloroethane-d4	65	4.477	4.474	(1.070)	265746	46.2389	46.23
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	887328	53.2539	53.25
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	275496	46.1663	46.16
53 1,1,2-Trichloroethane	83	6.854	6.839	(0.893)	1743	0.50763	5.07(a)
22 1,1-Dichloroethane	63	2.933	2.929	(0.701)	11924	1.39356	13.93(a)
28 Chloroform	83	3.915	3.911	(0.936)	26972	2.87704	28.77(a)
27 cis-1,2-Dichloroethene	96	3.529	3.533	(0.843)	5144678	931.051	9310.51(A)
17 Methylene Chloride	84	2.311	2.311	(0.552)	775687	153.559	1535.58
56 Tetrachloroethene	164	6.936	6.929	(0.904)	5347	1.23474	12.34(a)
20 trans-1,2-Dichloroethene	96	2.539	2.536	(0.607)	26692	5.45912	54.59
38 Trichloroethene	130	5.208	5.209	(1.048)	2042453	375.121	3751.20(A)
5 Vinyl Chloride	62	1.152	1.152	(0.275)	2446845	419.840	4198.40(A)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.

01148357

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090322.D

Page 1

Date : 03-SEP-2022 18:02

Client ID: HS22081514-21

Instrument: voa6.i

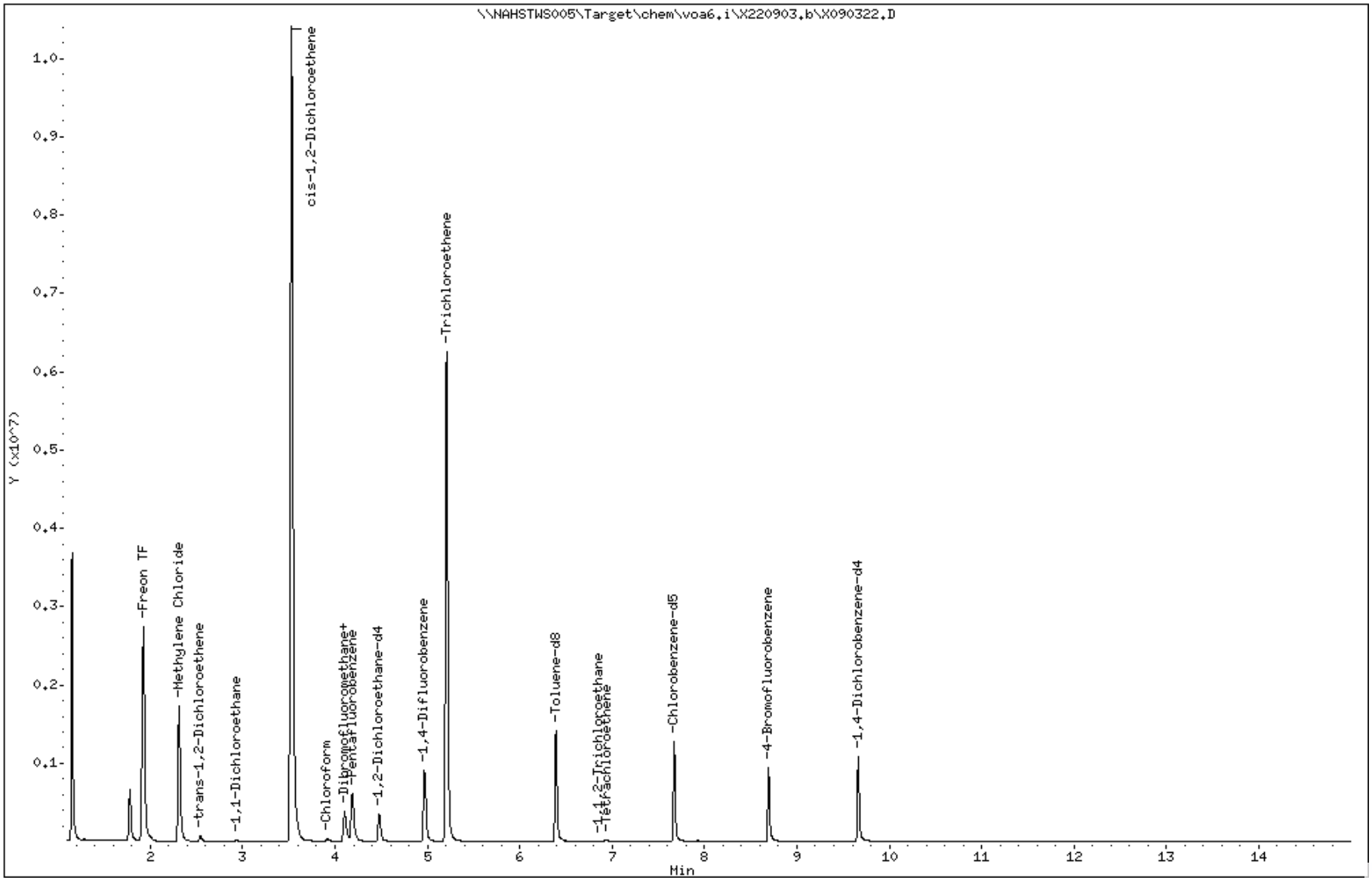
Sample Info: HS22081514-21;HS22081514-21;;;

Purge Volume: 5.0

Operator: PC

Column phase: DB624

Column diameter: 0.18



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Date : 03-SEP-2022 18:02

Client ID: HS22081514-21

Instrument: voa6.i

Sample Info: HS22081514-21;HS22081514-21;;;

Purge Volume: 5.0

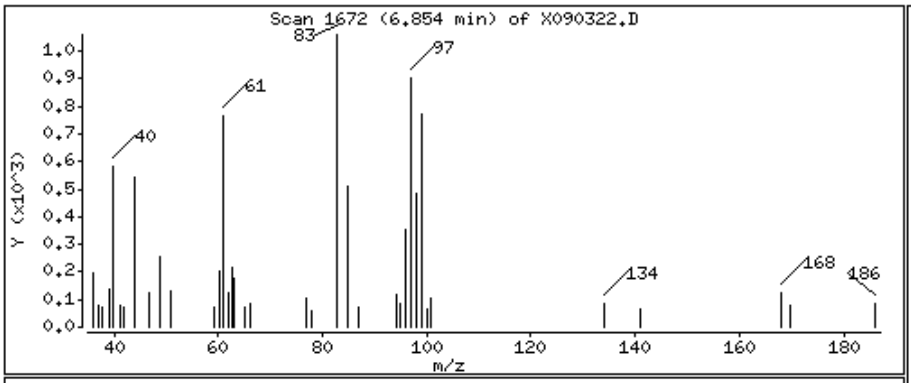
Operator: PC

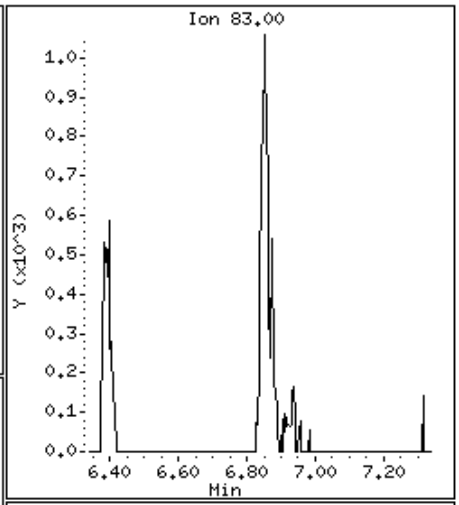
Column phase: DB624

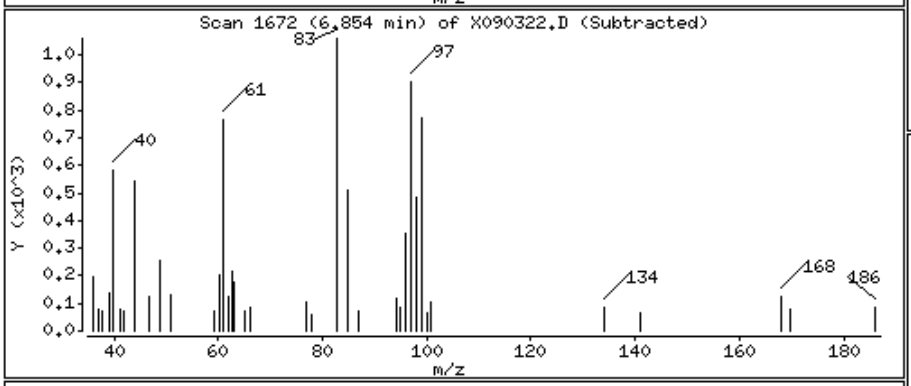
Column diameter: 0.18

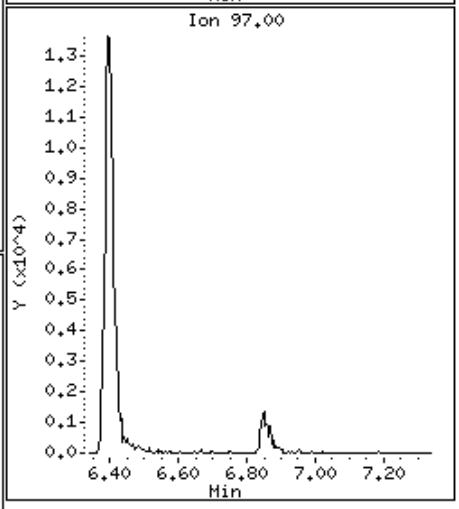
53 1,1,2-Trichloroethane

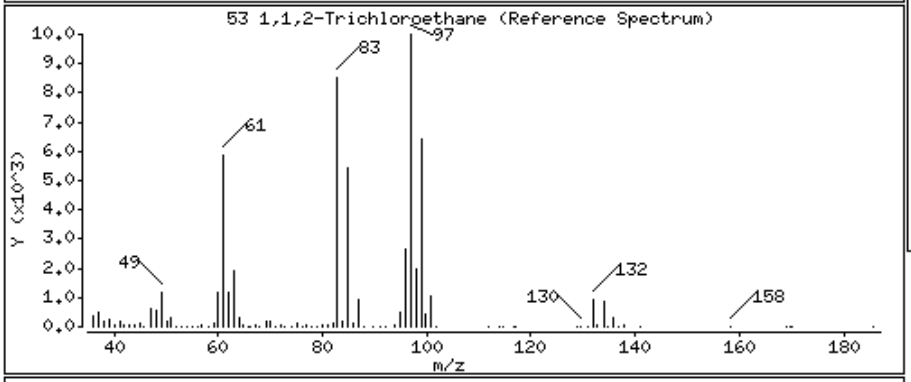
Concentration: 5.07 ug/l

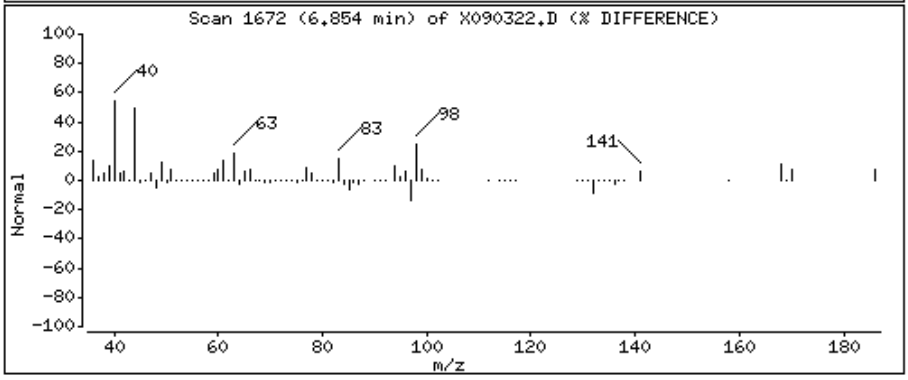












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090322.D Page 3

Date : 03-SEP-2022 18:02

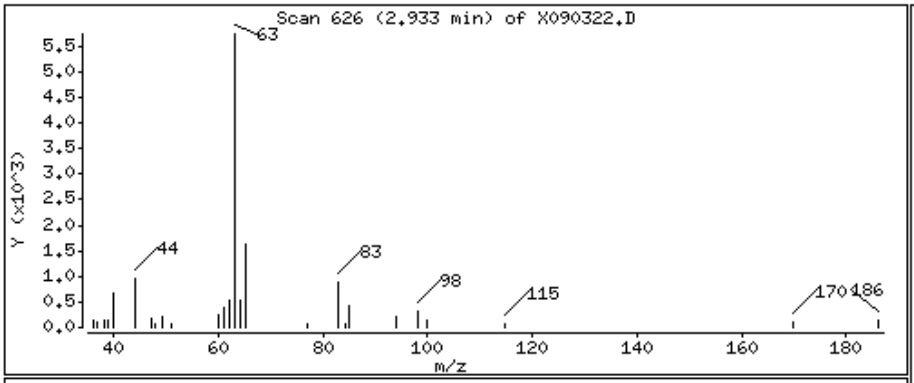
Client ID: HS22081514-21 Instrument: voa6.i

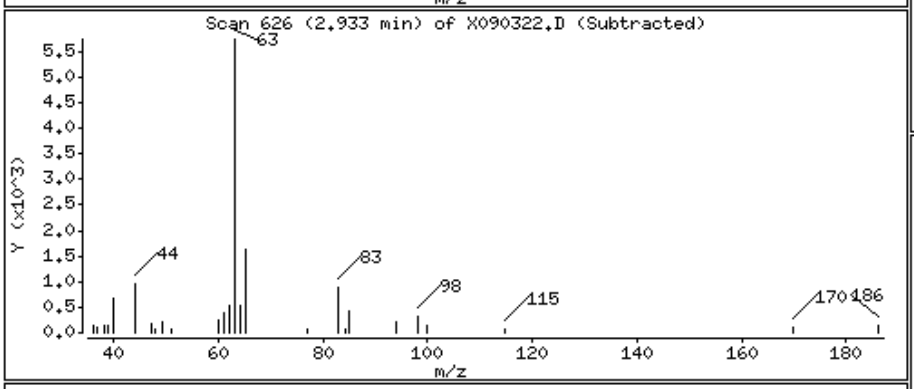
Sample Info: HS22081514-21;HS22081514-21;;;

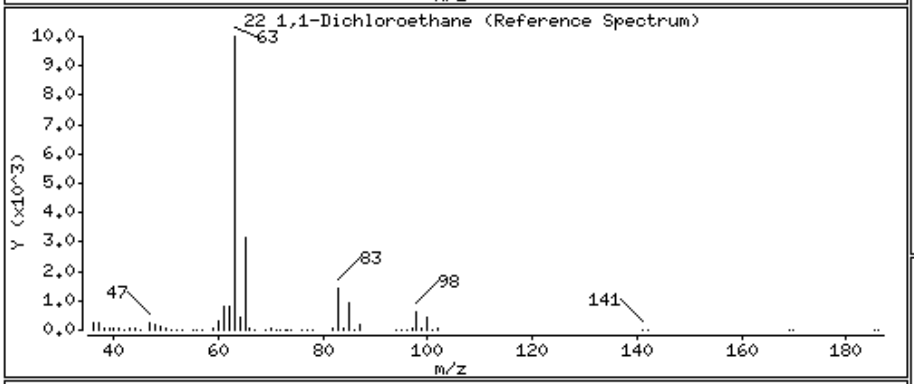
Purge Volume: 5.0 Operator: PC

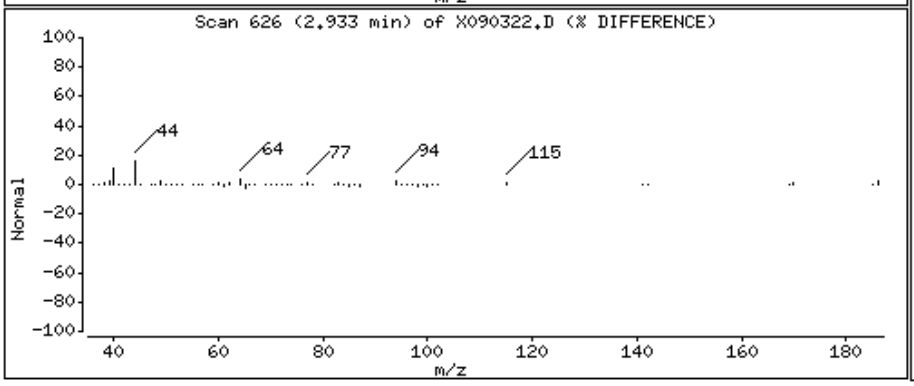
Column phase: DB624 Column diameter: 0.18

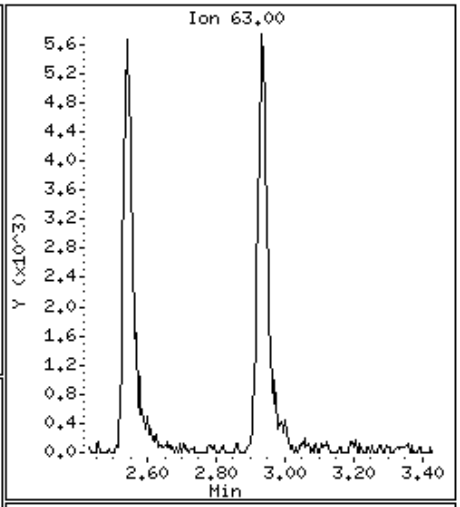
22 1,1-Dichloroethane Concentration: 13.93 ug/l

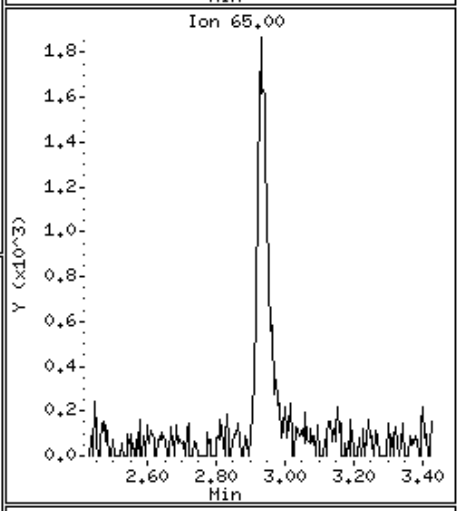


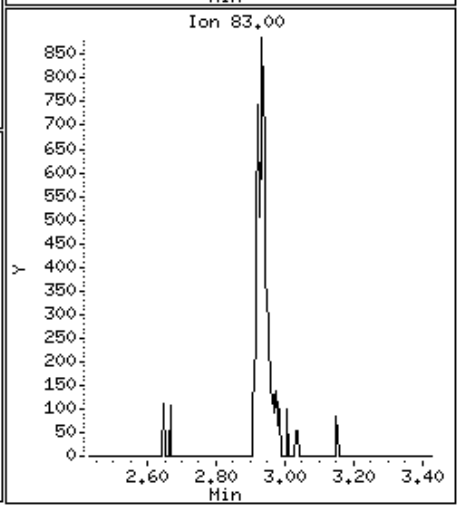












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Date : 03-SEP-2022 18:02

Client ID: HS22081514-21

Instrument: voa6.i

Sample Info: HS22081514-21;HS22081514-21;;;

Purge Volume: 5.0

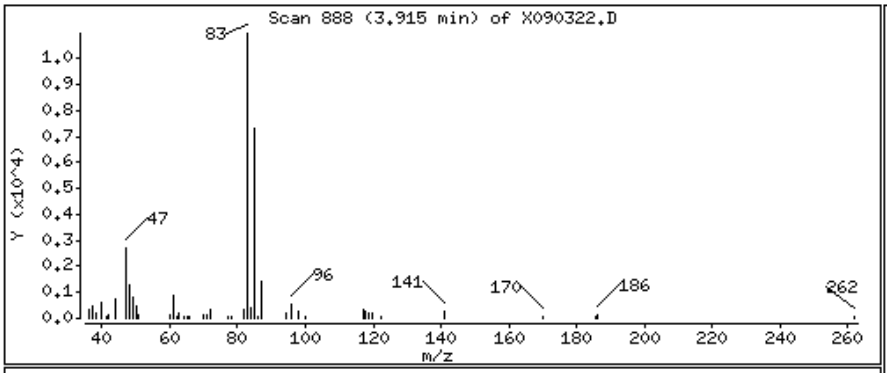
Operator: PC

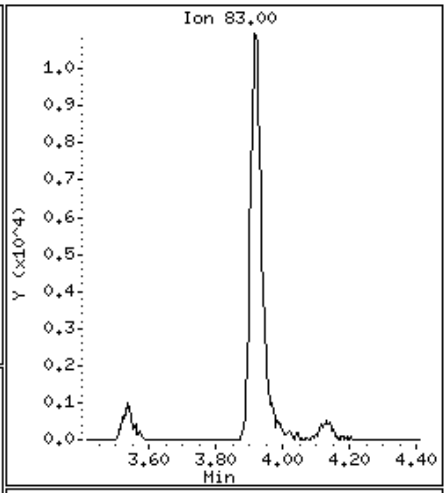
Column phase: DB624

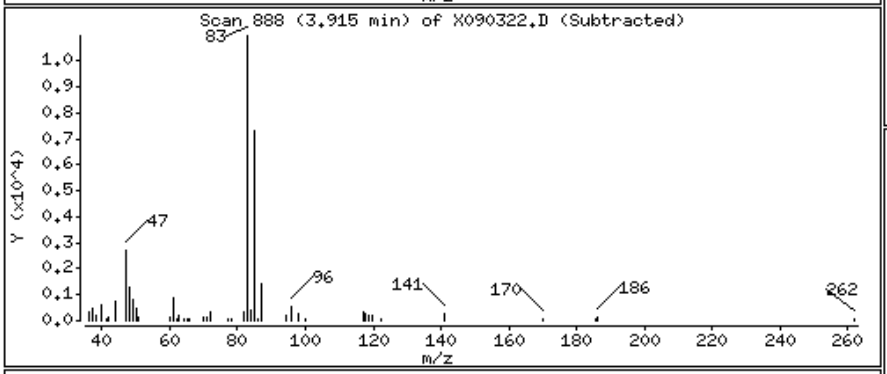
Column diameter: 0.18

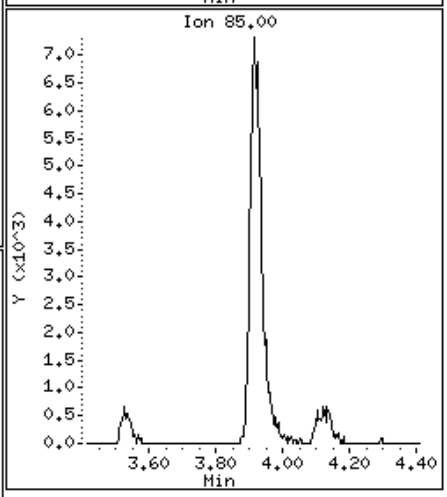
28 Chloroform

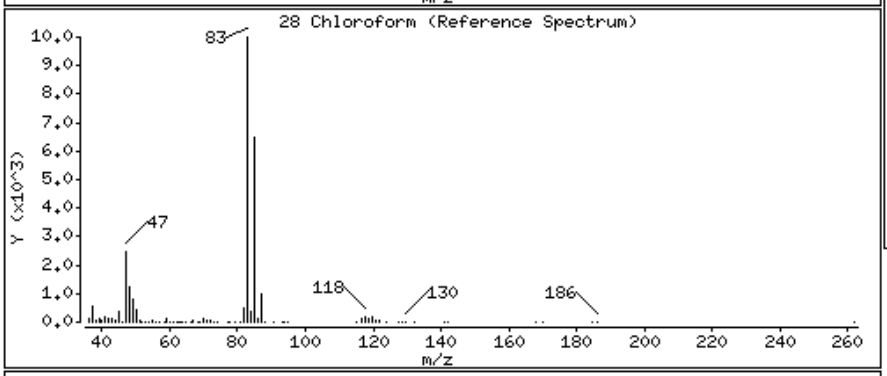
Concentration: 28.77 ug/l

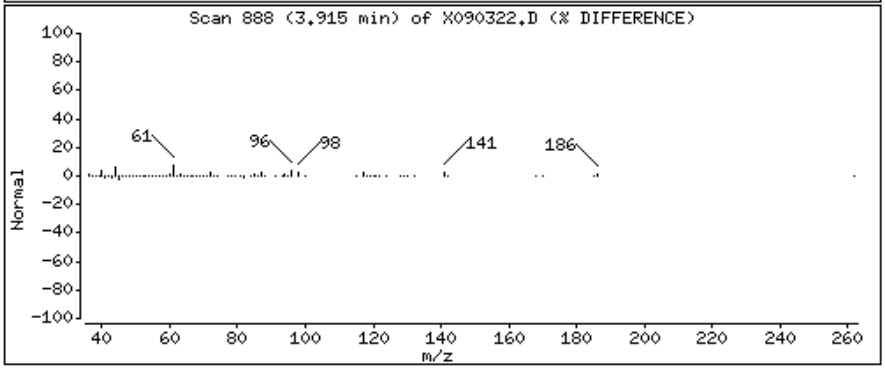












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090322.D Page 5

Date : 03-SEP-2022 18:02

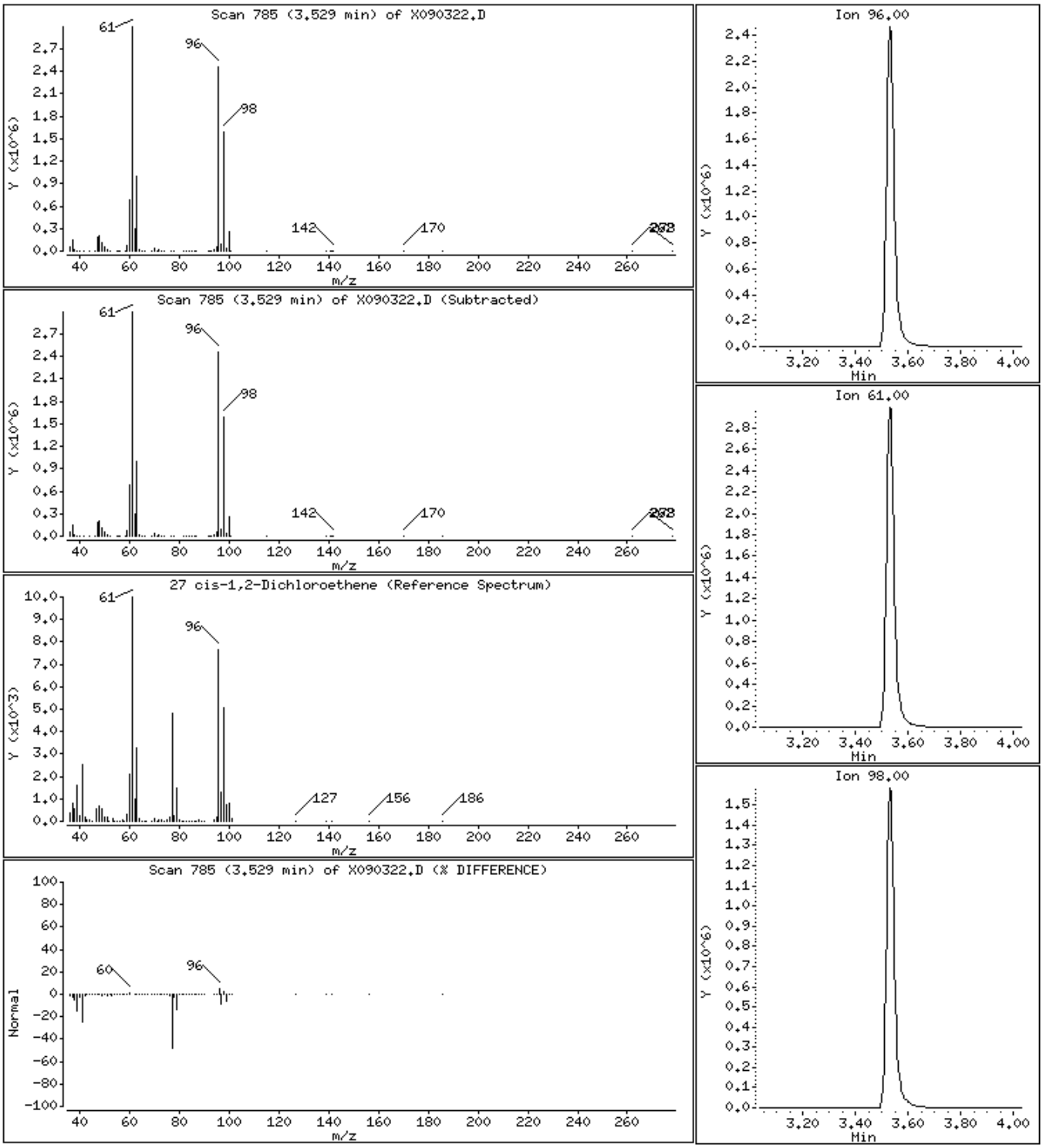
Client ID: HS22081514-21 Instrument: voa6.i

Sample Info: HS22081514-21;HS22081514-21;;;

Purge Volume: 5.0 Operator: PC

Column phase: DB624 Column diameter: 0.18

27 cis-1,2-Dichloroethene Concentration: 9310.51 ug/l



Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090322.D Page 6

Date : 03-SEP-2022 18:02

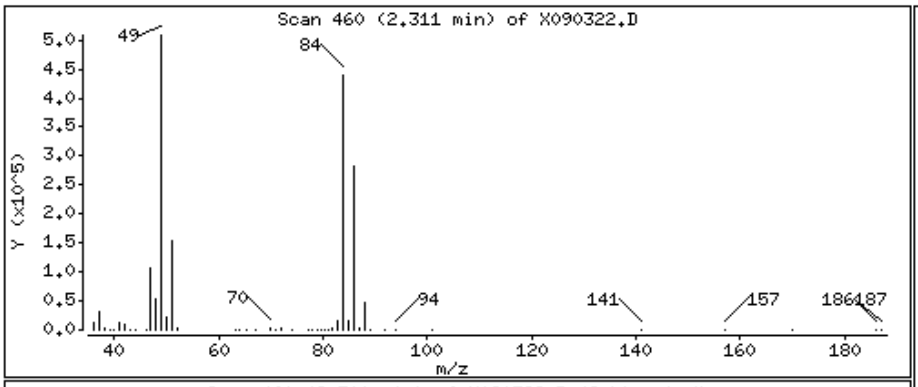
Client ID: HS22081514-21 Instrument: voa6.i

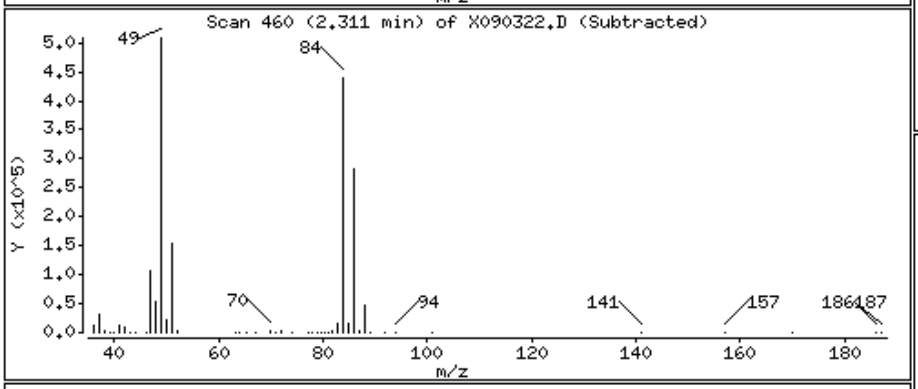
Sample Info: HS22081514-21;HS22081514-21;;;

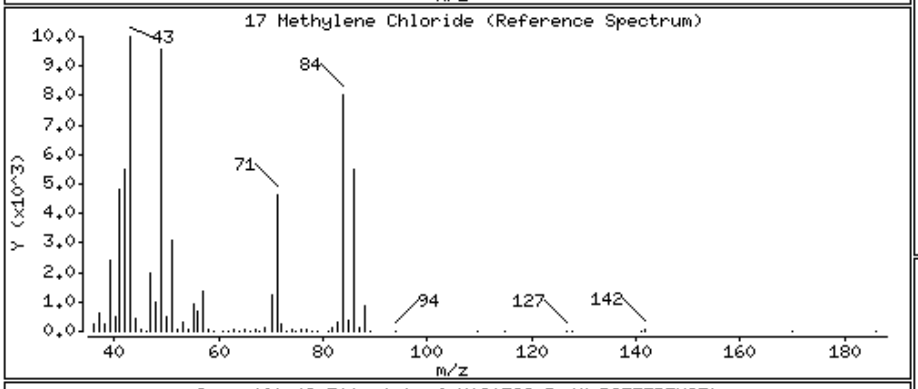
Purge Volume: 5.0 Operator: PC

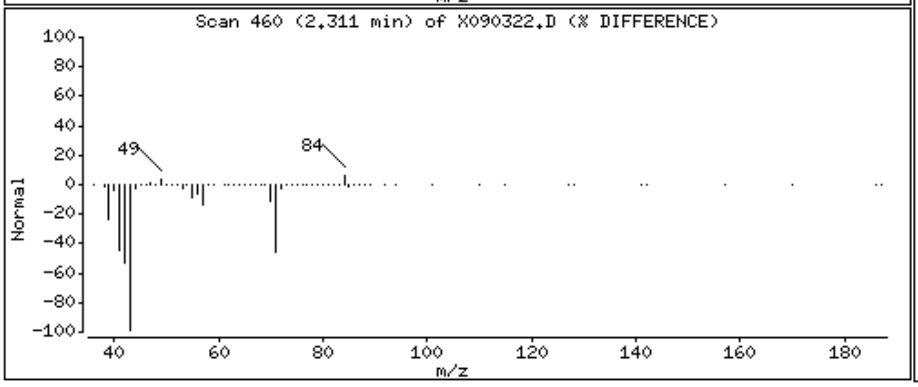
Column phase: DB624 Column diameter: 0.18

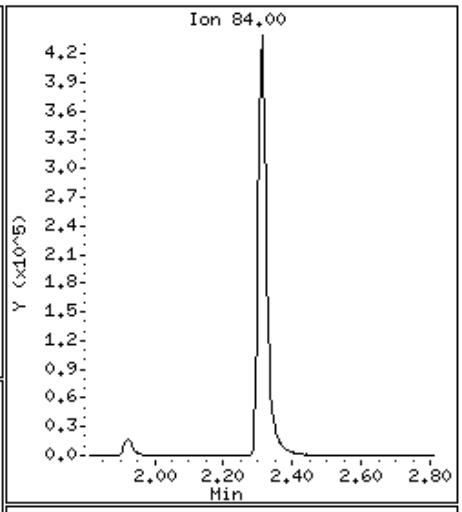
17 Methylene Chloride Concentration: 1535.58 ug/l

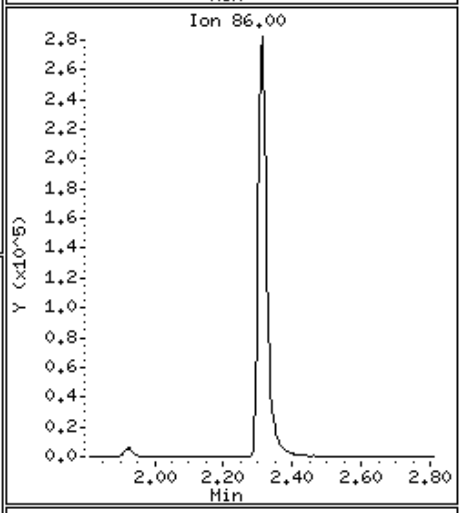


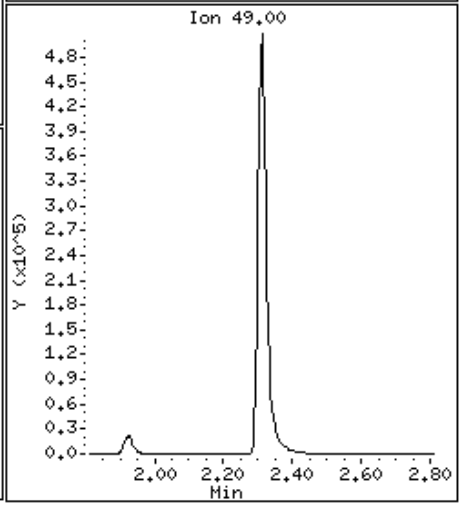












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090322.D Page 7

Date : 03-SEP-2022 18:02

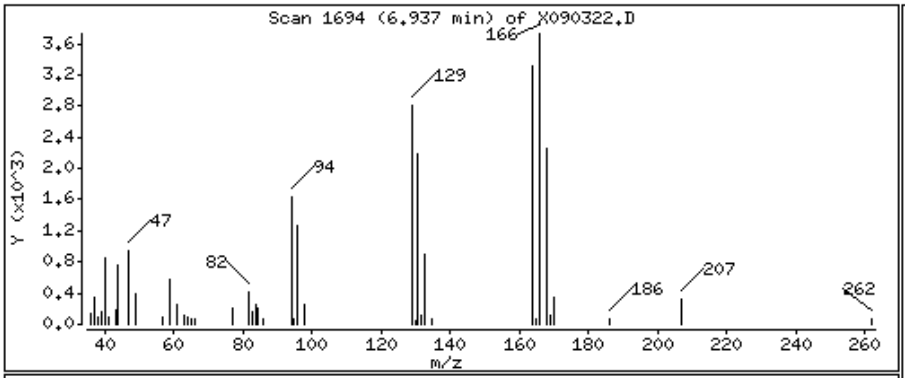
Client ID: HS22081514-21 Instrument: voa6.i

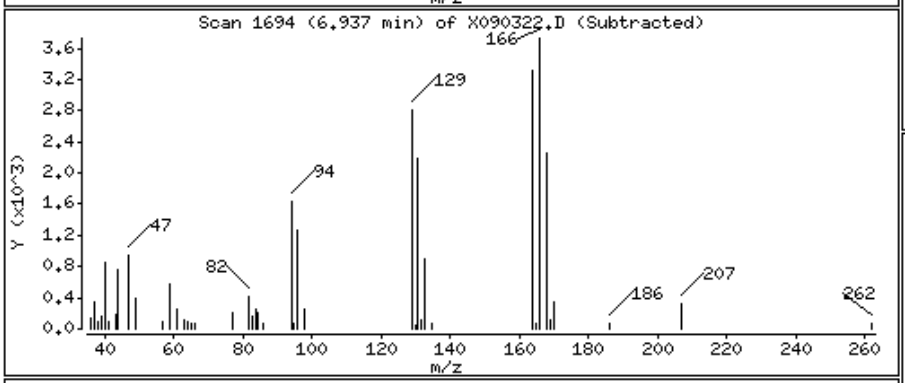
Sample Info: HS22081514-21;HS22081514-21;;;

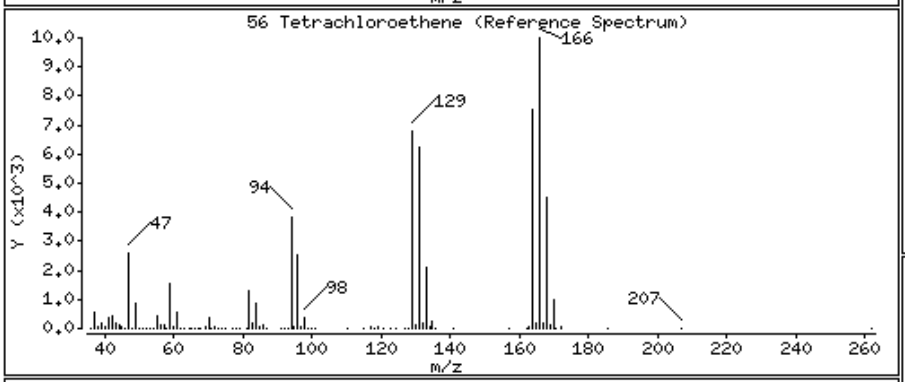
Purge Volume: 5.0 Operator: PC

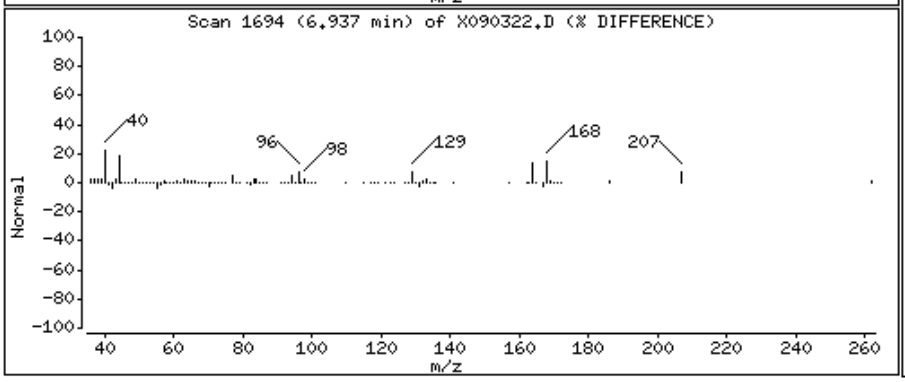
Column phase: DB624 Column diameter: 0.18

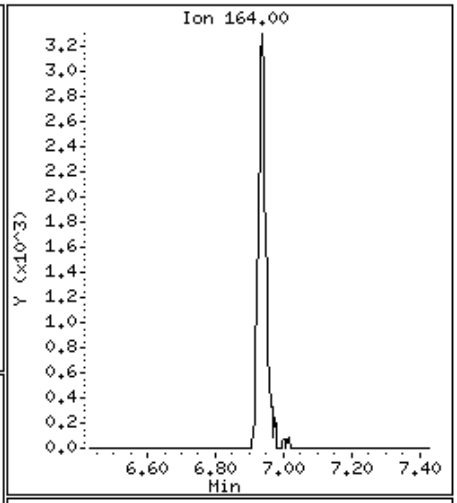
56 Tetrachloroethene Concentration: 12.34 ug/l

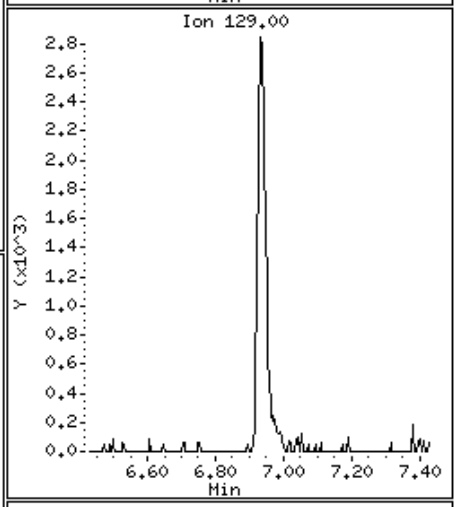


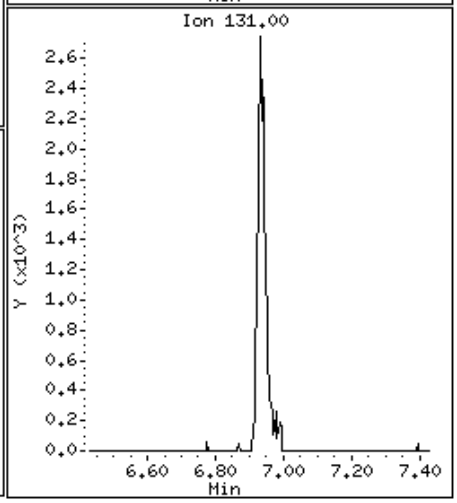












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090322.D Page 8

Date : 03-SEP-2022 18:02

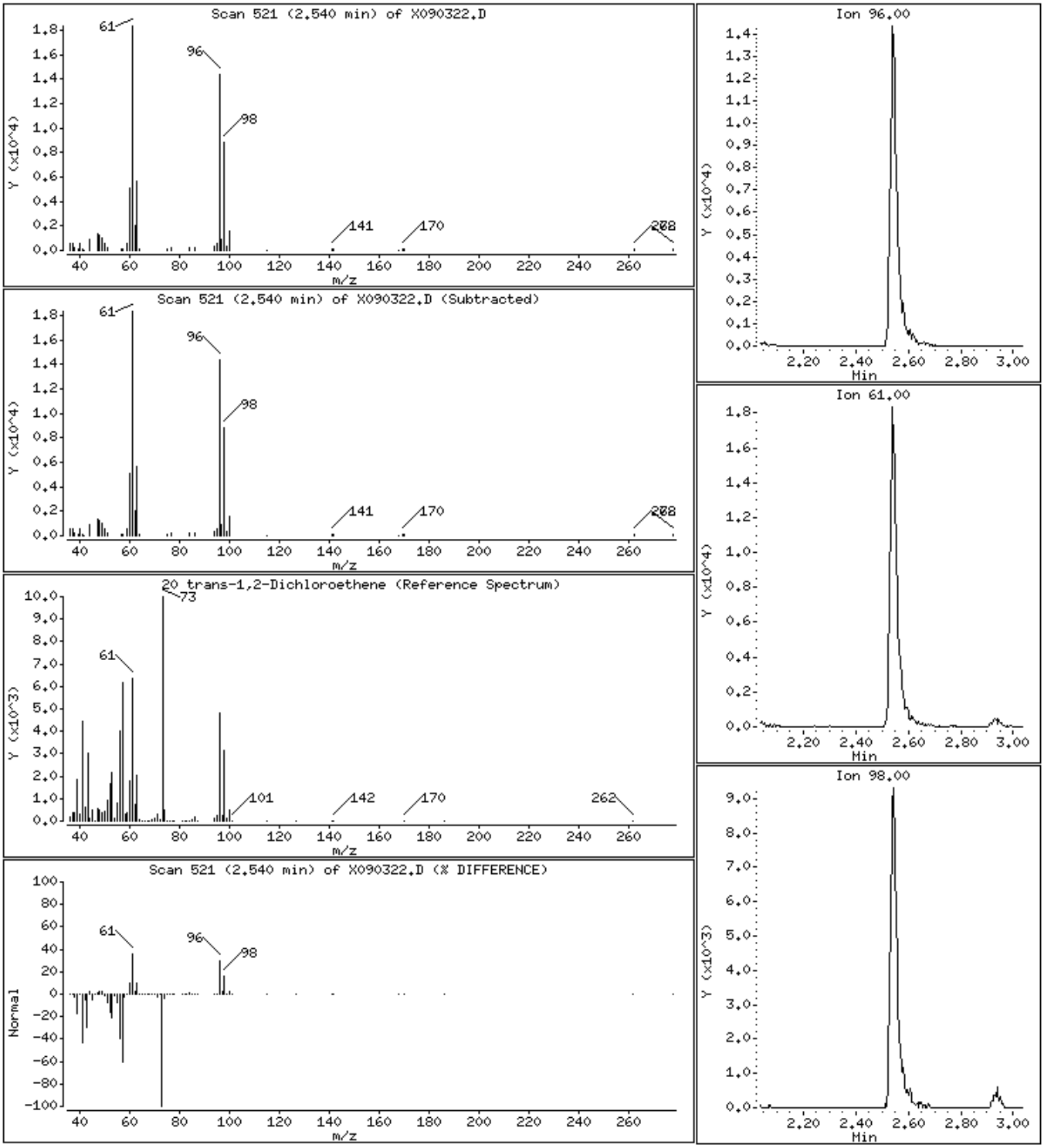
Client ID: HS22081514-21 Instrument: voa6.i

Sample Info: HS22081514-21;HS22081514-21;;;

Purge Volume: 5.0 Operator: PC

Column phase: DB624 Column diameter: 0.18

20 trans-1,2-Dichloroethene Concentration: 54.59 ug/l



Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090322.D Page 9

Date : 03-SEP-2022 18:02

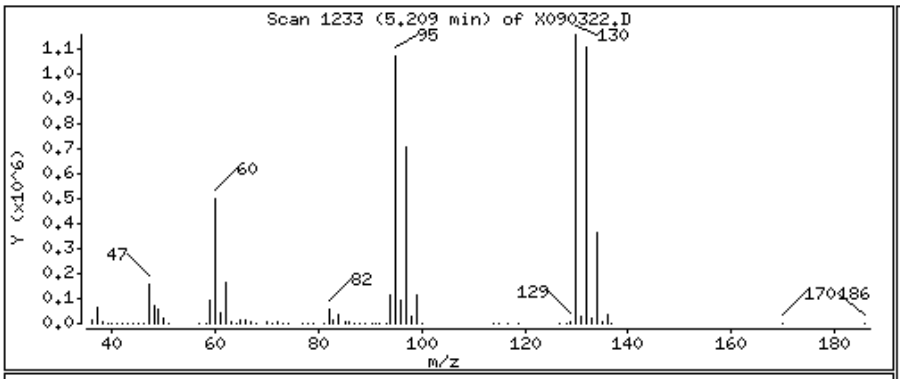
Client ID: HS22081514-21 Instrument: voa6.i

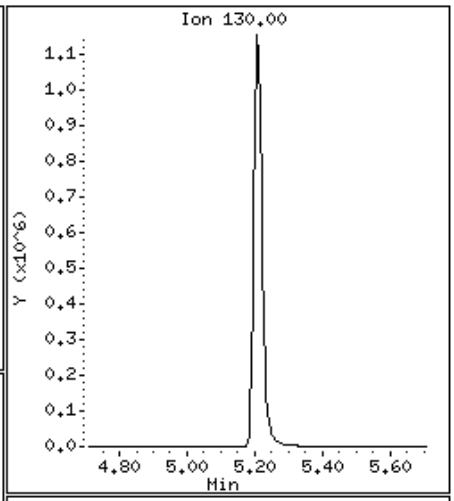
Sample Info: HS22081514-21;HS22081514-21;;;

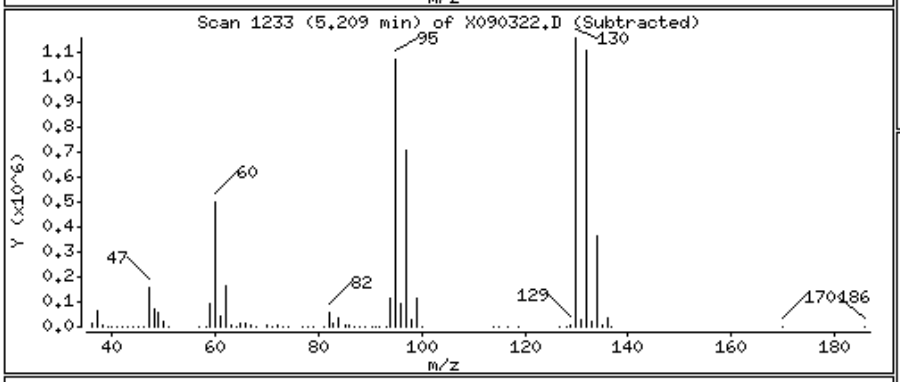
Purge Volume: 5.0 Operator: PC

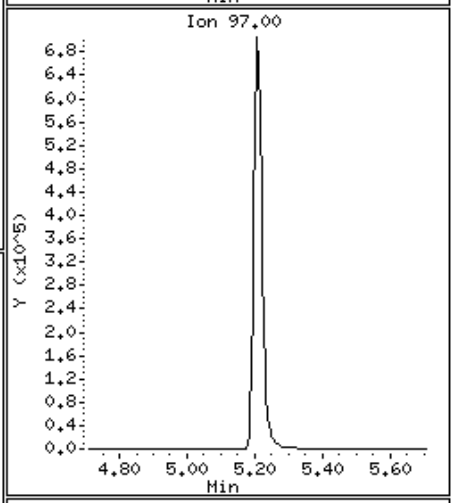
Column phase: DB624 Column diameter: 0.18

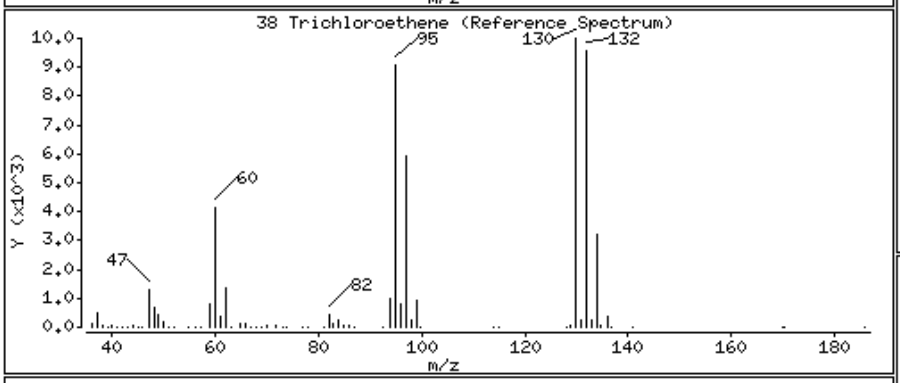
38 Trichloroethene Concentration: 3751.20 ug/l

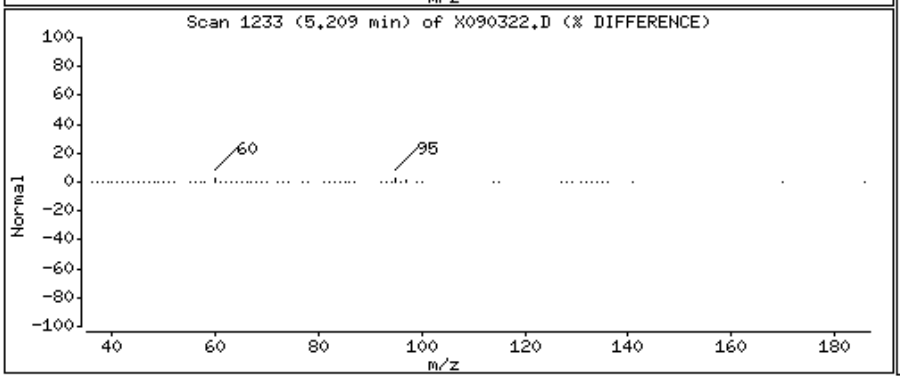


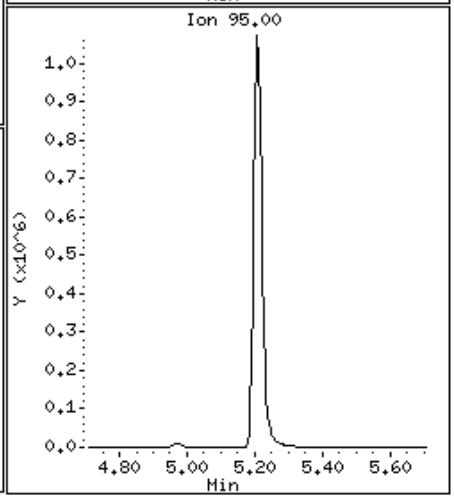












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Date : 03-SEP-2022 18:02

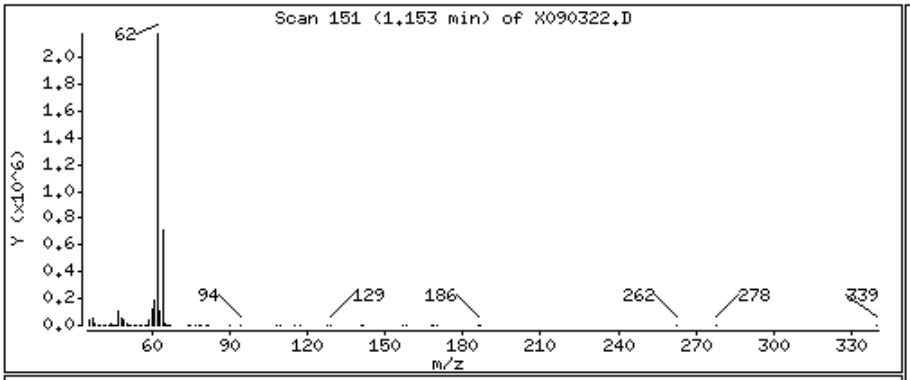
Client ID: HS22081514-21 Instrument: voa6.i

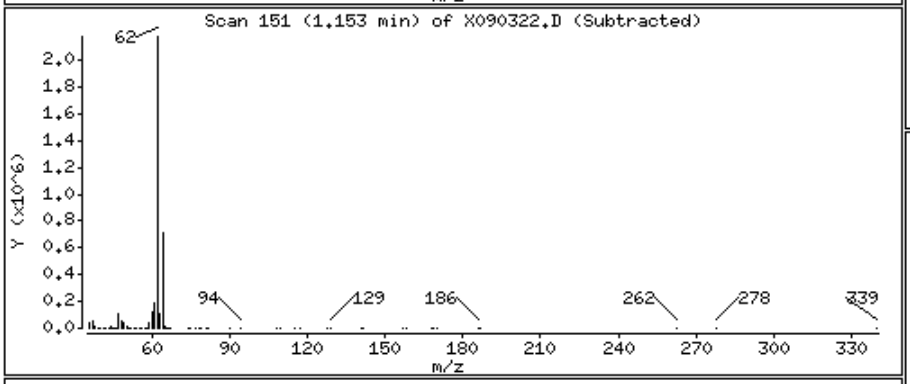
Sample Info: HS22081514-21;HS22081514-21;;;

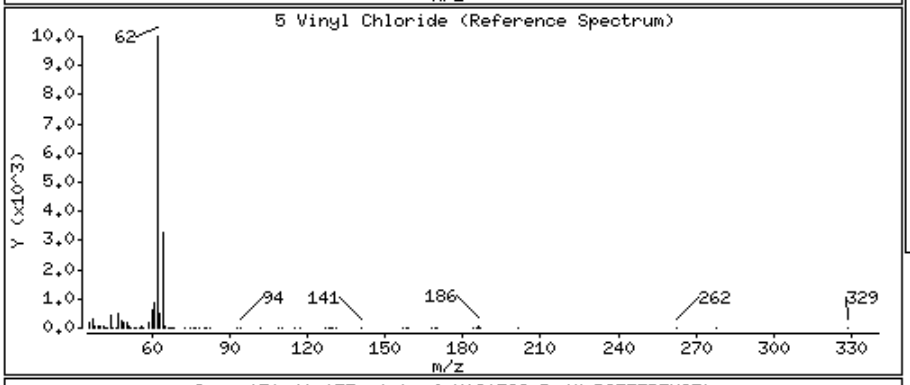
Purge Volume: 5.0 Operator: PC

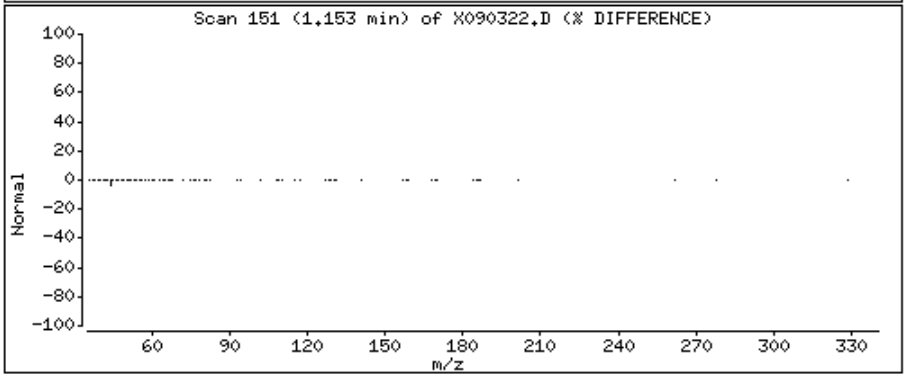
Column phase: DB624 Column diameter: 0.18

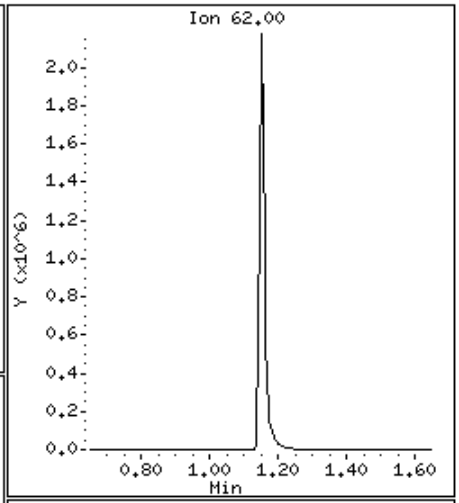
5 Vinyl Chloride Concentration: 4198.40 ug/l

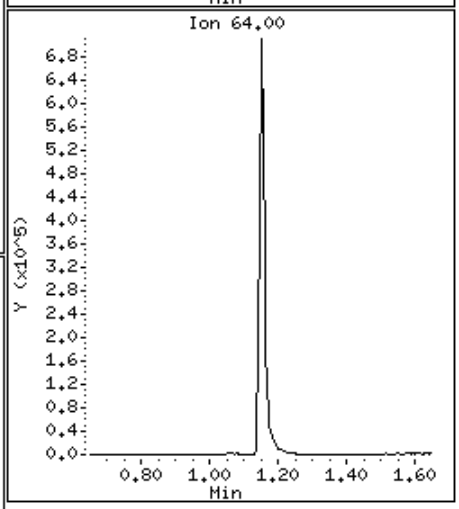












Data File : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090322.D
Inj Date : 03-SEP-2022 18:02
InstruID : voa6.i
LabSampID : HS22081514-21

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090332.D Page 1
Report Date: 09-Sep-2022 16:34

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090332.D
Lab Smp Id: CCV-END Client Smp ID: CCV-END
Inj Date : 03-SEP-2022 21:32
Operator : PC Inst ID: voa6.i
Smp Info : CCV-END;CCV-END;2;;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\8260W.m
Meth Date : 09-Sep-2022 16:34 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 31 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.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
Cpnd Variable		Local Compound Variable

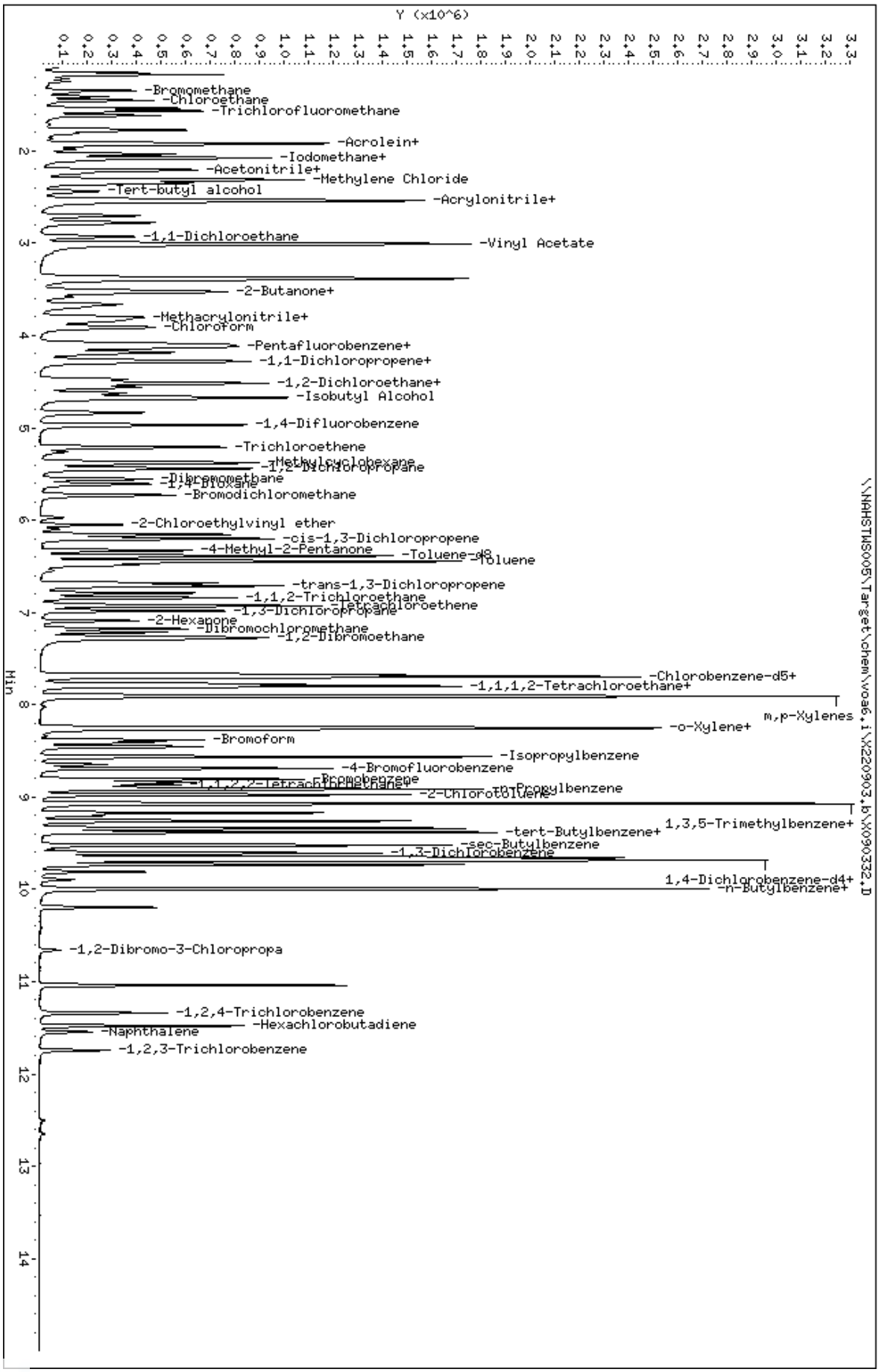
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.185	4.185	(1.000)	464202	50.0000	
* 36 1,4-Difluorobenzene	114	4.968	4.968	(1.000)	702954	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	655866	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.665	9.665	(1.000)	335140	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.980)	243784	50.0000	55.73
$ 35 1,2-Dichloroethane-d4	65	4.474	4.474	(1.069)	258554	50.0000	53.91
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	839698	50.0000	51.31
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	301117	50.0000	51.47
60 1,1,1,2-Tetrachloroethane	131	7.776	7.776	(1.014)	236400	50.0000	51.30
31 1,1,1-Trichloroethane	97	4.088	4.088	(0.977)	352563	50.0000	53.53
68 1,1,2,2-Tetrachloroethane	83	8.837	8.837	(0.914)	239634	50.0000	50.91
53 1,1,2-Trichloroethane	83	6.839	6.839	(0.892)	173156	50.0000	51.34
22 1,1-Dichloroethane	63	2.929	2.929	(0.700)	381077	50.0000	53.32
11 1,1-Dichloroethene	96	1.921	1.921	(0.459)	206035	50.0000	53.17
32 1,1-Dichloropropene	75	4.282	4.282	(0.862)	301957	50.0000	53.22
93 1,2,3-Trichlorobenzene	180	11.742	11.742	(1.215)	83942	50.0000	48.18
71 1,2,3-Trichloropropane	75	8.863	8.863	(0.917)	184835	50.0000	50.93(M)
90 1,2,4-Trichlorobenzene	180	11.337	11.337	(1.173)	151101	50.0000	49.50
79 1,2,4-Trimethylbenzene	105	9.381	9.381	(0.971)	822164	50.0000	51.14
89 1,2-Dibromo-3-Chloropropane	155	10.659	10.659	(1.103)	19018	50.0000	53.35

57 1,2-Dibromoethane	107	7.263	7.263 (0.947)	223734	50.0000	52.32
88 1,2-Dichlorobenzene	146	9.992	9.992 (1.034)	431093	50.0000	51.40

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
33	1,2-Dichloroethane	62	4.556	4.556	(0.917)	309682	50.0000	50.23
42	1,2-Dichloropropane	63	5.441	5.441	(1.095)	225911	50.0000	52.21
75	1,3,5-Trimethylbenzene	105	9.066	9.066	(0.938)	817804	50.0000	50.23
83	1,3-Dichlorobenzene	146	9.606	9.606	(0.994)	469601	50.0000	50.50
54	1,3-Dichloropropane	76	6.985	6.985	(0.911)	350663	50.0000	51.12
84	1,4-Dichlorobenzene	146	9.684	9.684	(1.002)	490144	50.0000	49.65
26	2,2-Dichloropropane	77	3.514	3.514	(0.840)	309497	50.0000	48.75
24	2-Butanone	43	3.585	3.585	(0.857)	128272	100.000	110.14
76	2-Chlorotoluene	91	8.976	8.976	(0.929)	683538	50.0000	47.58
52	2-Hexanone	43	7.086	7.086	(0.924)	220979	100.000	107.15
77	4-Chlorotoluene	91	9.069	9.069	(0.938)	786772	50.0000	49.06
82	p-Isopropyltoluene	119	9.650	9.650	(0.998)	851700	50.0000	52.10
45	4-Methyl-2-Pentanone	43	6.329	6.329	(0.825)	353976	100.000	110.76
10	Acetone	43	1.981	1.981	(0.473)	106791	100.000	109.79
37	Benzene	78	4.515	4.515	(0.909)	857916	50.0000	51.50
74	Bromobenzene	156	8.803	8.803	(0.911)	282410	50.0000	49.34
29	Bromochloromethane	128	3.799	3.799	(0.908)	133148	50.0000	50.87
39	Bromodichloromethane	83	5.729	5.729	(1.153)	306123	50.0000	51.56
66	Bromoform	173	8.410	8.410	(1.096)	155798	50.0000	49.02
6	Bromomethane	94	1.347	1.347	(0.322)	168827	50.0000	53.32
19	Carbon Disulfide	76	2.074	2.074	(0.496)	1132533	100.000	110.39
34	Carbon Tetrachloride	117	4.267	4.267	(0.859)	306363	50.0000	50.52
59	Chlorobenzene	112	7.694	7.694	(1.003)	634371	50.0000	51.01
7	Chloroethane	64	1.411	1.411	(0.337)	159231	50.0000	53.48
28	Chloroform	83	3.911	3.911	(0.935)	413253	50.0000	52.77
3	Chloromethane	50	1.085	1.085	(0.259)	225228	50.0000	52.40
27	cis-1,2-Dichloroethene	96	3.533	3.533	(0.844)	249952	50.0000	54.16
46	cis-1,3-Dichloropropene	75	6.157	6.157	(1.239)	372930	50.0000	51.13
55	Dibromochloromethane	129	7.176	7.176	(0.936)	251397	50.0000	51.64
44	Dibromomethane	93	5.557	5.557	(1.118)	151662	50.0000	52.24
2	Dichlorodifluoromethane	85	0.980	0.980	(0.234)	219214	50.0000	49.56
61	Ethylbenzene	106	7.802	7.802	(1.017)	326871	50.0000	52.03
91	Hexachlorobutadiene	225	11.480	11.480	(1.188)	133192	50.0000	47.24
67	Isopropylbenzene	105	8.563	8.563	(1.116)	1000995	50.0000	52.98
62	m,p-Xylenes	106	7.904	7.904	(1.030)	824478	100.000	105.51
17	Methylene Chloride	84	2.311	2.311	(0.552)	234221	50.0000	54.95
87	n-Butylbenzene	91	9.995	9.995	(1.034)	727409	50.0000	53.55
73	n-Propylbenzene	91	8.912	8.912	(0.922)	1151719	50.0000	52.09
92	Naphthalene	128	11.544	11.544	(1.194)	164503	50.0000	48.17
63	o-Xylene	106	8.241	8.241	(1.074)	388283	50.0000	51.11
81	sec-Butylbenzene	105	9.523	9.523	(0.985)	971463	50.0000	51.41
64	Styrene	104	8.260	8.260	(1.077)	656069	50.0000	52.44
78	tert-Butylbenzene	119	9.336	9.336	(0.966)	703181	50.0000	50.96
56	Tetrachloroethene	164	6.929	6.929	(0.903)	214158	50.0000	50.35
50	Toluene	91	6.449	6.449	(0.841)	937025	50.0000	50.82
20	trans-1,2-Dichloroethene	96	2.536	2.536	(0.606)	216852	50.0000	53.10
51	trans-1,3-Dichloropropene	75	6.682	6.682	(1.345)	313233	50.0000	51.86
38	Trichloroethene	130	5.208	5.208	(1.048)	254188	50.0000	51.51
8	Trichlorofluoromethane	101	1.568	1.568	(0.375)	403222	50.0000	55.16
5	Vinyl Chloride	62	1.149	1.149	(0.275)	249830	50.0000	51.32

QC Flag Legend

M - Compound response manually integrated.



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Date : 03-SEP-2022 21:32
Client ID: CCV-END
Sample Info: CCV-END;CCV-END;2;;
Purge Volume: 5.0
Column Phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

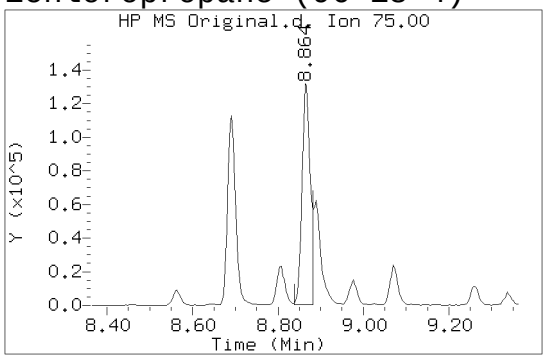
Data File : \\NAHSTWS005\Target\chem\voa6.i\X220903.b\X090332.D
Inj Date : 03-SEP-2022 21:32
InstruID : voa6.i
LabSampID : CCV-END

1,2,3-Trichloropropane (96-18-4)

Reason Code:

BEFORE

MASS
91
AREA
786772
HEIGHT
592013
09-Sep-2022
16:32
linh
pham



AFTER

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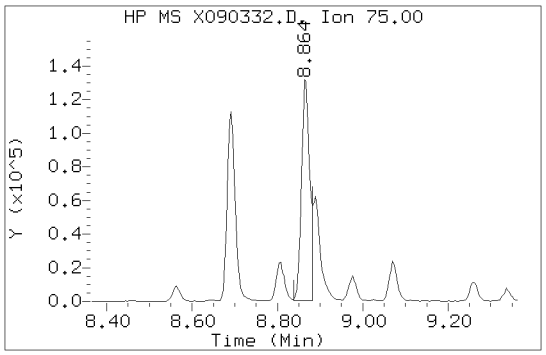

BEFORE

MASS
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09-Sep-2022
16:32
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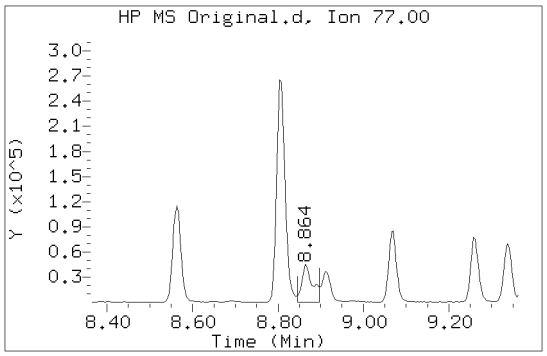
pham



AFTER

MASS
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AREA
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HEIGHT
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09-Sep-2022
16:33
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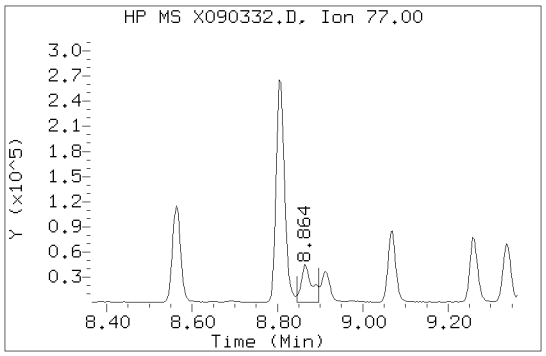
pham



right solutions.
right partner.

Raw Data VOA6 416599

Workorder

HS22081514

Client

Bhate Environmental Associates, Inc.

Project

LHAAP ICT Wells

09/09/2022

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090601.D Page 1
Report Date: 06-Sep-2022 22:18

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090601.D
Lab Smp Id: BFB Client Smp ID: BFB
Inj Date : 06-SEP-2022 10:30
Operator : PC Inst ID: voa6.i
Smp Info : BFB;BFB;3;;BFB
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220906.b\bfb.m
Meth Date : 26-Jul-2022 15:17 Linh.Pham Quant Type: ISTD
Cal Date : Cal File:
Als bottle: 1 QC Sample: BFB
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.14 Sample Matrix: WATER
Processing Host: NAHSTW7051

Concentration Formula: Amt * DF * Uf * Vf * Vi * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vf	1.000	Volumetric correction factor
Vi	2.000	Injection Volume
Cpnd Variable		Local Compound Variable

					CONCENTRATIONS ON-COL (ug/L)	CONCENTRATIONS FINAL (ug/l)		
RT	EXP RT	REL RT	MASS	RESPONSE			TARGET RANGE	RATIO
1 bfb							CAS #: 460-00-4	
8.695	8.889	(0.000)	95	22080			0.00- 100.00	100.00
8.695	8.889	(0.000)	50	4153			15.00- 40.00	18.81
8.695	8.889	(0.000)	75	10585			30.00- 60.00	47.94
8.695	8.889	(0.000)	96	1470			5.00- 9.00	6.66
8.695	8.889	(0.000)	173	266			0.00- 2.00	1.35
8.695	8.889	(0.000)	174	19680			50.00- 0.00	89.13
8.695	8.889	(0.000)	175	1106			5.00- 9.00	5.62
8.695	8.889	(0.000)	176	18840			95.00- 101.00	95.73
8.695	8.889	(0.000)	177	1351			5.00- 9.00	7.17

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	18.81
75	30.00 - 60.00% of mass 95	47.94
96	5.00 - 9.00% of mass 95	6.66
173	Less than 2.00% of mass 174	1.20 (1.35)
174	Greater than 50.00% of mass 95	89.13
175	5.00 - 9.00% of mass 174	5.01 (5.62)
176	95.00 - 101.00% of mass 174	85.33 (95.73)
177	5.00 - 9.00% of mass 176	6.12 (7.17)

Data File: X090601.D
Spectrum: Scan 2161 (8.69)
Location of Maximum: 95.00
Number of points: 76

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.10	267	55.00	1690	77.00	298	104.90	164
36.90	1365	56.00	682	77.80	89	105.90	121
38.00	980	57.10	958	78.20	124	110.10	52
39.10	1172	58.20	124	78.90	983	115.80	150
39.90	949	60.10	186	80.00	138	117.00	111
41.00	704	61.00	1100	80.80	769	127.70	224
42.00	1195	62.00	1281	82.00	99	128.90	75
43.00	886	63.10	858	82.70	166	141.00	412
43.90	789	63.90	178	83.20	118	143.00	345
45.00	166	65.10	81	86.90	829	172.90	266
46.00	63	67.00	118	87.90	986	173.90	19680
47.00	411	68.00	2041	90.90	132	175.00	1106
47.80	94	69.00	3078	91.90	902	175.90	18840
48.10	108	70.00	588	93.00	1046	176.80	1351
49.00	852	71.00	90	94.00	2425	186.10	306
50.00	4153	71.90	65	95.00	22080	207.00	51
51.10	1463	73.10	1059	96.00	1470		
51.90	138	74.00	4194	97.20	90		
53.00	76	75.00	10585	98.00	980		
54.00	181	76.00	1115	103.80	157		

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090601.D Page 1

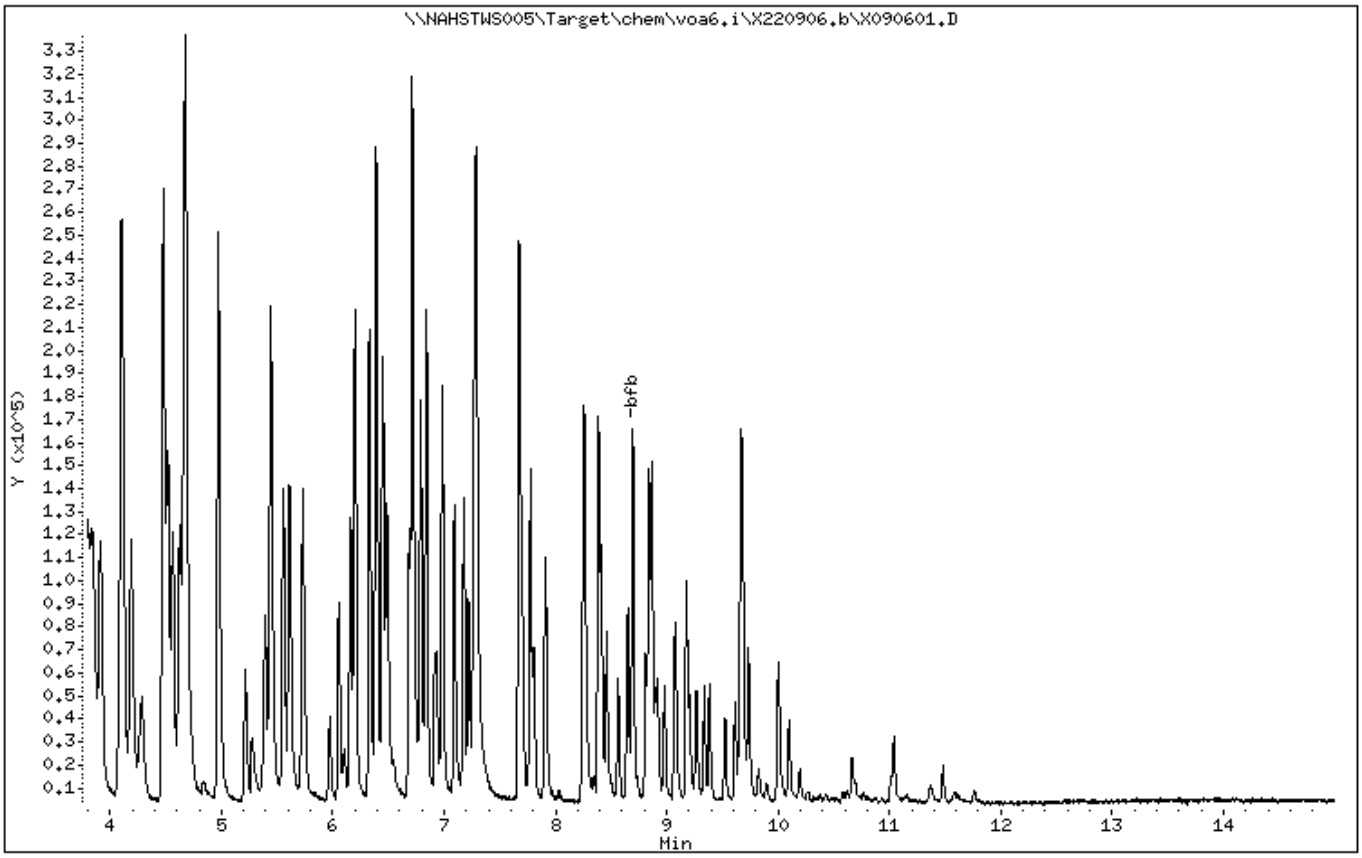
Date : 06-SEP-2022 10:30

Client ID: BFB Instrument: voa6.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0 Operator: PC

Column phase: DB624 Column diameter: 0.25



Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090601.D Page 2

Date : 06-SEP-2022 10:30

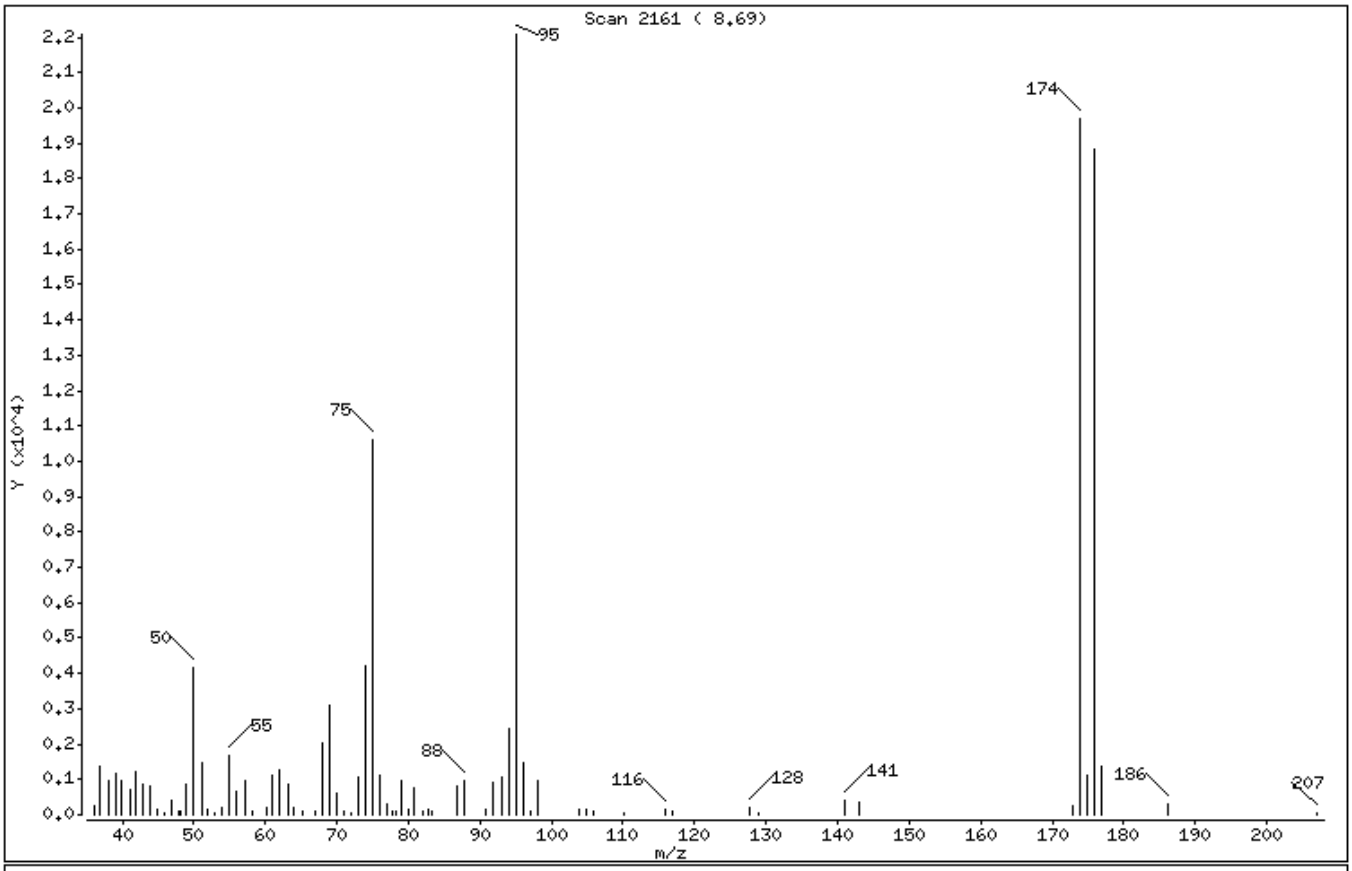
Client ID: BFB Instrument: voa6.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0 Operator: PC

Column phase: DB624 Column diameter: 0.25

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	18.81
75	30.00 - 60.00% of mass 95	47.94
96	5.00 - 9.00% of mass 95	6.66
173	Less than 2.00% of mass 174	1.20 (1.35)
174	Greater than 50.00% of mass 95	89.13
175	5.00 - 9.00% of mass 174	5.01 (5.62)
176	95.00 - 101.00% of mass 174	85.33 (95.73)
177	5.00 - 9.00% of mass 176	6.12 (7.17)

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090601.D Page 3

Date : 06-SEP-2022 10:30

Client ID: BFB Instrument: voa6.i

Sample Info: BFB;BFB;3;;BFB

Volume Injected (uL): 2.0 Operator: PC

Column phase: DB624 Column diameter: 0.25

Data File: X090601.D
Spectrum: Scan 2161 (8.69)
Location of Maximum: 95.00
Number of points: 76

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.10	267	55.00	1690	77.00	298	104.90	164
36.90	1365	56.00	682	77.80	89	105.90	121
38.00	980	57.10	958	78.20	124	110.10	52
39.10	1172	58.20	124	78.90	983	115.80	150
39.90	949	60.10	186	80.00	138	117.00	111
41.00	704	61.00	1100	80.80	769	127.70	224
42.00	1195	62.00	1281	82.00	99	128.90	75
43.00	886	63.10	858	82.70	166	141.00	412
43.90	789	63.90	178	83.20	118	143.00	345
45.00	166	65.10	81	86.90	829	172.90	266
46.00	63	67.00	118	87.90	986	173.90	19680
47.00	411	68.00	2041	90.90	132	175.00	1106
47.80	94	69.00	3078	91.90	902	175.90	18840
48.10	108	70.00	588	93.00	1046	176.80	1351
49.00	852	71.00	90	94.00	2425	186.10	306
50.00	4153	71.90	65	95.00	22080	207.00	51
51.10	1463	73.10	1059	96.00	1470		
51.90	138	74.00	4194	97.20	90		
53.00	76	75.00	10585	98.00	980		
54.00	181	76.00	1115	103.80	157		

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090603.D Page 1
Report Date: 09-Sep-2022 16:55

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090603.D
Lab Smp Id: CCV Client Smp ID: CCV
Inj Date : 06-SEP-2022 11:12
Operator : PC Inst ID: voa6.i
Smp Info : CCV;CCV;2;;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220906.b\8260W.m
Meth Date : 09-Sep-2022 16:55 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 3 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.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
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	4.185	4.185	(1.000)	475765	50.0000	
* 36 1,4-Difluorobenzene	114	4.969	4.969	(1.000)	713990	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	676132	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	348499	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.980)	244531	50.0000	54.53
$ 35 1,2-Dichloroethane-d4	65	4.477	4.477	(1.070)	264220	50.0000	53.75
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	869598	50.0000	51.54
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	316709	50.0000	52.53
60 1,1,1,2-Tetrachloroethane	131	7.773	7.773	(1.013)	259563	50.0000	54.64
31 1,1,1-Trichloroethane	97	4.088	4.088	(0.977)	376258	50.0000	55.74
68 1,1,2,2-Tetrachloroethane	83	8.841	8.841	(0.915)	246631	50.0000	50.38
53 1,1,2-Trichloroethane	83	6.839	6.839	(0.892)	179327	50.0000	51.58
22 1,1-Dichloroethane	63	2.929	2.929	(0.700)	404790	50.0000	55.26
11 1,1-Dichloroethene	96	1.925	1.925	(0.460)	211440	50.0000	53.23
32 1,1-Dichloropropene	75	4.283	4.283	(0.862)	324751	50.0000	56.35
93 1,2,3-Trichlorobenzene	180	11.742	11.742	(1.215)	91024	50.0000	50.24
71 1,2,3-Trichloropropane	75	8.863	8.863	(0.917)	195241	50.0000	51.73(M)
90 1,2,4-Trichlorobenzene	180	11.337	11.337	(1.173)	164492	50.0000	51.82
79 1,2,4-Trimethylbenzene	105	9.381	9.381	(0.971)	926025	50.0000	55.39
89 1,2-Dibromo-3-Chloropropane	155	10.659	10.659	(1.103)	19507	50.0000	52.67

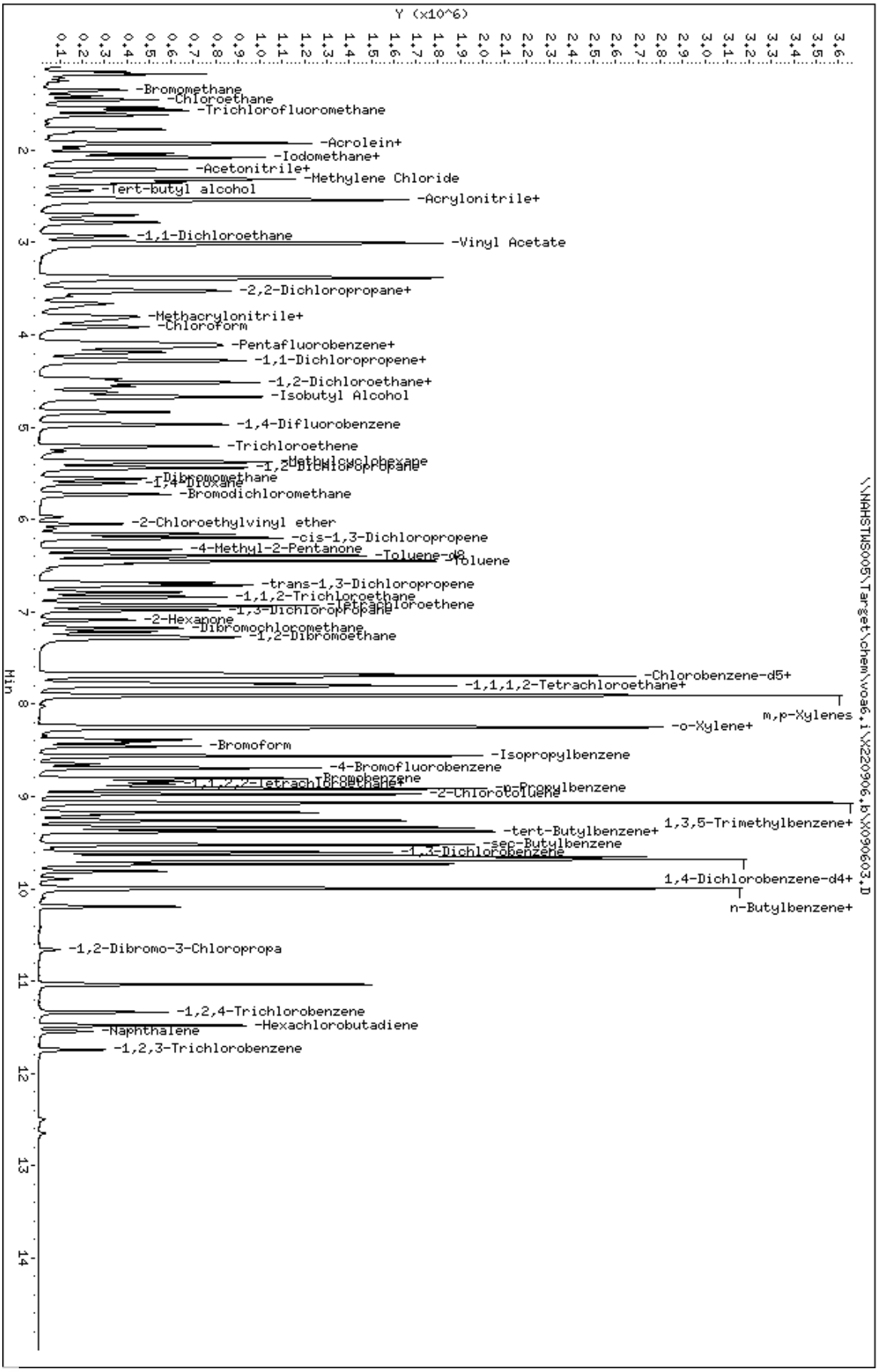
57	1,2-Dibromoethane	107	7.259	7.259 (0.946)	233899	50.0000	53.06
88	1,2-Dichlorobenzene	146	9.992	9.992 (1.034)	468544	50.0000	53.73

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090603.D Page 2
Report Date: 09-Sep-2022 16:55

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
33	1,2-Dichloroethane	62	4.560	4.560	(0.918)	328064	50.0000	52.39
42	1,2-Dichloropropane	63	5.437	5.437	(1.094)	242065	50.0000	55.08
75	1,3,5-Trimethylbenzene	105	9.066	9.066	(0.938)	931652	50.0000	55.03
83	1,3-Dichlorobenzene	146	9.606	9.606	(0.994)	526339	50.0000	54.43
54	1,3-Dichloropropane	76	6.982	6.982	(0.910)	370652	50.0000	52.41
84	1,4-Dichlorobenzene	146	9.684	9.684	(1.002)	542107	50.0000	52.81
26	2,2-Dichloropropane	77	3.514	3.514	(0.840)	371285	50.0000	57.11
24	2-Butanone	43	3.582	3.582	(0.856)	138336	100.000	115.90(M)
76	2-Chlorotoluene	91	8.976	8.976	(0.929)	765741	50.0000	51.26
52	2-Hexanone	43	7.090	7.090	(0.924)	243434	100.000	114.50
77	4-Chlorotoluene	91	9.070	9.070	(0.939)	891304	50.0000	53.45
82	p-Isopropyltoluene	119	9.651	9.651	(0.999)	978011	50.0000	57.53
45	4-Methyl-2-Pentanone	43	6.329	6.329	(0.825)	366369	100.000	111.20
10	Acetone	43	1.981	1.981	(0.473)	132304	100.000	133.96
37	Benzene	78	4.515	4.515	(0.909)	912979	50.0000	53.96
74	Bromobenzene	156	8.807	8.807	(0.912)	309707	50.0000	52.03
29	Bromochloromethane	128	3.799	3.799	(0.908)	138321	50.0000	51.56
39	Bromodichloromethane	83	5.726	5.726	(1.152)	326640	50.0000	54.16
66	Bromoform	173	8.410	8.410	(1.096)	172180	50.0000	52.46
6	Bromomethane	94	1.347	1.347	(0.322)	180817	50.0000	55.78
19	Carbon Disulfide	76	2.078	2.078	(0.497)	1203946	100.000	114.50
34	Carbon Tetrachloride	117	4.268	4.268	(0.859)	333791	50.0000	54.19
59	Chlorobenzene	112	7.694	7.694	(1.003)	694112	50.0000	54.14
7	Chloroethane	64	1.411	1.411	(0.337)	163429	50.0000	53.55
28	Chloroform	83	3.911	3.911	(0.935)	437083	50.0000	54.46
3	Chloromethane	50	1.085	1.085	(0.259)	240012	50.0000	54.48
27	cis-1,2-Dichloroethene	96	3.529	3.529	(0.843)	263084	50.0000	55.62
46	cis-1,3-Dichloropropene	75	6.157	6.157	(1.239)	414752	50.0000	55.99
55	Dibromochloromethane	129	7.176	7.176	(0.936)	269598	50.0000	53.72
44	Dibromomethane	93	5.553	5.553	(1.118)	156836	50.0000	53.18
2	Dichlorodifluoromethane	85	0.980	0.980	(0.234)	220107	50.0000	48.55
61	Ethylbenzene	106	7.802	7.802	(1.017)	357679	50.0000	55.22
91	Hexachlorobutadiene	225	11.480	11.480	(1.188)	153480	50.0000	52.35
67	Isopropylbenzene	105	8.563	8.563	(1.116)	1115315	50.0000	57.26
62	m,p-Xylenes	106	7.904	7.904	(1.030)	909979	100.000	112.96
17	Methylene Chloride	84	2.311	2.311	(0.552)	247319	50.0000	56.64
87	n-Butylbenzene	91	9.995	9.995	(1.035)	861978	50.0000	61.02
73	n-Propylbenzene	91	8.912	8.912	(0.922)	1293285	50.0000	56.25
92	Naphthalene	128	11.547	11.547	(1.195)	177939	50.0000	50.11
63	o-Xylene	106	8.241	8.241	(1.074)	428214	50.0000	54.68
81	sec-Butylbenzene	105	9.523	9.523	(0.986)	1117020	50.0000	56.85
64	Styrene	104	8.260	8.260	(1.077)	727681	50.0000	56.42
78	tert-Butylbenzene	119	9.336	9.336	(0.966)	791552	50.0000	55.17
56	Tetrachloroethene	164	6.929	6.929	(0.903)	233748	50.0000	53.31
50	Toluene	91	6.449	6.449	(0.841)	1019546	50.0000	53.64
20	trans-1,2-Dichloroethene	96	2.536	2.536	(0.606)	229905	50.0000	54.93
51	trans-1,3-Dichloropropene	75	6.682	6.682	(1.345)	347738	50.0000	56.68
38	Trichloroethene	130	5.208	5.208	(1.048)	271433	50.0000	54.15
8	Trichlorofluoromethane	101	1.569	1.569	(0.375)	411087	50.0000	54.87
5	Vinyl Chloride	62	1.152	1.152	(0.275)	256608	50.0000	51.43

QC Flag Legend

M - Compound response manually integrated.



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Date : 06-SEP-2022 11:12
Client ID: CCV
Sample Info: CCV,CCV,2,,
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File : \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090603.D
Inj Date : 06-SEP-2022 11:12
InstruID : voa6.i
LabSampID : CCV

2-Butanone (78-93-3)

Reason Code:

BEFORE

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HEIGHT
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09-Sep-2022
16:54
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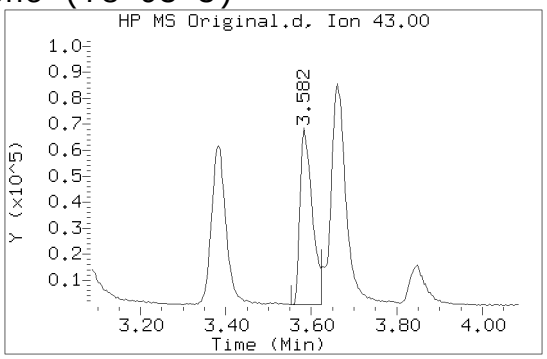
pham



AFTER

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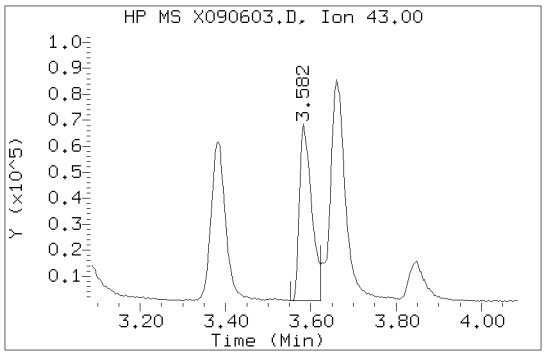

1,2,3-Trichloropropane (96-18-4)

Reason Code:

BEFORE

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AREA
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09-Sep-2022
16:54
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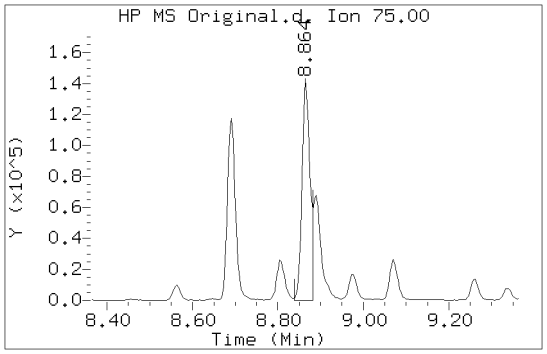
pham



AFTER

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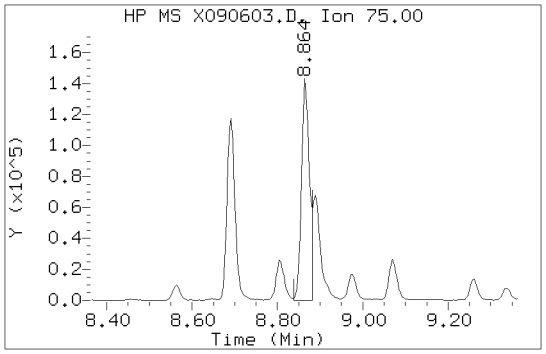

BEFORE

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09-Sep-2022
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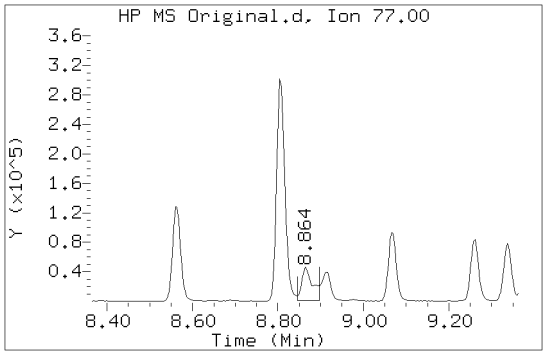

AFTER

MASS
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09-Sep-2022
16:55
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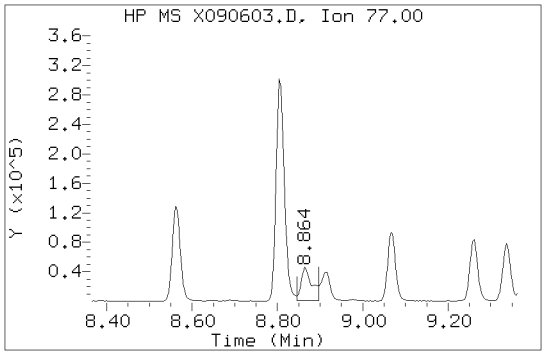


Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090604.D Page 1
Report Date: 06-Sep-2022 22:20

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090604.D
Lab Smp Id: CCB Client Smp ID: CCB
Inj Date : 06-SEP-2022 11:33
Operator : PC Inst ID: voa6.i
Smp Info : CCB;CCB;;;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\nahstws005\Target\chem\voa6.i\X220906.b\8260W.m
Meth Date : 06-Sep-2022 22:17 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 4
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: 8260_GB.sub
Target Version: 4.14
Processing Host: NAHSTWS005

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
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	4.189	4.185	(1.000)	564024	50.0000	
$ 30 Dibromofluoromethane	113	4.106	4.103	(0.980)	251184	47.1523	47.15
$ 35 1,2-Dichloroethane-d4	65	4.477	4.477	(1.069)	267725	45.9014	45.90
* 36 1,4-Difluorobenzene	114	4.969	4.969	(1.000)	784016	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	662880	50.0000	
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	908134	54.9086	54.90
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	272101	45.9330	45.93
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.662	(1.000)	285727	50.0000	

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090605.D Page 1
Report Date: 09-Sep-2022 16:55

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090605.D
Lab Smp Id: VLCSW-220906 Client Smp ID: VLCSW-220906
Inj Date : 06-SEP-2022 11:54
Operator : PC Inst ID: voa6.i
Smp Info : VLCSW-220906;VLCSW-220906;3;;LCS
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220906.b\8260W.m
Meth Date : 09-Sep-2022 16:55 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 5 QC Sample: LCS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.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
Cpnd Variable		Local Compound Variable

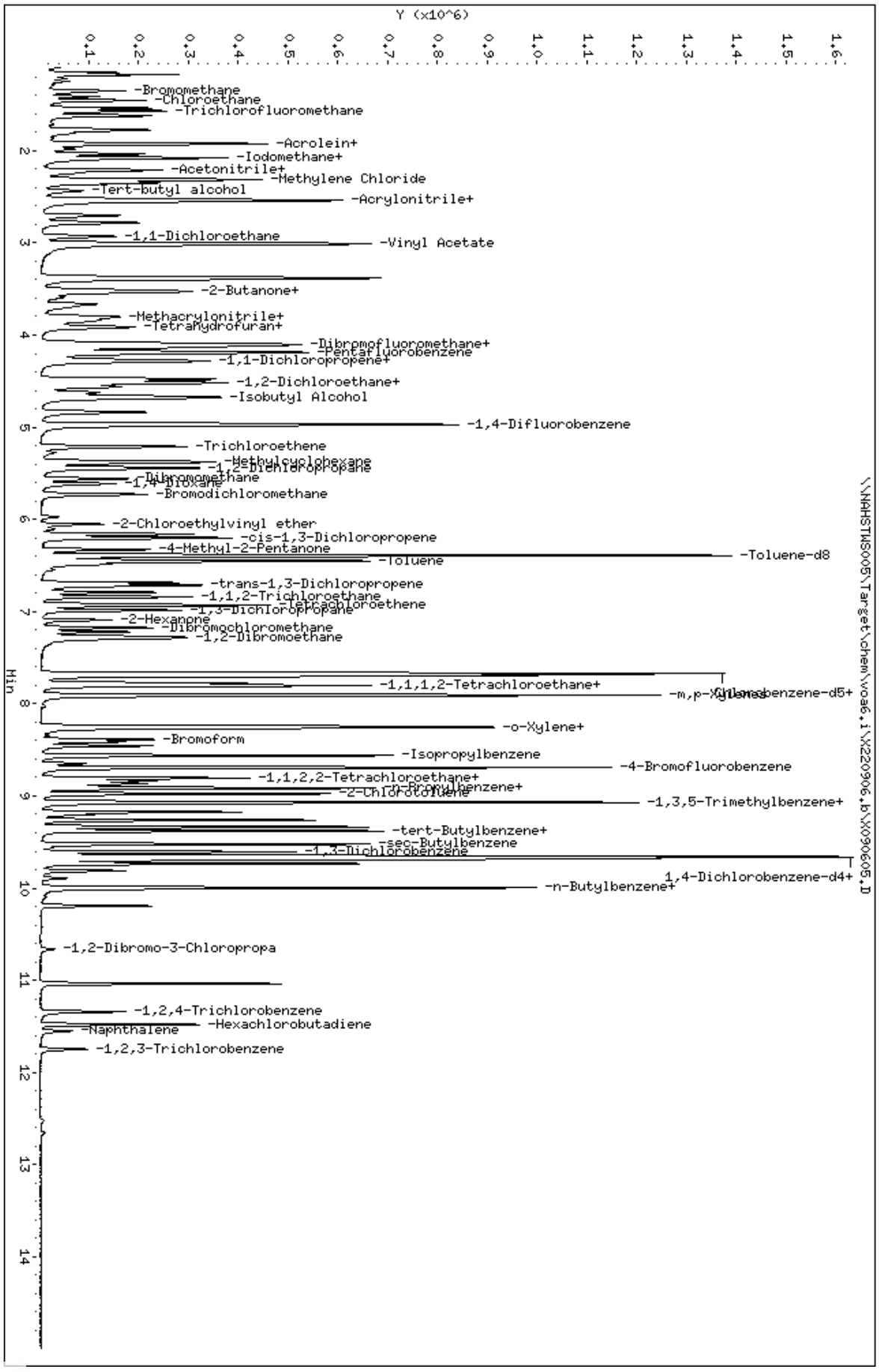
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.185	4.185	(1.000)	478182	50.0000	
* 36 1,4-Difluorobenzene	114	4.969	4.969	(1.000)	710056	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	653795	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.662	(1.000)	313936	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.980)	244410	54.2245	54.22
$ 35 1,2-Dichloroethane-d4	65	4.478	4.477	(1.070)	259786	52.5835	52.58
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	851899	52.2242	52.22
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	294539	50.4920	50.49
60 1,1,1,2-Tetrachloroethane	131	7.776	7.773	(1.014)	94829	20.6451	20.64
31 1,1,1-Trichloroethane	97	4.088	4.088	(0.977)	138243	20.3792	20.37
68 1,1,2,2-Tetrachloroethane	83	8.841	8.841	(0.915)	87919	19.9402	19.94
53 1,1,2-Trichloroethane	83	6.843	6.839	(0.892)	66007	19.6361	19.63
22 1,1-Dichloroethane	63	2.929	2.929	(0.700)	148384	20.1564	20.15
11 1,1-Dichloroethene	96	1.925	1.925	(0.460)	77999	19.5404	19.54
32 1,1-Dichloropropene	75	4.286	4.283	(0.863)	118204	20.6266	20.62
93 1,2,3-Trichlorobenzene	180	11.750	11.742	(1.216)	31247	19.1462	19.14
71 1,2,3-Trichloropropane	75	8.867	8.863	(0.917)	65534	19.2772	19.27(M)
90 1,2,4-Trichlorobenzene	180	11.341	11.337	(1.173)	54227	18.9649	18.96
79 1,2,4-Trimethylbenzene	105	9.381	9.381	(0.971)	314681	20.8971	20.89
89 1,2-Dibromo-3-Chloropropane	155	10.663	10.659	(1.103)	5735	17.9952	17.99

57 1,2-Dibromoethane	107	7.263	7.259 (0.947)	85158	19.9797	19.97
88 1,2-Dichlorobenzene	146	9.996	9.992 (1.034)	158509	20.1786	20.17

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
33	1,2-Dichloroethane	62	4.560	4.560	(0.918)	119443	19.1805	19.18
42	1,2-Dichloropropane	63	5.437	5.437	(1.094)	89296	20.4316	20.43
75	1,3,5-Trimethylbenzene	105	9.070	9.066	(0.938)	319533	20.9543	20.95
83	1,3-Dichlorobenzene	146	9.609	9.606	(0.994)	179790	20.6411	20.64
54	1,3-Dichloropropane	76	6.985	6.982	(0.911)	134928	19.7329	19.73
84	1,4-Dichlorobenzene	146	9.684	9.684	(1.002)	189484	20.4911	20.49
26	2,2-Dichloropropane	77	3.514	3.514	(0.840)	137187	20.8386	20.83
24	2-Butanone	43	3.593	3.582	(0.858)	47940	39.9634	39.96
76	2-Chlorotoluene	91	8.976	8.976	(0.929)	273625	20.3341	20.33
52	2-Hexanone	43	7.090	7.090	(0.924)	81877	39.8270	39.82
77	4-Chlorotoluene	91	9.073	9.070	(0.939)	309753	20.6230	20.62
82	p-Isopropyltoluene	119	9.651	9.651	(0.998)	328795	21.4716	21.47
45	4-Methyl-2-Pentanone	43	6.329	6.329	(0.825)	131255	41.2013	41.20
10	Acetone	43	1.985	1.981	(0.474)	47451	43.9440	43.94
37	Benzene	78	4.519	4.515	(0.909)	341491	20.2959	20.29
74	Bromobenzene	156	8.807	8.807	(0.911)	111784	20.8502	20.85
29	Bromochloromethane	128	3.807	3.799	(0.910)	53894	19.9894	19.98
39	Bromodichloromethane	83	5.730	5.726	(1.153)	123661	20.6215	20.62
66	Bromoform	173	8.414	8.410	(1.097)	56491	18.6172	18.61
6	Bromomethane	94	1.347	1.347	(0.322)	73944	21.8850	21.88
19	Carbon Disulfide	76	2.078	2.078	(0.497)	447300	42.3276	42.32
34	Carbon Tetrachloride	117	4.268	4.268	(0.859)	123450	20.1555	20.15
59	Chlorobenzene	112	7.698	7.694	(1.003)	257775	20.7939	20.79
7	Chloroethane	64	1.411	1.411	(0.337)	60703	19.7920	19.79
28	Chloroform	83	3.911	3.911	(0.935)	164730	20.4234	20.42
3	Chloromethane	50	1.085	1.085	(0.259)	89485	20.2433	20.24
27	cis-1,2-Dichloroethene	96	3.533	3.529	(0.844)	99860	21.0054	21.00
46	cis-1,3-Dichloropropene	75	6.161	6.157	(1.240)	153811	20.8809	20.88
55	Dibromochloromethane	129	7.177	7.176	(0.936)	97512	20.0949	20.09
44	Dibromomethane	93	5.557	5.553	(1.118)	60686	20.6953	20.69
2	Dichlorodifluoromethane	85	0.980	0.980	(0.234)	78296	17.0732	17.07
61	Ethylbenzene	106	7.803	7.802	(1.017)	131845	21.0536	21.05
91	Hexachlorobutadiene	225	11.480	11.480	(1.188)	53354	20.2046	20.20
67	Isopropylbenzene	105	8.564	8.563	(1.116)	394284	20.9371	20.93
62	m,p-Xylenes	106	7.908	7.904	(1.031)	328144	42.1275	42.12
17	Methylene Chloride	84	2.311	2.311	(0.552)	96077	21.3587	21.35
87	n-Butylbenzene	91	9.996	9.995	(1.034)	283172	22.2549	22.25
73	n-Propylbenzene	91	8.912	8.912	(0.922)	457647	22.0977	22.09
92	Naphthalene	128	11.555	11.547	(1.195)	57720	18.0446	18.04
63	o-Xylene	106	8.245	8.241	(1.075)	156579	20.6778	20.67
81	sec-Butylbenzene	105	9.523	9.523	(0.985)	374976	21.1880	21.18
64	Styrene	104	8.264	8.260	(1.077)	255481	20.4878	20.48
78	tert-Butylbenzene	119	9.340	9.336	(0.966)	272821	21.1093	21.10
56	Tetrachloroethene	164	6.933	6.929	(0.904)	87302	20.5923	20.59
50	Toluene	91	6.449	6.449	(0.841)	374823	20.3947	20.39
20	trans-1,2-Dichloroethene	96	2.539	2.536	(0.607)	86045	20.4546	20.45
51	trans-1,3-Dichloropropene	75	6.685	6.682	(1.346)	121696	19.9491	19.94
38	Trichloroethene	130	5.212	5.208	(1.049)	99974	20.0583	20.05
8	Trichlorofluoromethane	101	1.569	1.569	(0.375)	151727	20.1498	20.14
5	Vinyl Chloride	62	1.152	1.152	(0.275)	94010	18.7489	18.74

QC Flag Legend

M - Compound response manually integrated.



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Date : 06-SEP-2022 11:54
Client ID: VLCSW-220906
Sample Info: VLCSW-220906;VLCSW-220906;3;;LCS
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File : \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090605.D
Inj Date : 06-SEP-2022 11:54
InstruID : voa6.i
LabSampID : VLCSW-220906

1,2,3-Trichloropropane (96-18-4)

Reason Code:

BEFORE

MASS
91
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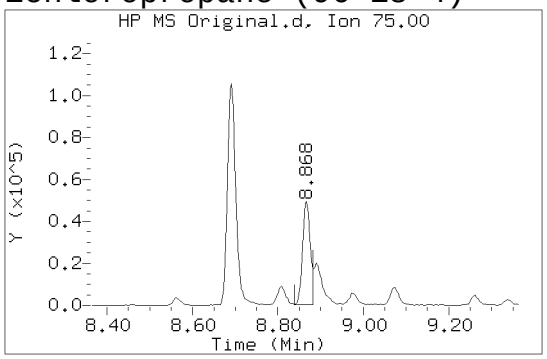
309753
HEIGHT
217158
09-Sep-2022
16:54
linh
pham



AFTER

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09-Sep-2022
16:55
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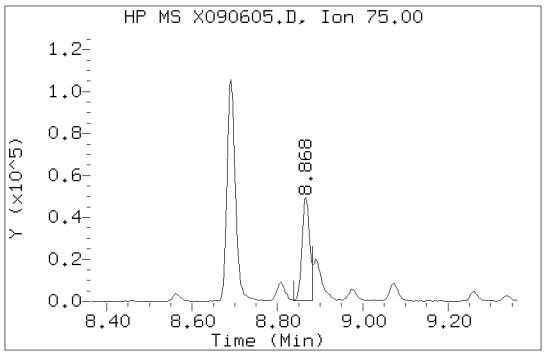

BEFORE

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16:54
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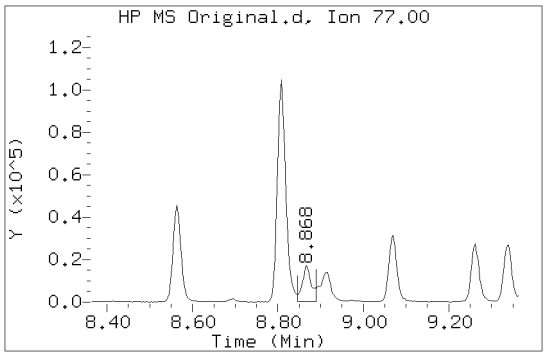

AFTER

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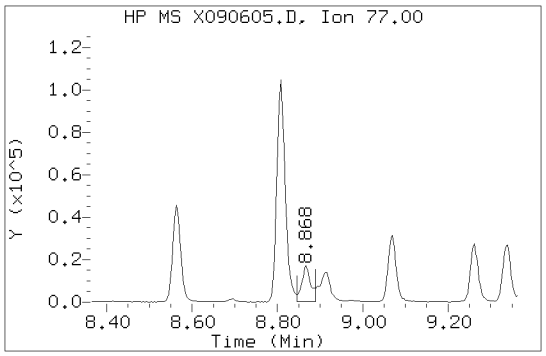


ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090607.D
Lab Smp Id: VBLKW-220906 Client Smp ID: VBLKW-220906
Inj Date : 06-SEP-2022 12:36
Operator : PC Inst ID: voa6.i
Smp Info : VBLKW-220906;VBLKW-220906;3;;BLANK
Misc Info : HS22052000V6;WATER;0;1;
Comment :
Method : \\NAHSTWS005\Target\chem\voa6.i\X220906.b\8260W.m
Meth Date : 09-Sep-2022 16:55 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 7 QC Sample: BLANK
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.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
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	4.185	4.185	(1.000)	552574	50.0000	
* 36 1,4-Difluorobenzene	114	4.968	4.969	(1.000)	764977	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	650776	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.662	(1.000)	274946	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.980)	246430	47.2194	47.21
$ 35 1,2-Dichloroethane-d4	65	4.477	4.477	(1.070)	262362	45.9141	45.91
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	883486	54.4119	54.41
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	269071	46.2723	46.27

01148395

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090607.D

Date : 06-SEP-2022 12:36

Client ID: VBLKW-220906

Instrument: voa6.i

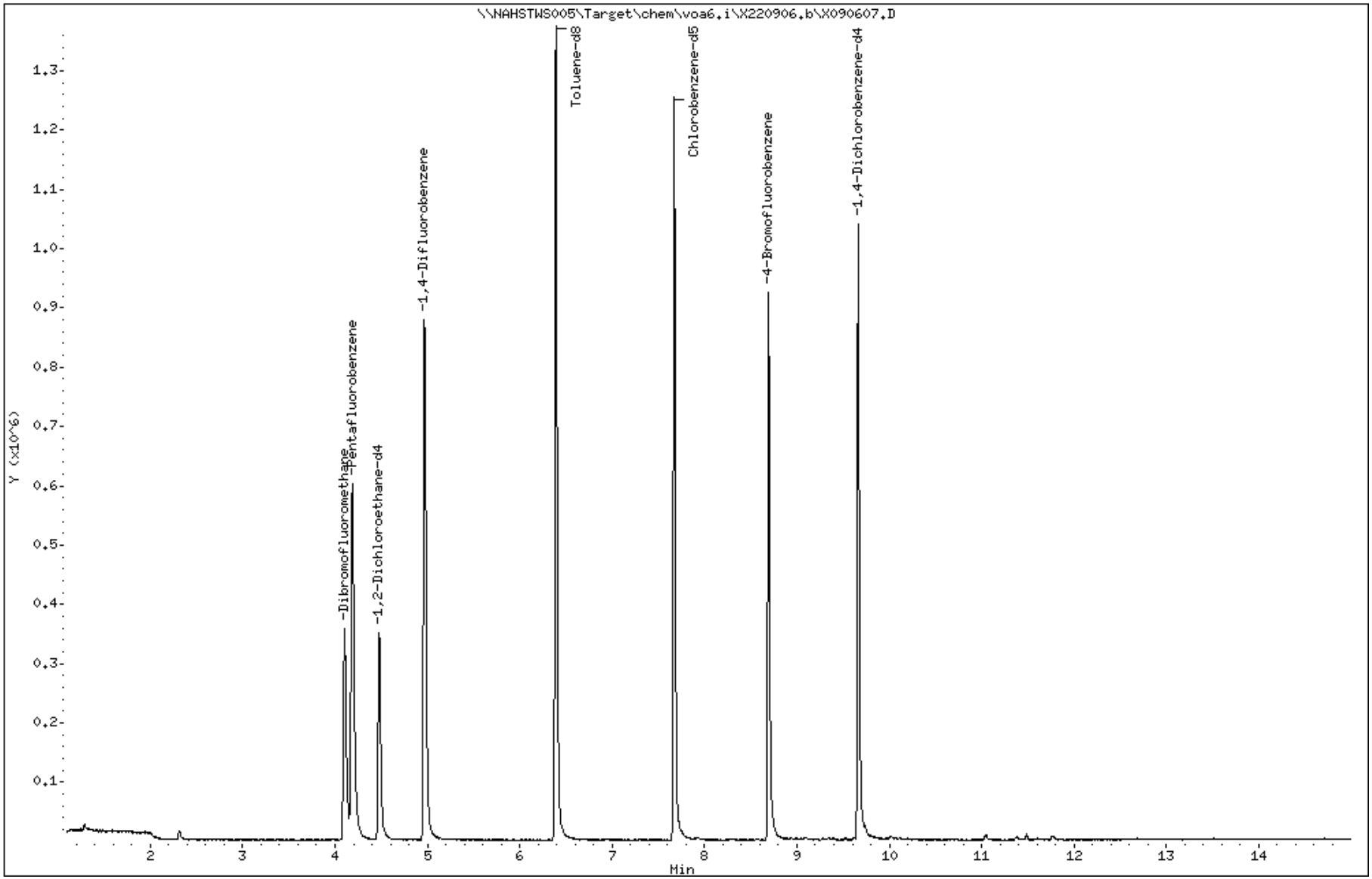
Sample Info: VBLKW-220906;VBLKW-220906;3;;BLANK

Purge Volume: 5.0

Operator: PC

Column phase: DB624

Column diameter: 0.18



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Inj Date : 06-SEP-2022 12:36
InstruID : voa6.i
LabSampID : VBLKW-220906

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090610.D Page 1
Report Date: 09-Sep-2022 16:55

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090610.D
Lab Smp Id: HS22081514-14 Client Smp ID: HS22081514-14
Inj Date : 06-SEP-2022 13:39
Operator : PC Inst ID: voa6.i
Smp Info : HS22081514-14;HS22081514-14;;;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220906.b\8260W.m
Meth Date : 09-Sep-2022 16:55 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 10
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.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
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	4.185	4.185	(1.000)	551312	50.0000	
* 36 1,4-Difluorobenzene	114	4.969	4.969	(1.000)	775678	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	663336	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.662	(1.000)	293677	50.0000	
$ 30 Dibromofluoromethane	113	4.106	4.103	(0.981)	248791	47.7896	47.78
$ 35 1,2-Dichloroethane-d4	65	4.478	4.477	(1.070)	260542	45.6984	45.69
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	883390	53.3758	53.37
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	277707	46.8635	46.86
11 1,1-Dichloroethene	96	1.925	1.925	(0.460)	5869	1.27528	1.27(a)
33 1,2-Dichloroethane	62	4.560	4.560	(0.918)	319384	46.9487	46.94
28 Chloroform	83	3.927	3.911	(0.938)	8859	0.95266	0.95(a)
27 cis-1,2-Dichloroethene	96	3.533	3.529	(0.844)	686628	125.273	125.27
20 trans-1,2-Dichloroethene	96	2.543	2.536	(0.608)	5276	1.08784	1.08(a)
38 Trichloroethene	130	5.209	5.208	(1.048)	6242703	1146.54	1146.54(A)
5 Vinyl Chloride	62	1.149	1.152	(0.275)	2919	0.50493	0.50(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.

01148399

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090610.D

Page 1

Date : 06-SEP-2022 13:39

Client ID: HS22081514-14

Instrument: voa6.i

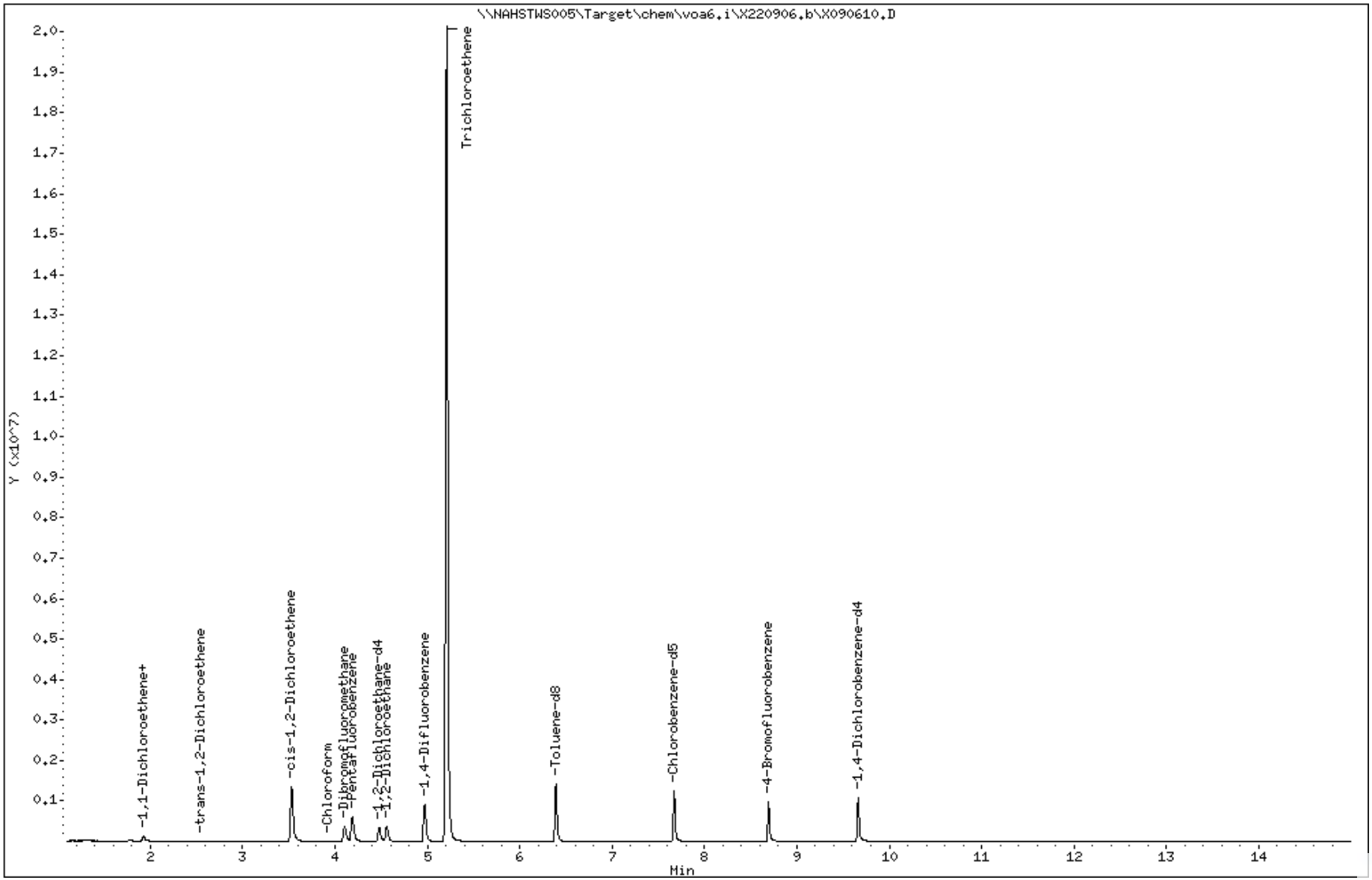
Sample Info: HS22081514-14;HS22081514-14;;;

Purge Volume: 5.0

Operator: PC

Column phase: DB624

Column diameter: 0.18



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Date : 06-SEP-2022 13:39

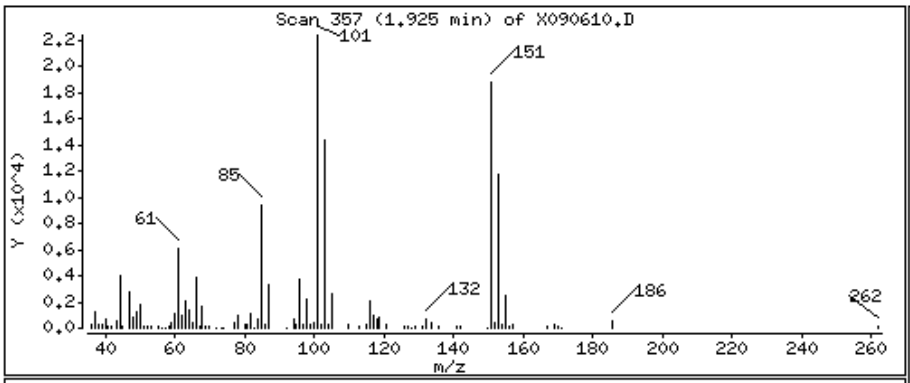
Client ID: HS22081514-14 Instrument: voa6.i

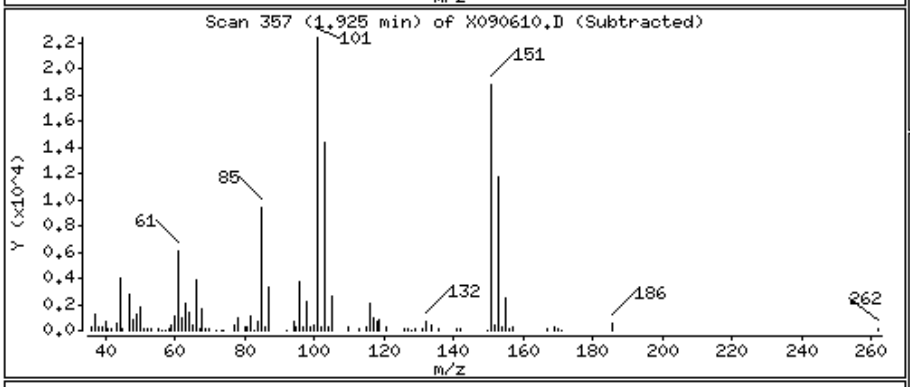
Sample Info: HS22081514-14;HS22081514-14;;;

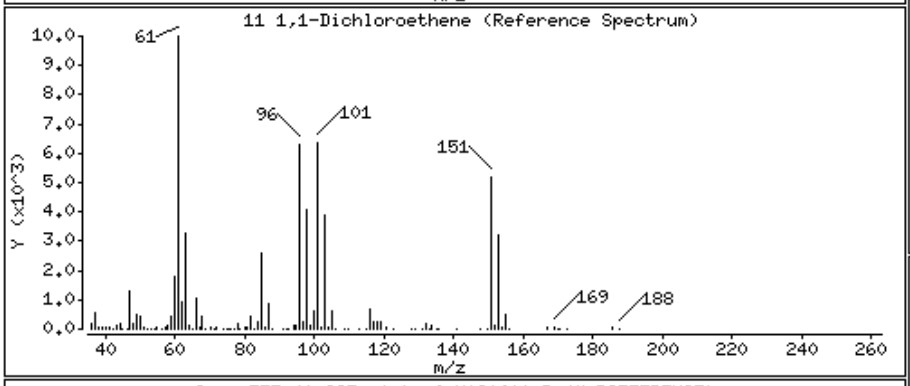
Purge Volume: 5.0 Operator: PC

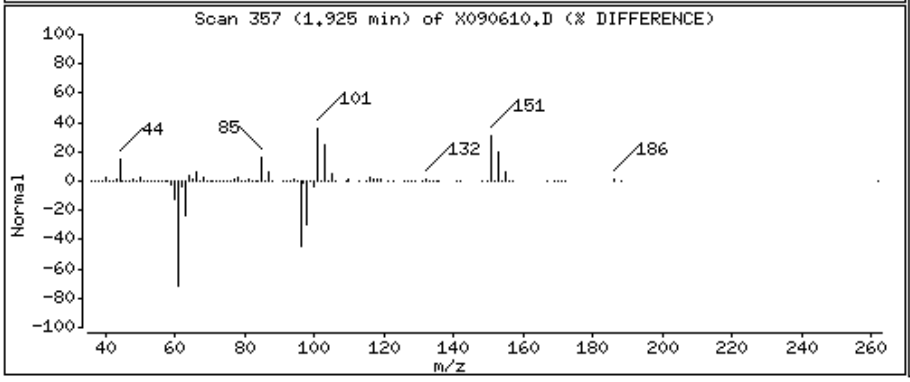
Column phase: DB624 Column diameter: 0.18

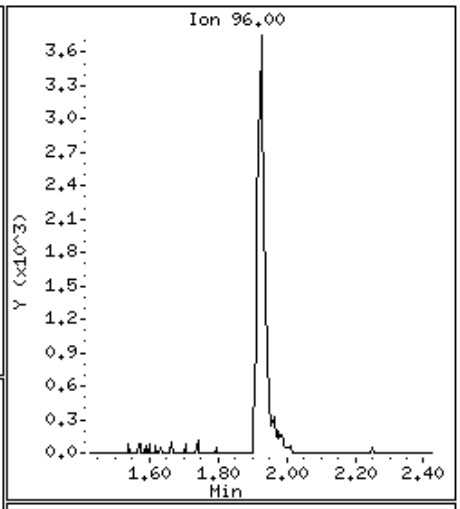
11 1,1-Dichloroethene Concentration: 1.27 ug/l

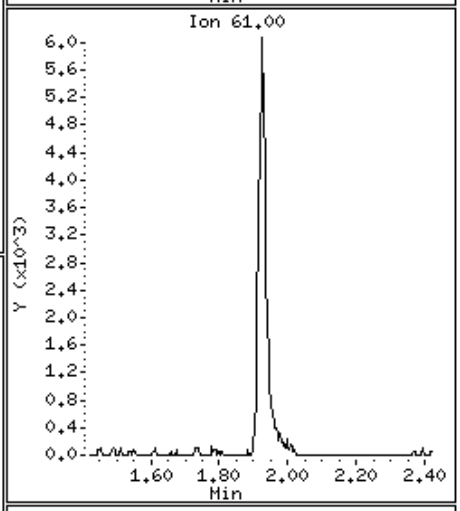


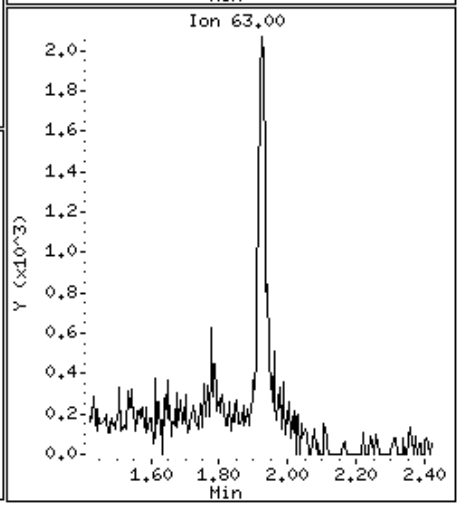












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090610.D

Date : 06-SEP-2022 13:39

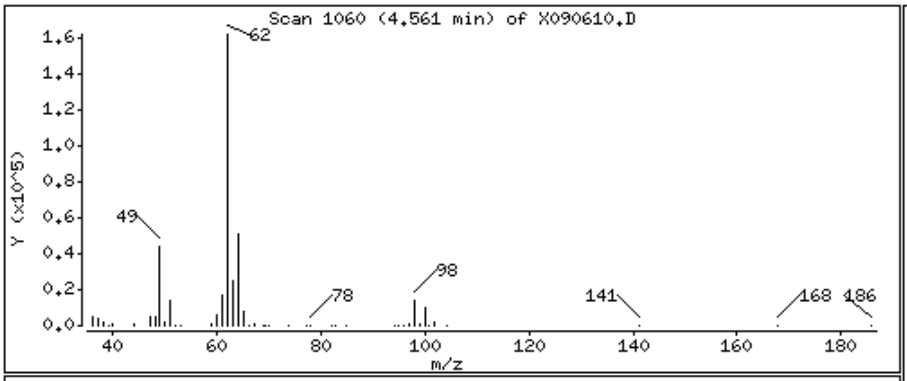
Client ID: HS22081514-14 Instrument: voa6.i

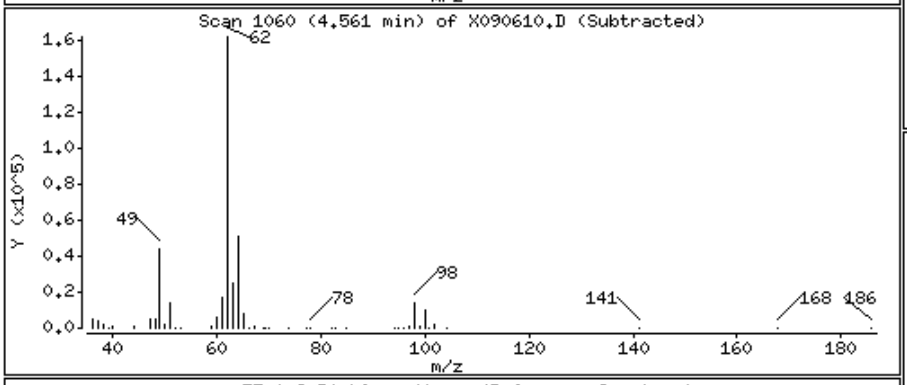
Sample Info: HS22081514-14;HS22081514-14;;;

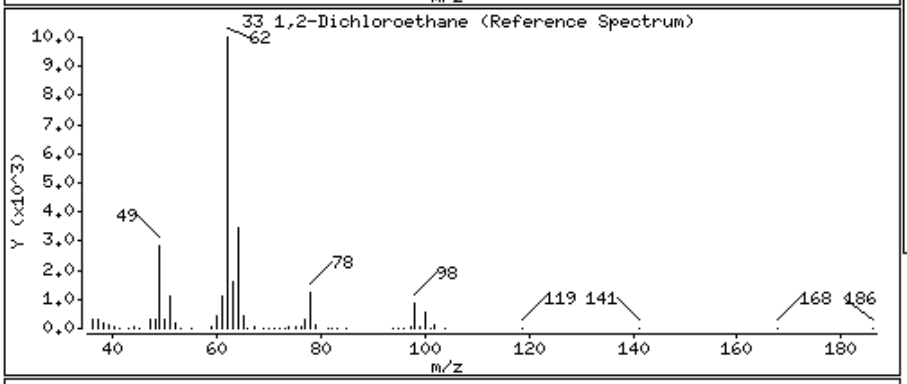
Purge Volume: 5.0 Operator: PC

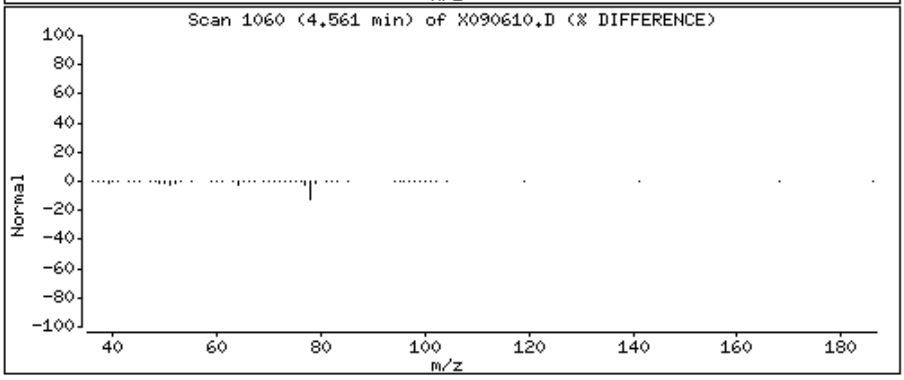
Column phase: DB624 Column diameter: 0.18

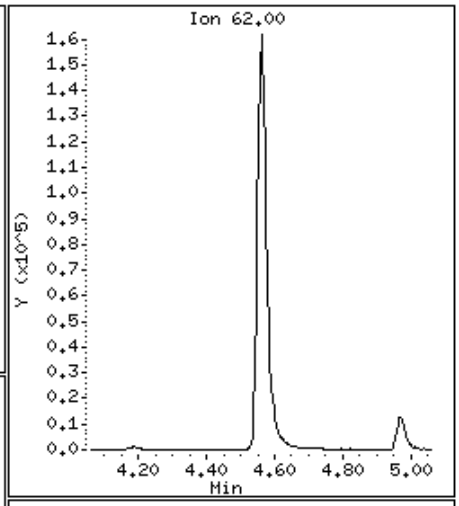
33 1,2-Dichloroethane Concentration: 46.94 ug/l

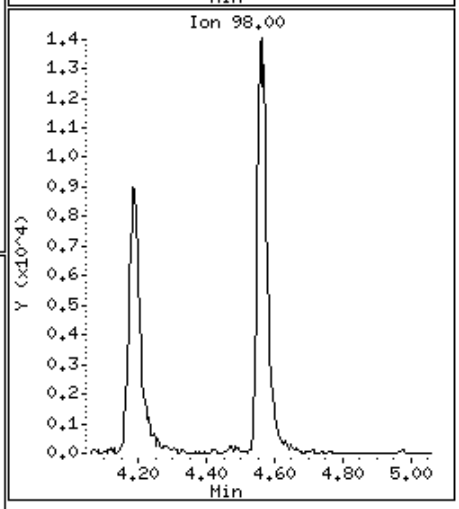












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090610.D Page 4

Date : 06-SEP-2022 13:39

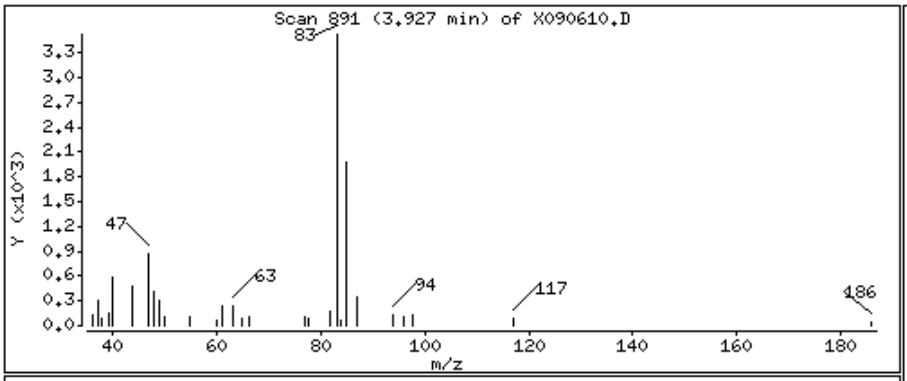
Client ID: HS22081514-14 Instrument: voa6.i

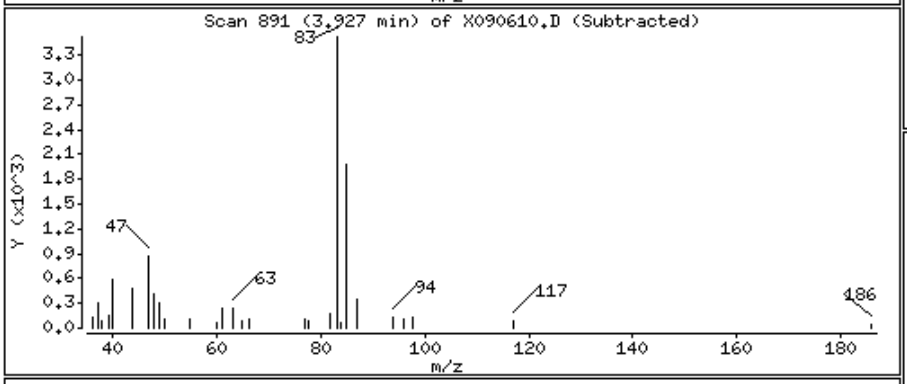
Sample Info: HS22081514-14;HS22081514-14;;;

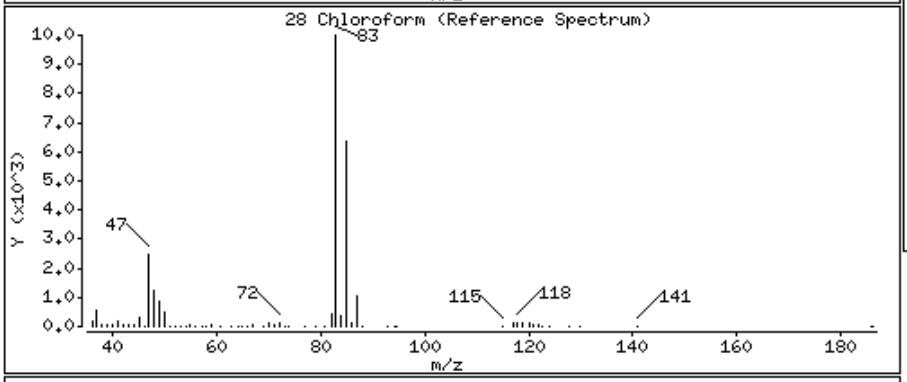
Purge Volume: 5.0 Operator: PC

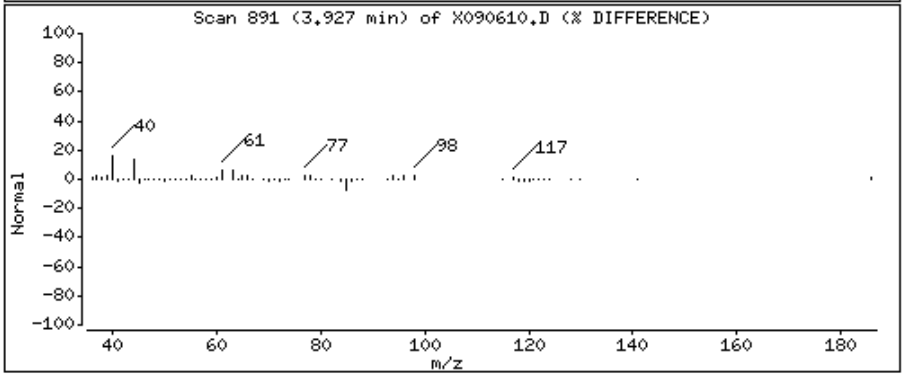
Column phase: DB624 Column diameter: 0.18

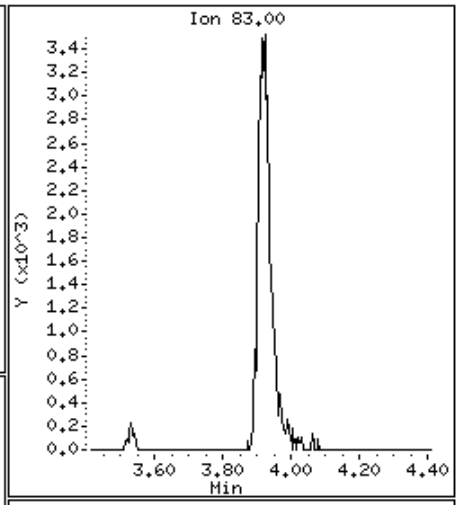
28 Chloroform Concentration: 0.95 ug/l

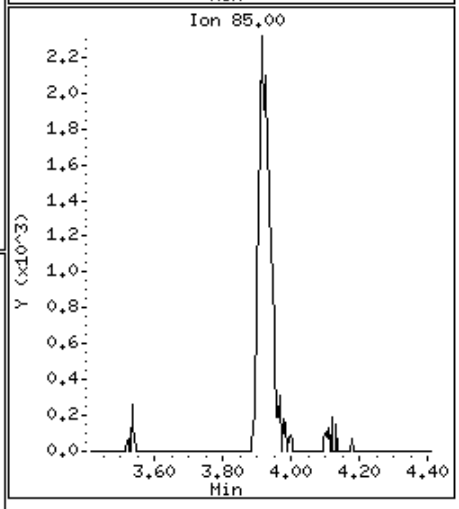












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090610.D Page 5

Date : 06-SEP-2022 13:39

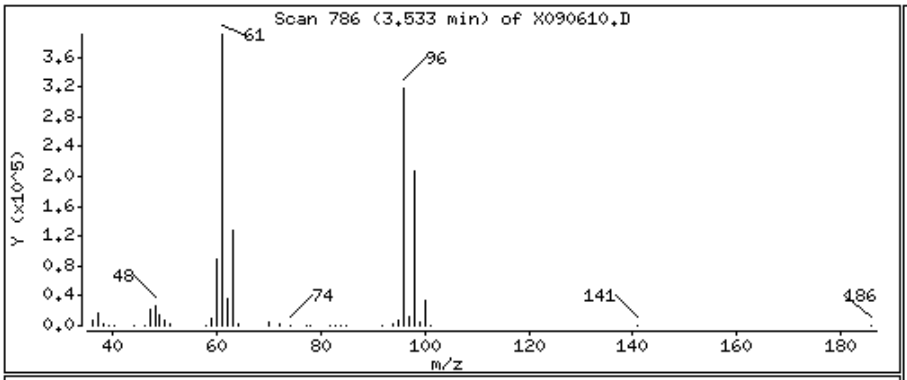
Client ID: HS22081514-14 Instrument: voa6.i

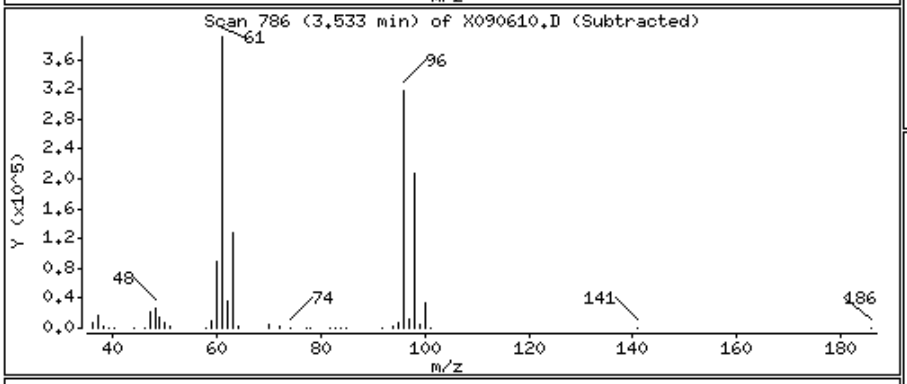
Sample Info: HS22081514-14;HS22081514-14;;;

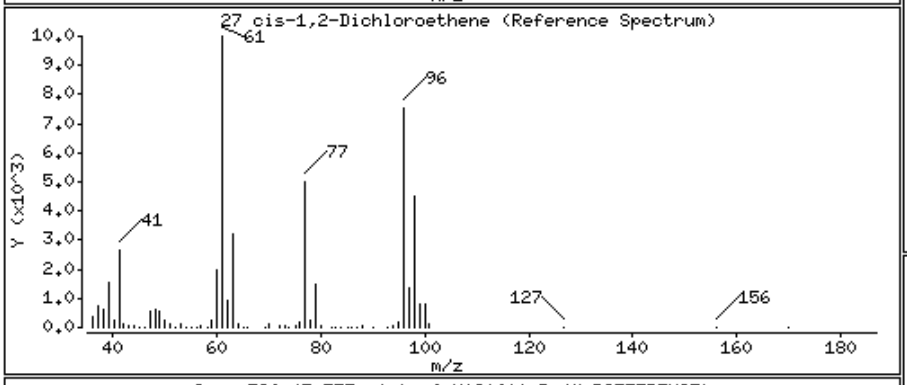
Purge Volume: 5.0 Operator: PC

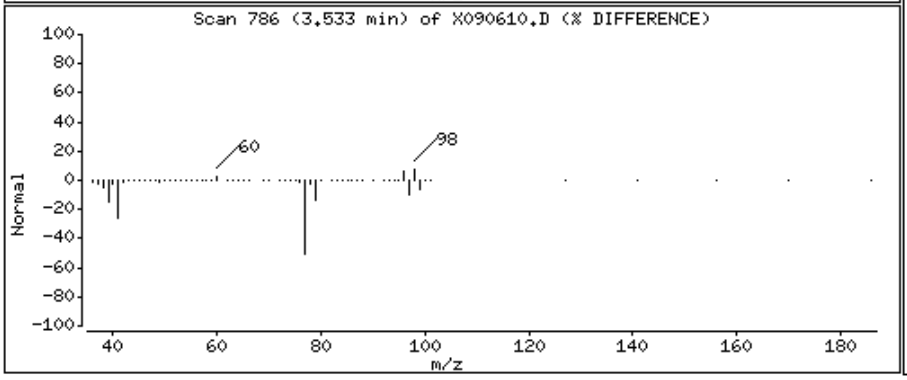
Column phase: DB624 Column diameter: 0.18

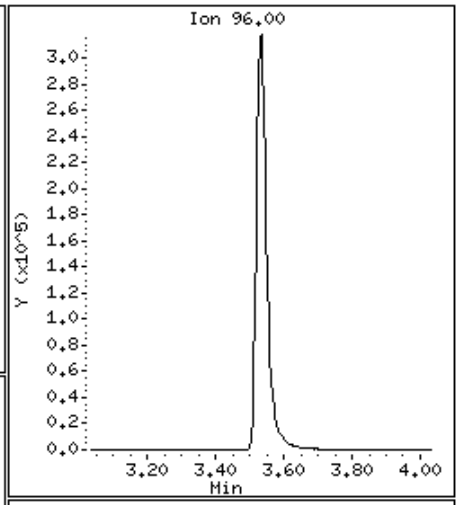
27 cis-1,2-Dichloroethene Concentration: 125.27 ug/l

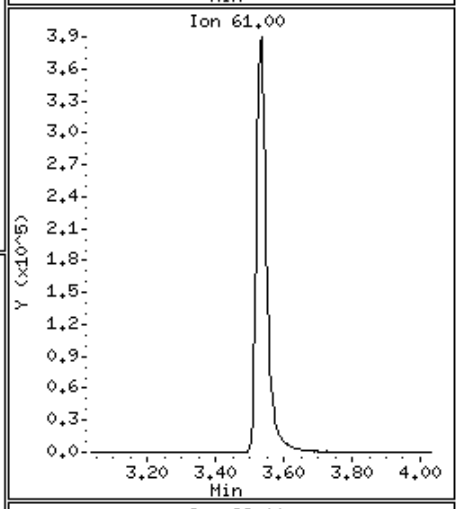


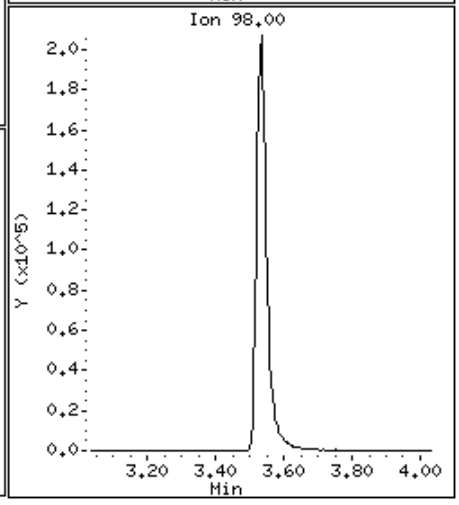












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090610.D Page 6

Date : 06-SEP-2022 13:39

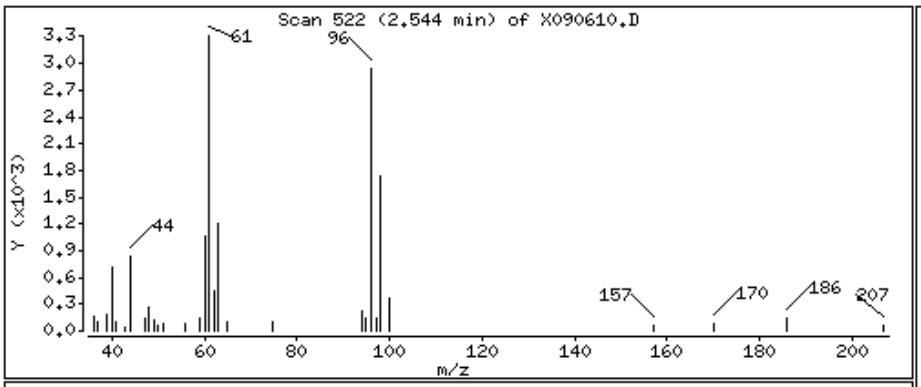
Client ID: HS22081514-14 Instrument: voa6.i

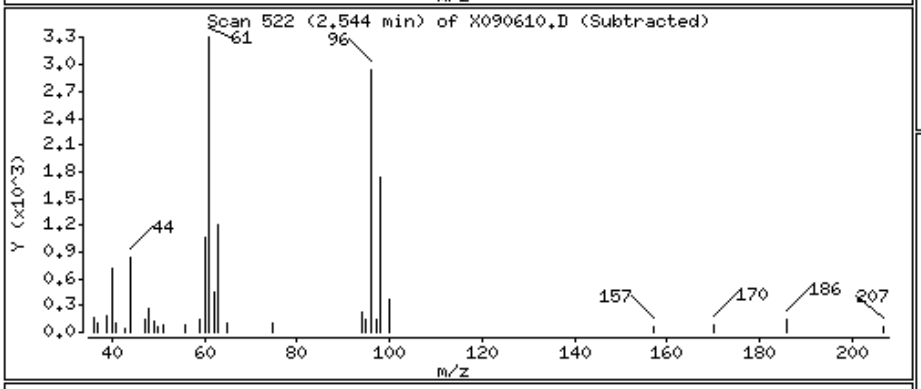
Sample Info: HS22081514-14;HS22081514-14;;;

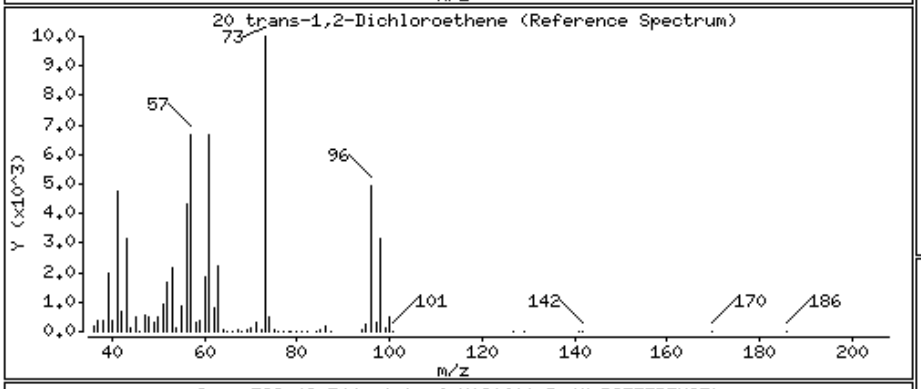
Purge Volume: 5.0 Operator: PC

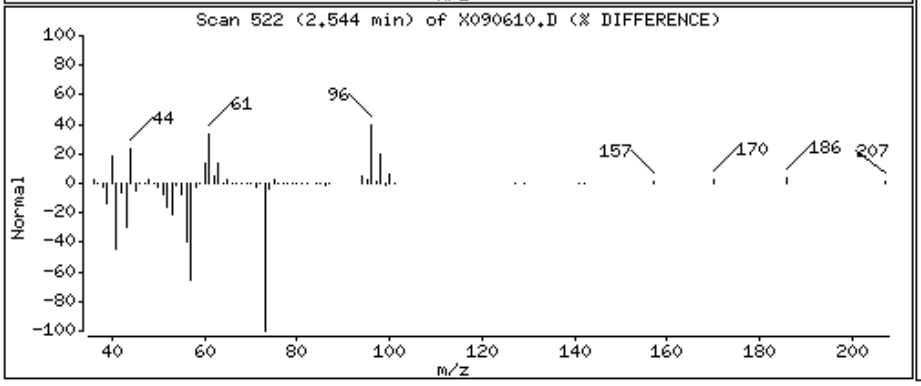
Column phase: DB624 Column diameter: 0.18

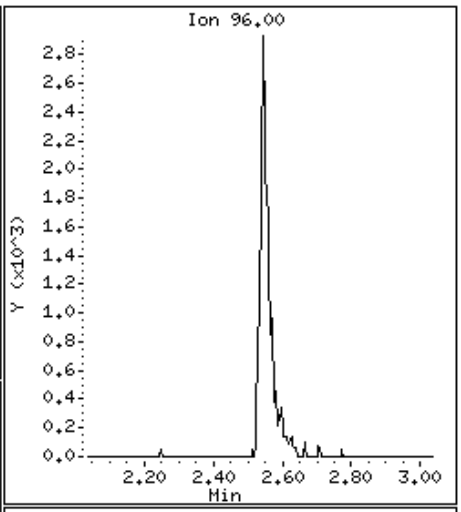
20 trans-1,2-Dichloroethene Concentration: 1.08 ug/l

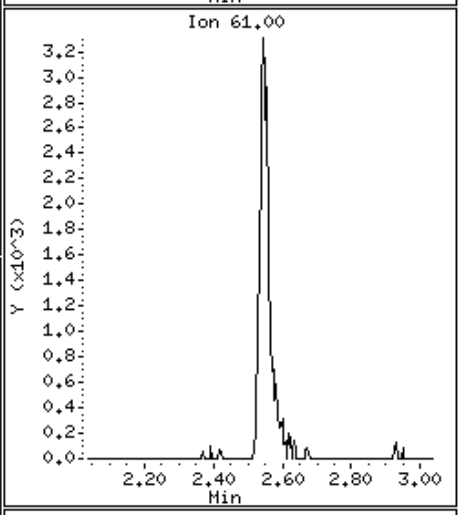


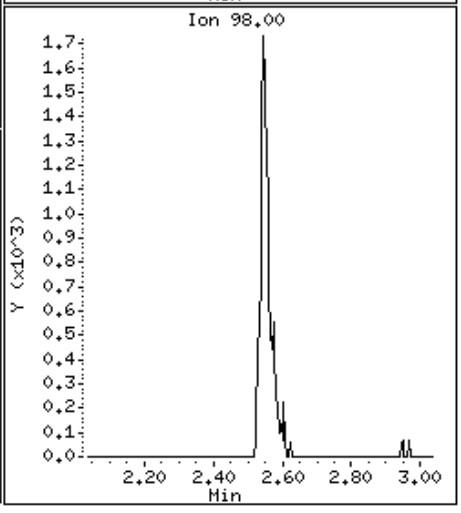












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090610.D Page 7

Date : 06-SEP-2022 13:39

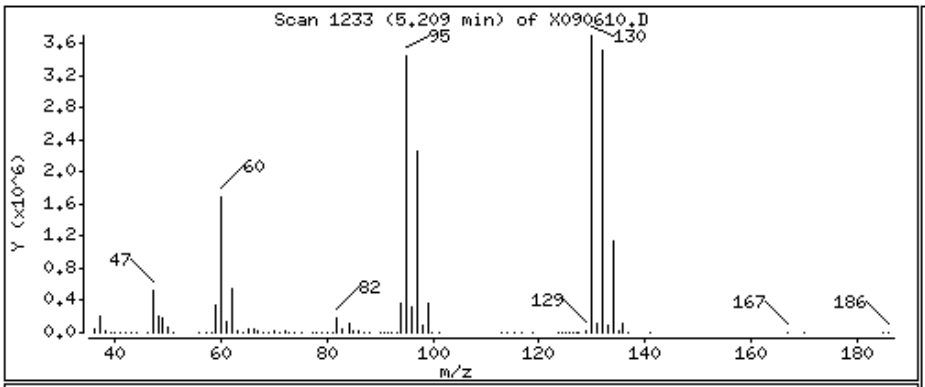
Client ID: HS22081514-14 Instrument: voa6.i

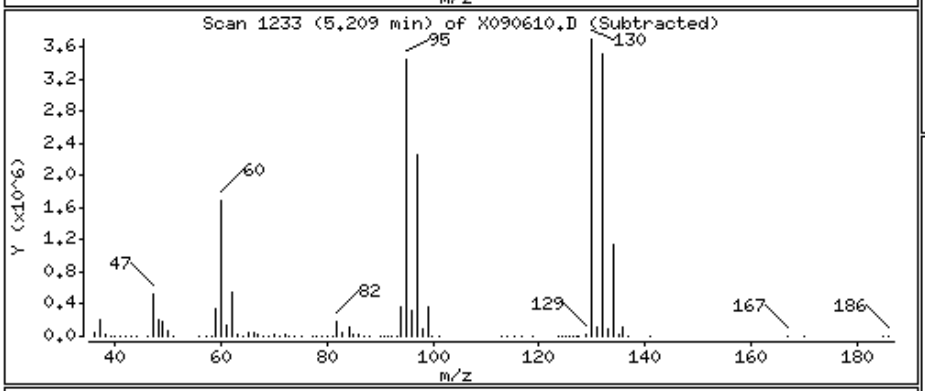
Sample Info: HS22081514-14;HS22081514-14;;;

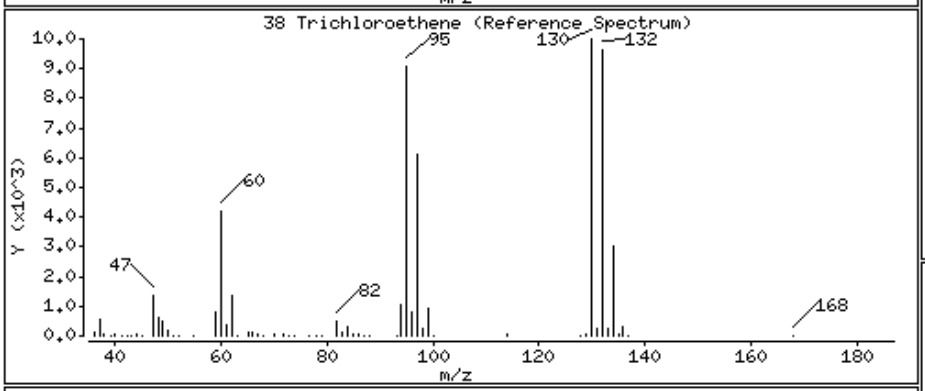
Purge Volume: 5.0 Operator: PC

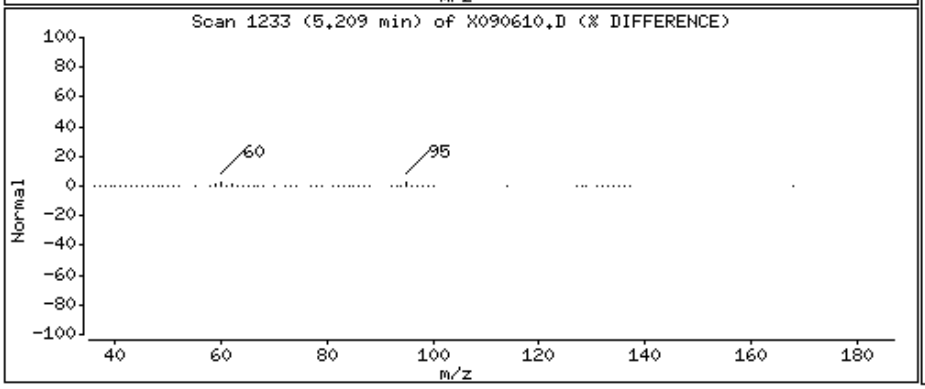
Column phase: DB624 Column diameter: 0.18

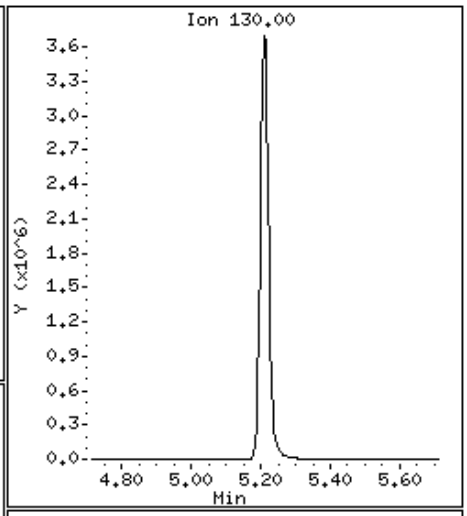
38 Trichloroethene Concentration: 1146.54 ug/l

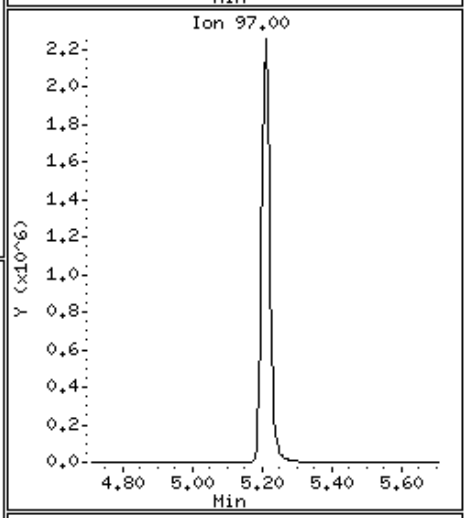


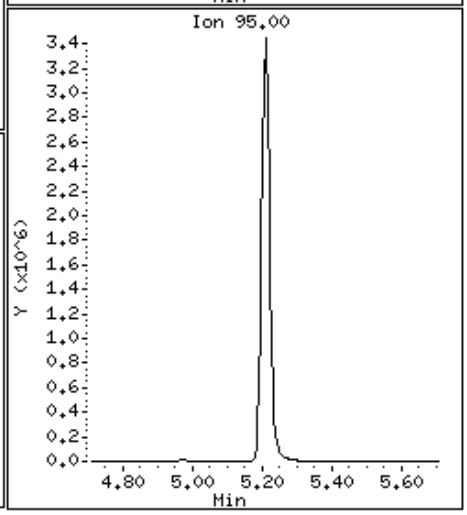












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Date : 06-SEP-2022 13:39

Client ID: HS22081514-14

Instrument: voa6.i

Sample Info: HS22081514-14;HS22081514-14;;;

Purge Volume: 5.0

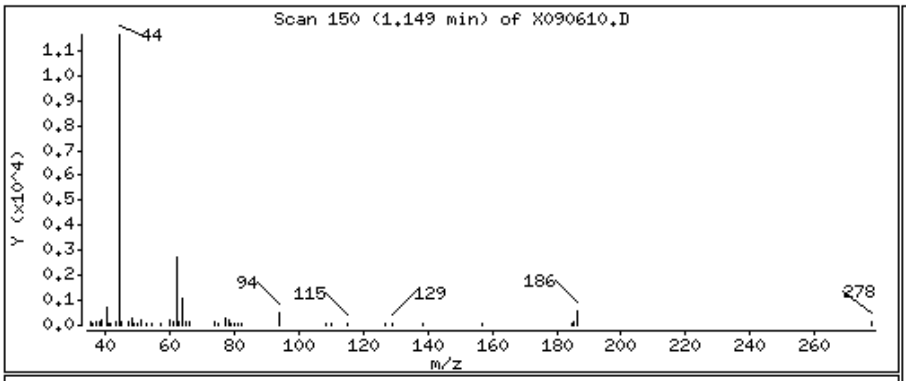
Operator: PC

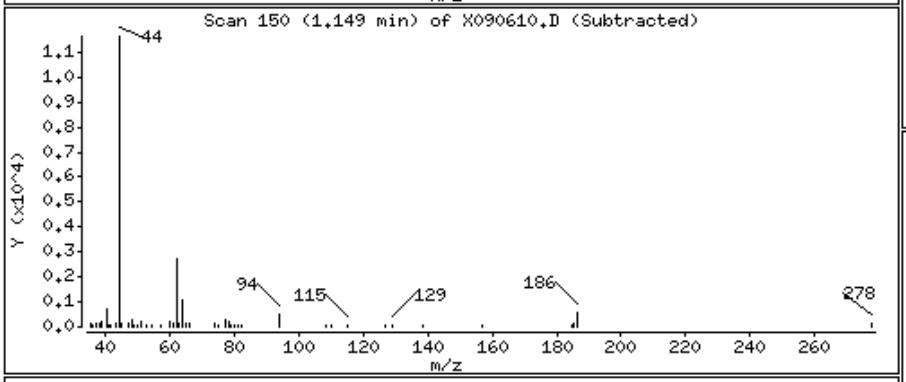
Column phase: DB624

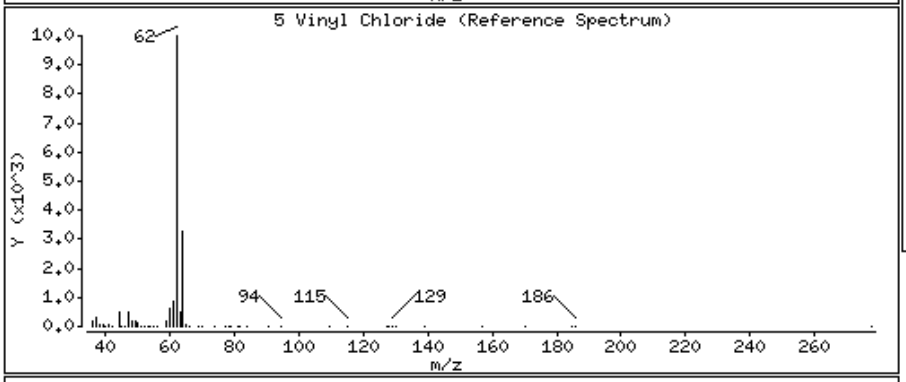
Column diameter: 0.18

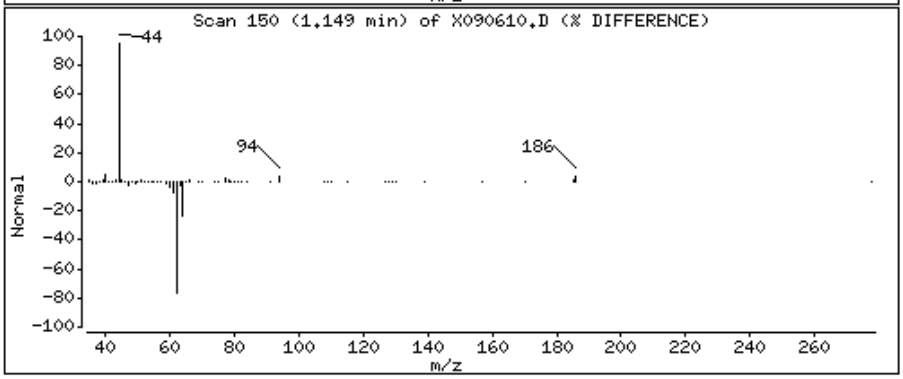
5 Vinyl Chloride

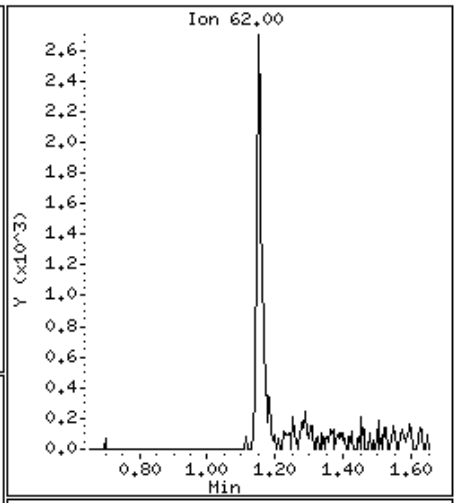
Concentration: 0.50 ug/l

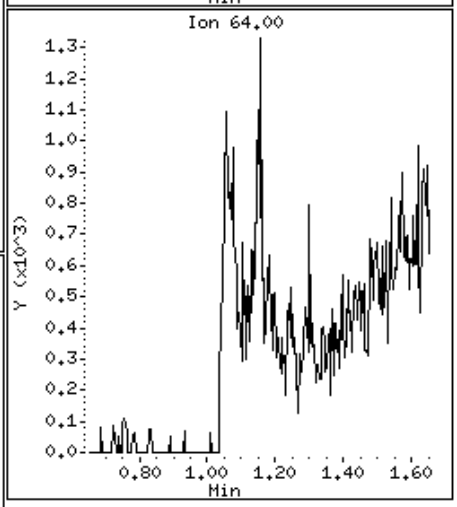












Data File : \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090610.D
Inj Date : 06-SEP-2022 13:39
InstruID : voa6.i
LabSampID : HS22081514-14

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090611.D Page 1
Report Date: 09-Sep-2022 16:55

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090611.D
Lab Smp Id: HS22081514-09 Client Smp ID: HS22081514-09
Inj Date : 06-SEP-2022 14:00
Operator : PC Inst ID: voa6.i
Smp Info : HS22081514-09;HS22081514-09;;;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220906.b\8260W.m
Meth Date : 09-Sep-2022 16:55 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 11
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.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
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	4.185	4.185	(1.000)	552712	50.0000	
* 36 1,4-Difluorobenzene	114	4.969	4.969	(1.000)	777780	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	654811	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.662	(1.000)	275259	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.980)	247652	47.4452	47.44
$ 35 1,2-Dichloroethane-d4	65	4.478	4.477	(1.070)	262790	45.9780	45.97
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	876349	53.6397	53.63
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	266892	45.6030	45.60
33 1,2-Dichloroethane	62	4.568	4.560	(0.919)	37184	5.45119	5.45
34 Carbon Tetrachloride	117	4.271	4.268	(0.860)	22049	3.28645	3.28(a)
28 Chloroform	83	3.915	3.911	(0.936)	54936	5.89261	5.89
27 cis-1,2-Dichloroethene	96	3.533	3.529	(0.844)	193685	35.2476	35.24
38 Trichloroethene	130	5.212	5.208	(1.049)	7281389	1333.69	1333.69(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.

01148410

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090611.D

Page 1

Date : 06-SEP-2022 14:00

Client ID: HS22081514-09

Instrument: voa6.i

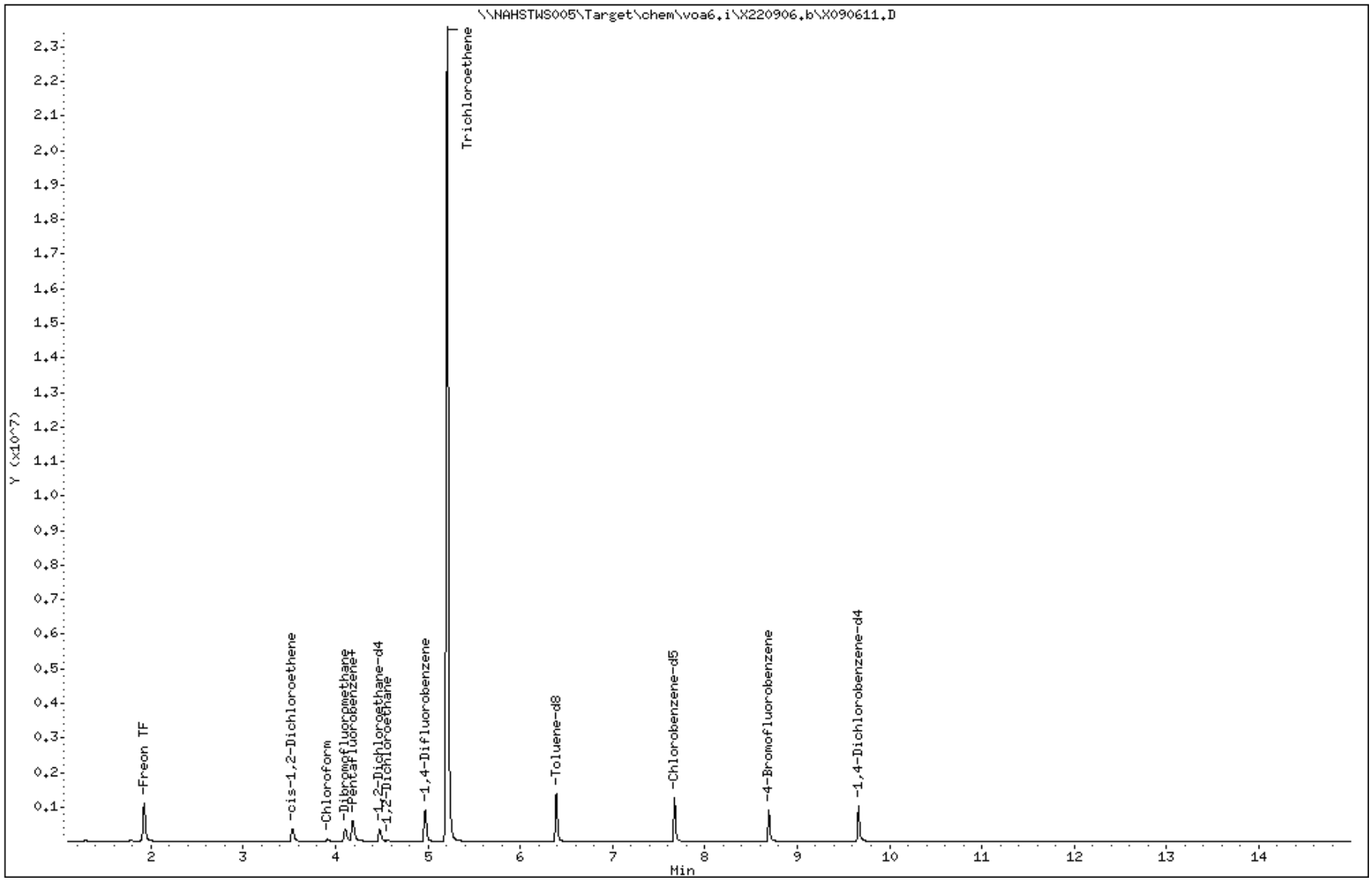
Sample Info: HS22081514-09;HS22081514-09;;;

Purge Volume: 5.0

Operator: PC

Column phase: DB624

Column diameter: 0.18



Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090611.D

Date : 06-SEP-2022 14:00

Client ID: HS22081514-09

Instrument: voa6.i

Sample Info: HS22081514-09;HS22081514-09;;;

Purge Volume: 5.0

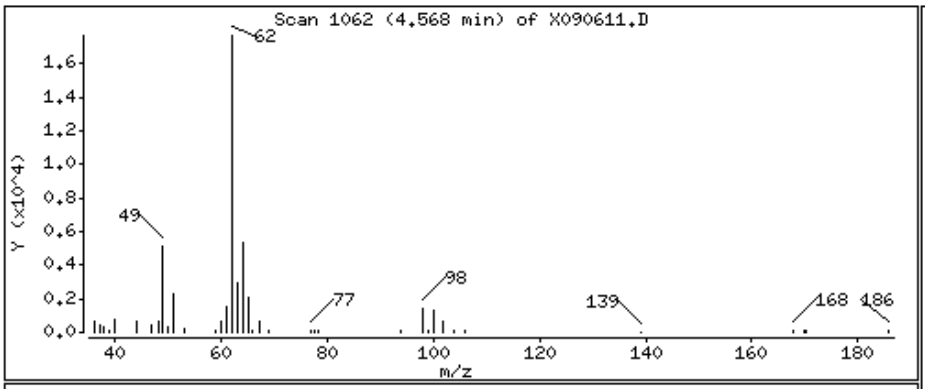
Operator: PC

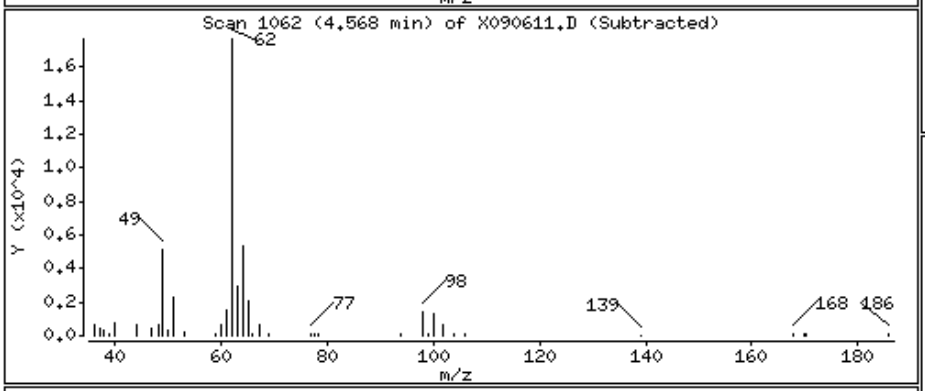
Column phase: DB624

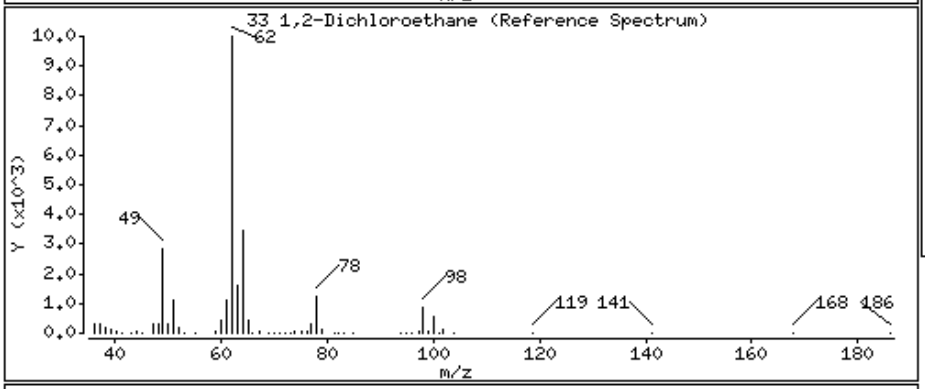
Column diameter: 0.18

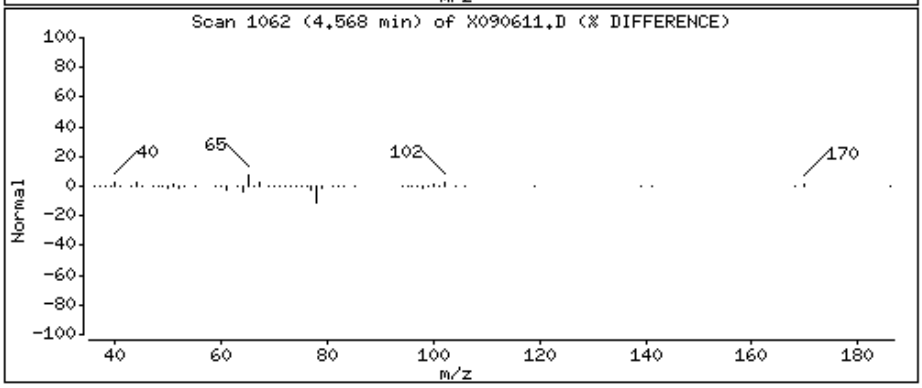
33 1,2-Dichloroethane

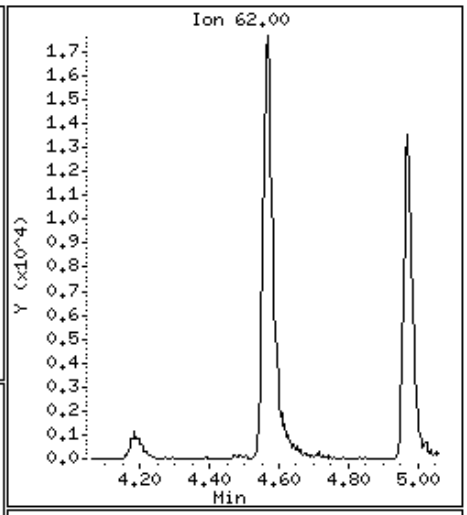
Concentration: 5.45 ug/l

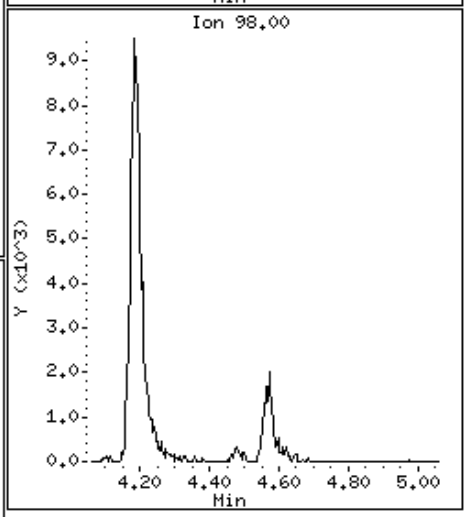












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090611.D Page 3

Date : 06-SEP-2022 14:00

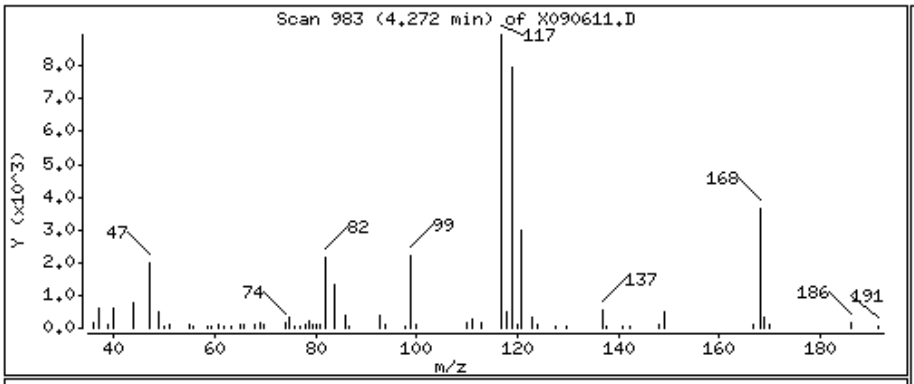
Client ID: HS22081514-09 Instrument: voa6.i

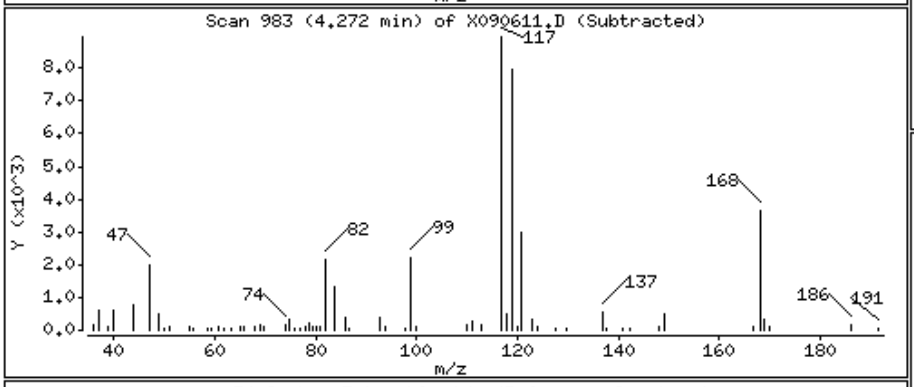
Sample Info: HS22081514-09;HS22081514-09;;;

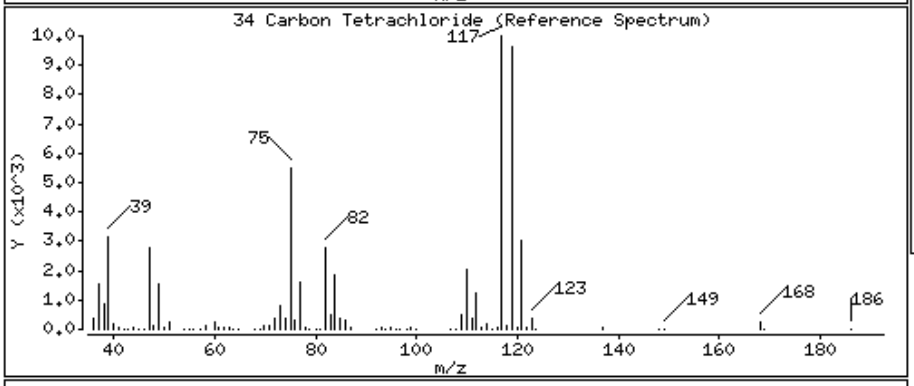
Purge Volume: 5.0 Operator: PC

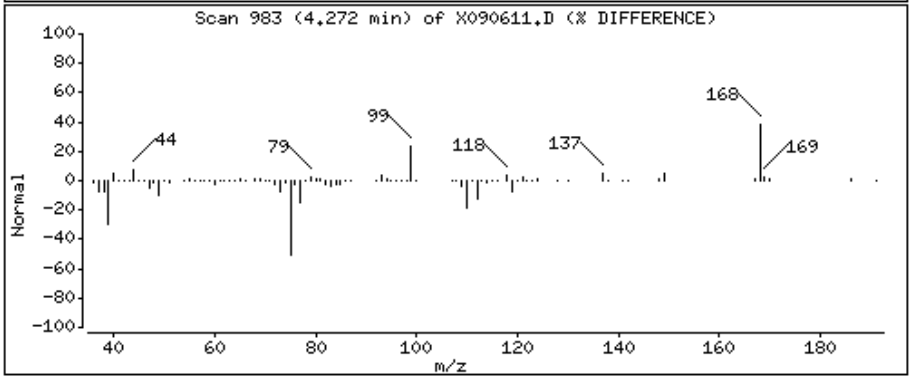
Column phase: DB624 Column diameter: 0.18

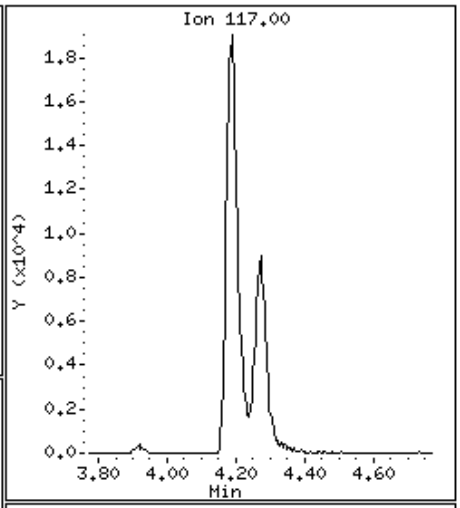
34 Carbon Tetrachloride Concentration: 3.28 ug/l

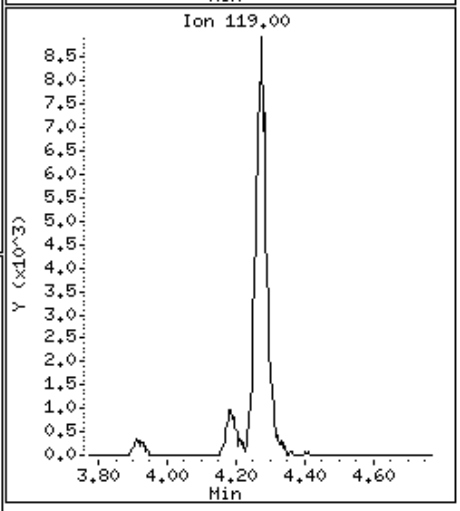












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090611.D Page 4

Date : 06-SEP-2022 14:00

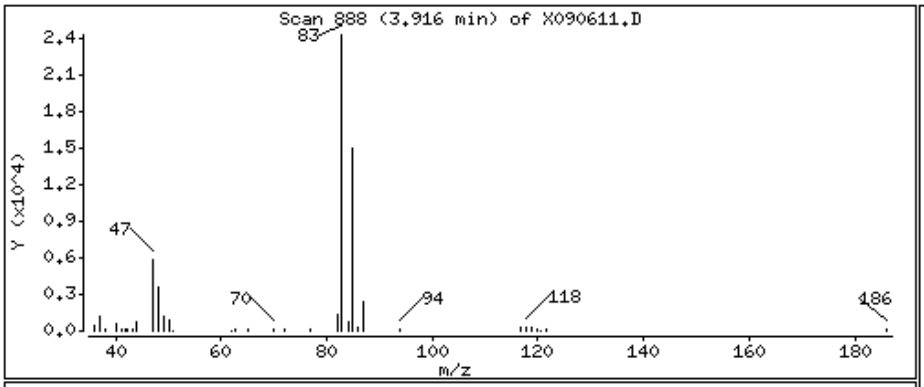
Client ID: HS22081514-09 Instrument: voa6.i

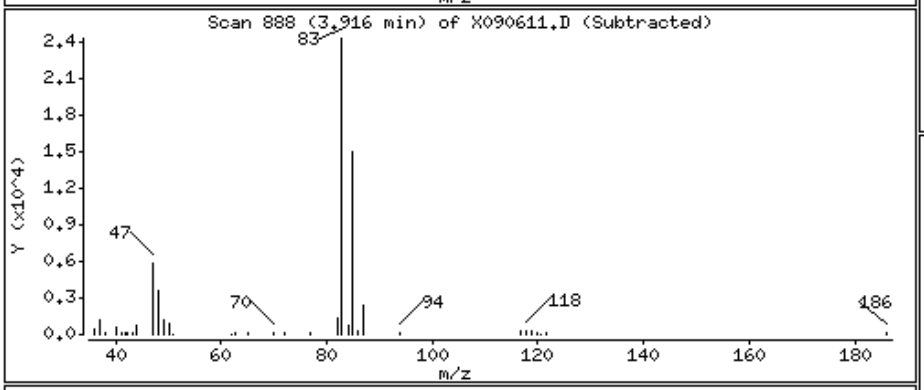
Sample Info: HS22081514-09;HS22081514-09;;;

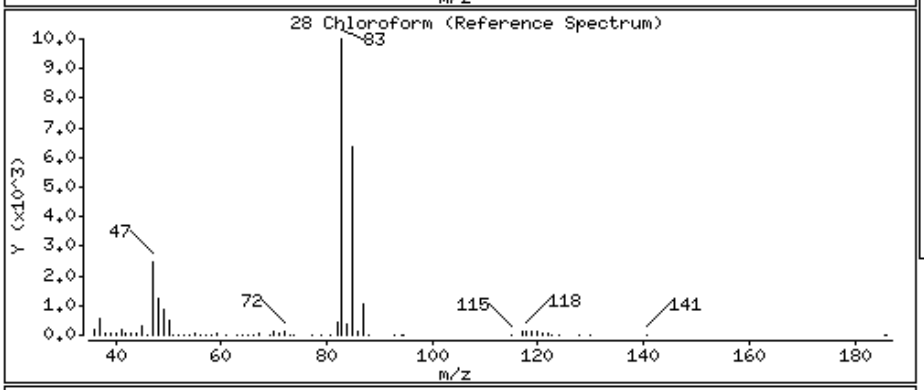
Purge Volume: 5.0 Operator: PC

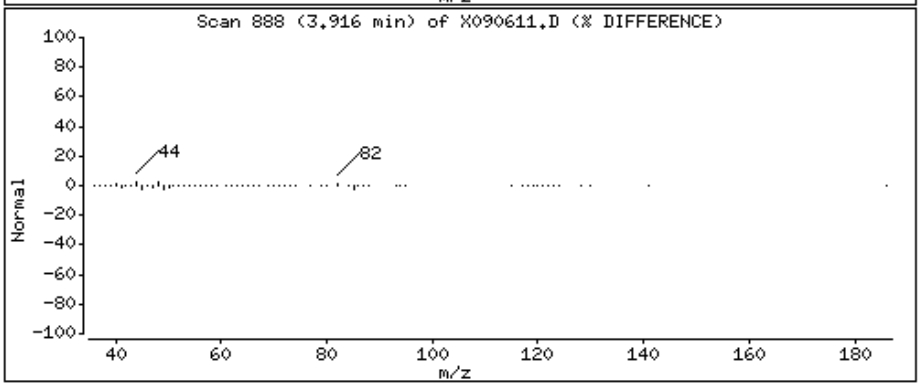
Column phase: DB624 Column diameter: 0.18

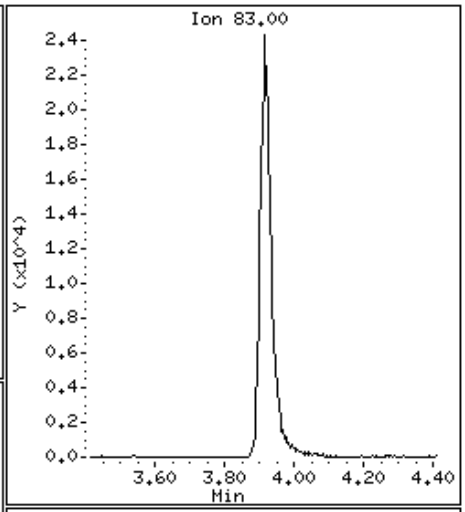
28 Chloroform Concentration: 5.89 ug/l

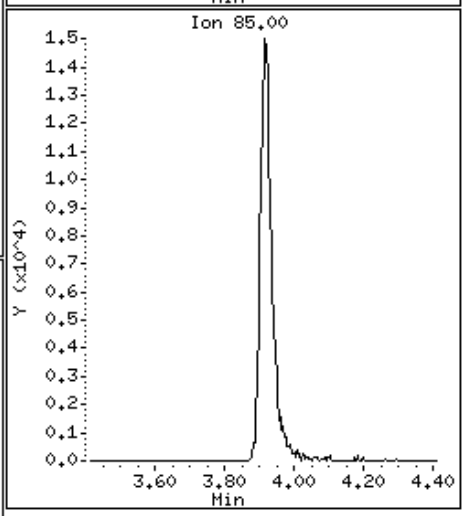












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090611.D

Date : 06-SEP-2022 14:00

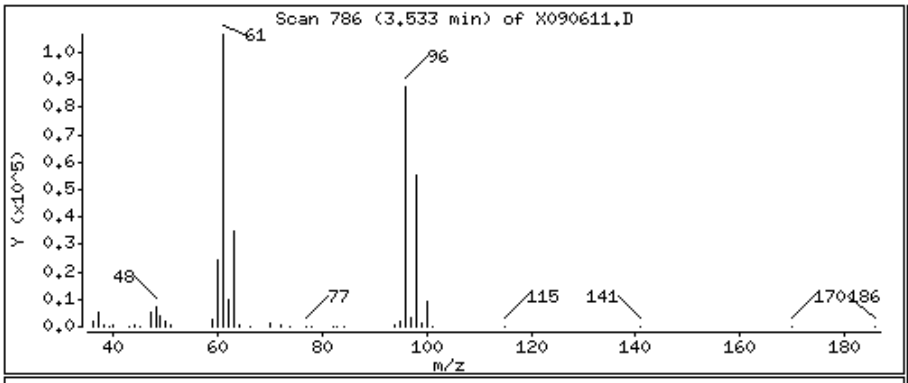
Client ID: HS22081514-09 Instrument: voa6.i

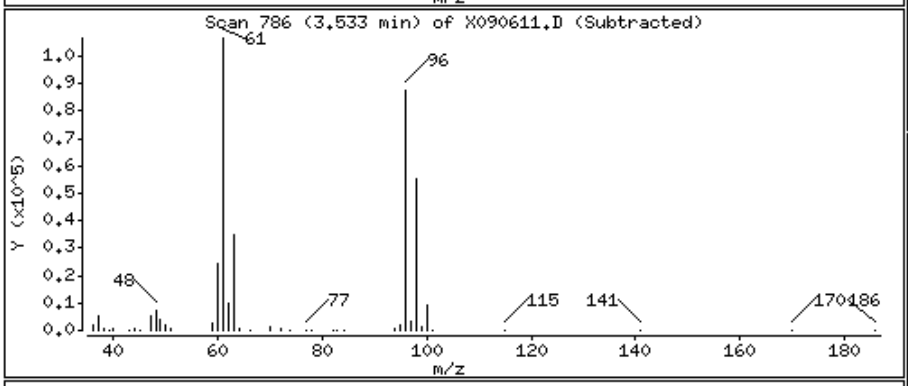
Sample Info: HS22081514-09;HS22081514-09;;;

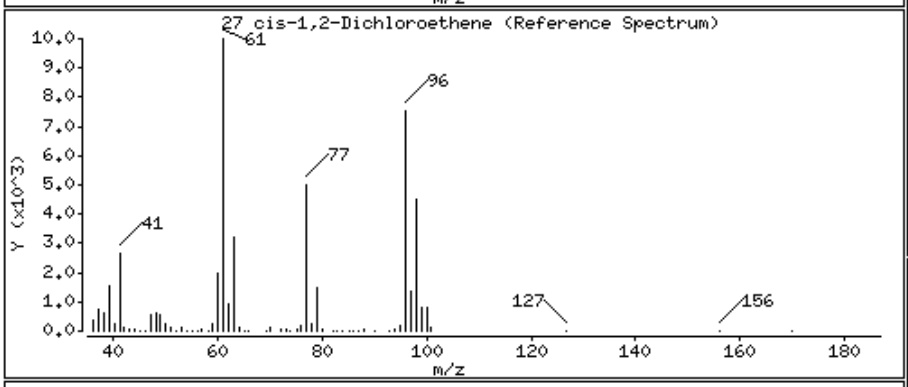
Purge Volume: 5.0 Operator: PC

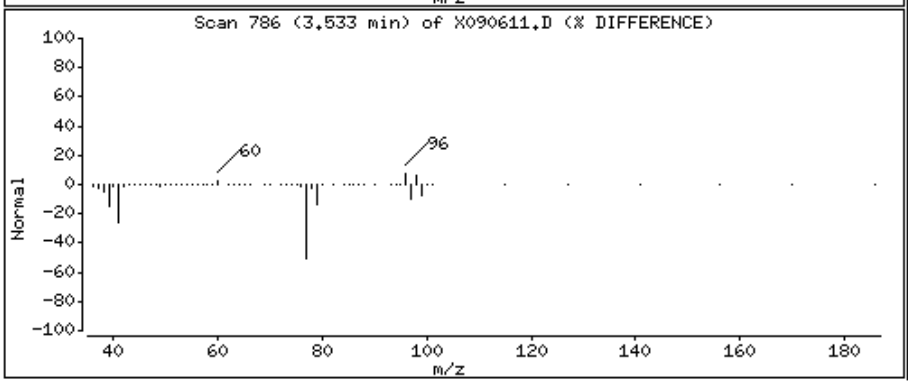
Column phase: DB624 Column diameter: 0.18

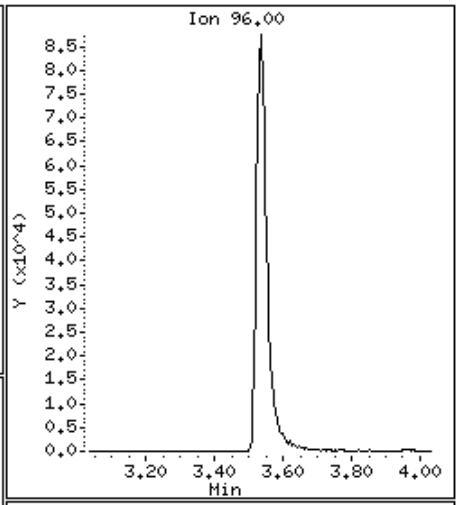
27 cis-1,2-Dichloroethene Concentration: 35.24 ug/l

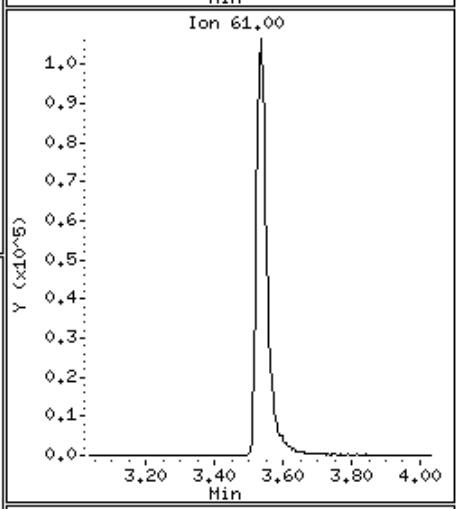


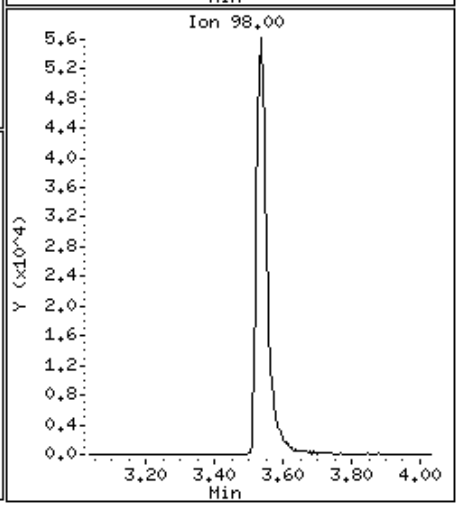












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090611.D

Date : 06-SEP-2022 14:00

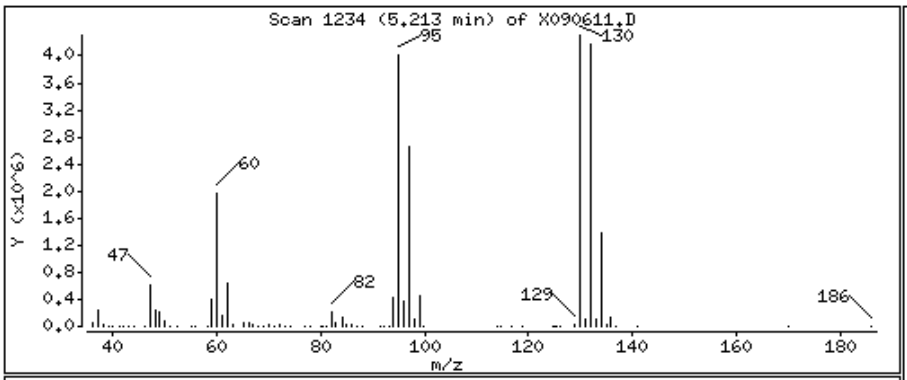
Client ID: HS22081514-09 Instrument: voa6.i

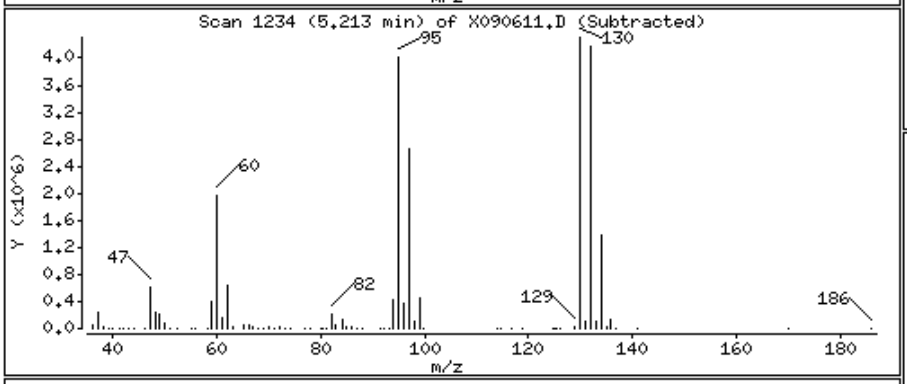
Sample Info: HS22081514-09;HS22081514-09;;;

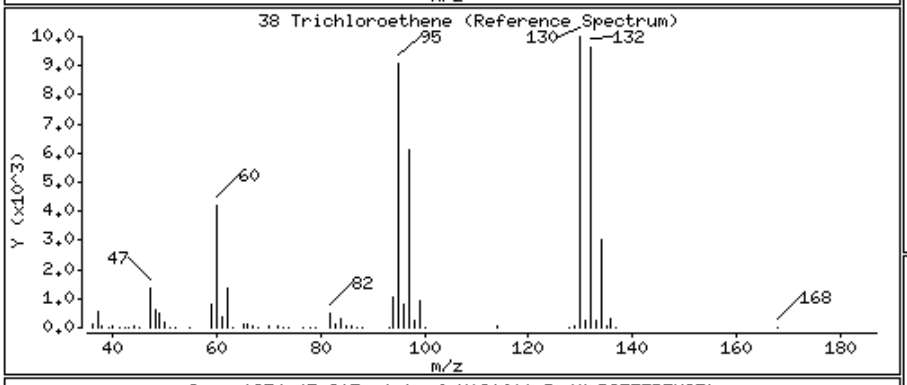
Purge Volume: 5.0 Operator: PC

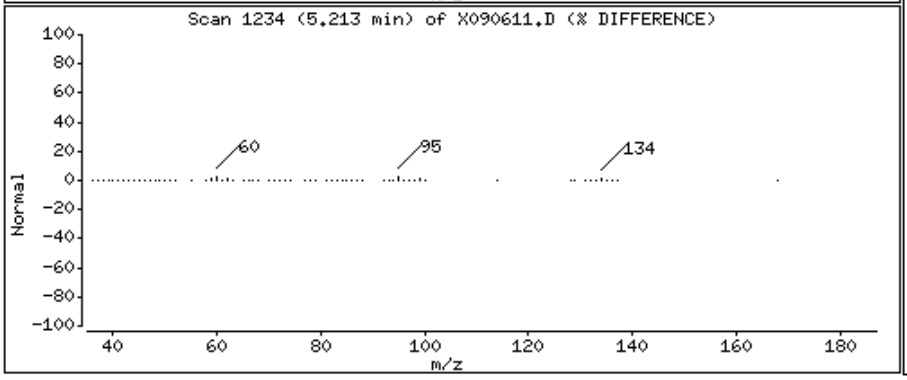
Column phase: DB624 Column diameter: 0.18

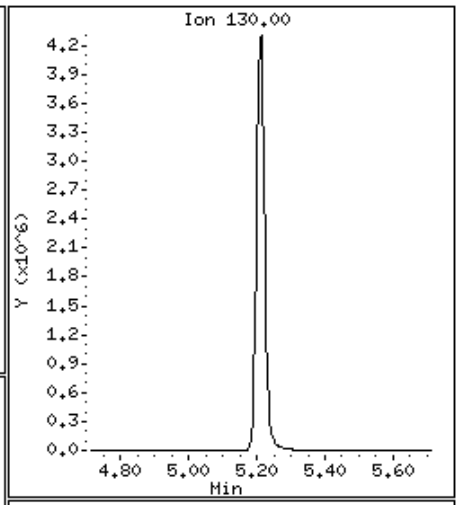
38 Trichloroethene Concentration: 1333.69 ug/l

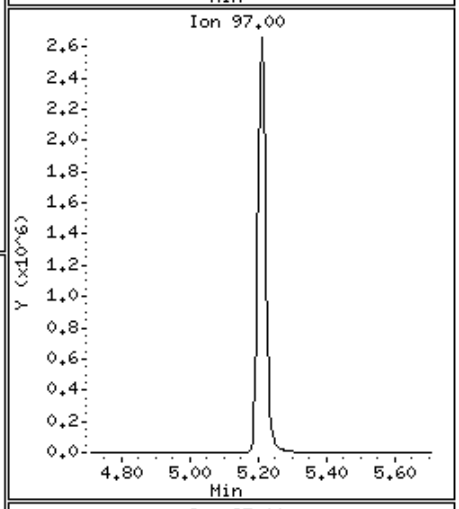


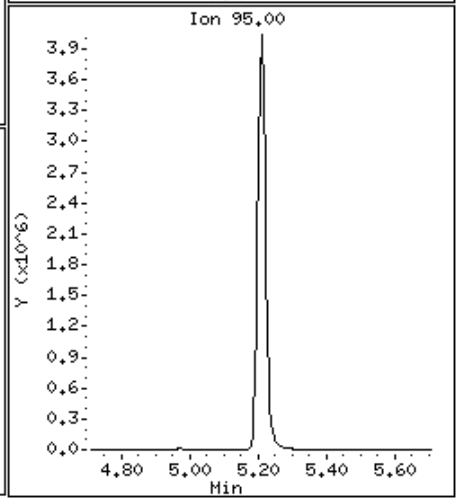












Data File : \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090611.D
Inj Date : 06-SEP-2022 14:00
InstruID : voa6.i
LabSampID : HS22081514-09

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090612.D Page 1
Report Date: 09-Sep-2022 16:56

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090612.D
Lab Smp Id: HS22090111-10MS Client Smp ID: HS22090111-10MS
Inj Date : 06-SEP-2022 14:21
Operator : PC Inst ID: voa6.i
Smp Info : HS22090111-10MS;HS22090111-10MS;3;;MS
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220906.b\8260W.m
Meth Date : 09-Sep-2022 16:55 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 12 QC Sample: MS
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.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
Cpnd Variable		Local Compound Variable

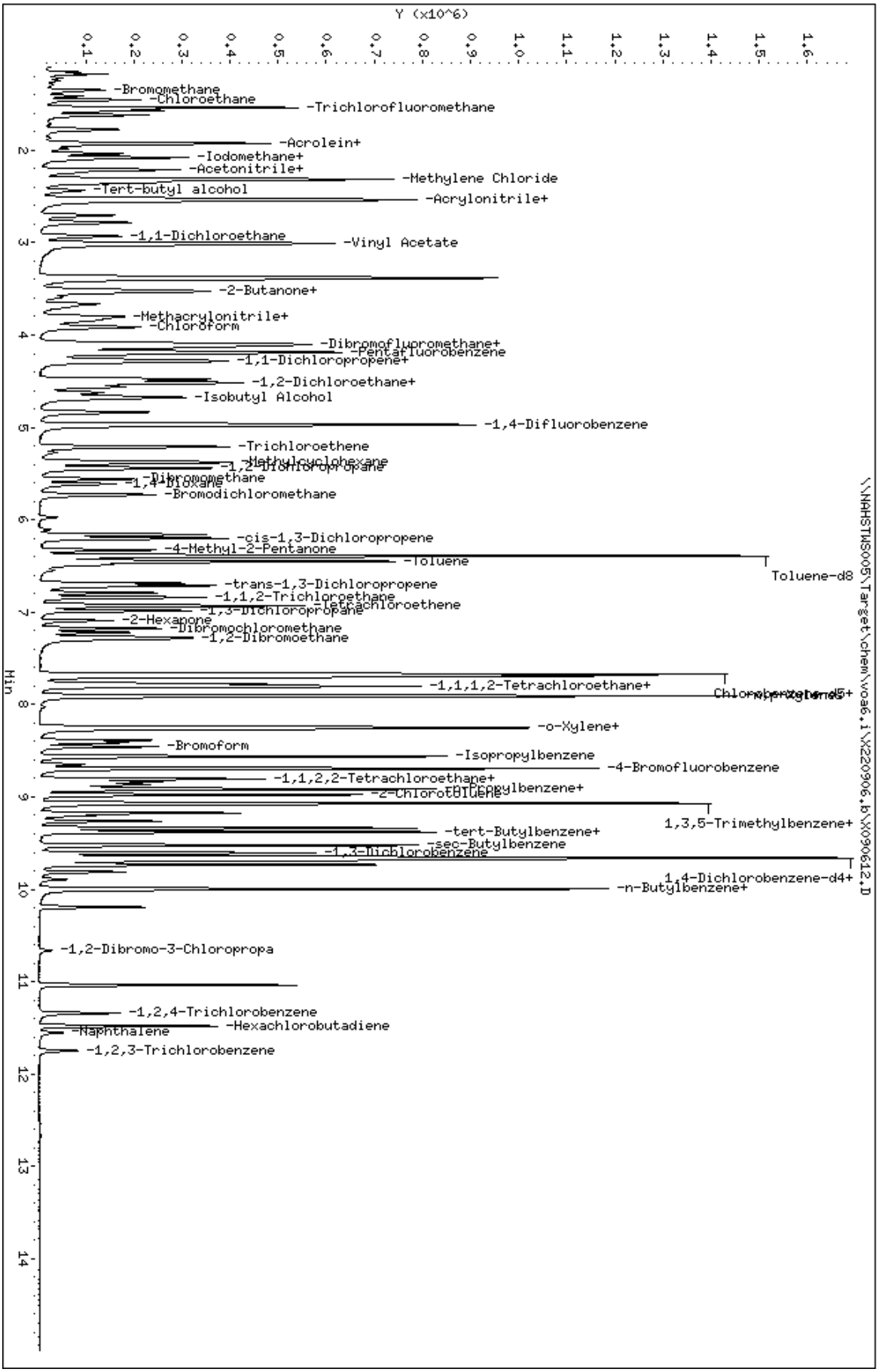
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	FINAL (ug/l)
* 1 Pentafluorobenzene	168	4.189	4.185	(1.000)	555733	50.0000	
* 36 1,4-Difluorobenzene	114	4.972	4.969	(1.000)	776585	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	674588	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.662	(1.000)	322874	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.979)	250315	47.6985	47.69
$ 35 1,2-Dichloroethane-d4	65	4.477	4.477	(1.069)	269565	46.9136	46.91
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	902082	53.5961	53.59
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	294705	48.9383	48.93
60 1,1,1,2-Tetrachloroethane	131	7.776	7.773	(1.014)	107027	22.5825	22.58
31 1,1,1-Trichloroethane	97	4.088	4.088	(0.976)	165821	21.0335	21.03
68 1,1,2,2-Tetrachloroethane	83	8.841	8.841	(0.915)	94592	20.8597	20.85
53 1,1,2-Trichloroethane	83	6.843	6.839	(0.892)	75734	21.8353	21.83
22 1,1-Dichloroethane	63	2.929	2.929	(0.699)	171677	20.0662	20.06
11 1,1-Dichloroethene	96	1.925	1.925	(0.460)	80523	17.3577	17.35
32 1,1-Dichloropropene	75	4.286	4.283	(0.862)	139813	22.3073	22.30
93 1,2,3-Trichlorobenzene	180	11.746	11.742	(1.215)	26779	15.9543	15.95
71 1,2,3-Trichloropropane	75	8.867	8.863	(0.917)	76654	21.9240	21.92(M)
90 1,2,4-Trichlorobenzene	180	11.345	11.337	(1.174)	55142	18.7510	18.75
79 1,2,4-Trimethylbenzene	105	9.381	9.381	(0.971)	363819	23.4914	23.49
89 1,2-Dibromo-3-Chloropropane	155	10.659	10.659	(1.103)	5784	17.6591	17.65

57	1,2-Dibromoethane	107	7.263	7.259 (0.947)	94281	21.4383	21.43
88	1,2-Dichlorobenzene	146	9.995	9.992 (1.034)	176276	21.8191	21.81

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/l)	CONCENTRATIONS FINAL (ug/l)
33	1,2-Dichloroethane	62	4.564	4.560	(0.918)	135804	19.9395	19.93
42	1,2-Dichloropropane	63	5.441	5.437	(1.094)	101323	21.1974	21.19
75	1,3,5-Trimethylbenzene	105	9.070	9.066	(0.938)	375691	23.9550	23.95
83	1,3-Dichlorobenzene	146	9.609	9.606	(0.994)	204018	22.7743	22.77
54	1,3-Dichloropropane	76	6.982	6.982	(0.910)	152650	21.6366	21.63
84	1,4-Dichlorobenzene	146	9.684	9.684	(1.002)	211599	22.2492	22.24
26	2,2-Dichloropropane	77	3.514	3.514	(0.839)	160580	20.9900	20.98
24	2-Butanone	43	3.589	3.582	(0.857)	45264	32.4671	32.46
76	2-Chlorotoluene	91	8.976	8.976	(0.929)	315943	22.8289	22.82
52	2-Hexanone	43	7.090	7.090	(0.924)	86683	40.8651	40.86
77	4-Chlorotoluene	91	9.073	9.070	(0.939)	351919	22.7817	22.78
82	p-Isopropyltoluene	119	9.651	9.651	(0.998)	387145	24.5822	24.58
45	4-Methyl-2-Pentanone	43	6.329	6.329	(0.825)	134019	40.7723	40.77
10	Acetone	43	1.981	1.981	(0.473)	38108	28.5121	28.51
37	Benzene	78	4.519	4.515	(0.909)	388543	21.1141	21.11
74	Bromobenzene	156	8.807	8.807	(0.911)	126357	22.9160	22.91
29	Bromochloromethane	128	3.803	3.799	(0.908)	57953	18.4954	18.49
39	Bromodichloromethane	83	5.729	5.726	(1.152)	136057	20.7450	20.74
66	Bromoform	173	8.413	8.410	(1.097)	62625	19.9108	19.91
6	Bromomethane	94	1.347	1.347	(0.322)	56440	13.9028	13.90
19	Carbon Disulfide	76	2.078	2.078	(0.496)	372045	30.2933	30.29
34	Carbon Tetrachloride	117	4.271	4.268	(0.859)	145198	21.6754	21.67
59	Chlorobenzene	112	7.698	7.694	(1.003)	291013	22.7516	22.75
7	Chloroethane	64	1.411	1.411	(0.337)	47104	13.2149	13.21
28	Chloroform	83	3.911	3.911	(0.934)	186549	19.9011	19.90
3	Chloromethane	50	1.089	1.085	(0.260)	32194	6.30276	6.30
27	cis-1,2-Dichloroethene	96	3.533	3.529	(0.843)	113277	20.5026	20.50
46	cis-1,3-Dichloropropene	75	6.161	6.157	(1.239)	170329	21.1424	21.14
55	Dibromochloromethane	129	7.176	7.176	(0.935)	109679	21.9055	21.90
44	Dibromomethane	93	5.557	5.553	(1.118)	66133	20.6208	20.62
2	Dichlorodifluoromethane	85	0.980	0.980	(0.234)	10782	1.87016	1.87(a)
61	Ethylbenzene	106	7.802	7.802	(1.017)	154395	23.8946	23.89
91	Hexachlorobutadiene	225	11.484	11.480	(1.188)	62105	22.8674	22.86
67	Isopropylbenzene	105	8.563	8.563	(1.116)	473523	24.3698	24.36
62	m,p-Xylenes	106	7.907	7.904	(1.031)	388200	48.3014	48.30
17	Methylene Chloride	84	2.311	2.311	(0.552)	103575	19.7491	19.74
87	n-Butylbenzene	91	9.995	9.995	(1.034)	332468	25.4058	25.40
73	n-Propylbenzene	91	8.912	8.912	(0.922)	542148	25.4532	25.45
92	Naphthalene	128	11.555	11.547	(1.195)	46737	14.2066	14.20
63	o-Xylene	106	8.245	8.241	(1.075)	181208	23.1927	23.19
81	sec-Butylbenzene	105	9.523	9.523	(0.985)	456892	25.1020	25.10
64	Styrene	104	8.264	8.260	(1.077)	282960	21.9920	21.99
78	tert-Butylbenzene	119	9.339	9.336	(0.966)	324814	24.4365	24.43
56	Tetrachloroethene	164	6.929	6.929	(0.903)	104158	23.8110	23.81
50	Toluene	91	6.449	6.449	(0.841)	435942	22.9892	22.98
20	trans-1,2-Dichloroethene	96	2.539	2.536	(0.606)	96610	19.7613	19.76
51	trans-1,3-Dichloropropene	75	6.685	6.682	(1.345)	136167	20.4090	20.40
38	Trichloroethene	130	5.212	5.208	(1.048)	133615	24.5112	24.51
8	Trichlorofluoromethane	101	1.568	1.569	(0.375)	135142	15.4428	15.44
5	Vinyl Chloride	62	1.152	1.152	(0.275)	45796	7.85879	7.85

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.



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Date : 06-SEP-2022 14:21
Client ID: HS22090111-10HS
Sample Info: HS22090111-10HS;HS22090111-10HS;3;;HS
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

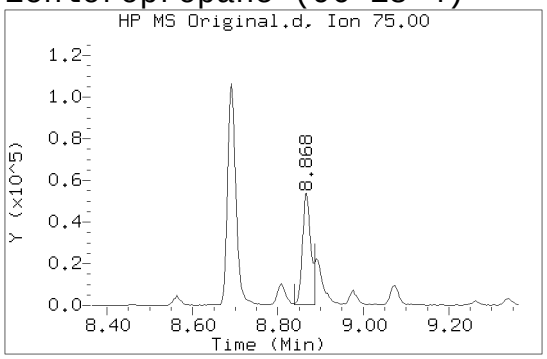
Data File : \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090612.D
Inj Date : 06-SEP-2022 14:21
InstruID : voa6.i
LabSampID : HS22090111-10MS

1,2,3-Trichloropropane (96-18-4)

Reason Code:

BEFORE

MASS
91
AREA
351919
HEIGHT
251702
09-Sep-2022
16:54
linh
pham



AFTER

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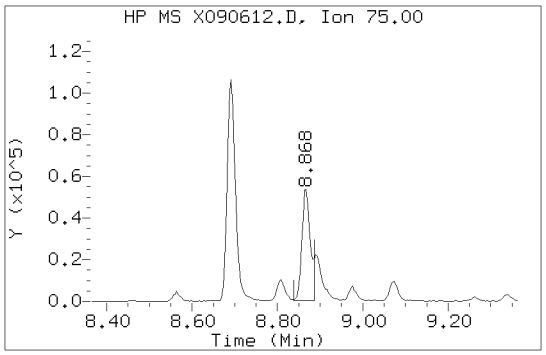

BEFORE

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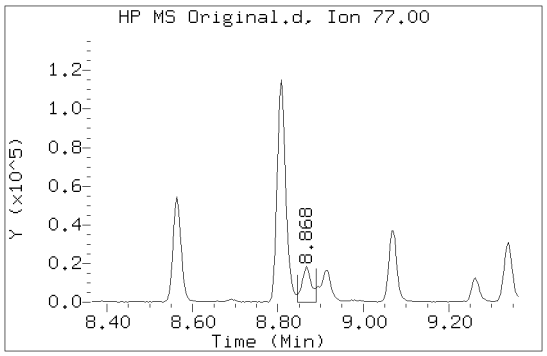

AFTER

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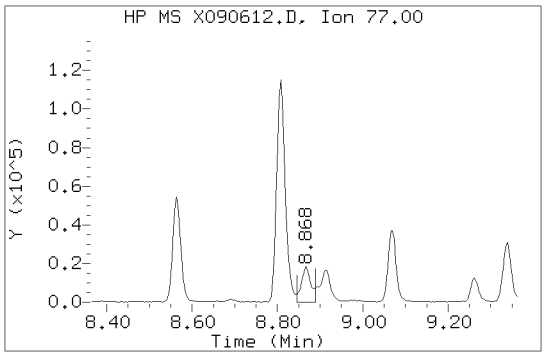
pham



Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090613.D Page 1
Report Date: 09-Sep-2022 16:56

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090613.D
Lab Smp Id: HS22090111-10MSD Client Smp ID: HS22090111-10MSD
Inj Date : 06-SEP-2022 14:42
Operator : PC Inst ID: voa6.i
Smp Info : HS22090111-10MSD;HS22090111-10MSD;3;;MSD
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220906.b\8260W.m
Meth Date : 09-Sep-2022 16:55 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 12 QC Sample: MSD
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.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
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	4.189	4.185	(1.000)	562061	50.0000	
* 36 1,4-Difluorobenzene	114	4.969	4.969	(1.000)	776506	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	679319	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.662	(1.000)	317552	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.979)	254300	47.9155	47.91
$ 35 1,2-Dichloroethane-d4	65	4.477	4.477	(1.069)	263411	45.3154	45.31
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	905386	53.4177	53.41
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	294096	48.4896	48.48
60 1,1,1,2-Tetrachloroethane	131	7.776	7.773	(1.014)	104614	21.9196	21.91
31 1,1,1-Trichloroethane	97	4.088	4.088	(0.976)	157977	19.8129	19.81
68 1,1,2,2-Tetrachloroethane	83	8.841	8.841	(0.915)	98155	22.0082	22.00
53 1,1,2-Trichloroethane	83	6.839	6.839	(0.892)	76415	21.8782	21.87
22 1,1-Dichloroethane	63	2.929	2.929	(0.699)	166126	19.1988	19.19
11 1,1-Dichloroethene	96	1.921	1.925	(0.459)	76695	16.3464	16.34
32 1,1-Dichloropropene	75	4.286	4.283	(0.863)	136500	21.7809	21.78
93 1,2,3-Trichlorobenzene	180	11.746	11.742	(1.215)	33145	20.0780	20.07
71 1,2,3-Trichloropropane	75	8.867	8.863	(0.917)	73389	21.3420	21.34(M)
90 1,2,4-Trichlorobenzene	180	11.341	11.337	(1.173)	61295	21.1927	21.19
79 1,2,4-Trimethylbenzene	105	9.381	9.381	(0.971)	362559	23.8024	23.80
89 1,2-Dibromo-3-Chloropropane	155	10.663	10.659	(1.103)	7139	21.9804	21.98

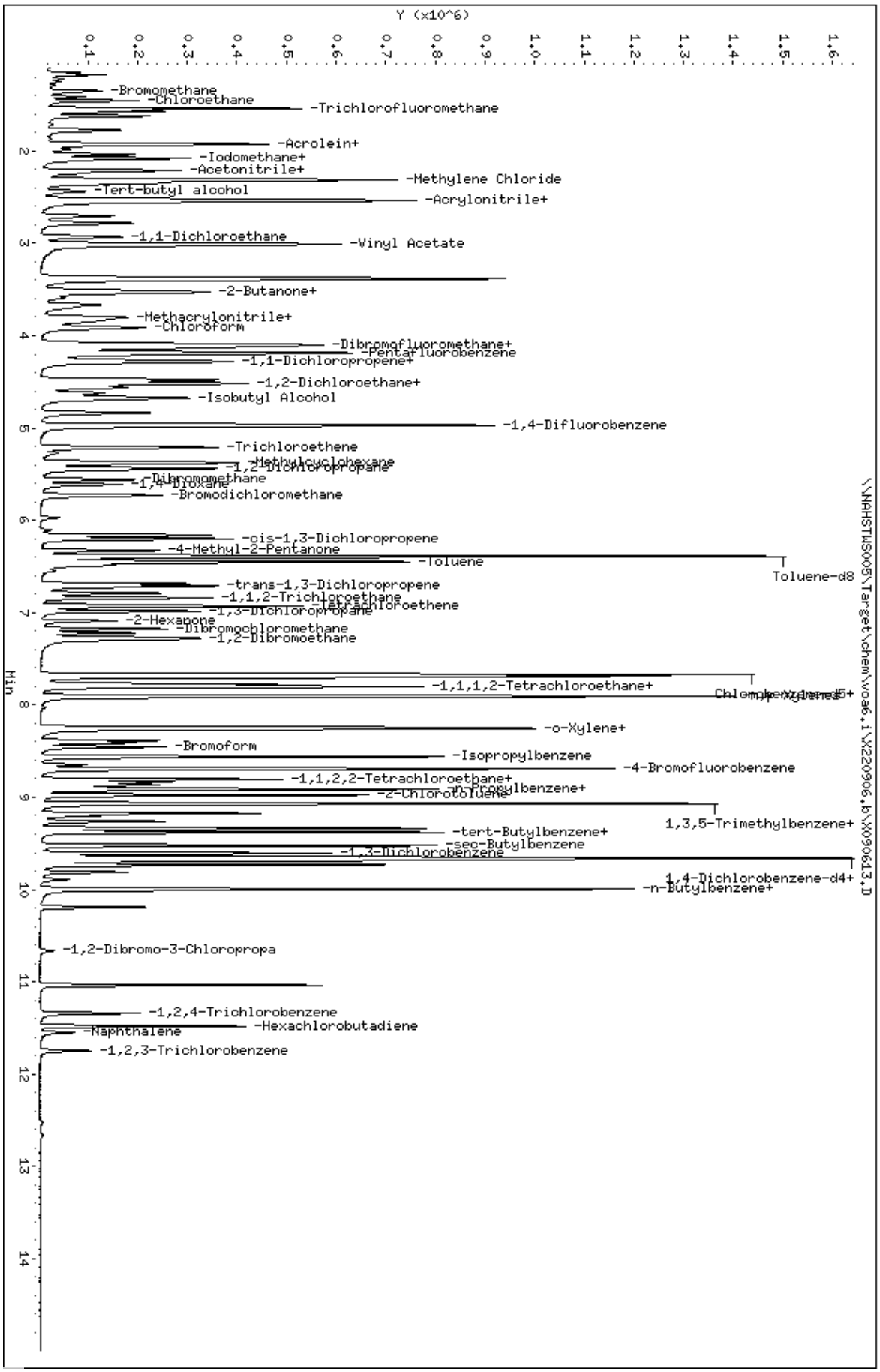
57	1,2-Dibromoethane	107	7.263	7.259 (0.947)	93515	21.1160	21.11
88	1,2-Dichlorobenzene	146	9.995	9.992 (1.034)	179900	22.6409	22.64

		QUANT SIG					CONCENTRATIONS ON-COLUMN	FINAL
	Compounds	MASS	RT	EXP RT	REL RT	RESPONSE	(ug/l)	(ug/l)
33	1,2-Dichloroethane	62	4.564	4.560	(0.919)	134488	19.7483	19.74
42	1,2-Dichloropropane	63	5.441	5.437	(1.095)	100284	20.9821	20.98
75	1,3,5-Trimethylbenzene	105	9.066	9.066	(0.938)	368966	23.9205	23.92
83	1,3-Dichlorobenzene	146	9.606	9.606	(0.994)	205547	23.3295	23.32
54	1,3-Dichloropropane	76	6.985	6.982	(0.911)	153563	21.6144	21.61
84	1,4-Dichlorobenzene	146	9.684	9.684	(1.002)	211099	22.5687	22.56
26	2,2-Dichloropropane	77	3.514	3.514	(0.839)	151458	19.5580	19.55
24	2-Butanone	43	3.593	3.582	(0.858)	45180	32.0420	32.04
76	2-Chlorotoluene	91	8.976	8.976	(0.929)	310129	22.7844	22.78
52	2-Hexanone	43	7.090	7.090	(0.924)	88045	41.2181	41.21
77	4-Chlorotoluene	91	9.073	9.070	(0.939)	354999	23.3663	23.36
82	p-Isopropyltoluene	119	9.651	9.651	(0.998)	385564	24.8921	24.89
45	4-Methyl-2-Pentanone	43	6.326	6.329	(0.825)	141410	42.7212	42.72
10	Acetone	43	1.985	1.981	(0.474)	37435	27.5208	27.52
37	Benzene	78	4.519	4.515	(0.909)	381972	20.7591	20.75
74	Bromobenzene	156	8.807	8.807	(0.911)	124815	23.0157	23.01
29	Bromochloromethane	128	3.803	3.799	(0.908)	57289	18.0776	18.07
39	Bromodichloromethane	83	5.730	5.726	(1.153)	135181	20.6135	20.61
66	Bromoform	173	8.414	8.410	(1.097)	64086	20.2134	20.21
6	Bromomethane	94	1.347	1.347	(0.322)	49380	11.8418	11.84
19	Carbon Disulfide	76	2.078	2.078	(0.496)	359485	28.9411	28.94
34	Carbon Tetrachloride	117	4.271	4.268	(0.860)	140825	21.0247	21.02
59	Chlorobenzene	112	7.694	7.694	(1.003)	286299	22.2271	22.22
7	Chloroethane	64	1.411	1.411	(0.337)	47780	13.2536	13.25
28	Chloroform	83	3.911	3.911	(0.934)	184372	19.4474	19.44
3	Chloromethane	50	1.085	1.085	(0.259)	30729	5.95116	5.95
27	cis-1,2-Dichloroethene	96	3.537	3.529	(0.844)	107981	19.3240	19.32
46	cis-1,3-Dichloropropene	75	6.157	6.157	(1.239)	170215	21.1304	21.13
55	Dibromochloromethane	129	7.176	7.176	(0.936)	108917	21.6019	21.60
44	Dibromomethane	93	5.557	5.553	(1.118)	63928	19.9353	19.93
2	Dichlorodifluoromethane	85	0.980	0.980	(0.234)	9547	1.61571	1.61(a)
61	Ethylbenzene	106	7.803	7.802	(1.017)	150328	23.1032	23.10
91	Hexachlorobutadiene	225	11.480	11.480	(1.188)	66808	25.0113	25.01
67	Isopropylbenzene	105	8.563	8.563	(1.116)	460243	23.5213	23.52
62	m,p-Xylenes	106	7.907	7.904	(1.031)	377360	46.6256	46.62
17	Methylene Chloride	84	2.315	2.311	(0.553)	102462	19.2978	19.29
87	n-Butylbenzene	91	9.995	9.995	(1.034)	334979	26.0266	26.02
73	n-Propylbenzene	91	8.912	8.912	(0.922)	536604	25.6152	25.61
92	Naphthalene	128	11.551	11.547	(1.195)	62272	19.2460	19.24
63	o-Xylene	106	8.245	8.241	(1.075)	176525	22.4359	22.43
81	sec-Butylbenzene	105	9.523	9.523	(0.985)	453455	25.3307	25.33
64	Styrene	104	8.260	8.260	(1.077)	280066	21.6155	21.61
78	tert-Butylbenzene	119	9.336	9.336	(0.966)	322109	24.6391	24.63
56	Tetrachloroethene	164	6.929	6.929	(0.903)	101758	23.1003	23.10
50	Toluene	91	6.449	6.449	(0.841)	428158	22.4214	22.42
20	trans-1,2-Dichloroethene	96	2.539	2.536	(0.606)	92414	18.6902	18.69
51	trans-1,3-Dichloropropene	75	6.685	6.682	(1.346)	136531	20.4657	20.46
38	Trichloroethene	130	5.208	5.208	(1.048)	121442	22.2804	22.28
8	Trichlorofluoromethane	101	1.569	1.569	(0.375)	136567	15.4299	15.42
5	Vinyl Chloride	62	1.152	1.152	(0.275)	44739	7.59097	7.59

QC Flag Legend

a - Target compound detected but, quantitated amount

    Below Limit Of Quantitation(BLOQ).
M - Compound response manually integrated.



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Date : 06-SEP-2022 14:42
Client ID: HS220901111-10MSD
Sample Info: HS220901111-10MSD;HS220901111-10MSD;3;;MSD
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File : \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090613.D
Inj Date : 06-SEP-2022 14:42
InstruID : voa6.i
LabSampID : HS22090111-10MSD

1,2,3-Trichloropropane (96-18-4)

Reason Code:

BEFORE

MASS
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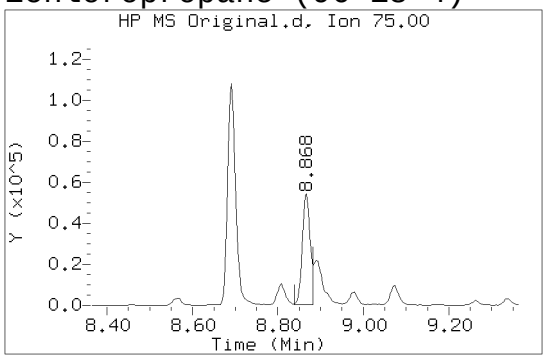
AREA
354999
HEIGHT
250971
09-Sep-2022
16:54
linh
pham



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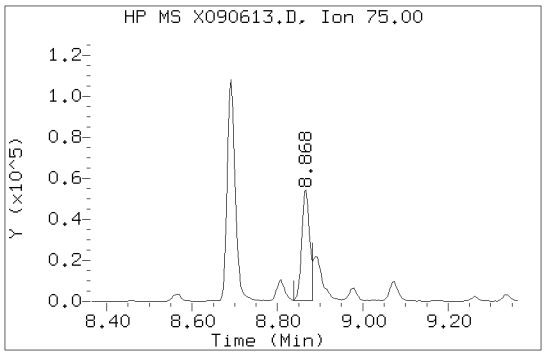

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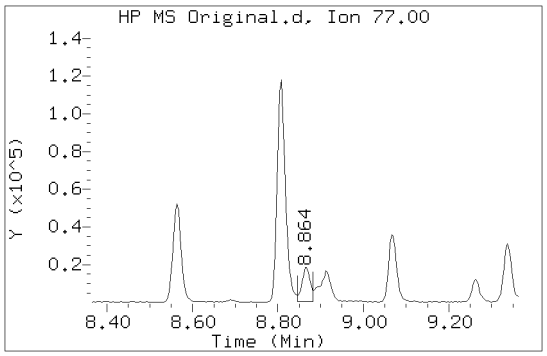

AFTER

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16:55
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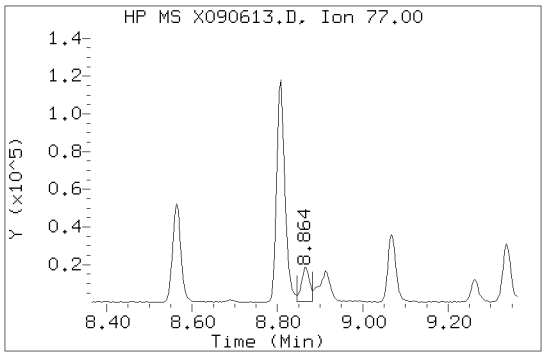


Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090614.D Page 1
Report Date: 09-Sep-2022 16:56

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090614.D
Lab Smp Id: HS22081514-13 Client Smp ID: HS22081514-13
Inj Date : 06-SEP-2022 15:03
Operator : PC Inst ID: voa6.i
Smp Info : HS22081514-13;HS22081514-13;;;
Misc Info : HS22052000V6;WATER;0;50;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220906.b\8260W.m
Meth Date : 09-Sep-2022 16:55 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 13
Dil Factor: 50.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	50.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
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	4.185	4.185	(1.000)	549836	50.0000	
* 36 1,4-Difluorobenzene	114	4.969	4.969	(1.000)	776088	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	669674	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.662	(1.000)	300444	50.0000	
$ 30 Dibromofluoromethane	113	4.106	4.103	(0.981)	250541	48.2620	48.26
$ 35 1,2-Dichloroethane-d4	65	4.478	4.477	(1.070)	267467	47.0486	47.04
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	903836	54.0943	54.09
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	286496	47.9071	47.90
33 1,2-Dichloroethane	62	4.571	4.560	(0.920)	9583	1.40793	70.39(a)
27 cis-1,2-Dichloroethene	96	3.537	3.529	(0.845)	49665	9.08552	454.27
62 m,p-Xylenes	106	7.915	7.904	(1.032)	5262	0.65952	32.97(a)
38 Trichloroethene	130	5.209	5.208	(1.048)	385930	70.8429	3542.14

QC Flag Legend

a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).

01148430

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090614.D

Date : 06-SEP-2022 15:03

Client ID: HS22081514-13

Instrument: voa6.i

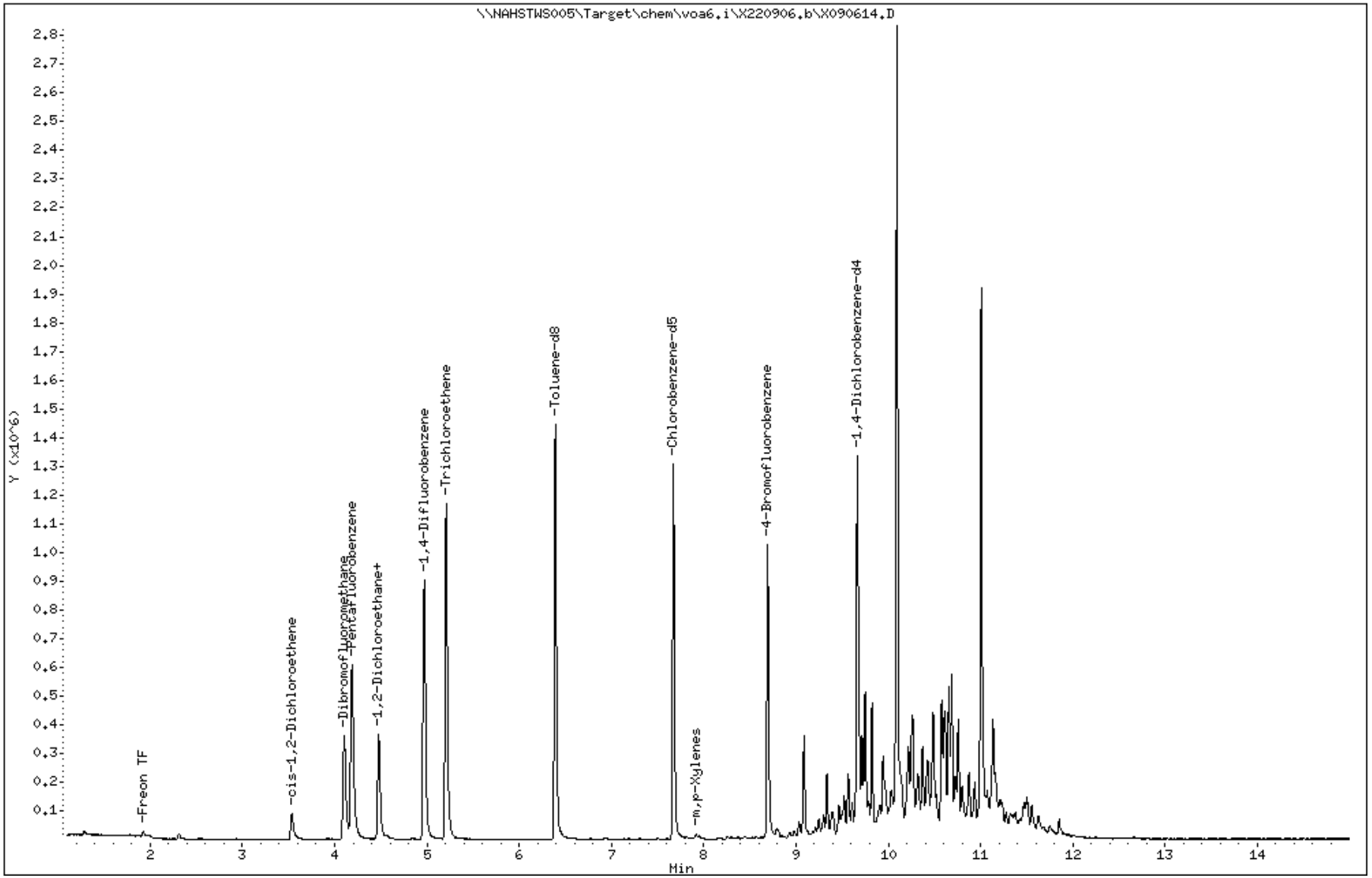
Sample Info: HS22081514-13;HS22081514-13;;;

Purge Volume: 5.0

Operator: PC

Column phase: DB624

Column diameter: 0.18



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Date : 06-SEP-2022 15:03

Client ID: HS22081514-13

Instrument: voa6.i

Sample Info: HS22081514-13;HS22081514-13;;;

Purge Volume: 5.0

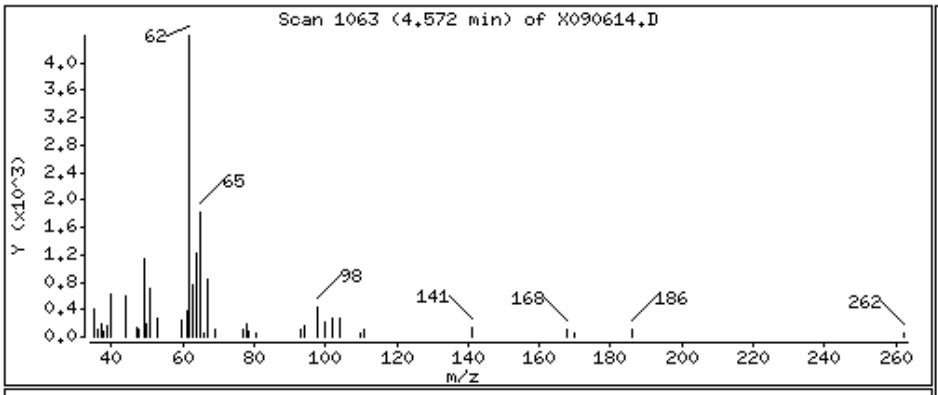
Operator: PC

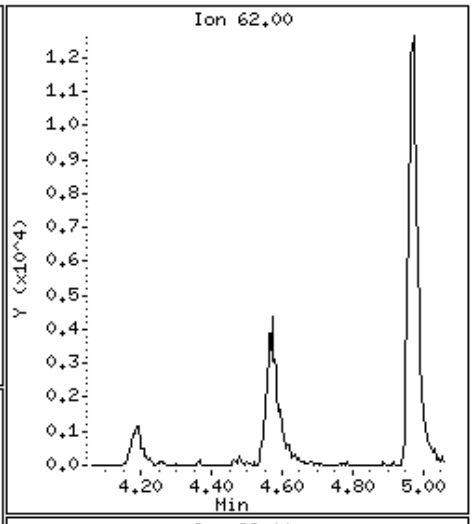
Column phase: DB624

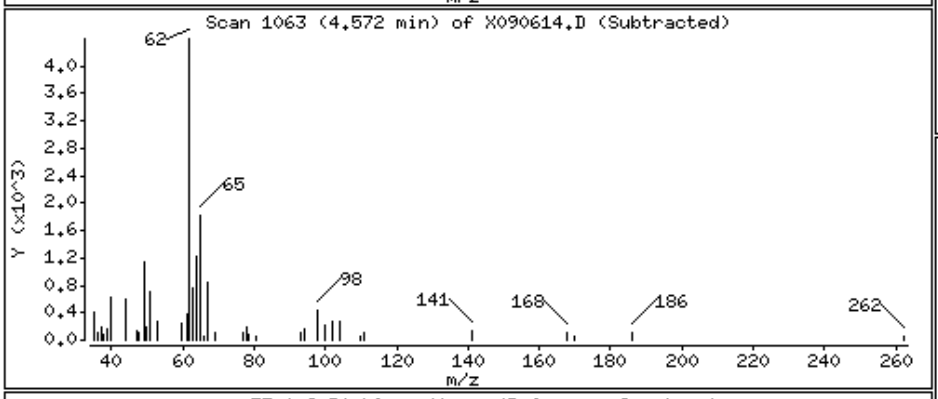
Column diameter: 0.18

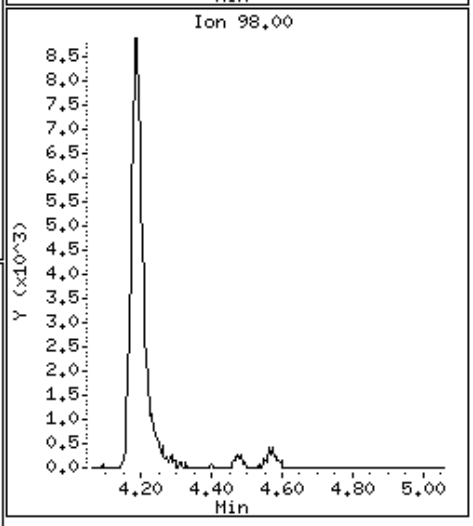
33 1,2-Dichloroethane

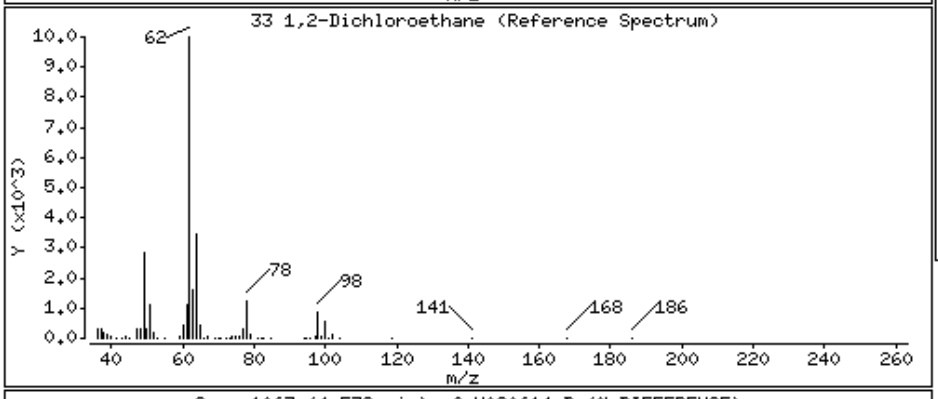
Concentration: 70.39 ug/l

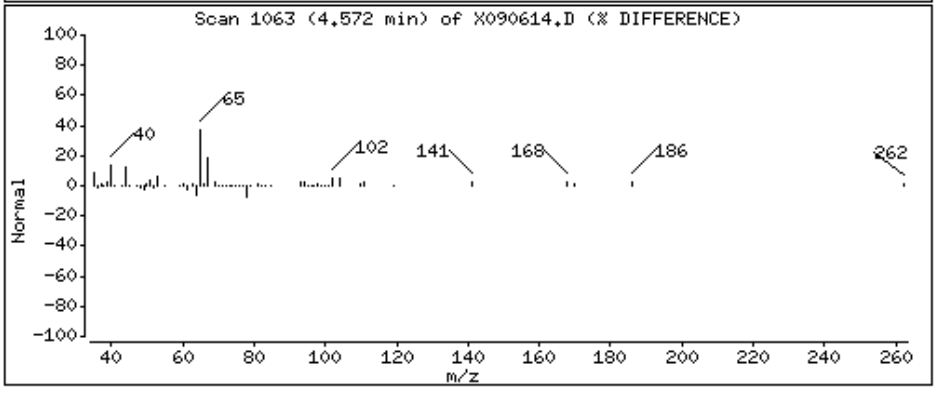












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090614.D

Date : 06-SEP-2022 15:03

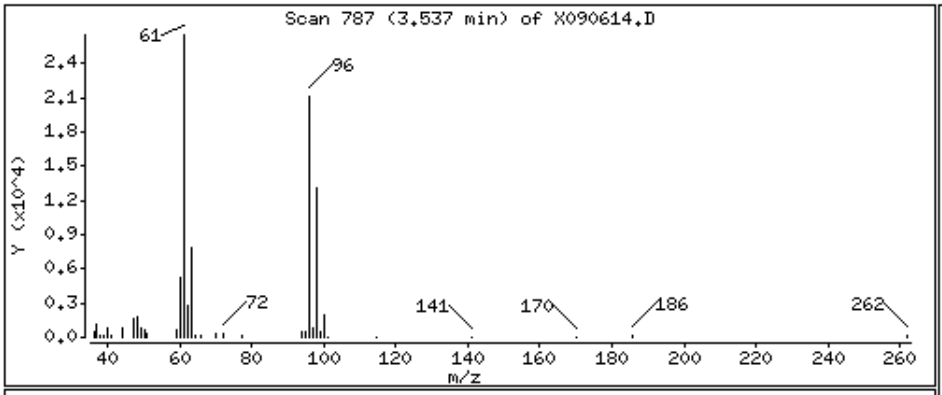
Client ID: HS22081514-13 Instrument: voa6.i

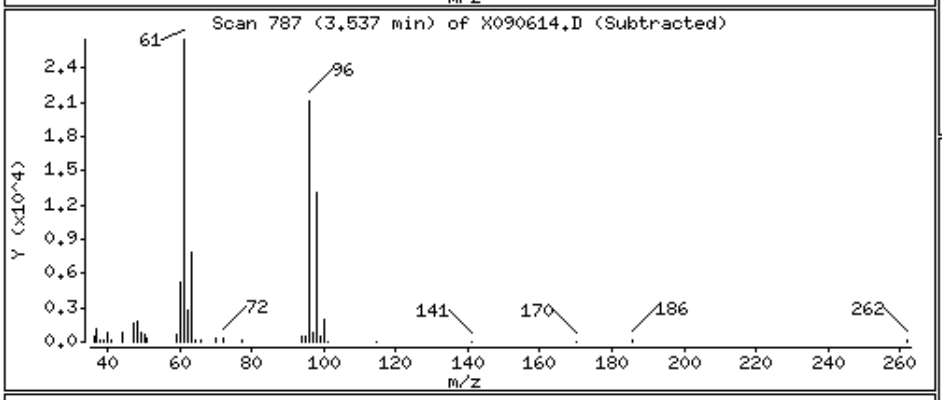
Sample Info: HS22081514-13;HS22081514-13;;;

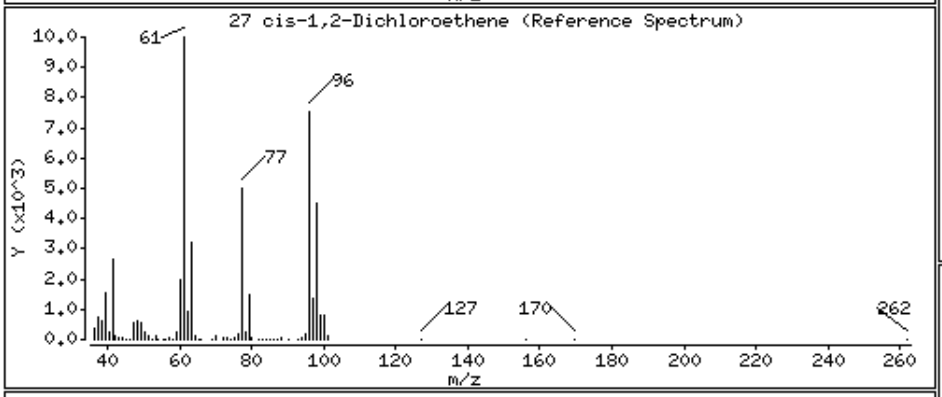
Purge Volume: 5.0 Operator: PC

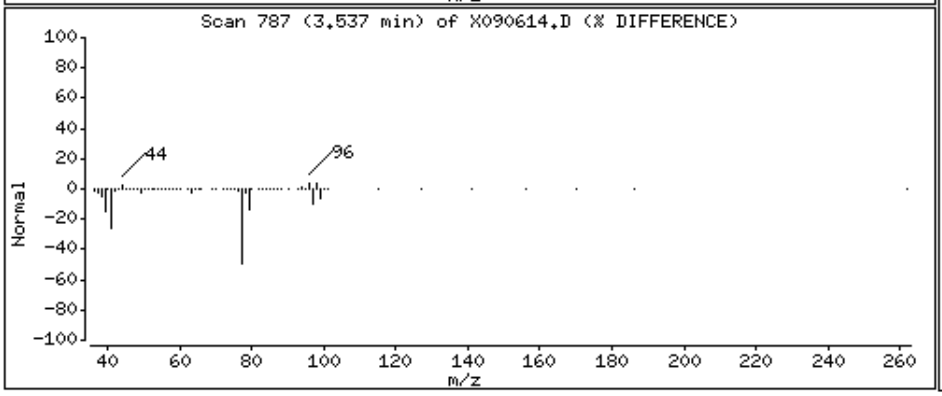
Column phase: DB624 Column diameter: 0.18

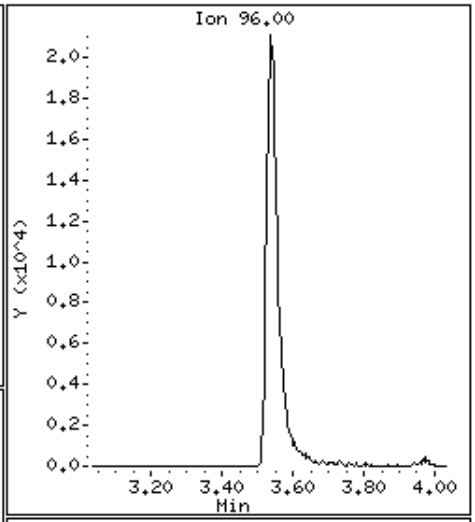
27 cis-1,2-Dichloroethene Concentration: 454.27 ug/l

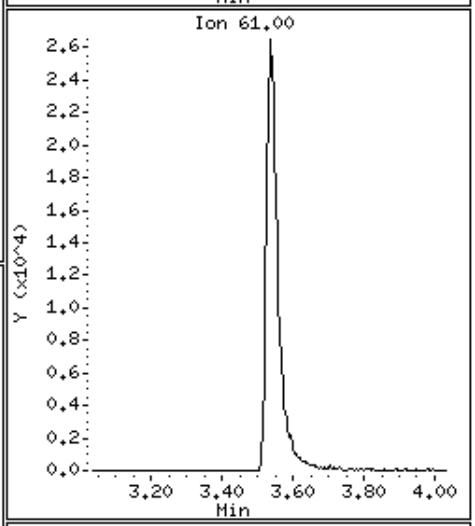


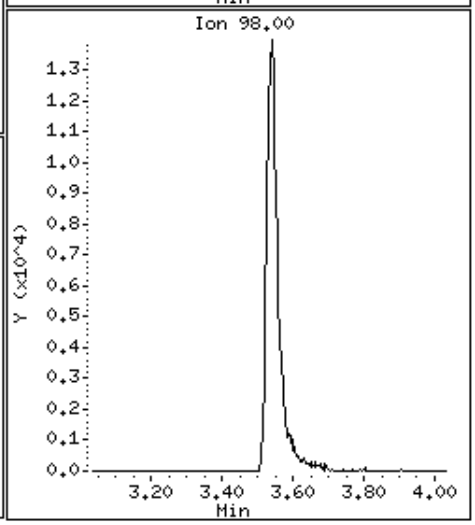












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090614.D

Date : 06-SEP-2022 15:03

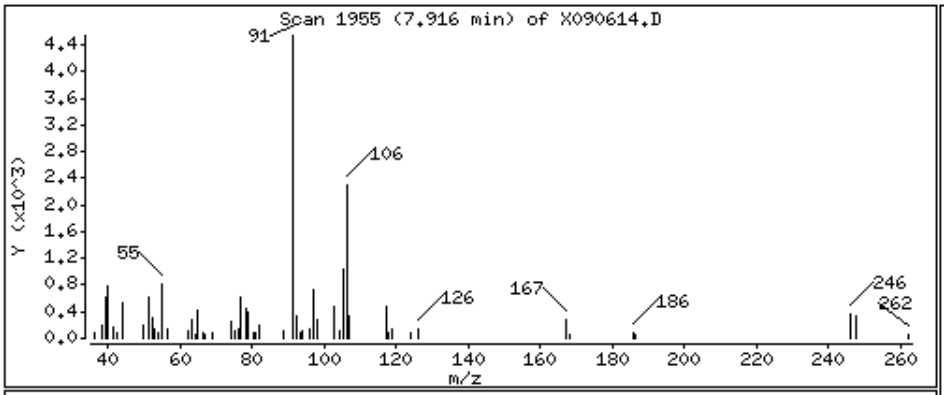
Client ID: HS22081514-13 Instrument: voa6.i

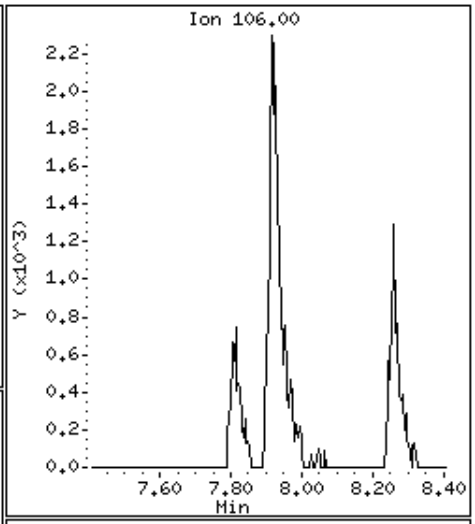
Sample Info: HS22081514-13;HS22081514-13;;;

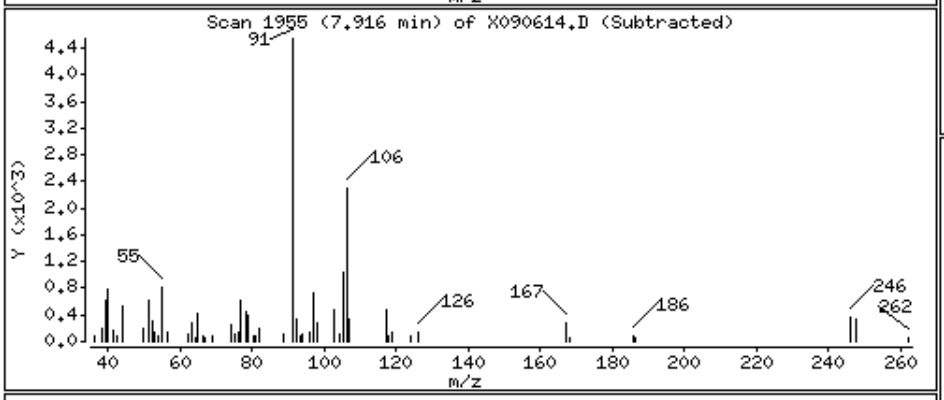
Purge Volume: 5.0 Operator: PC

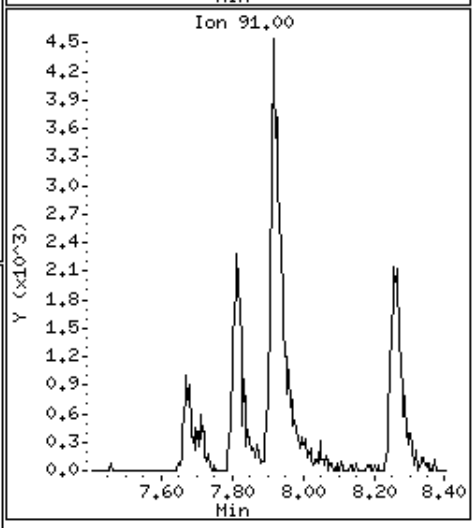
Column phase: DB624 Column diameter: 0.18

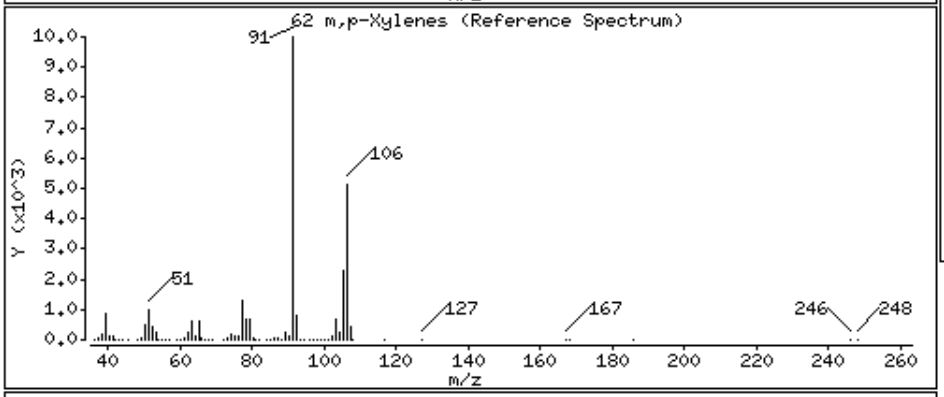
62 m,p-Xylenes Concentration: 32.97 ug/l

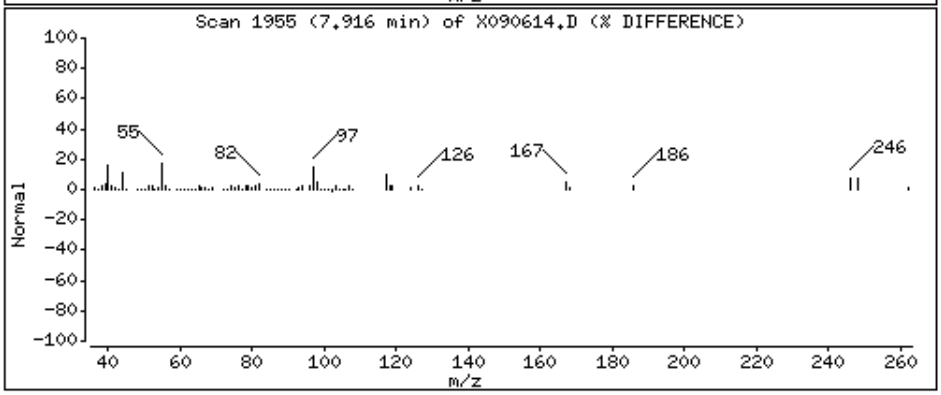












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090614.D Page 5

Date : 06-SEP-2022 15:03

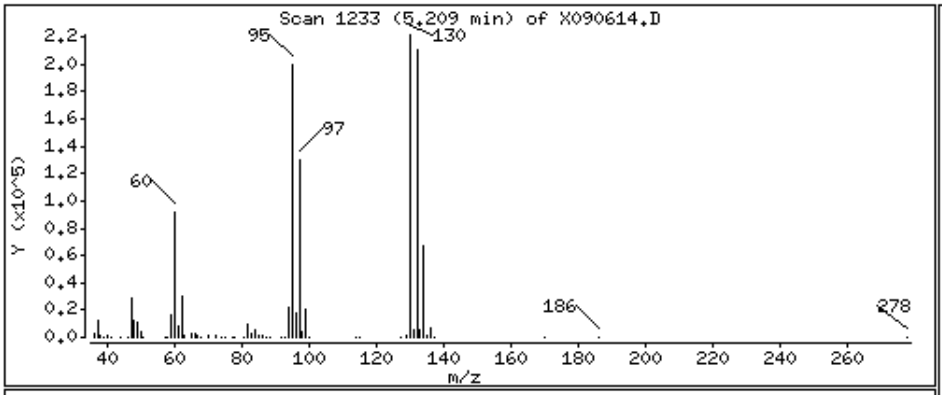
Client ID: HS22081514-13 Instrument: voa6.i

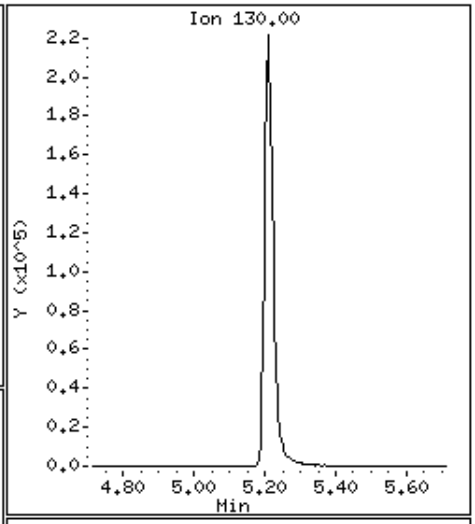
Sample Info: HS22081514-13;HS22081514-13;;;

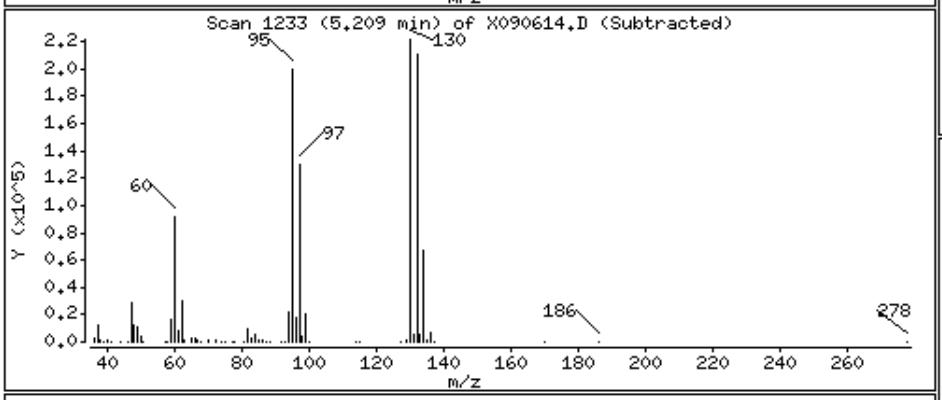
Purge Volume: 5.0 Operator: PC

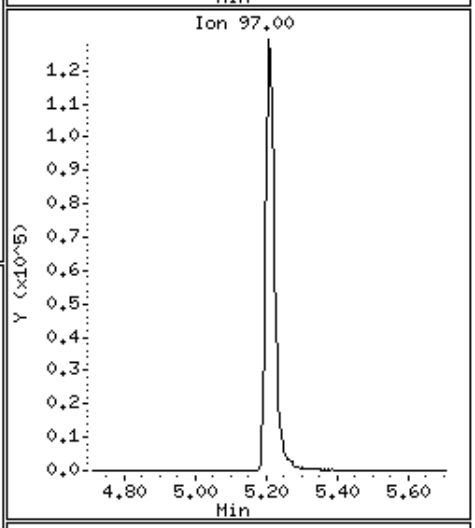
Column phase: DB624 Column diameter: 0.18

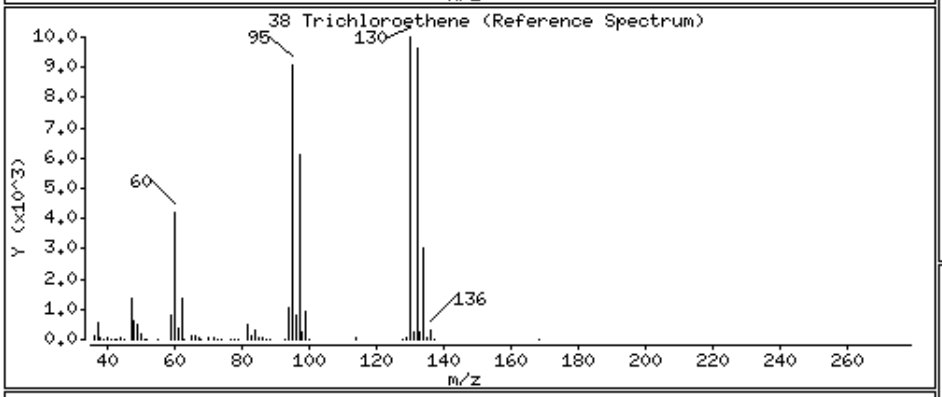
38 Trichloroethene Concentration: 3542.14 ug/l

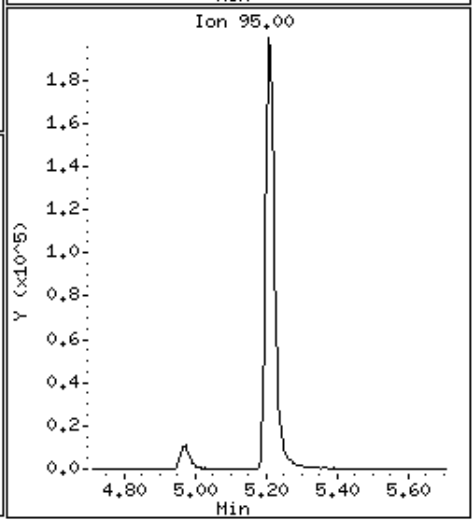


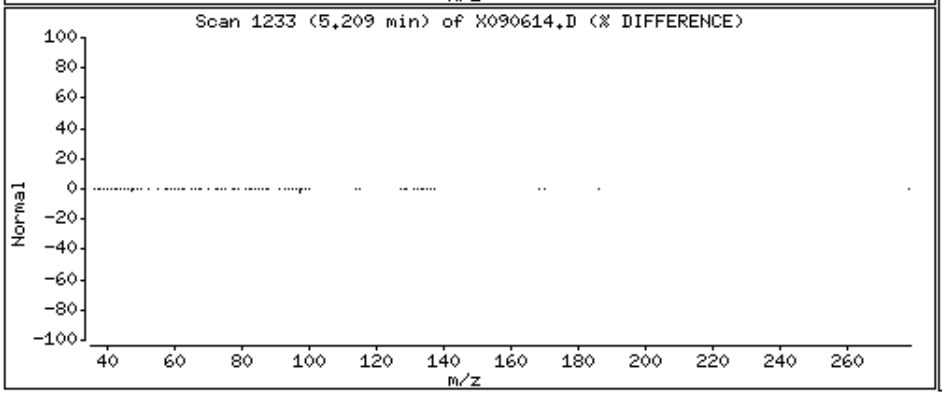












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Inj Date : 06-SEP-2022 15:03
InstruID : voa6.i
LabSampID : HS22081514-13

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090615.D Page 1
Report Date: 09-Sep-2022 16:56

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090615.D
Lab Smp Id: HS22081514-15 Client Smp ID: HS22081514-15
Inj Date : 06-SEP-2022 15:24
Operator : PC Inst ID: voa6.i
Smp Info : HS22081514-15;HS22081514-15;;;
Misc Info : HS22052000V6;WATER;0;50;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220906.b\8260W.m
Meth Date : 09-Sep-2022 16:55 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 14
Dil Factor: 50.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	50.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
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	4.185	4.185	(1.000)	547463	50.0000	
* 36 1,4-Difluorobenzene	114	4.972	4.969	(1.000)	760836	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	652252	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.662	(1.000)	274024	50.0000	
$ 30 Dibromofluoromethane	113	4.106	4.103	(0.981)	244063	47.2022	47.20
$ 35 1,2-Dichloroethane-d4	65	4.477	4.477	(1.070)	260795	46.0670	46.06
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	891033	54.7525	54.75
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	268383	46.0455	46.04
33 1,2-Dichloroethane	62	4.571	4.560	(0.919)	5993	0.89814	44.90(a)
27 cis-1,2-Dichloroethene	96	3.537	3.529	(0.845)	124334	22.8438	1142.18
38 Trichloroethene	130	5.212	5.208	(1.048)	201875	37.7999	1889.99
5 Vinyl Chloride	62	1.152	1.152	(0.275)	5893	1.02654	51.32(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).

01148437

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090615.D

Page 1

Date : 06-SEP-2022 15:24

Client ID: HS22081514-15

Instrument: voa6.i

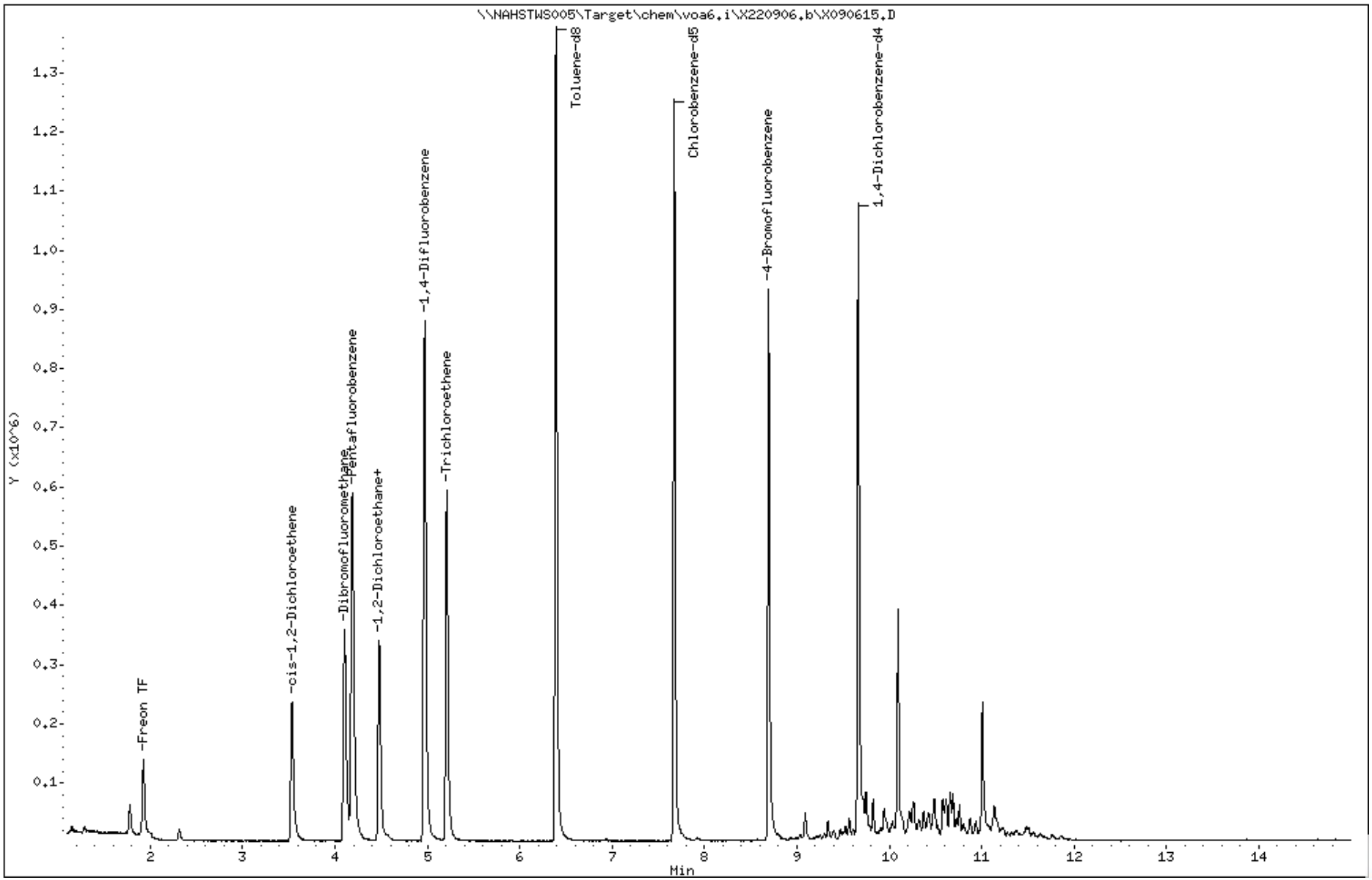
Sample Info: HS22081514-15;HS22081514-15;;;

Purge Volume: 5.0

Operator: PC

Column phase: DB624

Column diameter: 0.18



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Date : 06-SEP-2022 15:24

Client ID: HS22081514-15

Instrument: voa6.i

Sample Info: HS22081514-15;HS22081514-15;;;

Purge Volume: 5.0

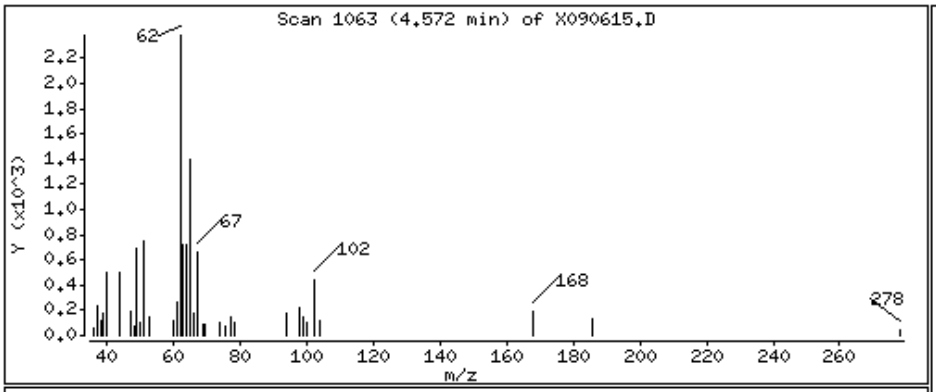
Operator: PC

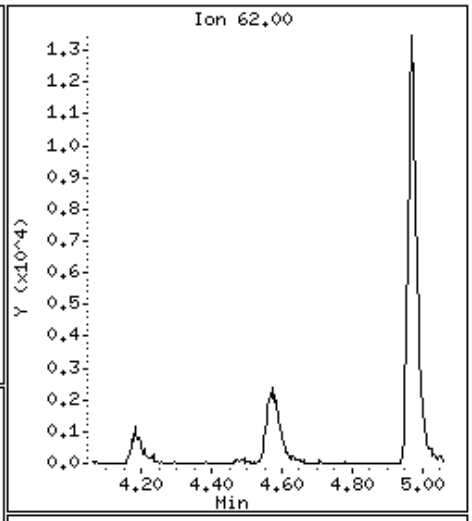
Column phase: DB624

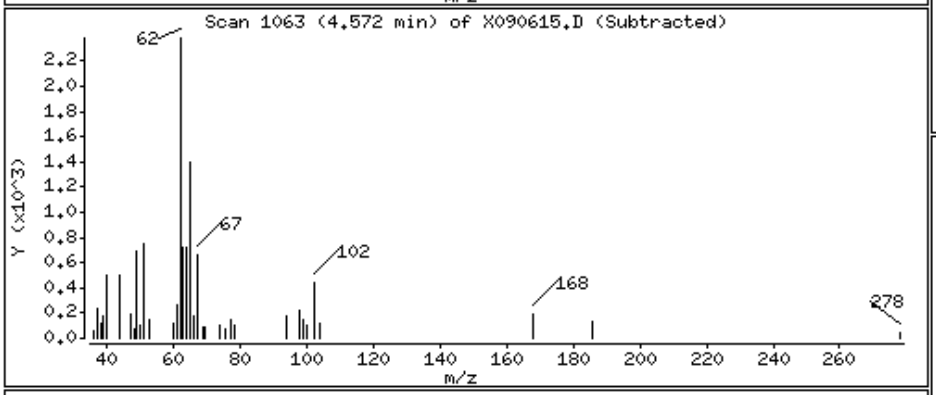
Column diameter: 0.18

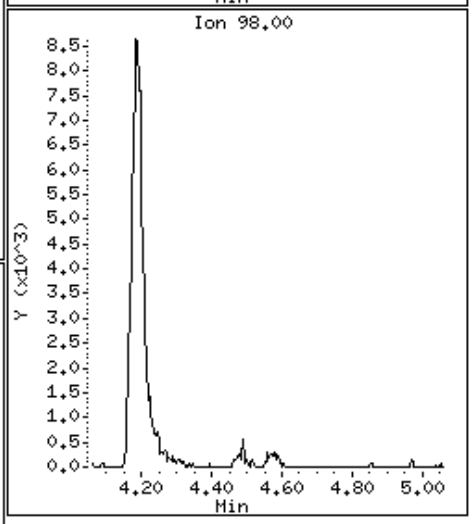
33 1,2-Dichloroethane

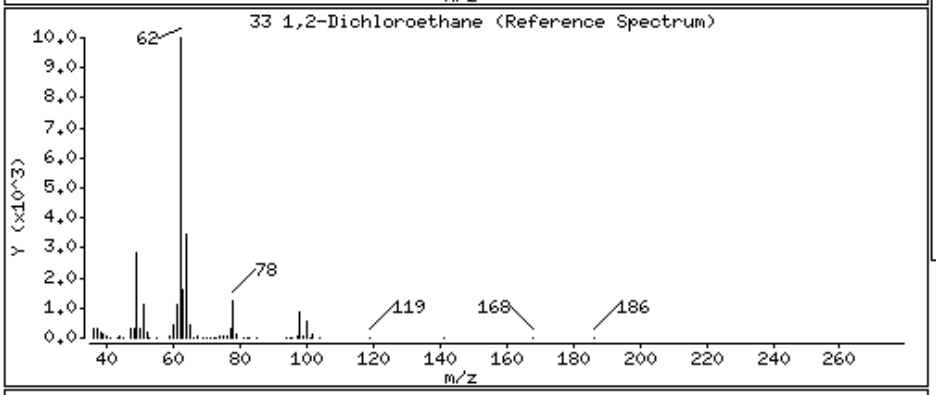
Concentration: 44.90 ug/l

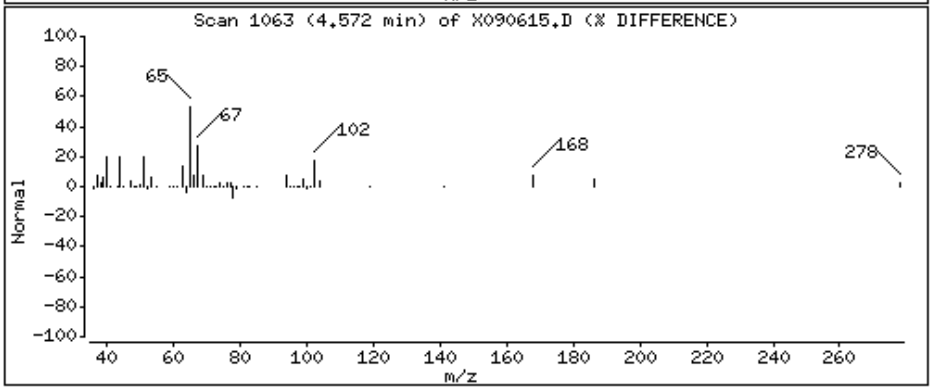












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090615.D

Date : 06-SEP-2022 15:24

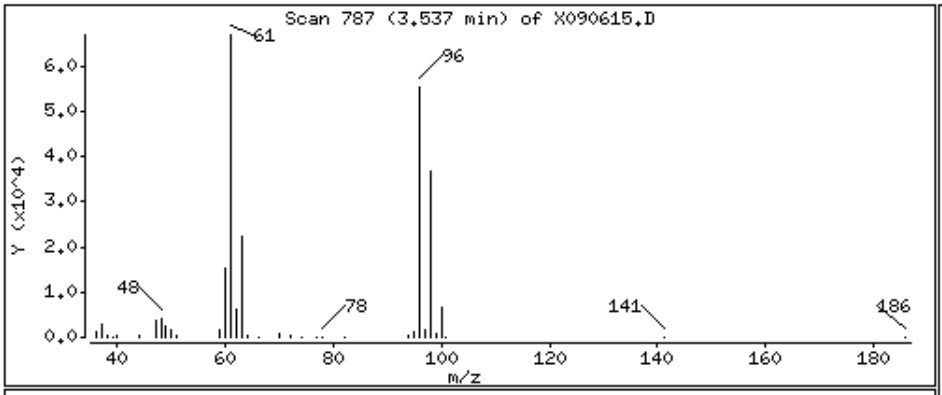
Client ID: HS22081514-15 Instrument: voa6.i

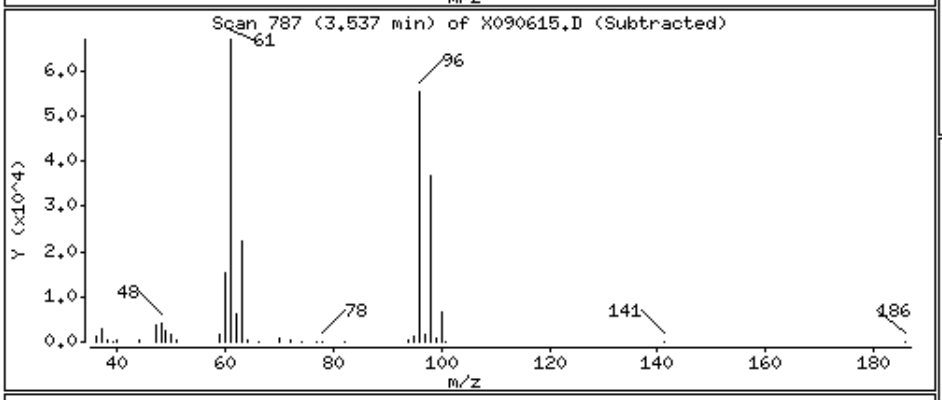
Sample Info: HS22081514-15;HS22081514-15;;;

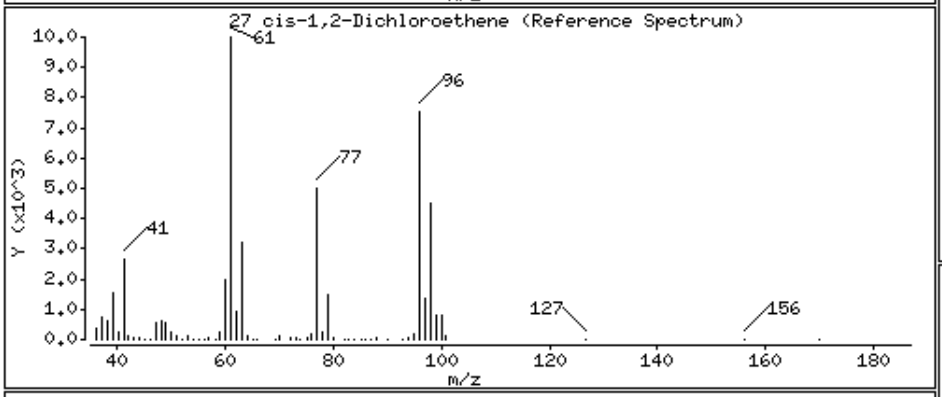
Purge Volume: 5.0 Operator: PC

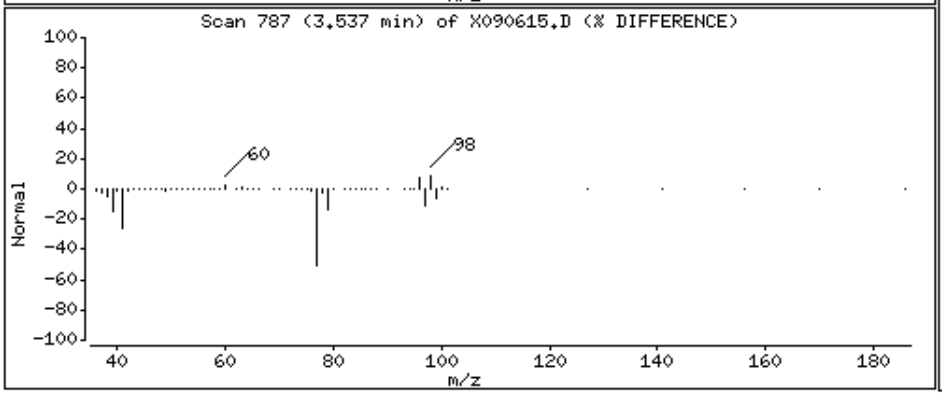
Column phase: DB624 Column diameter: 0.18

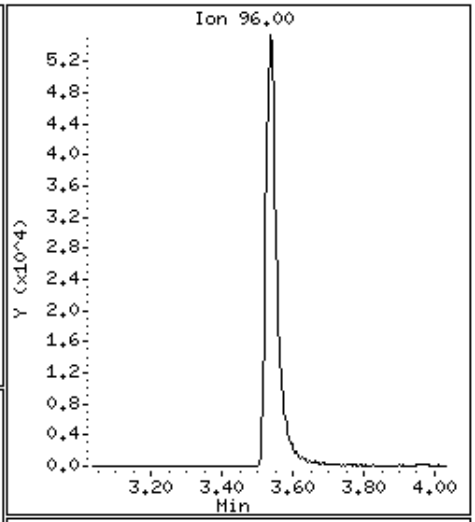
27 cis-1,2-Dichloroethene Concentration: 1142.18 ug/l

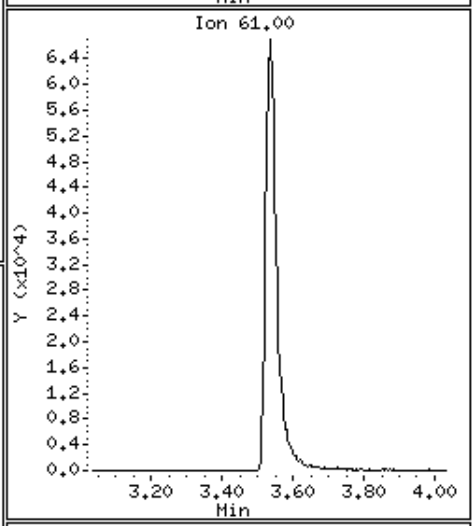


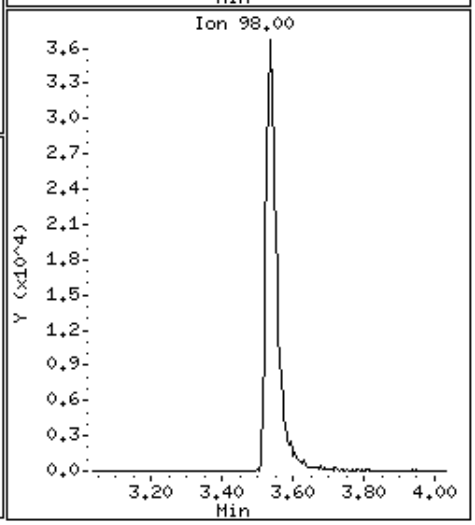












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090615.D

Date : 06-SEP-2022 15:24

Client ID: HS22081514-15

Instrument: voa6.i

Sample Info: HS22081514-15;HS22081514-15;;;

Purge Volume: 5.0

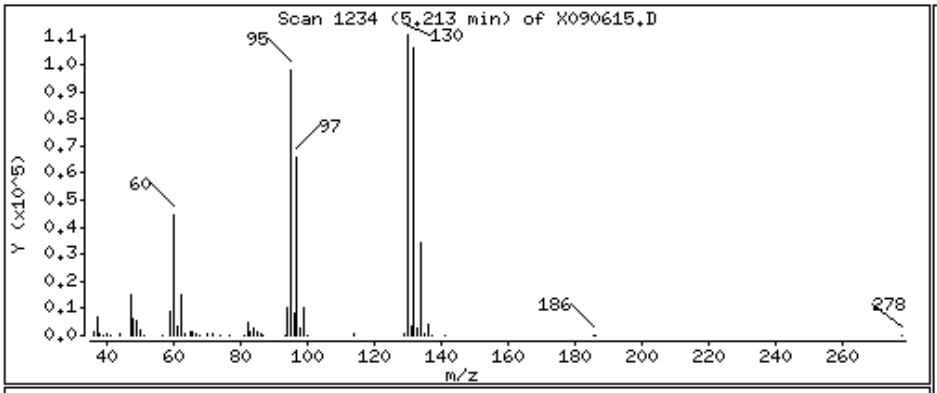
Operator: PC

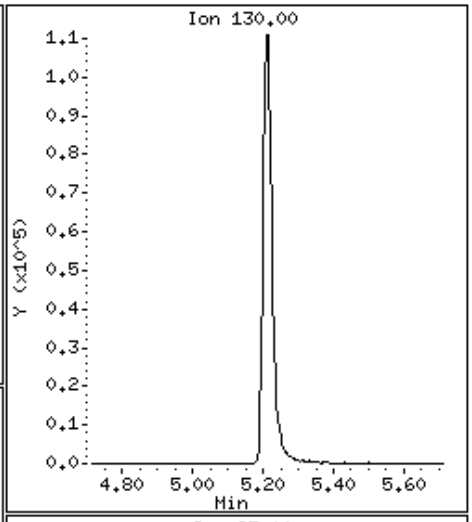
Column phase: DB624

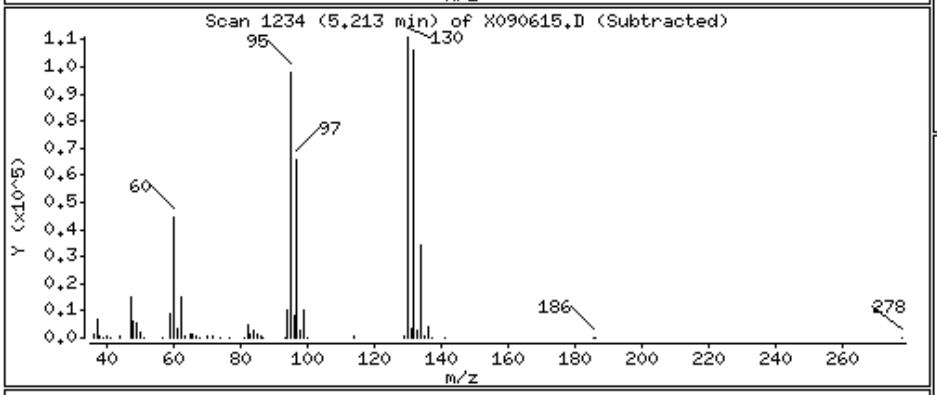
Column diameter: 0.18

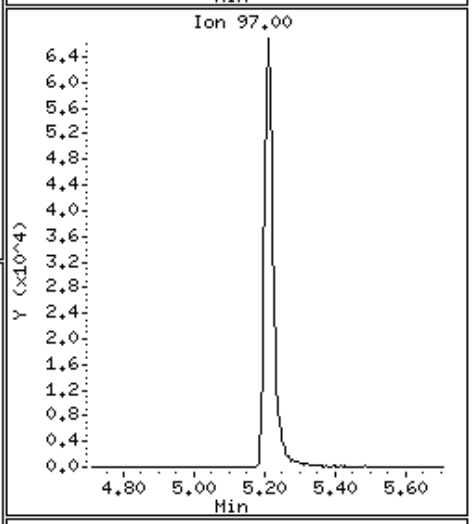
38 Trichloroethene

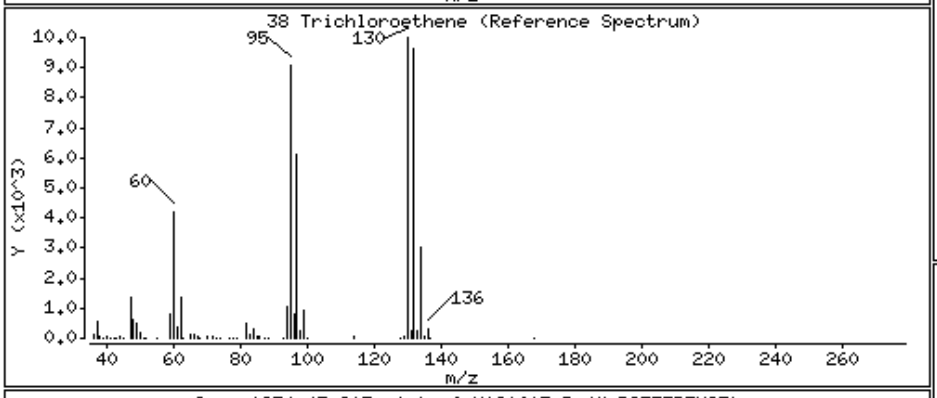
Concentration: 1889.99 ug/l

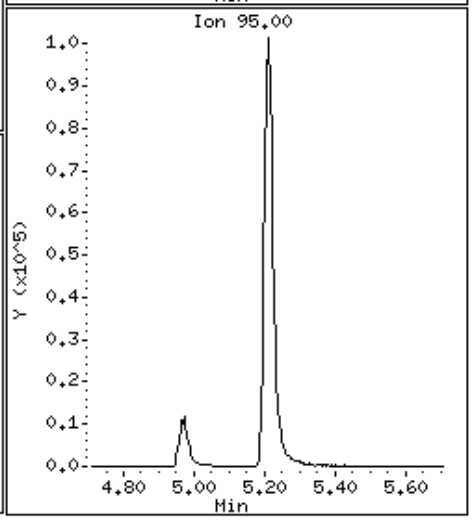


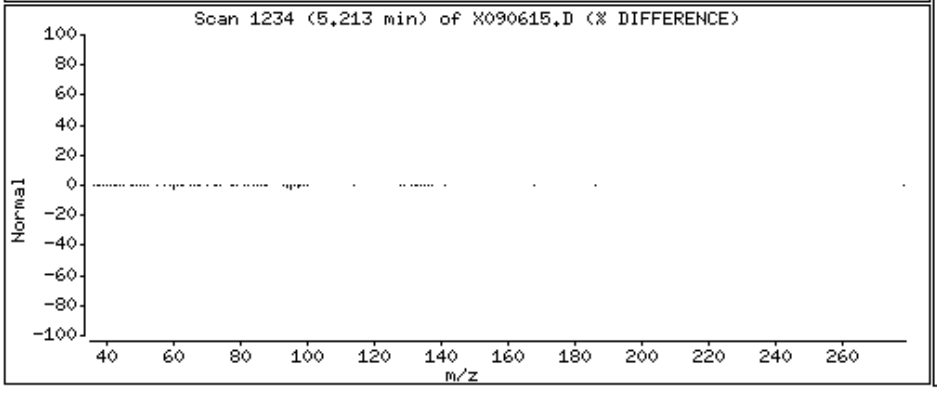












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090615.D Page 5

Date : 06-SEP-2022 15:24

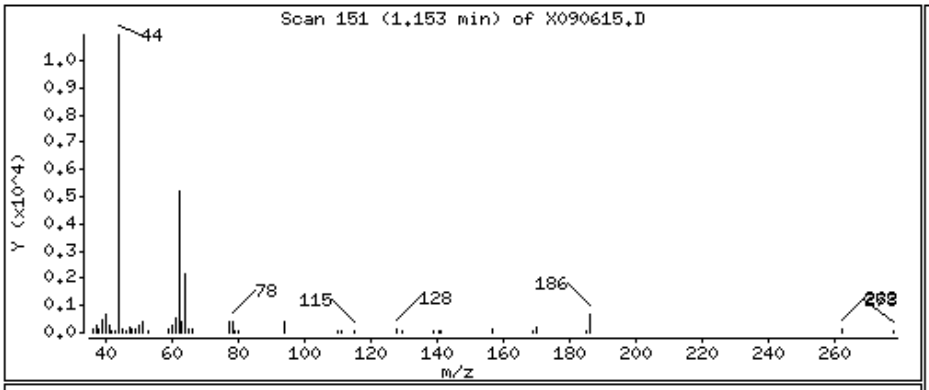
Client ID: HS22081514-15 Instrument: voa6.i

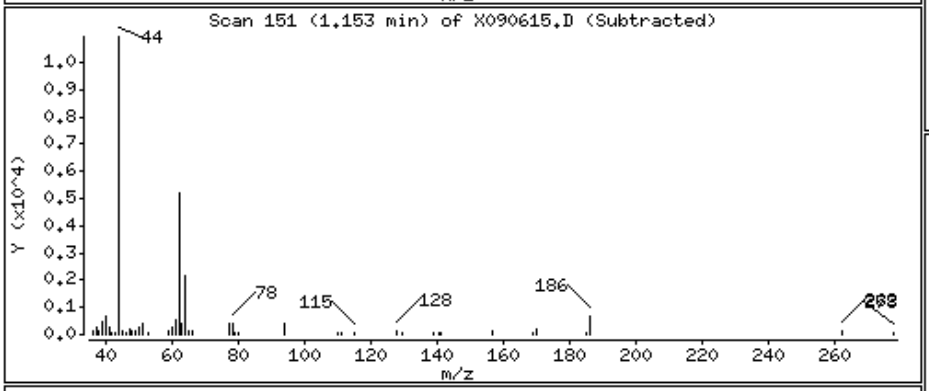
Sample Info: HS22081514-15;HS22081514-15;;;

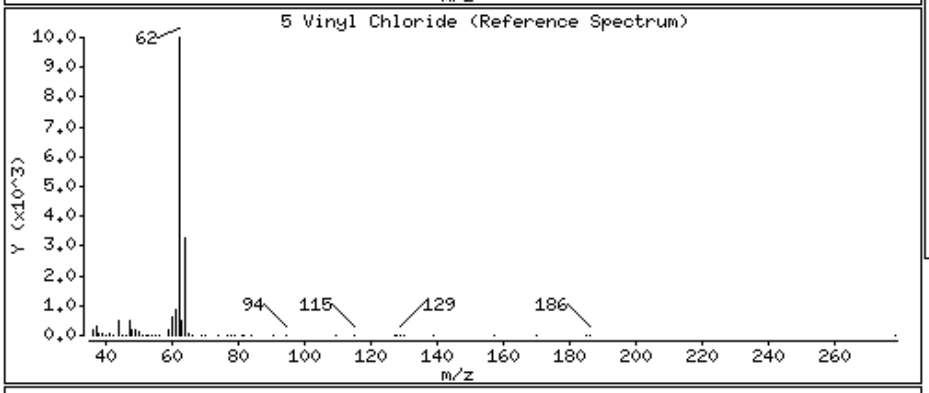
Purge Volume: 5.0 Operator: PC

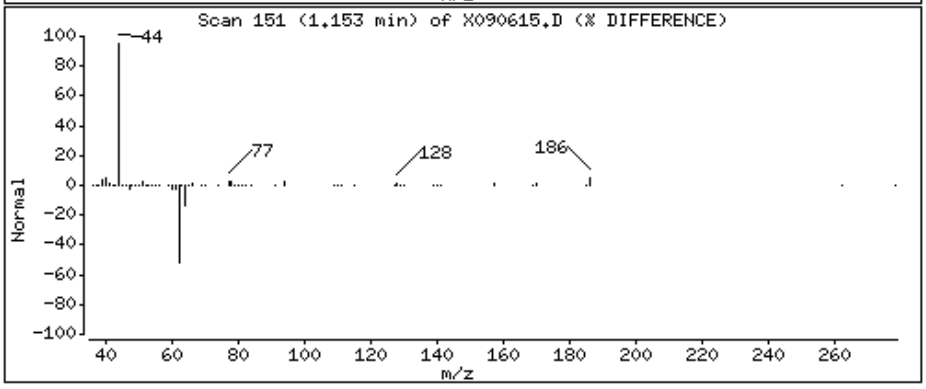
Column phase: DB624 Column diameter: 0.18

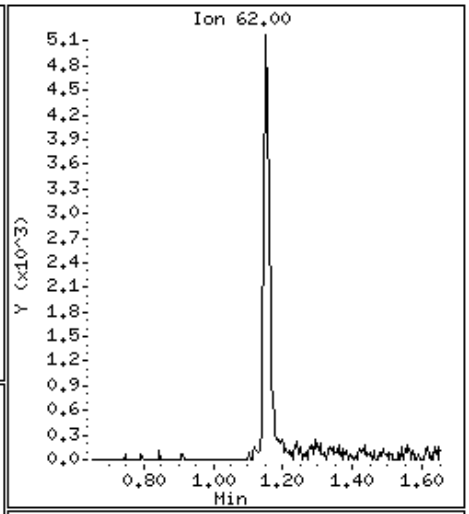
5 Vinyl Chloride Concentration: 51.32 ug/l

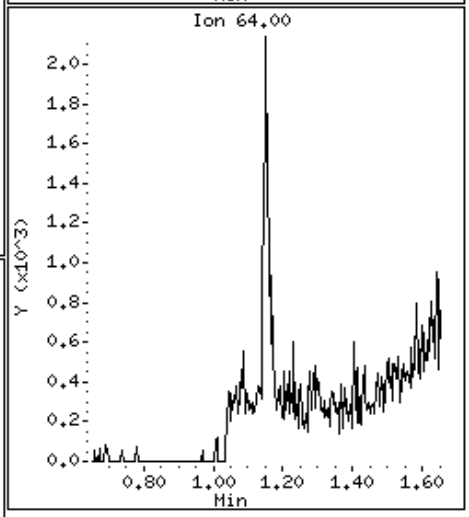












Data File : \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090615.D
Inj Date : 06-SEP-2022 15:24
InstruID : voa6.i
LabSampID : HS22081514-15

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090616.D Page 1
Report Date: 09-Sep-2022 16:56

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090616.D
Lab Smp Id: HS22081514-21 Client Smp ID: HS22081514-21
Inj Date : 06-SEP-2022 15:45
Operator : PC Inst ID: voa6.i
Smp Info : HS22081514-21;HS22081514-21;;;
Misc Info : HS22052000V6;WATER;0;100;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220906.b\8260W.m
Meth Date : 09-Sep-2022 16:55 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 15
Dil Factor: 100.00000
Integrator: HP RTE Compound Sublist: bhate.sub
Target Version: 4.14
Processing Host: NAHSTW7056

Concentration Formula: Amt * DF * (Uf/Vo)*1 * CpndVariable

Name	Value	Description
DF	100.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	sample purged
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	4.185	4.185	(1.000)	557484	50.0000	
* 36 1,4-Difluorobenzene	114	4.969	4.969	(1.000)	778960	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	660125	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.666	9.662	(1.000)	290034	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.980)	248140	47.1269	47.12
$ 35 1,2-Dichloroethane-d4	65	4.474	4.477	(1.069)	264382	45.8597	45.85
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	899868	54.6359	54.63
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	275857	46.7762	46.77
27 cis-1,2-Dichloroethene	96	3.533	3.529	(0.844)	384998	69.4638	6946.37
17 Methylene Chloride	84	2.311	2.311	(0.552)	21935	3.47962	347.96(a)
38 Trichloroethene	130	5.208	5.208	(1.048)	286747	52.4424	5244.24
5 Vinyl Chloride	62	1.152	1.152	(0.275)	82679	14.1435	1414.35

QC Flag Legend

a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).

01148444

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090616.D

Date : 06-SEP-2022 15:45

Client ID: HS22081514-21

Instrument: voa6.i

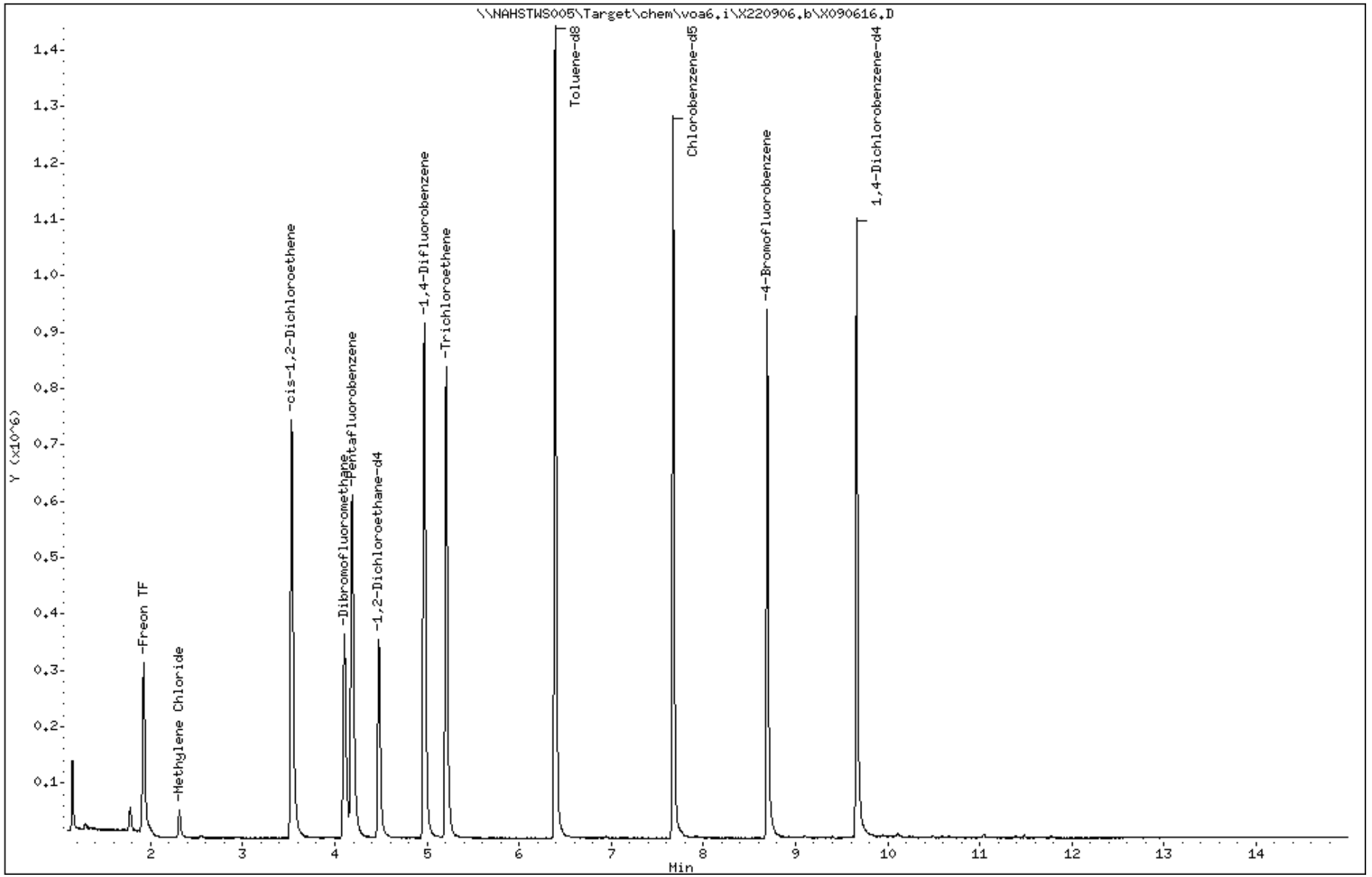
Sample Info: HS22081514-21;HS22081514-21;;;

Purge Volume: 5.0

Operator: PC

Column phase: DB624

Column diameter: 0.18



Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090616.D

Date : 06-SEP-2022 15:45

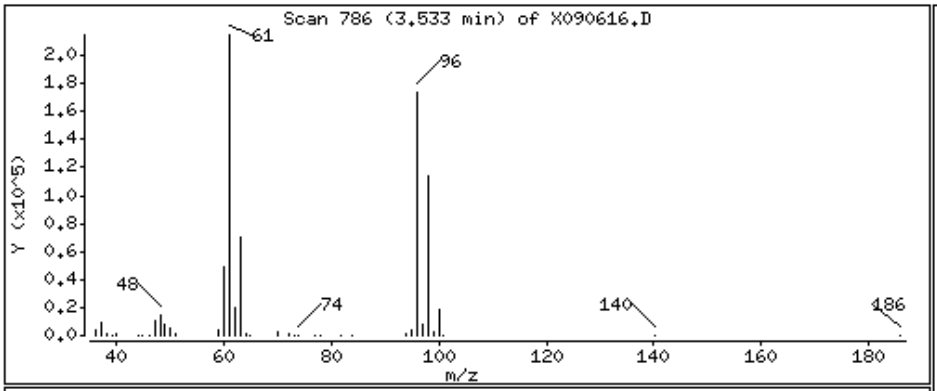
Client ID: HS22081514-21 Instrument: voa6.i

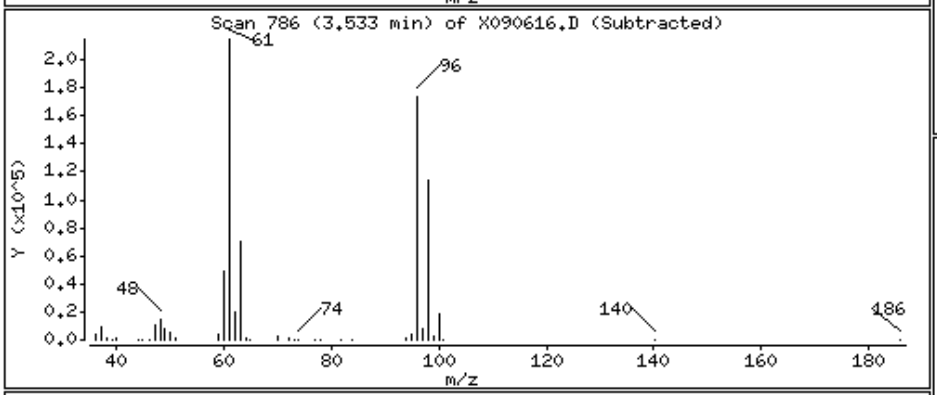
Sample Info: HS22081514-21;HS22081514-21;;;

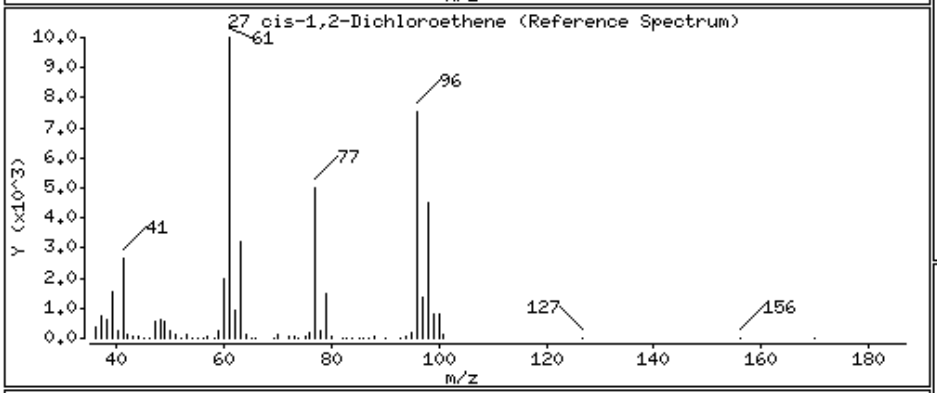
Purge Volume: 5.0 Operator: PC

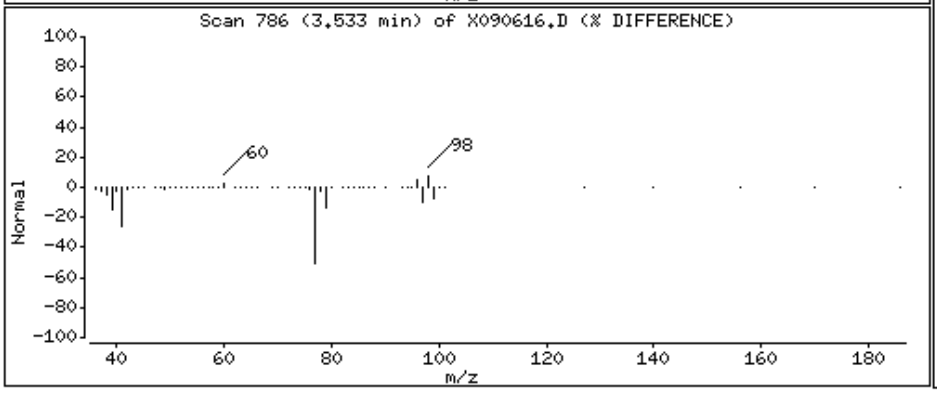
Column phase: DB624 Column diameter: 0.18

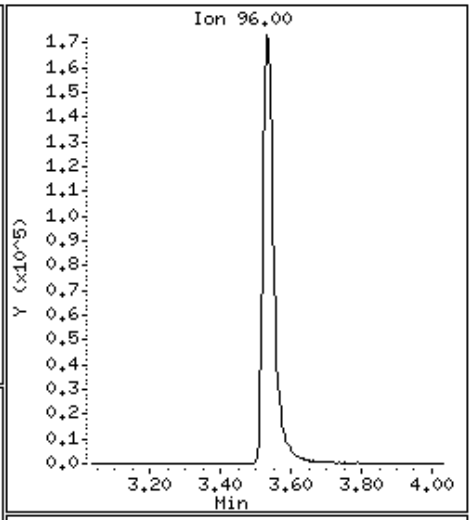
27 cis-1,2-Dichloroethene Concentration: 6946.37 ug/l

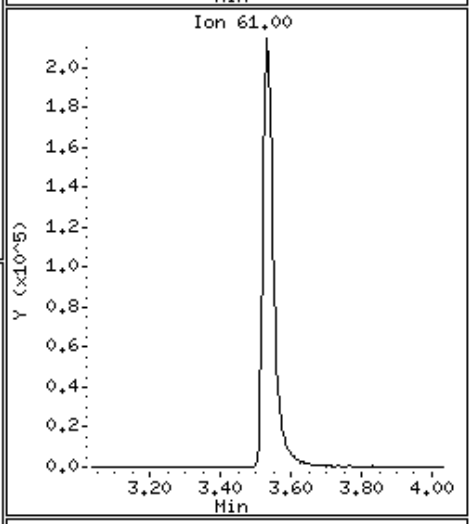


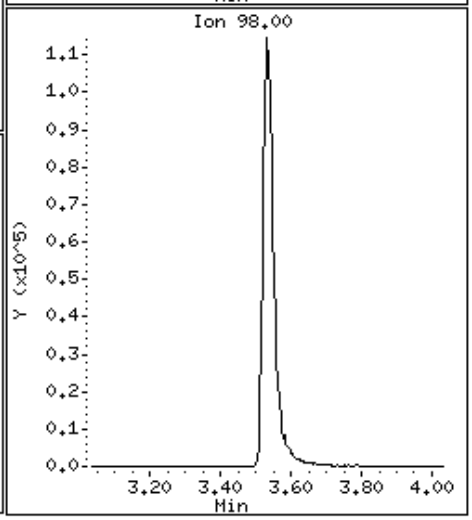












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090616.D

Date : 06-SEP-2022 15:45

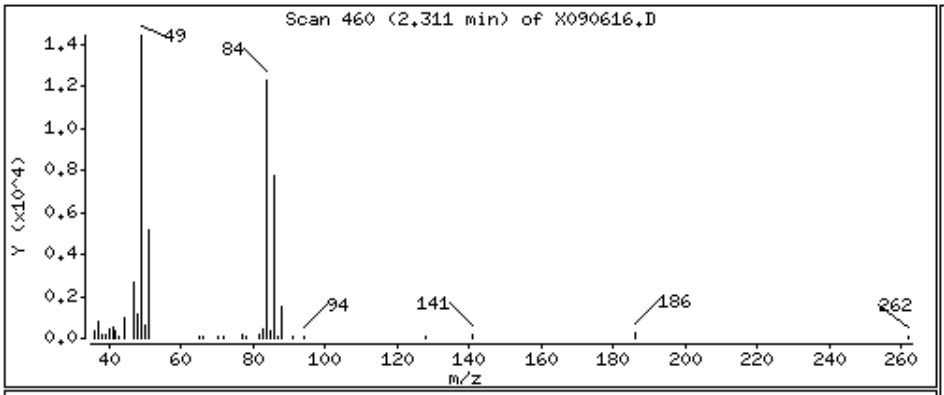
Client ID: HS22081514-21 Instrument: voa6.i

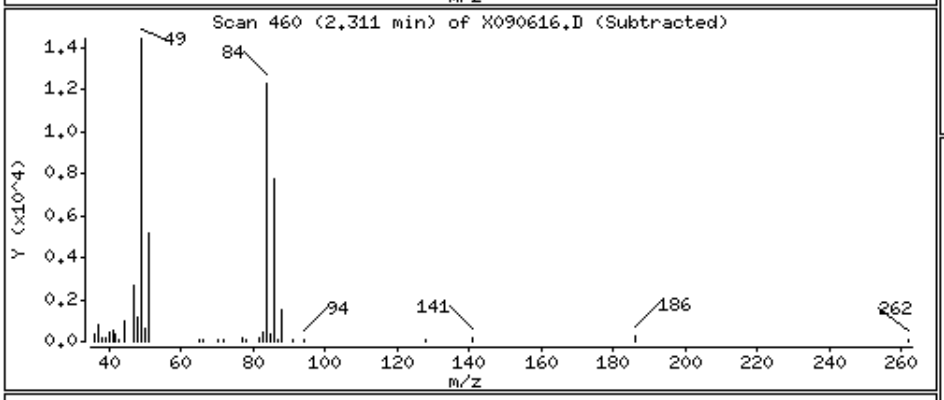
Sample Info: HS22081514-21;HS22081514-21;;;

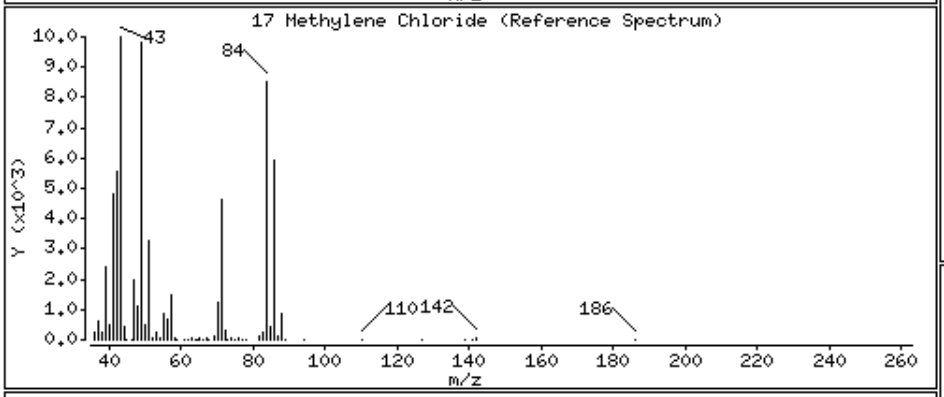
Purge Volume: 5.0 Operator: PC

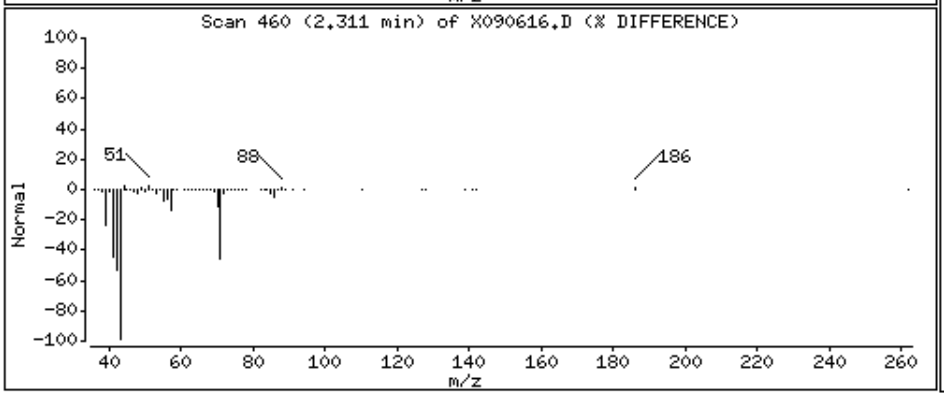
Column phase: DB624 Column diameter: 0.18

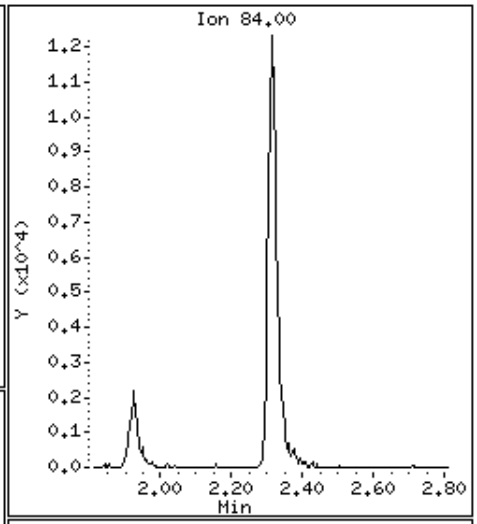
17 Methylene Chloride Concentration: 347.96 ug/l

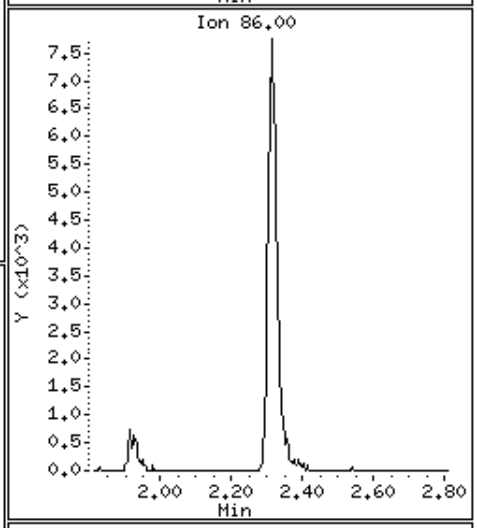


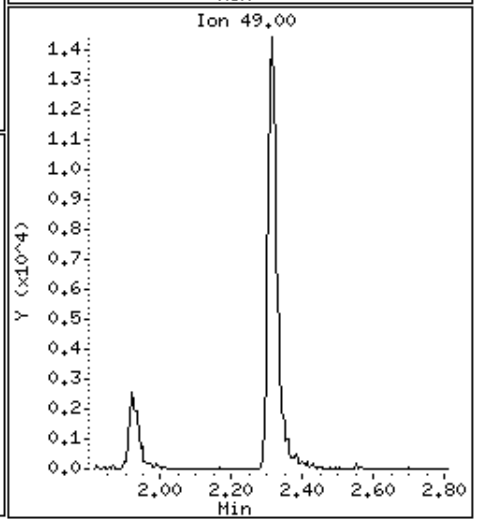












Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090616.D

Date : 06-SEP-2022 15:45

Client ID: HS22081514-21

Instrument: voa6.i

Sample Info: HS22081514-21;HS22081514-21;;;

Purge Volume: 5.0

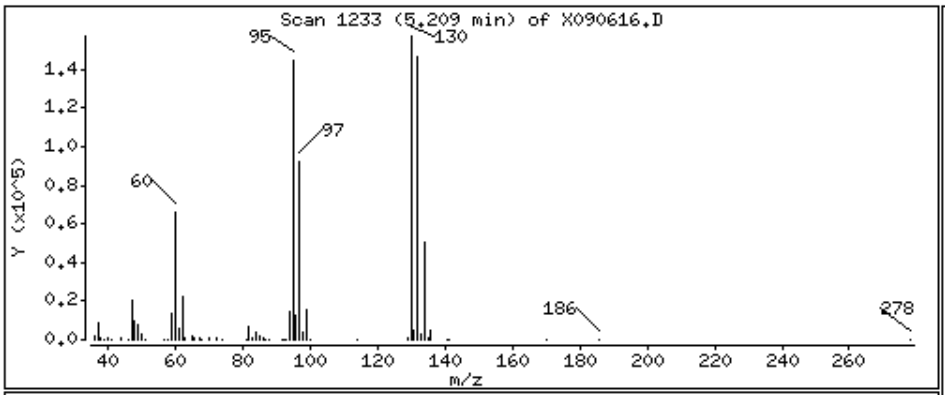
Operator: PC

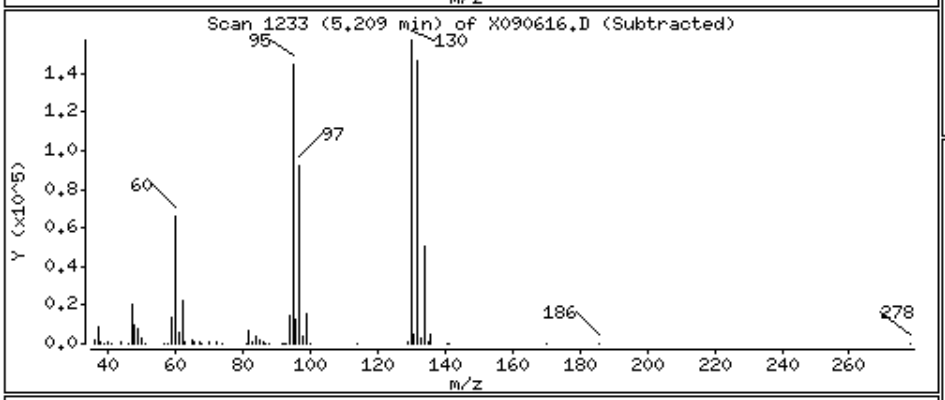
Column phase: DB624

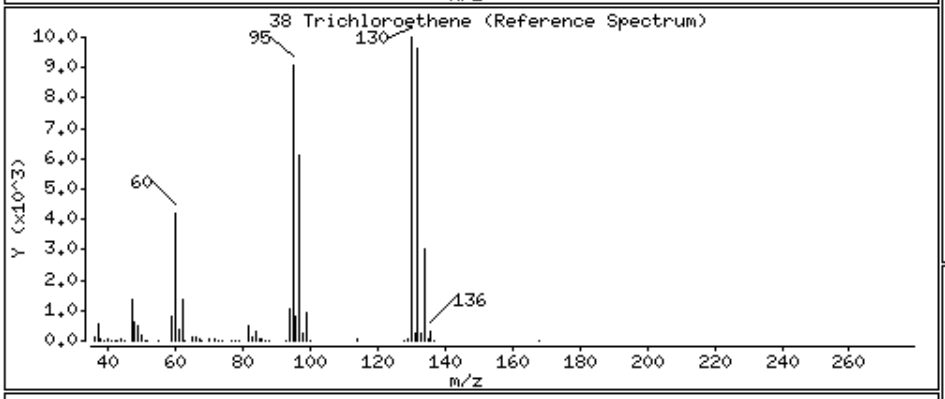
Column diameter: 0.18

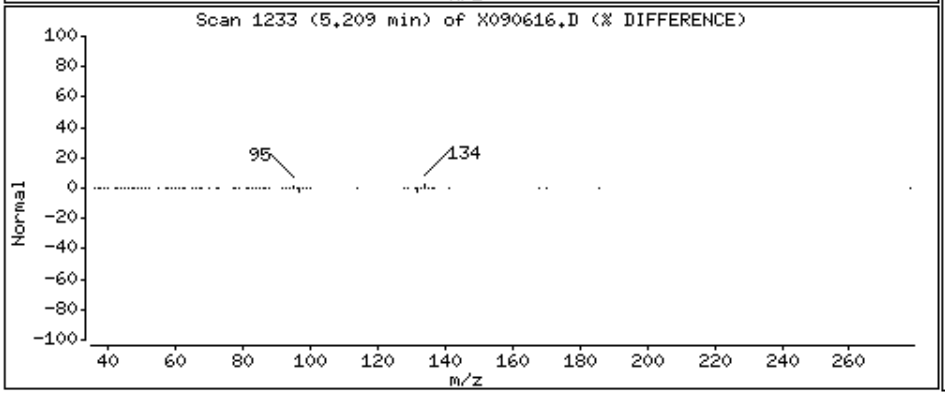
38 Trichloroethene

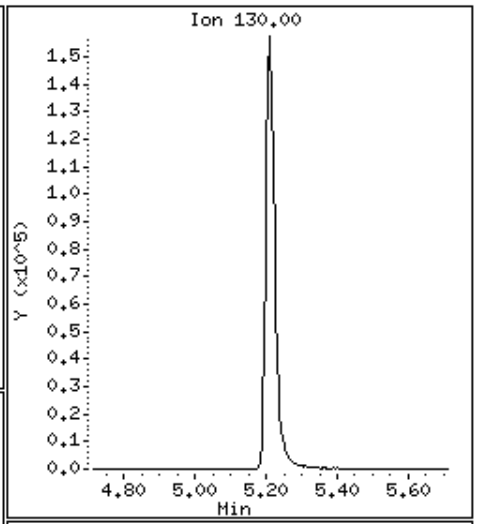
Concentration: 5244.24 ug/l

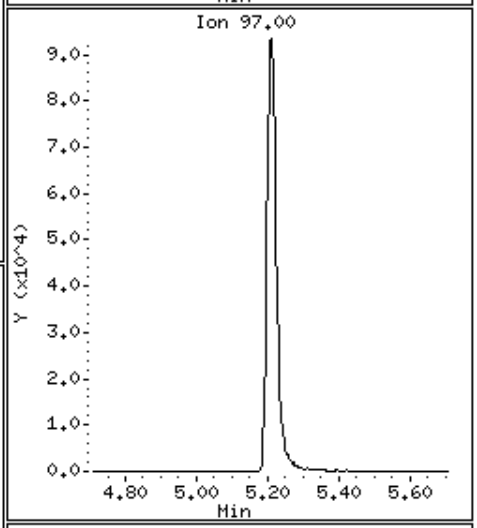


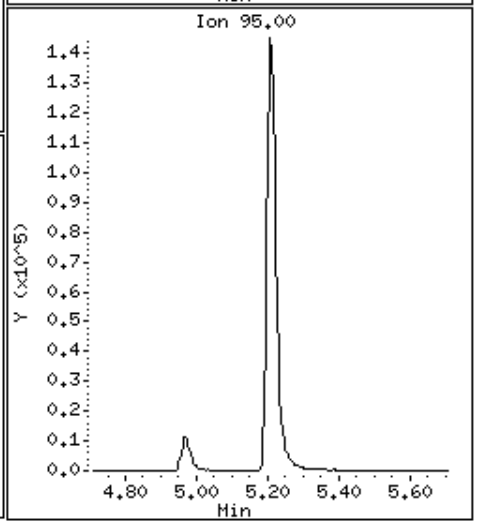












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Date : 06-SEP-2022 15:45

Client ID: HS22081514-21

Instrument: voa6.i

Sample Info: HS22081514-21;HS22081514-21;;;

Purge Volume: 5.0

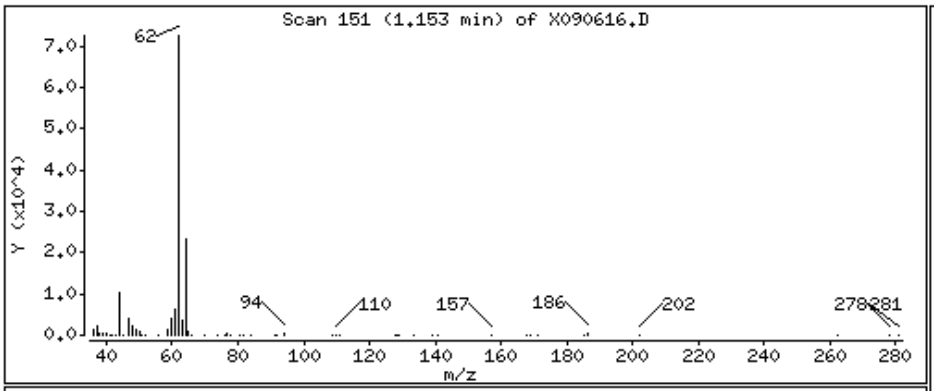
Operator: PC

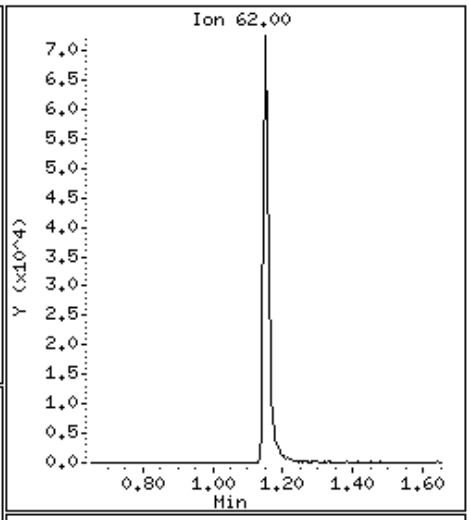
Column phase: DB624

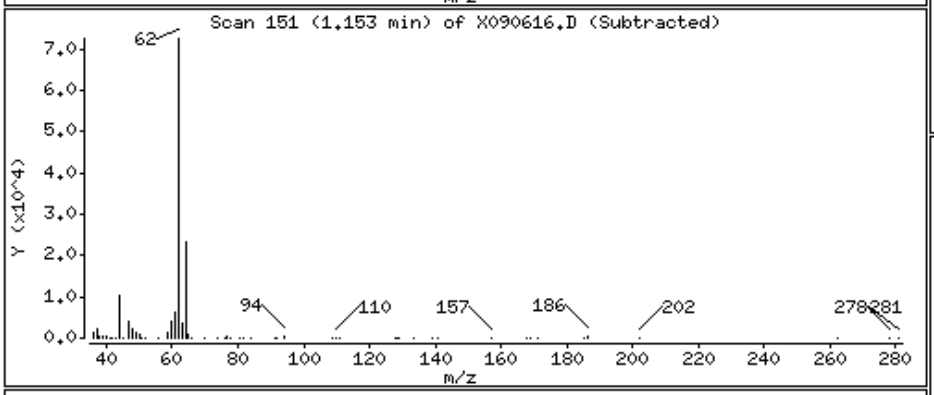
Column diameter: 0.18

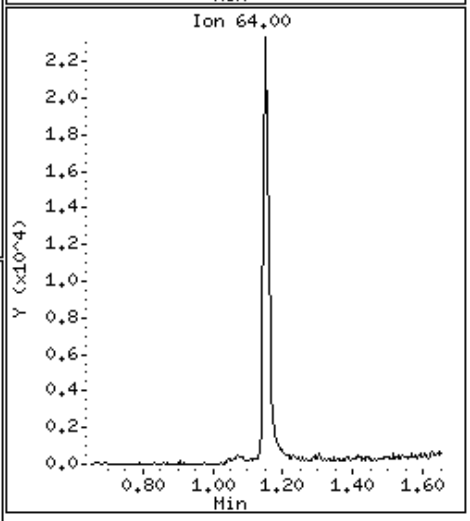
5 Vinyl Chloride

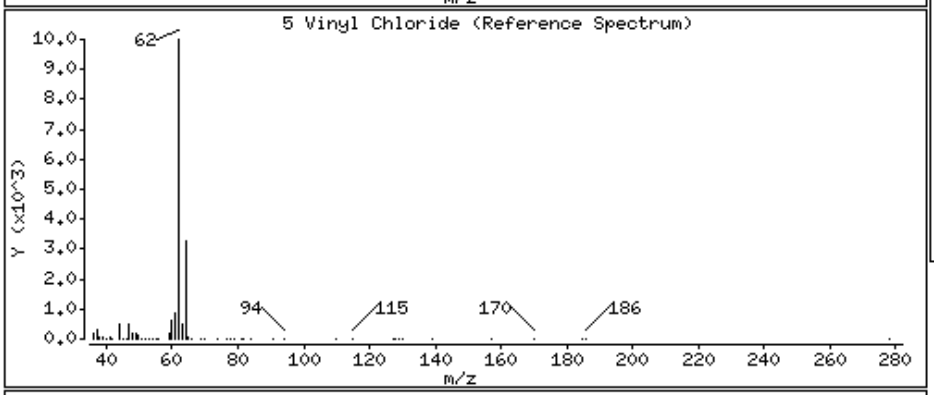
Concentration: 1414.35 ug/l

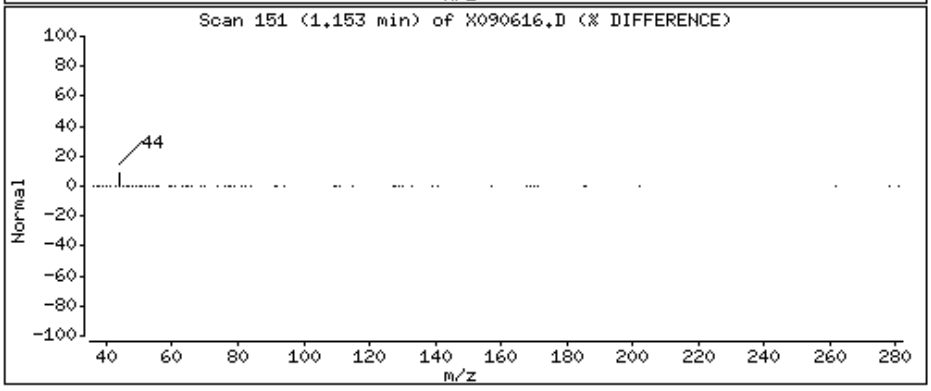












Data File : \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090616.D
Inj Date : 06-SEP-2022 15:45
InstruID : voa6.i
LabSampID : HS22081514-21

NO MANUAL INTEGRATIONS

Data File: \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090617.D Page 1
Report Date: 09-Sep-2022 16:56

ALS Laboratory Group

Data file : \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090617.D
Lab Smp Id: CCV-END Client Smp ID: CCV-END
Inj Date : 06-SEP-2022 16:06
Operator : PC Inst ID: voa6.i
Smp Info : CCV-END;CCV-END;2;;
Misc Info : HS22052000V6;WATER;0;1;
Comment   :
Method   : \\NAHSTWS005\Target\chem\voa6.i\X220906.b\8260W.m
Meth Date : 09-Sep-2022 16:56 voa6.i Quant Type: ISTD
Cal Date : 19-JUL-2022 13:53 Cal File: X071908.D
Als bottle: 16 Continuing Calibration Sample
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: bhate.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
Cpnd Variable		Local Compound Variable

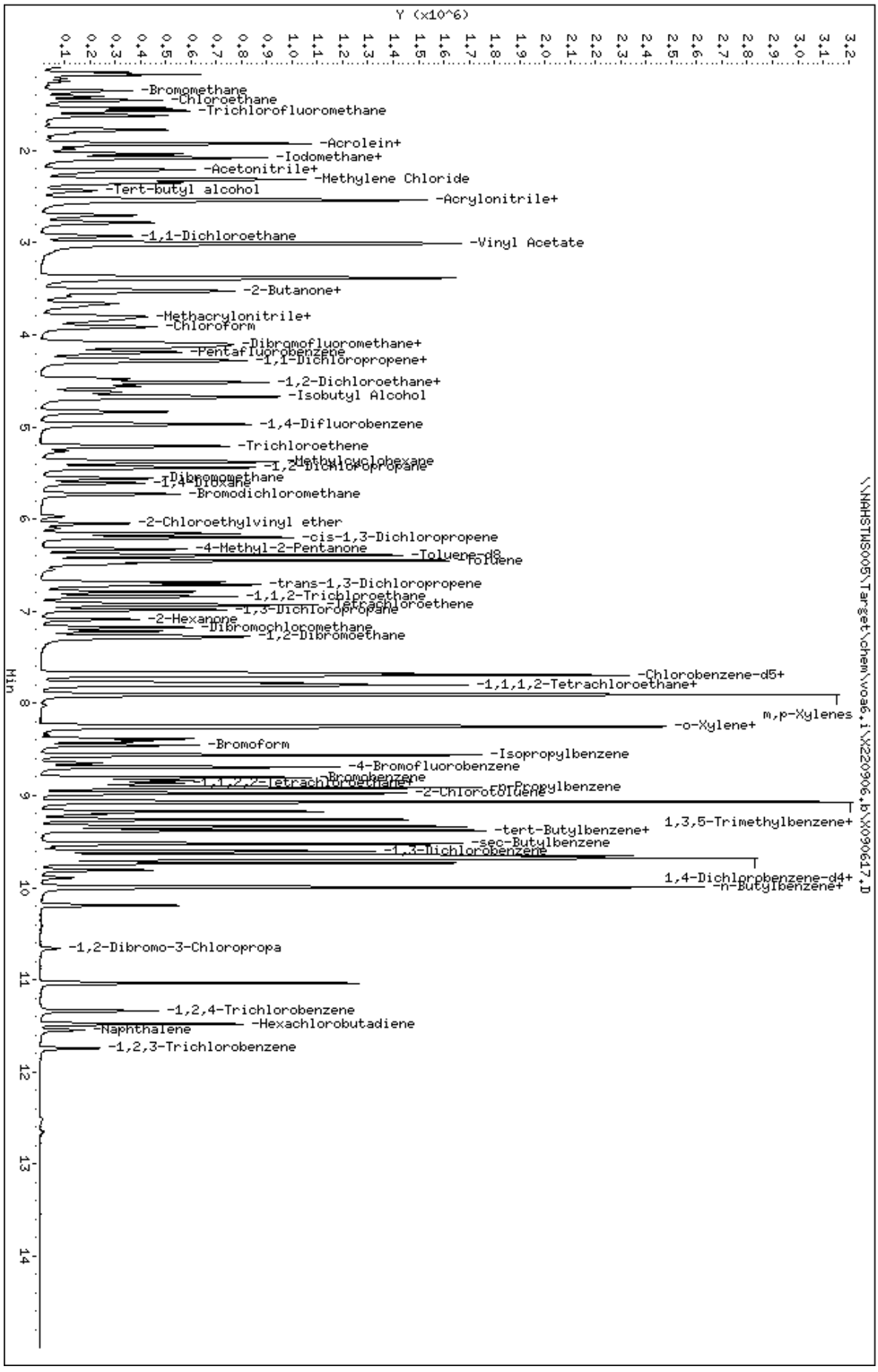
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
* 1 Pentafluorobenzene	168	4.185	4.185	(1.000)	477507	50.0000	
* 36 1,4-Difluorobenzene	114	4.969	4.969	(1.000)	702146	50.0000	
* 47 Chlorobenzene-d5	117	7.671	7.671	(1.000)	649761	50.0000	
* 70 1,4-Dichlorobenzene-d4	152	9.662	9.662	(1.000)	326525	50.0000	
$ 30 Dibromofluoromethane	113	4.103	4.103	(0.980)	241953	50.0000	53.74
$ 35 1,2-Dichloroethane-d4	65	4.478	4.478	(1.070)	257354	50.0000	52.16
$ 48 Toluene-d8	98	6.389	6.389	(0.833)	845639	50.0000	52.16
$ 69 4-Bromofluorobenzene	95	8.691	8.691	(1.133)	299440	50.0000	51.66
60 1,1,1,2-Tetrachloroethane	131	7.776	7.776	(1.014)	235097	50.0000	51.50
31 1,1,1-Trichloroethane	97	4.088	4.088	(0.977)	334884	50.0000	49.43
68 1,1,2,2-Tetrachloroethane	83	8.841	8.841	(0.915)	220285	50.0000	48.03
53 1,1,2-Trichloroethane	83	6.839	6.839	(0.892)	168800	50.0000	50.52
22 1,1-Dichloroethane	63	2.929	2.929	(0.700)	371542	50.0000	50.54
11 1,1-Dichloroethene	96	1.925	1.925	(0.460)	186921	50.0000	46.89
32 1,1-Dichloropropene	75	4.286	4.286	(0.863)	288383	50.0000	50.88
93 1,2,3-Trichlorobenzene	180	11.742	11.742	(1.215)	72317	50.0000	42.60
71 1,2,3-Trichloropropane	75	8.863	8.863	(0.917)	176630	50.0000	49.95(M)
90 1,2,4-Trichlorobenzene	180	11.338	11.338	(1.173)	135434	50.0000	45.53
79 1,2,4-Trimethylbenzene	105	9.381	9.381	(0.971)	799155	50.0000	51.02
89 1,2-Dibromo-3-Chloropropane	155	10.659	10.659	(1.103)	15822	50.0000	45.93

57	1,2-Dibromoethane	107	7.263	7.263 (0.947)	215994	50.0000	50.99
88	1,2-Dichlorobenzene	146	9.992	9.992 (1.034)	401927	50.0000	49.19

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/l)	ON-COL (ug/l)
33	1,2-Dichloroethane	62	4.560	4.560	(0.918)	306646	50.0000	49.79
42	1,2-Dichloropropane	63	5.441	5.441	(1.095)	221988	50.0000	51.36
75	1,3,5-Trimethylbenzene	105	9.070	9.070	(0.939)	797944	50.0000	50.30
83	1,3-Dichlorobenzene	146	9.606	9.606	(0.994)	455322	50.0000	50.25
54	1,3-Dichloropropane	76	6.982	6.982	(0.910)	345561	50.0000	50.85
84	1,4-Dichlorobenzene	146	9.684	9.684	(1.002)	470874	50.0000	48.95
26	2,2-Dichloropropane	77	3.518	3.518	(0.841)	319580	50.0000	48.94
24	2-Butanone	43	3.585	3.585	(0.857)	121885	100.000	101.74
76	2-Chlorotoluene	91	8.976	8.976	(0.929)	658102	50.0000	47.02
52	2-Hexanone	43	7.087	7.087	(0.924)	212529	100.000	104.02
77	4-Chlorotoluene	91	9.070	9.070	(0.939)	771358	50.0000	49.37
82	p-Isopropyltoluene	119	9.651	9.651	(0.999)	828287	50.0000	52.00
45	4-Methyl-2-Pentanone	43	6.326	6.326	(0.825)	333074	100.000	105.20
10	Acetone	43	1.981	1.981	(0.473)	96459	100.000	95.67
37	Benzene	78	4.515	4.515	(0.909)	837717	50.0000	50.34
74	Bromobenzene	156	8.807	8.807	(0.912)	277024	50.0000	49.67
29	Bromochloromethane	128	3.803	3.803	(0.909)	130295	50.0000	48.39
39	Bromodichloromethane	83	5.730	5.730	(1.153)	302556	50.0000	51.02
66	Bromoform	173	8.410	8.410	(1.096)	151117	50.0000	48.02
6	Bromomethane	94	1.347	1.347	(0.322)	164618	50.0000	50.47
19	Carbon Disulfide	76	2.078	2.078	(0.497)	1064230	100.000	100.84
34	Carbon Tetrachloride	117	4.271	4.271	(0.860)	290820	50.0000	48.01
59	Chlorobenzene	112	7.694	7.694	(1.003)	624317	50.0000	50.67
7	Chloroethane	64	1.411	1.411	(0.337)	147653	50.0000	48.20
28	Chloroform	83	3.911	3.911	(0.935)	402022	50.0000	49.91
3	Chloromethane	50	1.085	1.085	(0.259)	214586	50.0000	48.53
27	cis-1,2-Dichloroethene	96	3.533	3.533	(0.844)	244980	50.0000	51.60
46	cis-1,3-Dichloropropene	75	6.157	6.157	(1.239)	372953	50.0000	51.20
55	Dibromochloromethane	129	7.177	7.177	(0.936)	244366	50.0000	50.67
44	Dibromomethane	93	5.553	5.553	(1.118)	147652	50.0000	50.91
2	Dichlorodifluoromethane	85	0.980	0.980	(0.234)	189500	50.0000	41.62
61	Ethylbenzene	106	7.799	7.799	(1.017)	316766	50.0000	50.89
91	Hexachlorobutadiene	225	11.480	11.480	(1.188)	130158	50.0000	47.38
67	Isopropylbenzene	105	8.564	8.564	(1.116)	962504	50.0000	51.42
62	m,p-Xylenes	106	7.908	7.908	(1.031)	799901	100.000	103.32
17	Methylene Chloride	84	2.311	2.311	(0.552)	232098	50.0000	52.91
87	n-Butylbenzene	91	9.996	9.996	(1.035)	707013	50.0000	53.42
73	n-Propylbenzene	91	8.912	8.912	(0.922)	1111475	50.0000	51.59
92	Naphthalene	128	11.547	11.547	(1.195)	136502	50.0000	41.02
63	o-Xylene	106	8.245	8.245	(1.075)	385609	50.0000	51.23
81	sec-Butylbenzene	105	9.523	9.523	(0.986)	935979	50.0000	50.84
64	Styrene	104	8.260	8.260	(1.077)	642350	50.0000	51.83
78	tert-Butylbenzene	119	9.336	9.336	(0.966)	677898	50.0000	50.42
56	Tetrachloroethene	164	6.929	6.929	(0.903)	205724	50.0000	48.82
50	Toluene	91	6.449	6.449	(0.841)	916673	50.0000	50.18
20	trans-1,2-Dichloroethene	96	2.536	2.536	(0.606)	208981	50.0000	49.74
51	trans-1,3-Dichloropropene	75	6.682	6.682	(1.345)	312421	50.0000	51.79
38	Trichloroethene	130	5.212	5.212	(1.049)	245045	50.0000	49.71
8	Trichlorofluoromethane	101	1.569	1.569	(0.375)	363512	50.0000	48.34
5	Vinyl Chloride	62	1.152	1.152	(0.275)	228545	50.0000	45.64

QC Flag Legend

M - Compound response manually integrated.



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Date : 06-SEP-2022 16:06
Client ID: CCV-END
Sample Info: CCV-END;CCV-END;2;;
Purge Volume: 5.0
Column phase: DB624

Instrument: voa6.i
Operator: PC
Column diameter: 0.18

Data File : \\NAHSTWS005\Target\chem\voa6.i\X220906.b\X090617.D
Inj Date : 06-SEP-2022 16:06
InstruID : voa6.i
LabSampID : CCV-END

1,2,3-Trichloropropane (96-18-4)

Reason Code:

BEFORE

MASS
91
AREA
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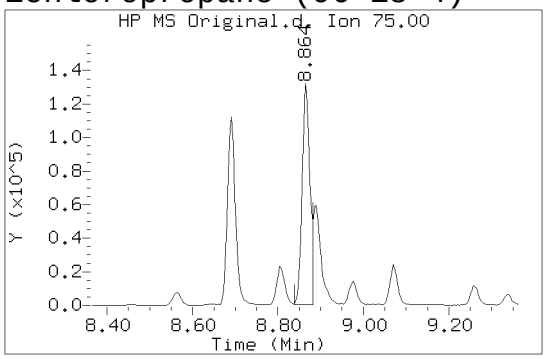
HEIGHT
585825
09-Sep-2022
16:54
linh
pham



AFTER

MASS
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AREA
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HEIGHT
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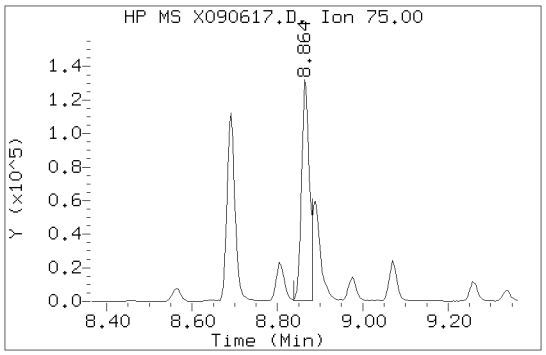
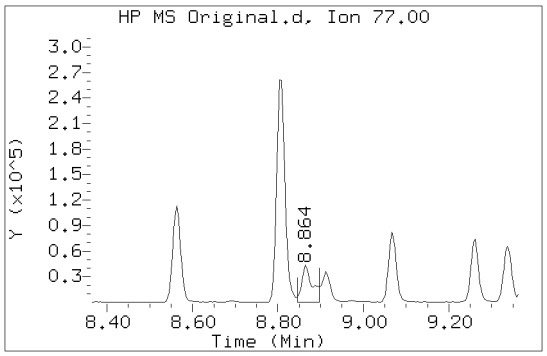
09-Sep-2022
16:55
linh
pham



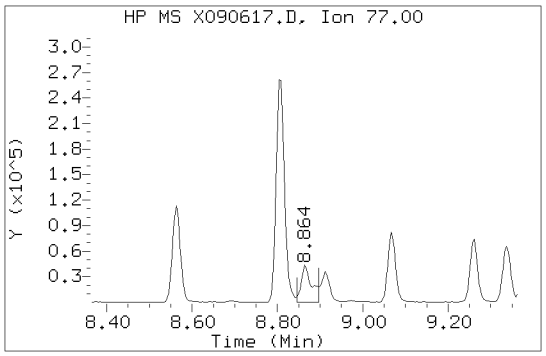
BEFORE

MASS
126
AREA
251026
HEIGHT
190654
09-Sep-2022
16:54
linh
pham



AFTER

MASS
77
AREA
76475
HEIGHT
43761
09-Sep-2022
16:55
linh
pham



HS22081514 - ME - ICP_W_DOD

ALS WO# HS22081514

ALS Houston, US

Date: 15-Sep-22

FORM 13 - ANALYSIS RUN LOG

Client: Bhate Environmental Associates, Inc.
Project: LHAAP ICT Wells
WorkOrder: HS22081514
Start Date: 12-Sep-2022 End Date: 13-Sep-2022

Run ID:ICPMS07_416916
Instrument:ICPMS07
Method:

Sample No.	D/F	Time	FileID	Analytes
ICPMS07_416916_Tune	1	12-Sep-2022 00:00	ICPMS07_416916_Tune_1	
CAL BLK	1	12-Sep-2022 11:24	015CALB.d_6844064	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
2/10/200	1	12-Sep-2022 11:26	016CALS.d_6844065	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
5/25/500	1	12-Sep-2022 11:28	017CALS.d_6844066	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
10/50/100	1	12-Sep-2022 11:30	018CALS.d_6844067	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
100/500/10K	1	12-Sep-2022 11:32	019CALS.d_6844068	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
200/1000/20K	1	12-Sep-2022 11:33	020CALS.d_6844069	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
ICV	1	12-Sep-2022 11:40	022_ICV.d_6844071	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
LLICV2	1	12-Sep-2022 11:41	023LCV2.d_6844072	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
LLICV5	1	12-Sep-2022 11:43	024LCV5.d_6844073	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
ICB	1	12-Sep-2022 11:45	025_ICB.d_6844074	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
ICSA	1	12-Sep-2022 11:47	026ICSA.d_6844075	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
ICSAB	1	12-Sep-2022 11:49	027ICSB.d_6844076	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
CCV 1	1	12-Sep-2022 11:58	029_CCV.d_6844202	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
CCB 1	1	12-Sep-2022 11:59	030_CCB.d_6844203	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
CCV 2	1	12-Sep-2022 12:22	041_CCV.d_6844213	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
CCB 2	1	12-Sep-2022 12:24	042_CCB.d_6844214	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
CCV 3	1	12-Sep-2022 12:45	053_CCV.d_6844223	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
CCB 3	1	12-Sep-2022 12:47	054_CCB.d_6844224	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
CCV 4	1	12-Sep-2022 13:32	077_CCV.d_6844329	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
CCB 4	1	12-Sep-2022 13:34	078_CCB.d_6844330	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
CCV 5	1	12-Sep-2022 13:57	088_CCV.d_6844339	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
CCB 5	1	12-Sep-2022 13:58	089_CCB.d_6844340	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
CCV 6	1	12-Sep-2022 14:21	100_CCV.d_6844426	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
CCB 6	1	12-Sep-2022 14:23	101_CCB.d_6844427	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
CCV 7	1	12-Sep-2022 14:53	109_CCV.d_6845217	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
CCB 7	1	12-Sep-2022 14:55	110_CCB.d_6845218	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
CAL BLK	1	12-Sep-2022 22:58	319CALB.d_6845221	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
2/10/200	1	12-Sep-2022 23:00	320CALS.d_6845222	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
5/25/500	1	12-Sep-2022 23:01	321CALS.d_6845223	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
10/50/100	1	12-Sep-2022 23:03	322CALS.d_6845224	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN

ALS Houston, US

Date: 15-Sep-22

FORM 13 - ANALYSIS RUN LOG

Client: Bhate Environmental Associates, Inc.
Project: LHAAP ICT Wells
WorkOrder: HS22081514
Start Date: 12-Sep-2022 End Date: 13-Sep-2022

Run ID:ICPMS07_416916
Instrument:ICPMS07
Method:

Sample No.	D/F	Time	FileID	Analytes
100/500/10K	1	12-Sep-2022 23:05	323CALS.d_6845225	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
200/1000/20K	1	12-Sep-2022 23:07	324CALS.d_6845226	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
ICCV 8	1	12-Sep-2022 23:11	326_ICV.d_6845228	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
LLCCV2	1	12-Sep-2022 23:12	327LCV2.d_6845229	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
LLCCV5	1	12-Sep-2022 23:14	328LCV5.d_6845230	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
ICCB 8	1	12-Sep-2022 23:16	329_ICB.d_6845231	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
ICSA	1	12-Sep-2022 23:18	330ICSA.d_6845232	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
ICSAB	1	12-Sep-2022 23:20	331ICSB.d_6845233	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
CCV 9	1	12-Sep-2022 23:26	334_CCV.d_6845236	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
CCB 9	1	12-Sep-2022 23:27	335_CCB.d_6845237	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
MBLK-183371	1	12-Sep-2022 23:29	336SMPL.d_6845238	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
LCS-183371	1	12-Sep-2022 23:31	337SMPL.d_6845239	AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
ICT14D_082522	1	12-Sep-2022 23:33	338SMPL.d_6845240	AG AS BE CA CD CO CU K MG NI PB SB SE TL V ZN
ICT14D_082522SD	5	12-Sep-2022 23:35	339SMPL.d_6845241	AG AS BE CA CD CO CU K MG NI PB SB SE TL V ZN
ICT14D_082522MS	1	12-Sep-2022 23:37	340SMPL.d_6845242	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
ICT14D_082522MSD	1	12-Sep-2022 23:39	341SMPL.d_6845243	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
ICT14D_082522PDS	1	12-Sep-2022 23:41	342SMPL.d_6845244	AG AS BE CA CD CO CU K MG NI PB SB SE TL V ZN
CCV 10	1	12-Sep-2022 23:42	343_CCV.d_6845245	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
CCB 10	1	12-Sep-2022 23:44	344_CCB.d_6845246	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
ICT2_082522	1	12-Sep-2022 23:46	345SMPL.d_6845247	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
ICT4_082522	1	12-Sep-2022 23:48	346SMPL.d_6845248	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
ICT7_082522	1	12-Sep-2022 23:50	347SMPL.d_6845446	AG AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
ICT8_082522	1	12-Sep-2022 23:52	348SMPL.d_6845447	AG AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
ICT11_082522	1	12-Sep-2022 23:54	349SMPL.d_6845448	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
ICT11_082522_a	1	12-Sep-2022 23:56	350SMPL.d_6845449	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
ICT12A_082522	1	12-Sep-2022 23:58	351SMPL.d_6845450	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
ICT12B_082522	1	12-Sep-2022 23:59	352SMPL.d_6845451	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
ICT12C_082522	1	13-Sep-2022 00:01	353SMPL.d_6845452	AG AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
ICT12D_082522	1	13-Sep-2022 00:03	354SMPL.d_6845453	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
CCV 11	1	13-Sep-2022 00:05	355_CCV.d_6845454	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
CCB 11	1	13-Sep-2022 00:07	356_CCB.d_6845455	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
ICT12D_082522_a	1	13-Sep-2022 00:09	357SMPL.d_6845456	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN

ALS Houston, US Date: 15-Sep-22

FORM 13 - ANALYSIS RUN LOG

Client: Bhate Environmental Associates, Inc.
Project: LHAAP ICT Wells
WorkOrder: HS22081514
Start Date: 12-Sep-2022 End Date: 13-Sep-2022

Run ID:ICPMS07_416916
Instrument:ICPMS07
Method:

Sample No.	D/F	Time	FileID	Analytes
ICT12E_082522	1	13-Sep-2022 00:11	358SMPL.d_6845457	AG AL AS BA BE CA CD CO CR CU FE K MG MN NI PB SB SE TL V ZN
ICT13A_082522	1	13-Sep-2022 00:13	359SMPL.d_6845458	AG AL AS BA BE CA CD CO CR CU FE K MG MN NI PB SB SE TL V ZN
ICT13B_082522	1	13-Sep-2022 00:14	360SMPL.d_6845459	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
ICT13C_082522	1	13-Sep-2022 00:16	361SMPL.d_6845460	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
ICT13E_082522	1	13-Sep-2022 00:18	362SMPL.d_6845461	AG AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
ICT13F_082522	1	13-Sep-2022 00:20	363SMPL.d_6845462	AG AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
ICT14A_082522	1	13-Sep-2022 00:22	364SMPL.d_6845463	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
CCV 12	1	13-Sep-2022 00:26	366_CCV.d_6845465	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
CCB 12	1	13-Sep-2022 00:28	367_CCB.d_6845466	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
CCV 13	1	13-Sep-2022 01:27	398_CCV.d_6845468	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
CCB 13	1	13-Sep-2022 01:28	399_CCB.d_6845469	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
LLCCV2	1	13-Sep-2022 01:32	401LCV2.d_6845471	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
LLCCV5	1	13-Sep-2022 01:34	402LCV5.d_6845472	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
ICSA	1	13-Sep-2022 01:36	403ICSA.d_6845473	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
ICSAB	1	13-Sep-2022 01:38	404ICSB.d_6845474	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN

ALS Houston, US Date: 15-Sep-22

FORM 13 - ANALYSIS RUN LOG

Client: Bhate Environmental Associates, Inc.
Project: LHAAP ICT Wells
WorkOrder: HS22081514
Start Date: 13-Sep-2022 End Date: 13-Sep-2022

Run ID:ICPMS07_417005
Instrument:ICPMS07
Method:

Sample No.	D/F	Time	FileID	Analytes
ICPMS07_417005_Tune	1	13-Sep-2022 00:00	ICPMS07_417005_Tune_1	
CAL BLK	1	13-Sep-2022 11:04	015CALB.d_6845942	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
2/10/200	1	13-Sep-2022 11:06	016CALS.d_6845943	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
5/25/500	1	13-Sep-2022 11:07	017CALS.d_6845944	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
10/50/100	1	13-Sep-2022 11:09	018CALS.d_6845945	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
100/500/10K	1	13-Sep-2022 11:11	019CALS.d_6845946	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
200/1000/20K	1	13-Sep-2022 11:13	020CALS.d_6845947	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
ICV	1	13-Sep-2022 11:17	022_ICV.d_6845949	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
LLICV2	1	13-Sep-2022 11:19	023LCV2.d_6845950	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
LLICV5	1	13-Sep-2022 11:21	024LCV5.d_6845951	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
ICB	1	13-Sep-2022 11:23	025_ICB.d_6845952	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
ICSA	1	13-Sep-2022 11:26	026ICSA.d_6845953	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
ICSAB	1	13-Sep-2022 11:28	027ICSB.d_6845954	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
CCV 1	1	13-Sep-2022 11:36	029_CCV.d_6846100	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
CCB 1	1	13-Sep-2022 11:38	030_CCB.d_6846101	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
LCS-183371	1	13-Sep-2022 11:40	031SMPL.d_6846102	AG AL
ICT14D_082522	20	13-Sep-2022 11:42	032SMPL.d_6846103	AL BA CR FE MN NA
ICT14D_082522SD	100	13-Sep-2022 11:44	033SMPL.d_6846104	AL BA CR FE MN NA
ICT14D_082522PDS	20	13-Sep-2022 11:45	034SMPL.d_6846105	AL BA CR FE MN NA
ICT8_082522	20	13-Sep-2022 11:49	036SMPL.d_6846107	AL
ICT12C_082522	20	13-Sep-2022 11:51	037SMPL.d_6846108	AL
ICT12E_082522	20	13-Sep-2022 11:53	038SMPL.d_6846109	NA
ICT13A_082522	20	13-Sep-2022 11:55	039SMPL.d_6846110	NA
ICT13E_082522	100	13-Sep-2022 11:57	040SMPL.d_6846111	AL
CCV 2	1	13-Sep-2022 11:59	041_CCV.d_6846112	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
CCB 2	1	13-Sep-2022 12:00	042_CCB.d_6846113	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
ICT13F_082522	20	13-Sep-2022 12:02	043SMPL.d_6846114	AL
MBLK-183432	1	13-Sep-2022 12:08	045SMPL.d_6846116	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
LCS-183432	1	13-Sep-2022 12:10	046SMPL.d_6846117	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
ZZZZZZSD	5	13-Sep-2022 12:14	048SMPL.d_6846119	AG AL AS BE CA CD CO CR CU FE K MG MN NI PB SB SE TL V ZN
ZZZZZZMS	1	13-Sep-2022 12:15	049SMPL.d_6846120	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
ZZZZZZMSD	1	13-Sep-2022 12:17	050SMPL.d_6846121	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
ZZZZZZPDS	1	13-Sep-2022 12:19	051SMPL.d_6846122	AG AL AS BE CA CD CO CR CU FE K MG MN NI PB SB SE TL V ZN
ICT7_082522	50	13-Sep-2022 12:21	052SMPL.d_6846123	AL
CCV 3	1	13-Sep-2022 12:23	053_CCV.d_6846124	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
CCB 3	1	13-Sep-2022 12:25	054_CCB.d_6846125	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN

ALS Houston, US

Date: 15-Sep-22

FORM 13 - ANALYSIS RUN LOG

Client: Bhate Environmental Associates, Inc.
Project: LHAAP ICT Wells
WorkOrder: HS22081514
Start Date: 13-Sep-2022 End Date: 13-Sep-2022

Run ID:ICPMS07_417005
Instrument:ICPMS07
Method:

Sample No.	D/F	Time	FileID	Analytes
ICT13D_082522	1	13-Sep-2022 12:27	055SMPL.d_6846126	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
ICT14B_082522	1	13-Sep-2022 12:29	056SMPL.d_6846127	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
ICT14C_082522	1	13-Sep-2022 12:31	057SMPL.d_6846128	AG AL AS BE CA CD CO CR CU FE K MG NI PB SB SE TL V ZN
ICT14E_082522	1	13-Sep-2022 12:33	058SMPL.d_6846129	AG AL AS BE CA CD CO CR CU FE K MG MN NI PB SB SE TL V ZN
ZZZZZZSD	50	13-Sep-2022 12:47	061SMPL.d_6846377	BA NA
ZZZZZZPDS	10	13-Sep-2022 12:49	062SMPL.d_6846378	BA NA
ICT14C_082522	20	13-Sep-2022 12:51	063SMPL.d_6846379	BA MN NA
ICT14E_082522	20	13-Sep-2022 12:53	064SMPL.d_6846380	BA NA
CCV 4	1	13-Sep-2022 12:54	065_CCV.d_6846381	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN
CCB 4	1	13-Sep-2022 12:56	066_CCB.d_6846382	AG AL AS BA BE CA CD CO CR CU FE K MG MN NA NI PB SB SE TL V ZN

ALS Houston, US Date: 15-Sep-22

Form 2 - Initial and Continuing Calibration Verification

Client: Bhate Environmental Associates, Inc.
Project: LHAAP ICT Wells
WorkOrder: HS22081514

Run ID: ICPMS07_416916
Instrument: ICPMS07
Method: SW6020A

ICV Date: 12-Sep-2022 11:40 Seq: 6844071 ICV Units: ug/L

Analyte	True	Found	%R	Control Limits	Flag
Aluminum	100	98.823	99	90-110	
Antimony	100	102.087	102	90-110	
Arsenic	100	103.749	104	90-110	
Barium	100	100.415	100	90-110	
Beryllium	100	100.821	101	90-110	
Cadmium	100	99.81	100	90-110	
Calcium	10000	9978.361	100	90-110	
Chromium	100	98.847	99	90-110	
Cobalt	100	100.436	100	90-110	
Copper	100	100.394	100	90-110	
Iron	10000	9944.44	99	90-110	
Lead	100	101.452	101	90-110	
Magnesium	10000	10079.57	101	90-110	
Manganese	100	100.066	100	90-110	
Nickel	100	100.319	100	90-110	
Potassium	10000	10053.227	101	90-110	
Selenium	100	101.47	101	90-110	
Silver	100	103.404	103	90-110	
Sodium	10000	9919.17	99	90-110	
Thallium	100	103.119	103	90-110	
Vanadium	100	95.95	96	90-110	
Zinc	100	100.447	100	90-110	

CCV1 Date: 12-Sep-2022 11:58 Seq: 6844202 CCV Units: ug/L

Analyte	True	Found	%R	Control Limits	Flag
Aluminum	100	102.481	102	90-110	
Antimony	100	99.56	100	90-110	
Arsenic	100	99.883	100	90-110	
Barium	100	99.466	100	90-110	
Beryllium	100	100.804	101	90-110	
Cadmium	100	100.018	100	90-110	
Calcium	10000	10055.234	101	90-110	
Chromium	100	100.264	100	90-110	
Cobalt	100	101.627	102	90-110	
Copper	100	102.678	103	90-110	
Iron	10000	10156.387	102	90-110	
Lead	100	100.351	100	90-110	
Magnesium	10000	10163.304	102	90-110	
Manganese	100	101.086	101	90-110	
Nickel	100	101.51	102	90-110	
Potassium	10000	10168.28	102	90-110	
Selenium	100	101.268	101	90-110	
Silver	100	102.469	102	90-110	
Sodium	10000	10138.38	101	90-110	
Thallium	100	100.272	100	90-110	
Vanadium	100	97.758	98	90-110	
Zinc	100	101.748	102	90-110	

CCV2 Date: 12-Sep-2022 12:22 Seq: 6844213 CCV Units: ug/L

Analyte	True	Found	%R	Control Limits	Flag
Aluminum	100	101.833	102	90-110	
Antimony	100	97.865	98	90-110	
Arsenic	100	99.777	100	90-110	
Barium	100	99.476	100	90-110	
Beryllium	100	102.838	103	90-110	

ALS Houston, US Date: 15-Sep-22

Form 2 - Initial and Continuing Calibration Verification

Client: Bhate Environmental Associates, Inc.
Project: LHAAP ICT Wells
WorkOrder: HS22081514

Run ID: ICPMS07_416916
Instrument: ICPMS07
Method: SW6020A

CCV2 Date: 12-Sep-2022 12:22 Seq: 6844213 CCV Units: ug/L

Analyte	True	Found	%R	Control Limits	Flag
Cadmium	100	100.474	100	90-110	
Calcium	10000	10083.061	101	90-110	
Chromium	100	100.475	100	90-110	
Cobalt	100	101.921	102	90-110	
Copper	100	102.454	102	90-110	
Iron	10000	10143.813	101	90-110	
Lead	100	101.145	101	90-110	
Magnesium	10000	10233.057	102	90-110	
Manganese	100	101.294	101	90-110	
Nickel	100	101.292	101	90-110	
Potassium	10000	10238.623	102	90-110	
Selenium	100	100.96	101	90-110	
Silver	100	101.814	102	90-110	
Sodium	10000	10320.967	103	90-110	
Thallium	100	100.879	101	90-110	
Vanadium	100	98.099	98	90-110	
Zinc	100	101.406	101	90-110	

CCV3 Date: 12-Sep-2022 12:45 Seq: 6844223 CCV Units: ug/L

Analyte	True	Found	%R	Control Limits	Flag
Aluminum	100	101.624	102	90-110	
Antimony	100	98.481	99	90-110	
Arsenic	100	99.587	100	90-110	
Barium	100	99.97	100	90-110	
Beryllium	100	100.525	101	90-110	
Cadmium	100	100.852	101	90-110	
Calcium	10000	10095.993	101	90-110	
Chromium	100	100.826	101	90-110	
Cobalt	100	104.79	105	90-110	
Copper	100	102.932	103	90-110	
Iron	10000	10353.47	104	90-110	
Lead	100	101.36	101	90-110	
Magnesium	10000	10550.783	106	90-110	
Manganese	100	101.057	101	90-110	
Nickel	100	101.983	102	90-110	
Potassium	10000	10379.353	104	90-110	
Selenium	100	98.8	99	90-110	
Silver	100	103.58	104	90-110	
Sodium	10000	10736.396	107	90-110	
Thallium	100	100.845	101	90-110	
Vanadium	100	98.476	99	90-110	
Zinc	100	102.988	103	90-110	

CCV4 Date: 12-Sep-2022 13:32 Seq: 6844329 CCV Units: ug/L

Analyte	True	Found	%R	Control Limits	Flag
Aluminum	100	100.521	101	90-110	
Antimony	100	99.915	100	90-110	
Arsenic	100	98.991	99	90-110	
Barium	100	99.01	99	90-110	
Beryllium	100	100.295	100	90-110	
Cadmium	100	98.815	99	90-110	
Calcium	10000	9866.307	99	90-110	
Chromium	100	101.293	101	90-110	
Cobalt	100	106.003	106	90-110	
Copper	100	102.936	103	90-110	

ALS Houston, US Date: 15-Sep-22

Form 2 - Initial and Continuing Calibration Verification

Client: Bhate Environmental Associates, Inc.
Project: LHAAP ICT Wells
WorkOrder: HS22081514

Run ID: ICPMS07_416916
Instrument: ICPMS07
Method: SW6020A

CCV4 Date: 12-Sep-2022 13:32 Seq: 6844329 CCV Units: ug/L

Analyte	True	Found	%R	Control Limits	Flag
Iron	10000	10315.94	103	90-110	
Lead	100	100.765	101	90-110	
Magnesium	10000	10641.932	106	90-110	
Manganese	100	100.768	101	90-110	
Nickel	100	102.312	102	90-110	
Potassium	10000	10055.832	101	90-110	
Selenium	100	98.208	98	90-110	
Silver	100	101.946	102	90-110	
Sodium	10000	10788.18	108	90-110	
Thallium	100	100.76	101	90-110	
Vanadium	100	98.085	98	90-110	
Zinc	100	102.718	103	90-110	

CCV5 Date: 12-Sep-2022 13:57 Seq: 6844339 CCV Units: ug/L

Analyte	True	Found	%R	Control Limits	Flag
Aluminum	100	101.393	101	90-110	
Antimony	100	99.396	99	90-110	
Arsenic	100	98.517	99	90-110	
Barium	100	97.926	98	90-110	
Beryllium	100	100.029	100	90-110	
Cadmium	100	98.713	99	90-110	
Calcium	10000	9916.801	99	90-110	
Chromium	100	100.471	100	90-110	
Cobalt	100	105.551	106	90-110	
Copper	100	102.765	103	90-110	
Iron	10000	10331.925	103	90-110	
Lead	100	99.805	100	90-110	
Magnesium	10000	10713.496	107	90-110	
Manganese	100	99.909	100	90-110	
Nickel	100	101.545	102	90-110	
Potassium	10000	10188.406	102	90-110	
Selenium	100	98.246	98	90-110	
Silver	100	101.021	101	90-110	
Sodium	10000	10891.095	109	90-110	
Thallium	100	99.508	100	90-110	
Vanadium	100	98.203	98	90-110	
Zinc	100	102.074	102	90-110	

CCV6 Date: 12-Sep-2022 14:21 Seq: 6844426 CCV Units: ug/L

Analyte	True	Found	%R	Control Limits	Flag
Aluminum	100	100.673	101	90-110	
Antimony	100	99.597	100	90-110	
Arsenic	100	98.794	99	90-110	
Barium	100	99.325	99	90-110	
Beryllium	100	102.156	102	90-110	
Cadmium	100	100.008	100	90-110	
Calcium	10000	10035.131	100	90-110	
Chromium	100	101.011	101	90-110	
Cobalt	100	102.976	103	90-110	
Copper	100	103.52	104	90-110	
Iron	10000	10293.147	103	90-110	
Lead	100	100.105	100	90-110	
Magnesium	10000	10434.381	104	90-110	
Manganese	100	101.365	101	90-110	
Nickel	100	101.208	101	90-110	

ALS Houston, US

Date: 15-Sep-22

Form 2 - Initial and Continuing Calibration Verification

Client: Bhate Environmental Associates, Inc.
Project: LHAAP ICT Wells
WorkOrder: HS22081514

Run ID: ICPMS07_416916
Instrument: ICPMS07
Method: SW6020A

CCV6 Date: 12-Sep-2022 14:21 Seq: 6844426 CCV Units: ug/L

Analyte	True	Found	%R	Control Limits	Flag
Potassium	10000	10186.013	102	90-110	
Selenium	100	95.777	96	90-110	
Silver	100	100.462	100	90-110	
Sodium	10000	10610.527	106	90-110	
Thallium	100	100.198	100	90-110	
Vanadium	100	98.485	99	90-110	
Zinc	100	103.656	104	90-110	

CCV7 Date: 12-Sep-2022 14:53 Seq: 6845217 CCV Units: ug/L

Analyte	True	Found	%R	Control Limits	Flag
Aluminum	100	101.542	102	90-110	
Antimony	100	98.763	99	90-110	
Arsenic	100	99.247	99	90-110	
Barium	100	99.162	99	90-110	
Beryllium	100	102.331	102	90-110	
Cadmium	100	99.932	100	90-110	
Calcium	10000	10096.644	101	90-110	
Chromium	100	102.199	102	90-110	
Cobalt	100	104.515	105	90-110	
Copper	100	103.889	104	90-110	
Iron	10000	10421.469	104	90-110	
Lead	100	99.185	99	90-110	
Magnesium	10000	10910.892	109	90-110	
Manganese	100	102.727	103	90-110	
Nickel	100	102.827	103	90-110	
Potassium	10000	10464.962	105	90-110	
Selenium	100	98.445	98	90-110	
Silver	100	101.726	102	90-110	
Sodium	10000	10971.112	110	90-110	
Thallium	100	99.57	100	90-110	
Vanadium	100	99.618	100	90-110	
Zinc	100	104.037	104	90-110	

ICCV8 Date: 12-Sep-2022 23:11 Seq: 6845228 CCV Units: ug/L

Analyte	True	Found	%R	Control Limits	Flag
Aluminum	100	96.984	97	90-110	
Antimony	100	100.238	100	90-110	
Arsenic	100	104.335	104	90-110	
Barium	100	100.179	100	90-110	
Beryllium	100	97.749	98	90-110	
Cadmium	100	99.95	100	90-110	
Calcium	10000	9851.389	99	90-110	
Chromium	100	96.98	97	90-110	
Cobalt	100	99.523	100	90-110	
Copper	100	99.175	99	90-110	
Iron	10000	9964.175	100	90-110	
Lead	100	99.188	99	90-110	
Magnesium	10000	10006.724	100	90-110	
Manganese	100	99.741	100	90-110	
Nickel	100	99.926	100	90-110	
Potassium	10000	9919.168	99	90-110	
Selenium	100	97.475	98	90-110	
Silver	100	102.434	102	90-110	
Sodium	10000	9879.121	99	90-110	
Thallium	100	103.201	103	90-110	

ALS Houston, US

Date: 15-Sep-22

Form 2 - Initial and Continuing Calibration Verification

Client: Bhate Environmental Associates, Inc.
Project: LHAAP ICT Wells
WorkOrder: HS22081514

Run ID: ICPMS07_416916
Instrument: ICPMS07
Method: SW6020A

ICCV8	Date: 12-Sep-2022 23:11		Seq: 6845228	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Vanadium	100	96.036	96	90-110	
Zinc	100	100.264	100	90-110	

CCV9	Date: 12-Sep-2022 23:26		Seq: 6845236	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Aluminum	100	100.795	101	90-110	
Antimony	100	102.146	102	90-110	
Arsenic	100	103.034	103	90-110	
Barium	100	100.968	101	90-110	
Beryllium	100	98.609	99	90-110	
Cadmium	100	101.29	101	90-110	
Calcium	10000	9912.736	99	90-110	
Chromium	100	98.601	99	90-110	
Cobalt	100	102.564	103	90-110	
Copper	100	102.054	102	90-110	
Iron	10000	10112.904	101	90-110	
Lead	100	100.393	100	90-110	
Magnesium	10000	10107.197	101	90-110	
Manganese	100	100.378	100	90-110	
Nickel	100	102.129	102	90-110	
Potassium	10000	9941.731	99	90-110	
Selenium	100	102.227	102	90-110	
Silver	100	103.362	103	90-110	
Sodium	10000	10010.311	100	90-110	
Thallium	100	101.577	102	90-110	
Vanadium	100	97.519	98	90-110	
Zinc	100	102.134	102	90-110	

CCV10	Date: 12-Sep-2022 23:42		Seq: 6845245	CCV	Units: ug/L
Analyte	**True**	**Found**	**%R**	**Control Limits**	**Flag**
Aluminum	100	101.222	101	90-110	
Antimony	100	101.702	102	90-110	
Arsenic	100	102.954	103	90-110	
Barium	100	102.7	103	90-110	
Beryllium	100	98.257	98	90-110	
Cadmium	100	101.209	101	90-110	
Calcium	10000	10111.545	101	90-110	
Chromium	100	99.508	100	90-110	
Cobalt	100	103.041	103	90-110	
Copper	100	100.798	101	90-110	
Iron	10000	10223.89	102	90-110	
Lead	100	100.395	100	90-110	
Magnesium	10000	10258.592	103	90-110	
Manganese	100	101.603	102	90-110	
Nickel	100	102.086	102	90-110	
Potassium	10000	10247.56	102	90-110	
Selenium	100	100.237	100	90-110	
Silver	100	102.958	103	90-110	
Sodium	10000	10298.923	103	90-110	
Thallium	100	102.877	103	90-110	
Vanadium	100	98.009	98	90-110	
Zinc	100	103.918	104	90-110	

ALS Houston, US

Date: 15-Sep-22

Form 2 - Initial and Continuing Calibration Verification

Client: Bhate Environmental Associates, Inc.
Project: LHAAP ICT Wells
WorkOrder: HS22081514

Run ID: ICPMS07_416916
Instrument: ICPMS07
Method: SW6020A

CCV11 Date: 13-Sep-2022 00:05 Seq: 6845454 CCV Units: ug/L

Analyte	True	Found	%R	Control Limits	Flag
Aluminum	100	100.601	101	90-110	
Antimony	100	102.604	103	90-110	
Arsenic	100	103.105	103	90-110	
Barium	100	99.129	99	90-110	
Beryllium	100	98.301	98	90-110	
Cadmium	100	99.434	99	90-110	
Calcium	10000	9948.868	100	90-110	
Chromium	100	96.936	97	90-110	
Cobalt	100	99.943	100	90-110	
Copper	100	100.111	100	90-110	
Iron	10000	10017.998	100	90-110	
Lead	100	100.259	100	90-110	
Magnesium	10000	9928.166	99	90-110	
Manganese	100	100.21	100	90-110	
Nickel	100	100.361	100	90-110	
Potassium	10000	9898.005	99	90-110	
Selenium	100	102.318	102	90-110	
Silver	100	100.643	101	90-110	
Sodium	10000	10006.403	100	90-110	
Thallium	100	102.141	102	90-110	
Vanadium	100	96.37	96	90-110	
Zinc	100	101.583	102	90-110	

CCV12 Date: 13-Sep-2022 00:26 Seq: 6845465 CCV Units: ug/L

Analyte	True	Found	%R	Control Limits	Flag
Aluminum	100	101.516	102	90-110	
Antimony	100	102.813	103	90-110	
Arsenic	100	103.723	104	90-110	
Barium	100	100.207	100	90-110	
Beryllium	100	95.421	95	90-110	
Cadmium	100	99.552	100	90-110	
Calcium	10000	9833.174	98	90-110	
Chromium	100	97.823	98	90-110	
Cobalt	100	98.882	99	90-110	
Copper	100	100.405	100	90-110	
Iron	10000	10108.543	101	90-110	
Lead	100	100.732	101	90-110	
Magnesium	10000	10108.695	101	90-110	
Manganese	100	100.432	100	90-110	
Nickel	100	100.22	100	90-110	
Potassium	10000	9840.581	98	90-110	
Selenium	100	100.977	101	90-110	
Silver	100	100.648	101	90-110	
Sodium	10000	10119.553	101	90-110	
Thallium	100	102.371	102	90-110	
Vanadium	100	96.913	97	90-110	
Zinc	100	101.759	102	90-110	

CCV13 Date: 13-Sep-2022 01:27 Seq: 6845468 CCV Units: ug/L

Analyte	True	Found	%R	Control Limits	Flag
Aluminum	100	95.698	96	90-110	
Antimony	100	103.157	103	90-110	
Arsenic	100	103.61	104	90-110	
Barium	100	99.86	100	90-110	
Beryllium	100	94.872	95	90-110	

ALS Houston, US Date: 15-Sep-22

Form 2 - Initial and Continuing Calibration Verification

Client: Bhate Environmental Associates, Inc.
Project: LHAAP ICT Wells
WorkOrder: HS22081514

Run ID: ICPMS07_416916
Instrument: ICPMS07
Method: SW6020A

CCV13 Date: 13-Sep-2022 01:27 Seq: 6845468 CCV Units: ug/L

Analyte	True	Found	%R	Control Limits	Flag
Cadmium	100	98.413	98	90-110	
Calcium	10000	9607.134	96	90-110	
Chromium	100	96.827	97	90-110	
Cobalt	100	102.452	102	90-110	
Copper	100	101.071	101	90-110	
Iron	10000	10029.215	100	90-110	
Lead	100	109.506	110	90-110	
Magnesium	10000	9912.32	99	90-110	
Manganese	100	98.321	98	90-110	
Nickel	100	101.41	101	90-110	
Potassium	10000	9623.152	96	90-110	
Selenium	100	97.348	97	90-110	
Silver	100	100.736	101	90-110	
Sodium	10000	9819.288	98	90-110	
Thallium	100	101.878	102	90-110	
Vanadium	100	95.672	96	90-110	
Zinc	100	102.437	102	90-110	

ALS Houston, US

Date: 15-Sep-22

Form 2 - Initial and Continuing Calibration Verification

Client: Bhate Environmental Associates, Inc.
Project: LHAAP ICT Wells
WorkOrder: HS22081514

Run ID: ICPMS07_417005
Instrument: ICPMS07
Method: SW6020A

ICV | Date: 13-Sep-2022 11:17 | Seq: 6845949 | ICV | Units: ug/L

Analyte	True	Found	%R	Control Limits	Flag
Aluminum	100	97.665	98	90-110	
Antimony	100	102.496	102	90-110	
Arsenic	100	102.226	102	90-110	
Barium	100	100.05	100	90-110	
Beryllium	100	101.504	102	90-110	
Cadmium	100	101.61	102	90-110	
Calcium	10000	9852.043	99	90-110	
Chromium	100	95.325	95	90-110	
Cobalt	100	97.19	97	90-110	
Copper	100	95.256	95	90-110	
Iron	10000	9926.925	99	90-110	
Lead	100	98.986	99	90-110	
Magnesium	10000	9923.373	99	90-110	
Manganese	100	99.018	99	90-110	
Nickel	100	99.807	100	90-110	
Potassium	10000	9856.032	99	90-110	
Selenium	100	102.112	102	90-110	
Silver	100	103.289	103	90-110	
Sodium	10000	9831.141	98	90-110	
Thallium	100	103.41	103	90-110	
Vanadium	100	94.238	94	90-110	
Zinc	100	100.11	100	90-110	

CCV1 | Date: 13-Sep-2022 11:36 | Seq: 6846100 | CCV | Units: ug/L

Analyte	True	Found	%R	Control Limits	Flag
Aluminum	100	102.949	103	90-110	
Antimony	100	98.534	99	90-110	
Arsenic	100	97.17	97	90-110	
Barium	100	96.341	96	90-110	
Beryllium	100	97.98	98	90-110	
Cadmium	100	97.714	98	90-110	
Calcium	10000	9770.605	98	90-110	
Chromium	100	94.572	95	90-110	
Cobalt	100	95.782	96	90-110	
Copper	100	94.142	94	90-110	
Iron	10000	9823.923	98	90-110	
Lead	100	95.884	96	90-110	
Magnesium	10000	9814.937	98	90-110	
Manganese	100	98.324	98	90-110	
Nickel	100	98.33	98	90-110	
Potassium	10000	9879.078	99	90-110	
Selenium	100	98.976	99	90-110	
Silver	100	99.181	99	90-110	
Sodium	10000	9964.092	100	90-110	
Thallium	100	98.235	98	90-110	
Vanadium	100	94.349	94	90-110	
Zinc	100	98.168	98	90-110	

CCV2 | Date: 13-Sep-2022 11:59 | Seq: 6846112 | CCV | Units: ug/L

Analyte	True	Found	%R	Control Limits	Flag
Aluminum	100	99.914	100	90-110	
Antimony	100	99.493	100	90-110	
Arsenic	100	97.411	97	90-110	
Barium	100	97.589	98	90-110	
Beryllium	100	98.299	98	90-110	

ALS Houston, US Date: 15-Sep-22

Form 2 - Initial and Continuing Calibration Verification

Client: Bhate Environmental Associates, Inc.
Project: LHAAP ICT Wells
WorkOrder: HS22081514

Run ID: ICPMS07_417005
Instrument: ICPMS07
Method: SW6020A

CCV2 Date: 13-Sep-2022 11:59 Seq: 6846112 CCV Units: ug/L

Analyte	True	Found	%R	Control Limits	Flag
Cadmium	100	99.499	100	90-110	
Calcium	10000	9808.992	98	90-110	
Chromium	100	95.089	95	90-110	
Cobalt	100	96.681	97	90-110	
Copper	100	94.725	95	90-110	
Iron	10000	9980.413	100	90-110	
Lead	100	97.495	98	90-110	
Magnesium	10000	9961.829	100	90-110	
Manganese	100	98.822	99	90-110	
Nickel	100	99.345	99	90-110	
Potassium	10000	9788.252	98	90-110	
Selenium	100	98.836	99	90-110	
Silver	100	100.747	101	90-110	
Sodium	10000	9881.336	99	90-110	
Thallium	100	99.92	100	90-110	
Vanadium	100	94.575	95	90-110	
Zinc	100	100.027	100	90-110	

CCV3 Date: 13-Sep-2022 12:23 Seq: 6846124 CCV Units: ug/L

Analyte	True	Found	%R	Control Limits	Flag
Aluminum	100	103.627	104	90-110	
Antimony	100	97.279	97	90-110	
Arsenic	100	97.942	98	90-110	
Barium	100	96.92	97	90-110	
Beryllium	100	101.333	101	90-110	
Cadmium	100	98.574	99	90-110	
Calcium	10000	10117.915	101	90-110	
Chromium	100	95.126	95	90-110	
Cobalt	100	96.415	96	90-110	
Copper	100	94.406	94	90-110	
Iron	10000	9910.973	99	90-110	
Lead	100	95.898	96	90-110	
Magnesium	10000	10026.392	100	90-110	
Manganese	100	98.809	99	90-110	
Nickel	100	97.999	98	90-110	
Potassium	10000	10096.284	101	90-110	
Selenium	100	101.959	102	90-110	
Silver	100	101.234	101	90-110	
Sodium	10000	10205.303	102	90-110	
Thallium	100	98.278	98	90-110	
Vanadium	100	95.142	95	90-110	
Zinc	100	98.306	98	90-110	

CCV4 Date: 13-Sep-2022 12:54 Seq: 6846381 CCV Units: ug/L

Analyte	True	Found	%R	Control Limits	Flag
Aluminum	100	102.077	102	90-110	
Antimony	100	97.572	98	90-110	
Arsenic	100	97.581	98	90-110	
Barium	100	97.594	98	90-110	
Beryllium	100	100.025	100	90-110	
Cadmium	100	98.187	98	90-110	
Calcium	10000	9914.017	99	90-110	
Chromium	100	95.238	95	90-110	
Cobalt	100	97.492	98	90-110	
Copper	100	93.745	94	90-110	

ALS Houston, US

Date: 15-Sep-22

Form 2 - Initial and Continuing Calibration Verification

Client: Bhate Environmental Associates, Inc.
Project: LHAAP ICT Wells
WorkOrder: HS22081514

Run ID: ICPMS07_417005
Instrument: ICPMS07
Method: SW6020A

CCV4 | Date: 13-Sep-2022 12:54 | Seq: 6846381 | CCV | Units: ug/L

Analyte	True	Found	%R	Control Limits	Flag
Iron	10000	9969.36	100	90-110	
Lead	100	96.898	97	90-110	
Magnesium	10000	9958.105	100	90-110	
Manganese	100	99.192	99	90-110	
Nickel	100	98.996	99	90-110	
Potassium	10000	9954.58	100	90-110	
Selenium	100	98.719	99	90-110	
Silver	100	100.949	101	90-110	
Sodium	10000	10123.563	101	90-110	
Thallium	100	98.321	98	90-110	
Vanadium	100	94.382	94	90-110	
Zinc	100	98.185	98	90-110	

ALS Houston, US Date: 15-Sep-22

Form 3 - BLANKS

Client: Bhate Environmental Associates, Inc.
Project: LHAAP ICT Wells
WorkOrder: HS22081514

Run ID: ICPMS07_416916
Instrument: ICPMS07
Method: SW6020A

ICB	Date: 12-Sep-2022 11:45		Seq: 6844074	ICB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Aluminum	10	1.8	10	U	
Antimony	5	0.4	5	U	
Arsenic	5	0.4	5	U	
Barium	5	1.9	5	U	
Beryllium	2	0.2	2	U	
Cadmium	2	0.2	2	U	
Calcium	500	34	500	U	
Chromium	5	0.4	5	U	
Cobalt	5	0.1	5	U	
Copper	5	1	5	U	
Iron	200	12	200	U	
Lead	5	0.6	5	U	
Magnesium	200	10	200	U	
Manganese	5	0.7	5	U	
Nickel	5	0.6	5	U	
Potassium	200	18	200	U	
Selenium	5	1.1	5	U	
Silver	5	0.2	5	U	
Sodium	200	14	200	U	
Thallium	2	0.2	2	U	
Vanadium	5	0.6	5	U	
Zinc	5	2	5	U	

CCB1	Date: 12-Sep-2022 11:59		Seq: 6844203	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Aluminum	10	1.8	10	U	
Antimony	2	0.4	2	U	
Arsenic	2	0.4	2	U	
Barium	4	1.9	4	U	
Beryllium	2	0.2	2	U	
Cadmium	2	0.2	2	U	
Calcium	500	34	500	U	
Chromium	4	0.4	4	U	
Cobalt	5	0.2	5	U	
Copper	2	1	2	U	
Iron	200	12	200	U	
Lead	2	0.6	2	U	
Magnesium	200	10	200	U	
Manganese	5	0.7	5	U	
Nickel	2	0.6	2	U	
Potassium	200	18	200	U	
Selenium	2	1.1	2	U	
Silver	2	0.2	2	U	
Sodium	200	14	200	U	
Thallium	2	0.2	2	U	
Vanadium	5	0.6	5	U	
Zinc	4	2	4	U	

CCB2	Date: 12-Sep-2022 12:24		Seq: 6844214	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Aluminum	10	1.8	10	U	
Antimony	2	0.4	2	U	
Arsenic	2	0.4	2	U	
Barium	4	1.9	4	U	
Beryllium	2	0.2	2	U	

ALS Houston, US Date: 15-Sep-22

Form 3 - BLANKS

Client: Bhate Environmental Associates, Inc.
Project: LHAAP ICT Wells
WorkOrder: HS22081514

Run ID: ICPMS07_416916
Instrument: ICPMS07
Method: SW6020A

CCB2	Date: 12-Sep-2022 12:24	Seq: 6844214	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**
Cadmium	2	0.2	2	U
Calcium	500	34	500	U
Chromium	4	0.4	4	U
Cobalt	5	0.2	5	U
Copper	2	1	2	U
Iron	200	12	200	U
Lead	2	0.6	2	U
Magnesium	200	10	200	U
Manganese	5	0.7	5	U
Nickel	2	0.6	2	U
Potassium	200	18	200	U
Selenium	2	1.1	2	U
Silver	2	0.2	2	U
Sodium	26.6	14	200	J
Thallium	2	0.2	2	U
Vanadium	5	0.6	5	U
Zinc	4	2	4	U

CCB3	Date: 12-Sep-2022 12:47	Seq: 6844224	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**
Aluminum	10	1.8	10	U
Antimony	2	0.4	2	U
Arsenic	2	0.4	2	U
Barium	4	1.9	4	U
Beryllium	2	0.2	2	U
Cadmium	2	0.2	2	U
Calcium	500	34	500	U
Chromium	4	0.4	4	U
Cobalt	5	0.2	5	U
Copper	2	1	2	U
Iron	200	12	200	U
Lead	2	0.6	2	U
Magnesium	200	10	200	U
Manganese	5	0.7	5	U
Nickel	2	0.6	2	U
Potassium	200	18	200	U
Selenium	2	1.1	2	U
Silver	2	0.2	2	U
Sodium	86.67	14	200	J
Thallium	2	0.2	2	U
Vanadium	5	0.6	5	U
Zinc	4	2	4	U

CCB4	Date: 12-Sep-2022 13:34	Seq: 6844330	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**
Aluminum	10	1.8	10	U
Antimony	2	0.4	2	U
Arsenic	2	0.4	2	U
Barium	4	1.9	4	U
Beryllium	2	0.2	2	U
Cadmium	2	0.2	2	U
Calcium	500	34	500	U
Chromium	4	0.4	4	U
Cobalt	5	0.2	5	U
Copper	2	1	2	U

ALS Houston, US Date: 15-Sep-22

Form 3 - BLANKS

Client: Bhate Environmental Associates, Inc.
Project: LHAAP ICT Wells
WorkOrder: HS22081514

Run ID: ICPMS07_416916
Instrument: ICPMS07
Method: SW6020A

CCB4 Date: 12-Sep-2022 13:34 Seq: 6844330 CCB Units: ug/L

Analyte	Result	MDL	Report Limit	Qual
Iron	200	12	200	U
Lead	2	0.6	2	U
Magnesium	200	10	200	U
Manganese	5	0.7	5	U
Nickel	2	0.6	2	U
Potassium	200	18	200	U
Selenium	2	1.1	2	U
Silver	2	0.2	2	U
Sodium	75.2	14	200	J
Thallium	2	0.2	2	U
Vanadium	5	0.6	5	U
Zinc	4	2	4	U

CCB5 Date: 12-Sep-2022 13:58 Seq: 6844340 CCB Units: ug/L

Analyte	Result	MDL	Report Limit	Qual
Aluminum	10	1.8	10	U
Antimony	2	0.4	2	U
Arsenic	2	0.4	2	U
Barium	4	1.9	4	U
Beryllium	2	0.2	2	U
Cadmium	2	0.2	2	U
Calcium	500	34	500	U
Chromium	4	0.4	4	U
Cobalt	5	0.2	5	U
Copper	2	1	2	U
Iron	200	12	200	U
Lead	2	0.6	2	U
Magnesium	200	10	200	U
Manganese	5	0.7	5	U
Nickel	2	0.6	2	U
Potassium	200	18	200	U
Selenium	2	1.1	2	U
Silver	2	0.2	2	U
Sodium	60.7	14	200	J
Thallium	2	0.2	2	U
Vanadium	5	0.6	5	U
Zinc	4	2	4	U

CCB6 Date: 12-Sep-2022 14:23 Seq: 6844427 CCB Units: ug/L

Analyte	Result	MDL	Report Limit	Qual
Aluminum	10	1.8	10	U
Antimony	2	0.4	2	U
Arsenic	2	0.4	2	U
Barium	4	1.9	4	U
Beryllium	2	0.2	2	U
Cadmium	2	0.2	2	U
Calcium	500	34	500	U
Chromium	4	0.4	4	U
Cobalt	5	0.2	5	U
Copper	2	1	2	U
Iron	200	12	200	U
Lead	2	0.6	2	U
Magnesium	200	10	200	U
Manganese	5	0.7	5	U
Nickel	2	0.6	2	U

ALS Houston, US Date: 15-Sep-22

Form 3 - BLANKS

Client: Bhate Environmental Associates, Inc.
Project: LHAAP ICT Wells
WorkOrder: HS22081514

Run ID: ICPMS07_416916
Instrument: ICPMS07
Method: SW6020A

CCB6	Date: 12-Sep-2022 14:23		Seq: 6844427	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Potassium	200	18	200	U	
Selenium	2	1.1	2	U	
Silver	2	0.2	2	U	
Sodium	49.54	14	200	J	
Thallium	2	0.2	2	U	
Vanadium	5	0.6	5	U	
Zinc	4	2	4	U	

CCB7	Date: 12-Sep-2022 14:55		Seq: 6845218	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Aluminum	10	1.8	10	U	
Antimony	2	0.4	2	U	
Arsenic	2	0.4	2	U	
Barium	4	1.9	4	U	
Beryllium	2	0.2	2	U	
Cadmium	2	0.2	2	U	
Calcium	500	34	500	U	
Chromium	4	0.4	4	U	
Cobalt	5	0.2	5	U	
Copper	2	1	2	U	
Iron	200	12	200	U	
Lead	2	0.6	2	U	
Magnesium	200	10	200	U	
Manganese	5	0.7	5	U	
Nickel	2	0.6	2	U	
Potassium	200	18	200	U	
Selenium	2	1.1	2	U	
Silver	2	0.2	2	U	
Sodium	53.78	14	200	J	
Thallium	2	0.2	2	U	
Vanadium	5	0.6	5	U	
Zinc	4	2	4	U	

ICCB8	Date: 12-Sep-2022 23:16		Seq: 6845231	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Aluminum	10	1.8	10	U	
Antimony	2	0.4	2	U	
Arsenic	2	0.4	2	U	
Barium	4	1.9	4	U	
Beryllium	2	0.2	2	U	
Cadmium	2	0.2	2	U	
Calcium	500	34	500	U	
Chromium	4	0.4	4	U	
Cobalt	5	0.2	5	U	
Copper	2	1	2	U	
Iron	200	12	200	U	
Lead	2	0.6	2	U	
Magnesium	200	10	200	U	
Manganese	5	0.7	5	U	
Nickel	2	0.6	2	U	
Potassium	200	18	200	U	
Selenium	2	1.1	2	U	
Silver	2	0.2	2	U	
Sodium	-55.22	14	200	J	
Thallium	2	0.2	2	U	

ALS Houston, US Date: 15-Sep-22

Form 3 - BLANKS

Client: Bhate Environmental Associates, Inc.
Project: LHAAP ICT Wells
WorkOrder: HS22081514

Run ID: ICPMS07_416916
Instrument: ICPMS07
Method: SW6020A

ICCB8	Date: 12-Sep-2022 23:16		Seq: 6845231	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Vanadium	5	0.6	5	U	
Zinc	4	2	4	U	

CCB9	Date: 12-Sep-2022 23:27		Seq: 6845237	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Aluminum	10	1.8	10	U	
Antimony	2	0.4	2	U	
Arsenic	2	0.4	2	U	
Barium	4	1.9	4	U	
Beryllium	2	0.2	2	U	
Cadmium	2	0.2	2	U	
Calcium	500	34	500	U	
Chromium	4	0.4	4	U	
Cobalt	5	0.2	5	U	
Copper	2	1	2	U	
Iron	200	12	200	U	
Lead	2	0.6	2	U	
Magnesium	200	10	200	U	
Manganese	5	0.7	5	U	
Nickel	2	0.6	2	U	
Potassium	200	18	200	U	
Selenium	2	1.1	2	U	
Silver	2	0.2	2	U	
Sodium	-76.16	14	200	J	
Thallium	2	0.2	2	U	
Vanadium	5	0.6	5	U	
Zinc	4	2	4	U	

MBLK-183371	Date: 12-Sep-2022 23:29		Seq: 6845238	MBLK	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Aluminum	5.146	1.8	10	J	
Antimony	5	0.4	5	U	
Arsenic	5	0.4	5	U	
Barium	5	1.9	5	U	
Beryllium	2	0.2	2	U	
Cadmium	2	0.2	2	U	
Calcium	500	34	500	U	
Chromium	5	0.4	5	U	
Cobalt	5	0.1	5	U	
Copper	5	1	5	U	
Iron	200	12	200	U	
Lead	5	0.6	5	U	
Magnesium	12.51	10	200	J	
Manganese	5	0.7	5	U	
Nickel	5	0.6	5	U	
Potassium	200	18	200	U	
Selenium	5	1.1	5	U	
Silver	5	0.2	5	U	
Sodium	200	14	200	U	
Thallium	2	0.2	2	U	
Vanadium	5	0.6	5	U	
Zinc	5	2	5	U	

ALS Houston, US Date: 15-Sep-22

Form 3 - BLANKS

Client: Bhate Environmental Associates, Inc.
Project: LHAAP ICT Wells
WorkOrder: HS22081514

Run ID: ICPMS07_416916
Instrument: ICPMS07
Method: SW6020A

CCB10 Date: 12-Sep-2022 23:44 Seq: 6845246 CCB Units: ug/L

Analyte	Result	MDL	Report Limit	Qual
Aluminum	10	1.8	10	U
Antimony	2	0.4	2	U
Arsenic	2	0.4	2	U
Barium	4	1.9	4	U
Beryllium	2	0.2	2	U
Cadmium	2	0.2	2	U
Calcium	500	34	500	U
Chromium	4	0.4	4	U
Cobalt	5	0.2	5	U
Copper	2	1	2	U
Iron	200	12	200	U
Lead	2	0.6	2	U
Magnesium	200	10	200	U
Manganese	5	0.7	5	U
Nickel	2	0.6	2	U
Potassium	200	18	200	U
Selenium	2	1.1	2	U
Silver	2	0.2	2	U
Sodium	200	14	200	U
Thallium	2	0.2	2	U
Vanadium	5	0.6	5	U
Zinc	4	2	4	U

CCB11 Date: 13-Sep-2022 00:07 Seq: 6845455 CCB Units: ug/L

Analyte	Result	MDL	Report Limit	Qual
Aluminum	10	1.8	10	U
Antimony	2	0.4	2	U
Arsenic	2	0.4	2	U
Barium	4	1.9	4	U
Beryllium	2	0.2	2	U
Cadmium	2	0.2	2	U
Calcium	500	34	500	U
Chromium	4	0.4	4	U
Cobalt	5	0.2	5	U
Copper	2	1	2	U
Iron	200	12	200	U
Lead	2	0.6	2	U
Magnesium	200	10	200	U
Manganese	5	0.7	5	U
Nickel	2	0.6	2	U
Potassium	200	18	200	U
Selenium	2	1.1	2	U
Silver	2	0.2	2	U
Sodium	-33.36	14	200	J
Thallium	2	0.2	2	U
Vanadium	5	0.6	5	U
Zinc	4	2	4	U

CCB12 Date: 13-Sep-2022 00:28 Seq: 6845466 CCB Units: ug/L

Analyte	Result	MDL	Report Limit	Qual
Aluminum	10	1.8	10	U
Antimony	2	0.4	2	U
Arsenic	2	0.4	2	U
Barium	4	1.9	4	U
Beryllium	2	0.2	2	U

ALS Houston, US Date: 15-Sep-22

Form 3 - BLANKS

Client: Bhate Environmental Associates, Inc.
Project: LHAAP ICT Wells
WorkOrder: HS22081514

Run ID: ICPMS07_416916
Instrument: ICPMS07
Method: SW6020A

CCB12	Date: 13-Sep-2022 00:28		Seq: 6845466	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Cadmium	2	0.2	2	U	
Calcium	500	34	500	U	
Chromium	4	0.4	4	U	
Cobalt	5	0.2	5	U	
Copper	2	1	2	U	
Iron	200	12	200	U	
Lead	2	0.6	2	U	
Magnesium	200	10	200	U	
Manganese	5	0.7	5	U	
Nickel	2	0.6	2	U	
Potassium	200	18	200	U	
Selenium	2	1.1	2	U	
Silver	2	0.2	2	U	
Sodium	-46.82	14	200	J	
Thallium	2	0.2	2	U	
Vanadium	5	0.6	5	U	
Zinc	4	2	4	U	

CCB13	Date: 13-Sep-2022 01:28		Seq: 6845469	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Aluminum	10	1.8	10	U	
Antimony	2	0.4	2	U	
Arsenic	2	0.4	2	U	
Barium	4	1.9	4	U	
Beryllium	2	0.2	2	U	
Cadmium	2	0.2	2	U	
Calcium	500	34	500	U	
Chromium	4	0.4	4	U	
Cobalt	5	0.2	5	U	
Copper	2	1	2	U	
Iron	200	12	200	U	
Lead	9.208	0.6	2		
Magnesium	200	10	200	U	
Manganese	5	0.7	5	U	
Nickel	2	0.6	2	U	
Potassium	200	18	200	U	
Selenium	2	1.1	2	U	
Silver	2	0.2	2	U	
Sodium	-131.3	14	200	J	
Thallium	2	0.2	2	U	
Vanadium	5	0.6	5	U	
Zinc	4	2	4	U	

ALS Houston, US Date: 15-Sep-22

Form 3 - BLANKS

Client: Bhate Environmental Associates, Inc.
Project: LHAAP ICT Wells
WorkOrder: HS22081514

Run ID: ICPMS07_417005
Instrument: ICPMS07
Method: SW6020A

ICB	Date: 13-Sep-2022 11:23		Seq: 6845952	ICB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Aluminum	10	1.8	10	U	
Antimony	5	0.4	5	U	
Arsenic	5	0.4	5	U	
Barium	5	1.9	5	U	
Beryllium	2	0.2	2	U	
Cadmium	2	0.2	2	U	
Calcium	500	34	500	U	
Chromium	5	0.4	5	U	
Cobalt	5	0.1	5	U	
Copper	5	1	5	U	
Iron	200	12	200	U	
Lead	5	0.6	5	U	
Magnesium	200	10	200	U	
Manganese	5	0.7	5	U	
Nickel	5	0.6	5	U	
Potassium	200	18	200	U	
Selenium	5	1.1	5	U	
Silver	5	0.2	5	U	
Sodium	200	14	200	U	
Thallium	2	0.2	2	U	
Vanadium	5	0.6	5	U	
Zinc	5	2	5	U	

CCB1	Date: 13-Sep-2022 11:38		Seq: 6846101	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Aluminum	10	1.8	10	U	
Antimony	2	0.4	2	U	
Arsenic	2	0.4	2	U	
Barium	4	1.9	4	U	
Beryllium	2	0.2	2	U	
Cadmium	2	0.2	2	U	
Calcium	500	34	500	U	
Chromium	4	0.4	4	U	
Cobalt	5	0.2	5	U	
Copper	2	1	2	U	
Iron	200	12	200	U	
Lead	2	0.6	2	U	
Magnesium	200	10	200	U	
Manganese	5	0.7	5	U	
Nickel	2	0.6	2	U	
Potassium	200	18	200	U	
Selenium	2	1.1	2	U	
Silver	2	0.2	2	U	
Sodium	200	14	200	U	
Thallium	2	0.2	2	U	
Vanadium	5	0.6	5	U	
Zinc	4	2	4	U	

CCB2	Date: 13-Sep-2022 12:00		Seq: 6846113	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Aluminum	10	1.8	10	U	
Antimony	2	0.4	2	U	
Arsenic	2	0.4	2	U	
Barium	4	1.9	4	U	
Beryllium	2	0.2	2	U	

ALS Houston, US

Date: 15-Sep-22

Form 3 - BLANKS

Client: Bhate Environmental Associates, Inc.
Project: LHAAP ICT Wells
WorkOrder: HS22081514

Run ID: ICPMS07_417005
Instrument: ICPMS07
Method: SW6020A

CCB2	Date: 13-Sep-2022 12:00		Seq: 6846113	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Cadmium	2	0.2	2	U	
Calcium	500	34	500	U	
Chromium	4	0.4	4	U	
Cobalt	5	0.2	5	U	
Copper	2	1	2	U	
Iron	200	12	200	U	
Lead	-0.624	0.6	2	J	
Magnesium	200	10	200	U	
Manganese	5	0.7	5	U	
Nickel	2	0.6	2	U	
Potassium	200	18	200	U	
Selenium	2	1.1	2	U	
Silver	2	0.2	2	U	
Sodium	200	14	200	U	
Thallium	2	0.2	2	U	
Vanadium	5	0.6	5	U	
Zinc	4	2	4	U	

MBLK-183432	Date: 13-Sep-2022 12:08		Seq: 6846116	MBLK	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Aluminum	4.548	1.8	10	J	
Antimony	5	0.4	5	U	
Arsenic	5	0.4	5	U	
Barium	5	1.9	5	U	
Beryllium	2	0.2	2	U	
Cadmium	2	0.2	2	U	
Calcium	500	34	500	U	
Chromium	5	0.4	5	U	
Cobalt	5	0.1	5	U	
Copper	5	1	5	U	
Iron	200	12	200	U	
Lead	5	0.6	5	U	
Magnesium	11.58	10	200	J	
Manganese	5	0.7	5	U	
Nickel	5	0.6	5	U	
Potassium	200	18	200	U	
Selenium	5	1.1	5	U	
Silver	5	0.2	5	U	
Sodium	200	14	200	U	
Thallium	2	0.2	2	U	
Vanadium	5	0.6	5	U	
Zinc	5	2	5	U	

CCB3	Date: 13-Sep-2022 12:25		Seq: 6846125	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Aluminum	10	1.8	10	U	
Antimony	2	0.4	2	U	
Arsenic	2	0.4	2	U	
Barium	4	1.9	4	U	
Beryllium	2	0.2	2	U	
Cadmium	2	0.2	2	U	
Calcium	500	34	500	U	
Chromium	4	0.4	4	U	
Cobalt	5	0.2	5	U	
Copper	2	1	2	U	

ALS Houston, US

Date: 15-Sep-22

Form 3 - BLANKS

Client: Bhate Environmental Associates, Inc.
Project: LHAAP ICT Wells
WorkOrder: HS22081514

Run ID: ICPMS07_417005
Instrument: ICPMS07
Method: SW6020A

CCB3	Date: 13-Sep-2022 12:25		Seq: 6846125	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Iron	200	12	200	U	
Lead	-0.603	0.6	2	J	
Magnesium	200	10	200	U	
Manganese	5	0.7	5	U	
Nickel	2	0.6	2	U	
Potassium	200	18	200	U	
Selenium	2	1.1	2	U	
Silver	2	0.2	2	U	
Sodium	140.5	14	200	J	
Thallium	2	0.2	2	U	
Vanadium	5	0.6	5	U	
Zinc	4	2	4	U	

CCB4	Date: 13-Sep-2022 12:56		Seq: 6846382	CCB	Units: ug/L
Analyte	**Result**	**MDL**	**Report Limit**	**Qual**	
Aluminum	10	1.8	10	U	
Antimony	2	0.4	2	U	
Arsenic	2	0.4	2	U	
Barium	4	1.9	4	U	
Beryllium	2	0.2	2	U	
Cadmium	2	0.2	2	U	
Calcium	500	34	500	U	
Chromium	4	0.4	4	U	
Cobalt	5	0.2	5	U	
Copper	2	1	2	U	
Iron	200	12	200	U	
Lead	-0.805	0.6	2	J	
Magnesium	200	10	200	U	
Manganese	5	0.7	5	U	
Nickel	2	0.6	2	U	
Potassium	200	18	200	U	
Selenium	2	1.1	2	U	
Silver	2	0.2	2	U	
Sodium	54.83	14	200	J	
Thallium	2	0.2	2	U	
Vanadium	5	0.6	5	U	
Zinc	4	2	4	U	

ALS Houston, US Date: 15-Sep-22

Form 4 - ICP Interference Check Sample

Client: Bhate Environmental Associates, Inc. Run ID:ICPMS07_416916
Project: LHAAP ICT Wells Instrument:ICPMS07
WorkOrder: HS22081514 Method:SW6020A

ICSA	Date: 12-Sep-2022 11:47	Seq: 6844075	ICSA	Units: ug/L
Analyte	**True**	**Found**	**%R**	
Aluminum	100000	99370	99.4	
Antimony		0.373	0	
Arsenic		0.177	0	
Barium		0.457	0	
Beryllium		0.021	0	
Cadmium		0.931	0	
Calcium	100000	106100	106	
Chromium		1.576	0	
Cobalt		0.118	0	
Copper		0.308	0	
Iron	100000	105000	105	
Lead		0.124	0	
Magnesium	100000	106600	107	
Manganese		0.368	0	
Nickel		0.489	0	
Potassium	100000	106500	107	
Selenium		0.236	0	
Silver		0.103	0	
Sodium	100000	106700	107	
Thallium		0.035	0	
Vanadium		-0.129	0	
Zinc		0.771	0	

ICSAB	Date: 12-Sep-2022 11:49	Seq: 6844076	ICSAB	Units: ug/L
Analyte	**True**	**Found**	**%R**	
Aluminum	100500	97970	97.5	
Antimony	100	103.5	104	
Arsenic	100	102.5	102	
Barium	100	103.6	104	
Beryllium	100	103	103	
Cadmium	100	101.2	101	
Calcium	110000	115700	105	
Chromium	100	103	103	
Cobalt	100	98.99	99.0	
Copper	100	101.2	101	
Iron	110000	115000	105	
Lead	100	104.2	104	
Magnesium	110000	116500	106	
Manganese	100	103.1	103	
Nickel	100	99.93	99.9	
Potassium	110000	115700	105	
Selenium	100	103.4	103	
Silver	100	97.23	97.2	
Sodium	110000	116700	106	
Thallium	100	102.9	103	
Vanadium	100	100.2	100	
Zinc	100	103.1	103	

ICSA	Date: 12-Sep-2022 23:18	Seq: 6845232	ICSA	Units: ug/L
Analyte	**True**	**Found**	**%R**	
Aluminum	100000	99510	99.5	
Antimony		0.29	0	
Arsenic		0.176	0	
Barium		0.491	0	

ALS Houston, US Date: 15-Sep-22

Form 4 - ICP Interference Check Sample

Client: Bhate Environmental Associates, Inc.
Project: LHAAP ICT Wells
WorkOrder: HS22081514

Run ID:ICPMS07_416916
Instrument:ICPMS07
Method:SW6020A

ICSA	Date: 12-Sep-2022 23:18	Seq: 6845232	ICSA	Units: ug/L
Analyte	**True**	**Found**	**%R**	
Beryllium		0.026	0	
Cadmium		0.853	0	
Calcium	100000	107300	107	
Chromium		1.532	0	
Cobalt		0.119	0	
Copper		0.045	0	
Iron	100000	105000	105	
Lead		0.12	0	
Magnesium	100000	105600	106	
Manganese		0.336	0	
Nickel		0.482	0	
Potassium	100000	105700	106	
Selenium		0.004	0	
Silver		0.085	0	
Sodium	100000	106000	106	
Thallium		0.031	0	
Vanadium		0.115	0	
Zinc		1.134	0	

ICSAB	Date: 12-Sep-2022 23:20	Seq: 6845233	ICSAB	Units: ug/L
Analyte	**True**	**Found**	**%R**	
Aluminum	100500	97630	97.1	
Antimony	100	102.7	103	
Arsenic	100	103.5	103	
Barium	100	103	103	
Beryllium	100	98.07	98.1	
Cadmium	100	100.8	101	
Calcium	110000	116600	106	
Chromium	100	100.5	100	
Cobalt	100	97.74	97.7	
Copper	100	99.26	99.3	
Iron	110000	114300	104	
Lead	100	102.4	102	
Magnesium	110000	113800	103	
Manganese	100	101.8	102	
Nickel	100	100.5	100	
Potassium	110000	113700	103	
Selenium	100	99.7	99.7	
Silver	100	98.82	98.8	
Sodium	110000	115000	105	
Thallium	100	102	102	
Vanadium	100	99.79	99.8	
Zinc	100	104.3	104	

ICSA	Date: 13-Sep-2022 01:36	Seq: 6845473	ICSA	Units: ug/L
Analyte	**True**	**Found**	**%R**	
Aluminum	100000	96280	96.3	
Antimony		0.28	0	
Arsenic		0.255	0	
Barium		0.445	0	
Beryllium		0.022	0	
Cadmium		0.892	0	
Calcium	100000	105100	105	
Chromium		1.488	0	

ALS Houston, US Date: 15-Sep-22

Form 4 - ICP Interference Check Sample

Client: Bhate Environmental Associates, Inc.
Project: LHAAP ICT Wells
WorkOrder: HS22081514

Run ID:ICPMS07_416916
Instrument:ICPMS07
Method:SW6020A

ICSA	Date: 13-Sep-2022 01:36	Seq: 6845473	ICSA	Units: ug/L
Analyte	**True**	**Found**	**%R**	
Cobalt		0.116	0	
Copper		0.103	0	
Iron	100000	103700	104	
Lead		7.218	0	
Magnesium	100000	102800	103	
Manganese		0.332	0	
Nickel		0.458	0	
Potassium	100000	102200	102	
Selenium		0.123	0	
Silver		0.078	0	
Sodium	100000	104200	104	
Thallium		0.036	0	
Vanadium		0.117	0	
Zinc		1.436	0	

ICSAB	Date: 13-Sep-2022 01:38	Seq: 6845474	ICSAB	Units: ug/L
Analyte	**True**	**Found**	**%R**	
Aluminum	100500	94800	94.3	
Antimony	100	103.5	104	
Arsenic	100	102.4	102	
Barium	100	105.6	106	
Beryllium	100	97.22	97.2	
Cadmium	100	101.3	101	
Calcium	110000	112400	102	
Chromium	100	98.7	98.7	
Cobalt	100	99.96	100.0	
Copper	100	97.88	97.9	
Iron	110000	112400	102	
Lead	100	109.5	110	
Magnesium	110000	110900	101	
Manganese	100	99.21	99.2	
Nickel	100	99.62	99.6	
Potassium	110000	109800	99.8	
Selenium	100	98.22	98.2	
Silver	100	97.75	97.7	
Sodium	110000	112100	102	
Thallium	100	101.9	102	
Vanadium	100	97.8	97.8	
Zinc	100	103.1	103	

ALS Houston, US

Date: 15-Sep-22

Form 4 - ICP Interference Check Sample

Client: Bhate Environmental Associates, Inc.
Project: LHAAP ICT Wells
WorkOrder: HS22081514

Run ID:ICPMS07_417005
Instrument:ICPMS07
Method:SW6020A

ICSA	Date: 13-Sep-2022 11:26	Seq: 6845953	ICSA	Units: ug/L
Analyte	**True**	**Found**	**%R**	
Aluminum	100000	101200	101	
Antimony		0.249	0	
Arsenic		0.159	0	
Barium		0.419	0	
Beryllium		0.022	0	
Cadmium		1.068	0	
Calcium	100000	108400	108	
Chromium		1.497	0	
Cobalt		0.113	0	
Copper		0.116	0	
Iron	100000	104800	105	
Lead		-0.119	0	
Magnesium	100000	105200	105	
Manganese		0.344	0	
Nickel		0.507	0	
Potassium	100000	105500	105	
Selenium		0.232	0	
Silver		0.08	0	
Sodium	100000	106100	106	
Thallium		0.035	0	
Vanadium		0.034	0	
Zinc		0.997	0	

ICSAB	Date: 13-Sep-2022 11:28	Seq: 6845954	ICSAB	Units: ug/L
Analyte	**True**	**Found**	**%R**	
Aluminum	100500	99130	98.6	
Antimony	100	104.6	105	
Arsenic	100	101.8	102	
Barium	100	102.9	103	
Beryllium	100	99.91	99.9	
Cadmium	100	101.7	102	
Calcium	110000	115900	105	
Chromium	100	98.88	98.9	
Cobalt	100	98.77	98.8	
Copper	100	94.68	94.7	
Iron	110000	113700	103	
Lead	100	100.4	100	
Magnesium	110000	114400	104	
Manganese	100	102.3	102	
Nickel	100	101	101	
Potassium	110000	113100	103	
Selenium	100	103.2	103	
Silver	100	98.14	98.1	
Sodium	110000	115300	105	
Thallium	100	101.5	102	
Vanadium	100	98.28	98.3	
Zinc	100	102.5	103	

ALS Houston, US Date: 15-Sep-22

Form 5A - Matrix Spike/Matrix Spike Duplicate Recovery

Client: Bhate Environmental Associates, Inc.
Project: LHAAP ICT Wells
WorkOrder: HS22081514

Date Analyzed: 12-Sep-2022 23:39
Date Extracted: 09-Sep-2022 11:00
Units: ug/L

Matrix Spike: HS22081514-22MS
Client Sample ID: ICT14D_082522
Analysis Method: SW6020A

Analyte	Sample Result	MS Result	Spike Amount	% Rec	MSD Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
Aluminum	403.7	1079	100.0	675	919.5	100.0	516	84-117	16.0	20
Antimony	0.4610	54.98	50.00	109	53.65	50.00	106	85-117	2.44	20
Arsenic	44.62	110.1	50.00	131	102.6	50.00	116	84-116	6.98	20
Barium	4744	4882	50.00	275	4666	50.00	-156	86-114	4.51	20
Beryllium	1.452	57.57	50.00	112	55.97	50.00	109	83-121	2.83	20
Cadmium	21.48	78.22	50.00	113	76.10	50.00	109	87-115	2.75	20
Calcium	102400	116700	5000	286	115100	5000	252	87-118	1.44	20
Chromium	286.1	367.8	50.00	164	366.1	50.00	160	85-116	0.466	20
Cobalt	36.07	90.74	50.00	109	89.78	50.00	107	86-115	1.07	20
Copper	47.65	105.5	50.00	116	102.0	50.00	109	85-118	3.44	20
Iron	37220	46540	5000	186	45220	5000	160	87-118	2.88	20
Lead	2.453	55.70	50.00	106	55.13	50.00	105	88-115	1.03	20
Magnesium	65900	78140	5000	245	76070	5000	203	83-118	2.69	20
Manganese	2441	2753	50.00	623	2656	50.00	430	87-115	3.58	20
Nickel	166.8	233.0	50.00	132	223.3	50.00	113	85-117	4.23	20
Potassium	1122	6936	5000	116	6705	5000	112	87-115	3.38	20
Selenium	5.000	56.51	50.00	111	55.74	50.00	110	80-120	1.37	20
Silver	0.5400	41.44	50.00	81.8	40.98	50.00	80.9	85-116	1.11	20
Sodium	324400	362400	5000	761	353600	5000	585	85-117	2.46	20
Thallium	2.000	54.33	50.00	108	53.46	50.00	107	82-116	1.60	20
Vanadium	7.086	62.46	50.00	111	60.93	50.00	108	86-115	2.47	20
Zinc	123.8	190.5	50.00	133	184.2	50.00	121	83-119	3.37	20

ALS Houston, US

Date: 15-Sep-22

Form 5A - Matrix Spike/Matrix Spike Duplicate Recovery

Client: Bhate Environmental Associates, Inc.
Project: LHAAP ICT Wells
WorkOrder: HS22081514

Date Analyzed: 13-Sep-2022 12:17
Date Extracted: 12-Sep-2022 09:00
Units: ug/L

Matrix Spike: HS22090337-01MS
Client Sample ID:

Analysis Method: SW6020A

Analyte	Sample Result	MS Result	Spike Amount	% Rec	MSD Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
Aluminum	8.554	107.1	100.0	98.5	117.4	100.0	109	84-117	9.19	20
Antimony	5.000	49.90	50.00	99.6	51.44	50.00	103	85-117	3.03	20
Arsenic	5.000	51.13	50.00	102	52.78	50.00	105	84-116	3.17	20
Barium	247.8	316.2	50.00	137	327.3	50.00	159	86-114	3.44	20
Beryllium	2.000	51.74	50.00	103	52.84	50.00	106	83-121	2.10	20
Cadmium	2.000	48.04	50.00	96.1	51.07	50.00	102	87-115	6.12	20
Calcium	12940	18340	5000	108	18580	5000	113	87-118	1.31	20
Chromium	0.4690	47.23	50.00	93.5	48.31	50.00	95.7	85-116	2.27	20
Cobalt	5.000	47.18	50.00	94.3	48.00	50.00	95.9	86-115	1.71	20
Copper	5.000	45.78	50.00	90.8	47.21	50.00	93.7	85-118	3.08	20
Iron	38.58	4984	5000	98.9	5080	5000	101	87-118	1.92	20
Lead	5.000	46.37	50.00	94.3	47.57	50.00	96.7	88-115	2.56	20
Magnesium	9811	15040	5000	105	15290	5000	109	83-118	1.62	20
Manganese	64.42	115.1	50.00	101	116.9	50.00	105	87-115	1.58	20
Nickel	5.000	47.69	50.00	94.9	48.59	50.00	96.7	85-117	1.89	20
Potassium	2300	7462	5000	103	7525	5000	104	87-115	0.838	20
Selenium	5.000	26.73	50.00	52.9	29.96	50.00	59.4	80-120	11.4	20
Silver	5.000	42.79	50.00	85.6	46.16	50.00	92.3	85-116	7.56	20
Sodium	728500	745400	5000	338	761100	5000	652	85-117	2.08	20
Thallium	2.000	44.80	50.00	89.5	46.29	50.00	92.5	82-116	3.28	20
Vanadium	5.000	47.95	50.00	96.2	49.28	50.00	98.9	86-115	2.72	20
Zinc	5.000	51.33	50.00	99.1	52.29	50.00	101	83-119	1.85	20

ALS Houston, US

Date: 15-Sep-22

Form 5B - Post Digest Sample Recovery

Client: Bhate Environmental Associates, Inc.
Project: LHAAP ICT Wells
WorkOrder: HS22081514

Date Analyzed: 12-Sep-2022 23:41
Date Extracted: 09-Sep-2022 11:00
Units: ug/L

Lab Sample ID: HS22081514-22PDS
Client Sample ID: ICT14D_082522

Analysis Method: SW6020A

Analyte	Sample Result	PDS Result	Spike Amount	% Rec	% Rec Limits
Antimony	0.461	108.5	100	108	80-120
Arsenic	44.62	160.4	100	116	80-120
Beryllium	1.452	108.2	100	107	80-120
Cadmium	21.48	129.9	100	108	80-120
Calcium	102400	120800	10000	184	80-120
Cobalt	36.07	138.8	100	103	80-120
Copper	47.65	155.5	100	108	80-120
Lead	2.453	111	100	109	80-120
Magnesium	65900	82990	10000	171	80-120
Nickel	166.8	281.7	100	115	80-120
Potassium	1122	12270	10000	111	80-120
Selenium	0	109.8	100	109	80-120
Silver	0.54	106.4	100	106	80-120
Thallium	0	107.2	100	107	80-120
Vanadium	7.086	114.7	100	108	80-120
Zinc	123.8	239.9	100	116	80-120

ALS Houston, US Date: 15-Sep-22

Form 5B - Post Digest Sample Recovery

Client: Bhate Environmental Associates, Inc.
Project: LHAAP ICT Wells
WorkOrder: HS22081514

Date Analyzed: 13-Sep-2022 11:45
Date Extracted: 09-Sep-2022 11:00
Units: ug/L

Lab Sample ID: HS22081514-22PDS
Client Sample ID: ICT14D_082522
Analysis Method: SW6020A

Analyte	Sample Result	PDS Result	Spike Amount	% Rec	% Rec Limits
Aluminum	293.9	2304	2000	101	80-120
Barium	5038	7056	2000	101	80-120
Chromium	292.9	2178	2000	94	80-120
Iron	39070	235800	200000	98	80-120
Manganese	2521	4689	2000	108	80-120
Sodium	336900	529400	200000	96	80-120

Lab Sample ID: HS22090337-01PDS
Client Sample ID:
Analysis Method: SW6020A

Analyte	Sample Result	PDS Result	Spike Amount	% Rec	% Rec Limits
Aluminum	8.554	115.3	100	107	80-120
Antimony	0	101.4	100	101	80-120
Arsenic	0	105.7	100	105	80-120
Beryllium	0	108.9	100	109	80-120
Cadmium	0	103.2	100	103	80-120
Calcium	12940	24110	10000	112	80-120
Chromium	0.469	98.39	100	98	80-120
Cobalt	0	101.9	100	102	80-120
Copper	0	94.38	100	94	80-120
Iron	38.58	10320	10000	103	80-120
Lead	0	103.6	100	104	80-120
Magnesium	9811	20540	10000	107	80-120
Manganese	64.42	169.2	100	105	80-120
Nickel	0	99.42	100	99	80-120
Potassium	2300	12980	10000	107	80-120
Selenium	0	105.2	100	105	80-120
Silver	0	99.6	100	100	80-120
Thallium	0	104.4	100	104	80-120
Vanadium	0	100.3	100	100	80-120
Zinc	0	104.1	100	102	80-120
Barium	242.4	1203	1000	96	80-120
Sodium	764800	863700	100000	99	80-120

ALS Houston, US

Date: 15-Sep-22

Form 7 - Laboratory Control Sample

Client: Bhate Environmental Associates, Inc.
Project: LHAAP ICT Wells
WorkOrder: HS22081514

Date Analyzed: 12-Sep-2022 23:31
Date Extracted: 09-Sep-2022 11:00
Units: ug/L

Lab Sample ID: LCS-183371
Analysis Method: SW6020A

Analyte	Spike Amount	LCS Result	% Rec	% Rec Limits
Antimony	50	53.32	107	85-117
Arsenic	50	54.03	108	84-116
Barium	50	50.44	101	86-114
Beryllium	50	50.62	101	83-121
Cadmium	50	51.78	104	87-115
Calcium	5000	5118	102	87-118
Chromium	50	50.84	102	85-116
Cobalt	50	52.61	105	86-115
Copper	50	53.33	107	85-118
Iron	5000	5326	107	87-118
Lead	50	49.28	99	88-115
Magnesium	5000	5348	107	83-118
Manganese	50	52.35	105	87-115
Nickel	50	53.29	107	85-117
Potassium	5000	5310	106	87-115
Selenium	50	53.6	107	80-120
Sodium	5000	5226	105	85-117
Thallium	50	50.28	101	82-116
Vanadium	50	50.63	101	86-115
Zinc	50	54.96	110	83-119

ALS Houston, US Date: 15-Sep-22

Form 7 - Laboratory Control Sample

Client: Bhate Environmental Associates, Inc.
Project: LHAAP ICT Wells
WorkOrder: HS22081514

Date Analyzed: 13-Sep-2022 11:40
Date Extracted: 09-Sep-2022 11:00
Units: ug/L

Lab Sample ID: LCS-183371 Analysis Method: SW6020A

Analyte	Spike Amount	LCS Result	% Rec	% Rec Limits
Aluminum	100	114.8	115	84-117
Silver	50	49.33	99	85-116

Lab Sample ID: LCS-183432 Analysis Method: SW6020A

Analyte	Spike Amount	LCS Result	% Rec	% Rec Limits
Aluminum	100	108.8	109	84-117
Antimony	50	52.83	106	85-117
Arsenic	50	52.14	104	84-116
Barium	50	50.41	101	86-114
Beryllium	50	52.16	104	83-121
Cadmium	50	52.69	105	87-115
Calcium	5000	5031	101	87-118
Chromium	50	49.43	99	85-116
Cobalt	50	50.36	101	86-115
Copper	50	50.02	100	85-118
Iron	5000	5267	105	87-118
Lead	50	46.27	93	88-115
Magnesium	5000	5302	106	83-118
Manganese	50	51.54	103	87-115
Nickel	50	51.8	104	85-117
Potassium	5000	5305	106	87-115
Selenium	50	53.16	106	80-120
Silver	50	48.09	96	85-116
Sodium	5000	5189	104	85-117
Thallium	50	50.11	100	82-116
Vanadium	50	49.16	98	86-115
Zinc	50	53.98	108	83-119

ALS Houston, US Date: 15-Sep-22

Form 8 - ICP Serial Dilutions

Client: Bhate Environmental Associates, Inc.
Project: LHAAP ICT Wells
WorkOrder: HS22081514

Date Analyzed: 12-Sep-2022 23:35
Date Extracted: 09-Sep-2022 11:00
Units: ug/L

Lab Sample ID: HS22081514-22SD
Client Sample ID:ICT14D_082522

Analysis Method: SW6020A

Analyte	Sample Result	C	SD Result	C	RPD	Q
Antimony	0.461	J	0	U	0	
Arsenic	44.62		44.84		0	
Beryllium	1.452	J	1.493	J	3	
Cadmium	21.48		22.05		3	
Calcium	102400		98810		4	
Cobalt	36.07		37.43		4	
Copper	47.65		49.53		4	
Lead	2.453	J	0	U	0	
Magnesium	65900		66870		1	
Nickel	166.8		175		5	
Potassium	1122		1122		0	
Selenium	0	U	0	U	0	
Silver	0.54	J	0	U	0	
Thallium	0	U	0	U	0	
Vanadium	7.086		6.688	J	6	
Zinc	123.8		130		5	

ALS Houston, US

Date: 15-Sep-22

Form 8 - ICP Serial Dilutions

Client: Bhate Environmental Associates, Inc.
Project: LHAAP ICT Wells
WorkOrder: HS22081514

Date Analyzed: 13-Sep-2022 11:44
Date Extracted: 09-Sep-2022 11:00
Units: ug/L

Lab Sample ID: HS22081514-22SD
Client Sample ID:ICT14D_082522
Analysis Method: SW6020A

Analyte	Sample Result	C	SD Result	C	RPD	Q
Aluminum	293.9		264.1	J	10	
Barium	5038		4870		3	
Chromium	292.9		355.4	J	21	
Iron	39070		41570		6	
Manganese	2521		2537		1	
Sodium	336900		344200		2	

Lab Sample ID: HS22090337-01SD
Client Sample ID:
Analysis Method: SW6020A

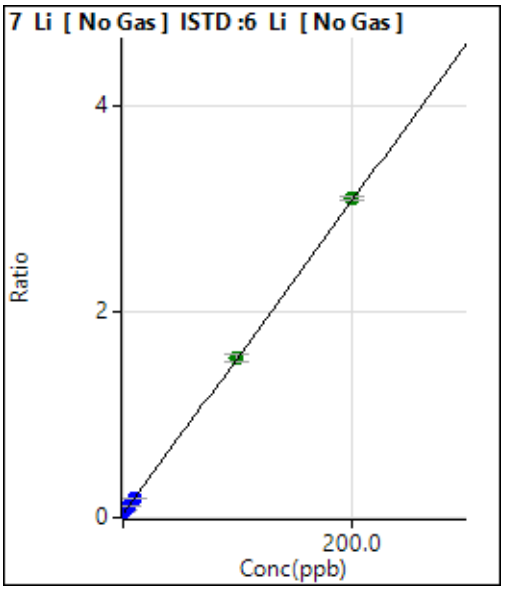
Analyte	Sample Result	C	SD Result	C	RPD	Q
Aluminum	8.554	J	0	U	0	
Antimony	0	U	0	U	0	
Arsenic	0	U	0	U	0	
Beryllium	0	U	0	U	0	
Cadmium	0	U	0	U	0	
Calcium	12940		13100		1	
Chromium	0.469	J	3.652	J	679	
Cobalt	0	U	0	U	0	
Copper	0	U	0	U	0	
Iron	38.58	J	0	U	0	
Lead	0	U	0	U	0	
Magnesium	9811		10020		2	
Manganese	64.42		66.66		3	
Nickel	0	U	0	U	0	
Potassium	2300		2261		2	
Selenium	0	U	0	U	0	
Silver	0	U	0	U	0	
Thallium	0	U	0	U	0	
Vanadium	0	U	0	U	0	
Zinc	0	U	0	U	0	
Barium	242.4		238.7	J	2	
Sodium	764800		776200		1	

Calibration for 326_ICV.d

Batch Folder: D:\Agilent\ICPMH\1\DATA\091222A.b\
Analysis File: 091222A.batch.bin
DA Date-Time: 09/12/2022 23:11:45
Calibration Title:
Calibration Method: External Calibration
VIS Interpolation Fit:

Level	Standard Data File	Sample Name	Acq. Date-Time
1	319CALB.d	CAL BLK	09/12/2022 22:58:07
2	320CALS.d	2/10/200	09/12/2022 23:00:01
3	321CALS.d	5/25/500	09/12/2022 23:01:54
4	322CALS.d	10/50/100	09/12/2022 23:03:47
5	323CALS.d	100/500/10K	09/12/2022 23:05:39
6	324CALS.d	200/1000/20K	09/12/2022 23:07:27

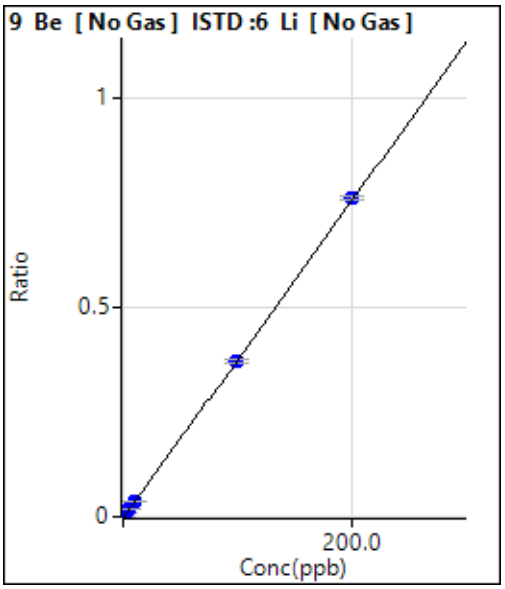
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	47565.14	0.0513	P	2.0	
2	☐	2.000	1.871	72634.67	0.0798	P	3.8	-6.4
3	☐	5.000	4.456	108288.12	0.1192	P	1.4	-10.9
4	☐	10.000	9.065	171772.27	0.1894	P	2.2	-9.4
5	☐	100.000	98.563	1355445.35	1.5528	A	5.1	-1.4
6	☐	200.000	200.780	2607897.31	3.1100	A	1.6	0.4

y = 0.0152 * x + 0.0513
R = 1.0000
DL = 0.1994 ppb
BEC = 3.37 ppb

Weight: <None>
Min Conc: <None>

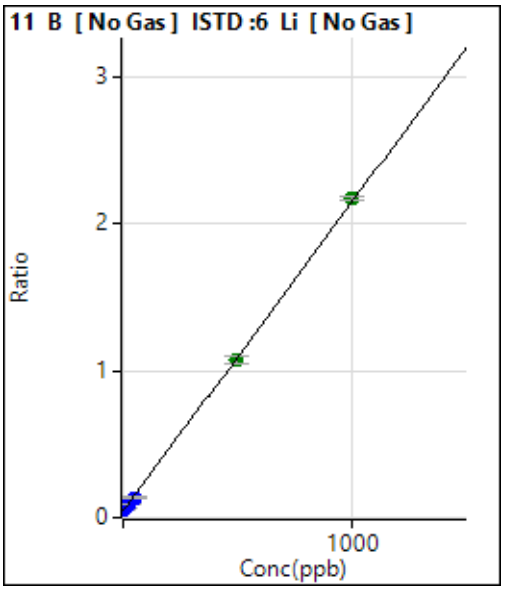


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	20.00	0.0000	P	65.3	
2	☐	2.000	1.865	6456.53	0.0071	P	2.4	-6.7
3	☐	5.000	4.645	16017.52	0.0176	P	1.8	-7.1
4	☐	10.000	9.568	32908.50	0.0363	P	3.5	-4.3
5	☐	100.000	98.253	325313.29	0.3726	P	3.1	-1.7
6	☐	200.000	200.905	638814.21	0.7618	P	1.1	0.5

y = 0.0038 * x + 2.1395E-005
R = 0.9999
DL = 0.01105 ppb
BEC = 0.005643 ppb

Weight: <None>
Min Conc: <None>

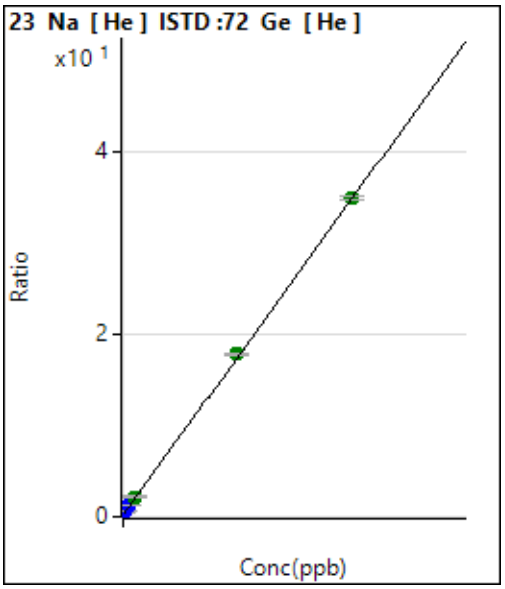
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	52389.04	0.0565	P	0.6	
2	☐	10.000	6.881	64569.35	0.0710	P	2.7	-31.2
3	☐	25.000	18.072	85779.99	0.0944	P	0.7	-27.7
4	☐	50.000	38.505	124474.89	0.1373	P	2.9	-23.0
5	☐	500.000	484.829	936813.48	1.0734	A	5.7	-3.0
6	☐	1000.000	1008.365	1820921.64	2.1714	A	1.0	0.8

y = 0.0021 * x + 0.0565
R = 0.9998
DL = 0.448 ppb
BEC = 26.95 ppb

Weight: <None>
Min Conc: <None>

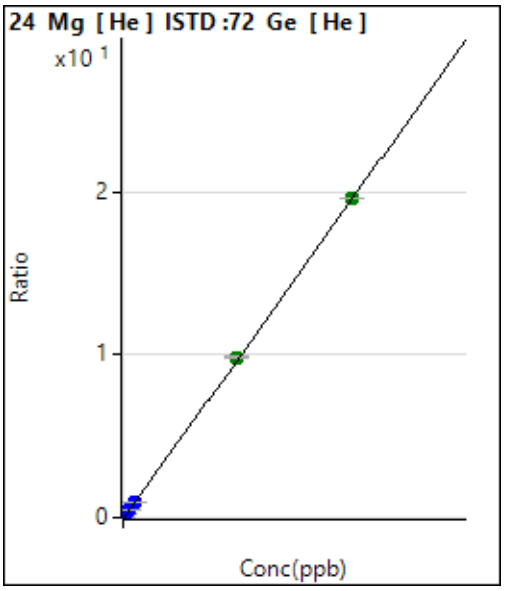


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	224991.16	0.3852	P	1.0	
2	☐	200.000	186.543	416302.60	0.7075	P	1.7	-6.7
3	☐	500.000	471.634	704928.06	1.2000	P	0.4	-5.7
4	☐	1000.000	1051.811	1284100.84	2.2023	A	0.6	5.2
5	☐	10000.00	10058.06	10312167.55	17.7614	A	1.4	0.6
6	☐	20000.00	19969.22	19764670.96	34.8837	A	1.6	-0.2

y = 0.0017 * x + 0.3852
R = 1.0000
DL = 6.778 ppb
BEC = 223 ppb

Weight: <None>
Min Conc: <None>

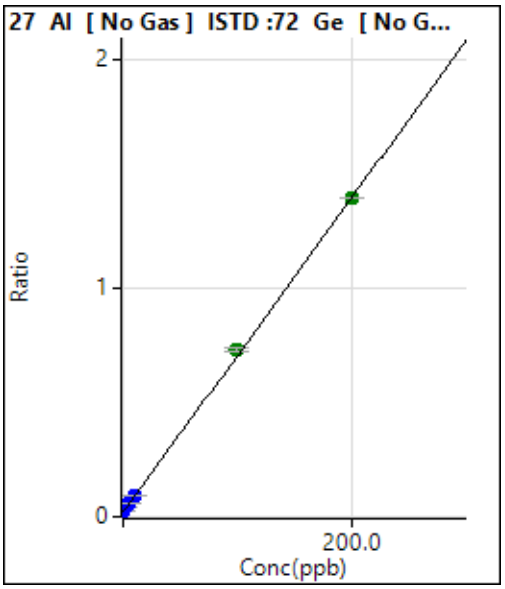
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	693.36	0.0012	P	13.5	
2	☐	200.000	196.665	114332.73	0.1943	P	2.2	-1.7
3	☐	500.000	485.196	280589.93	0.4777	P	1.2	-3.0
4	☐	1000.000	983.347	563721.42	0.9669	P	1.0	-1.7
5	☐	10000.00	10045.89	5728803.25	9.8668	A	1.6	0.5
6	☐	20000.00	19978.29	11118175.67	19.6210	A	0.5	-0.1

y = 9.8205E-004 * x + 0.0012
R = 1.0000
DL = 0.4907 ppb
BEC = 1.209 ppb

Weight: <None>
Min Conc: <None>

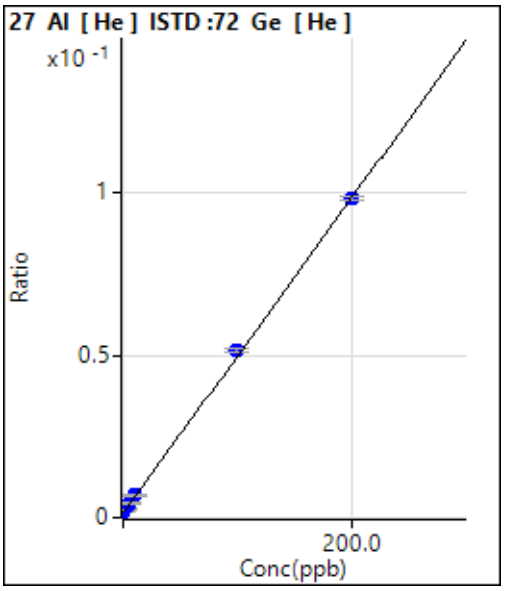


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	56129.93	0.0264	P	3.6	
2	☐	2.000	2.017	85572.31	0.0403	P	1.5	0.9
3	☐	5.000	4.557	124392.58	0.0578	P	1.7	-8.9
4	☐	10.000	9.841	198364.91	0.0942	P	2.3	-1.6
5	☐	100.000	102.277	1526878.42	0.7310	A	3.2	2.3
6	☐	200.000	198.880	2835865.79	1.3965	A	0.4	-0.6

y = 0.0069 * x + 0.0264
R = 0.9999
DL = 0.4091 ppb
BEC = 3.826 ppb

Weight: <None>
Min Conc: <None>

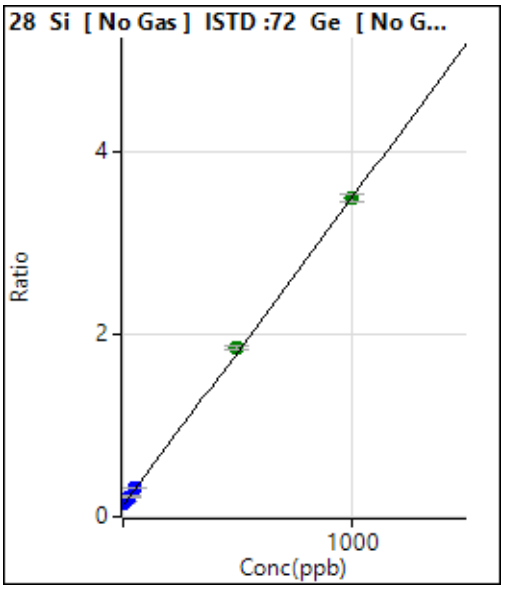
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1080.06	0.0018	P	20.3	
2	☐	2.000	1.964	1650.13	0.0028	P	12.3	-1.8
3	☐	5.000	5.274	2590.30	0.0044	P	10.6	5.5
4	☐	10.000	10.328	4000.64	0.0069	P	6.3	3.3
5	☐	100.000	102.383	29929.15	0.0515	P	1.7	2.4
6	☐	200.000	198.785	55725.03	0.0983	P	0.9	-0.6

y = 4.8542E-004 * x + 0.0018
R = 0.9999
DL = 2.321 ppb
BEC = 3.811 ppb

Weight: <None>
Min Conc: <None>

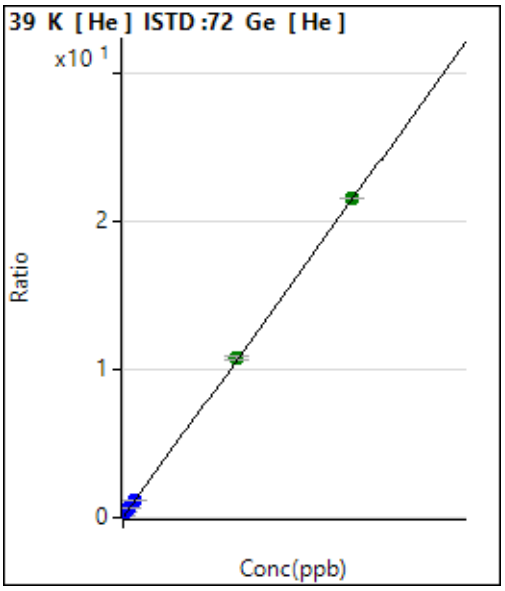


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	300477.34	0.1411	P	2.0	
2	☐	10.000	10.171	372753.50	0.1754	P	1.6	1.7
3	☐	25.000	23.302	473100.61	0.2197	P	1.7	-6.8
4	☐	50.000	49.986	652391.42	0.3096	P	1.6	0.0
5	☐	500.000	509.729	3885451.50	1.8601	A	2.4	1.9
6	☐	1000.000	995.177	7100494.48	3.4972	A	1.8	-0.5

y = 0.0034 * x + 0.1411
R = 0.9999
DL = 2.476 ppb
BEC = 41.83 ppb

Weight: <None>
Min Conc: <None>

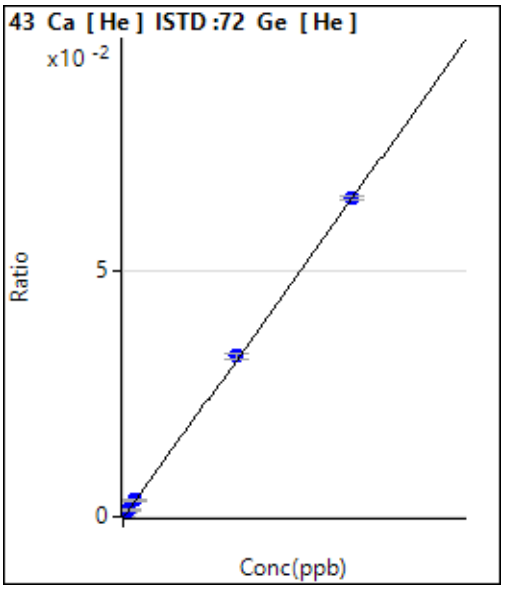
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	80104.91	0.1372	P	1.1	
2	☐	200.000	196.644	204287.25	0.3472	P	1.7	-1.7
3	☐	500.000	494.246	390655.61	0.6651	P	1.1	-1.2
4	☐	1000.000	1001.547	703656.87	1.2069	P	0.9	0.2
5	☐	10000.00	9962.325	6257593.03	10.7777	A	1.7	-0.4
6	☐	20000.00	20018.93	12193697.74	21.5190	A	0.6	0.1

y = 0.0011 * x + 0.1372
R = 1.0000
DL = 4.077 ppb
BEC = 128.4 ppb

Weight: <None>
Min Conc: <None>

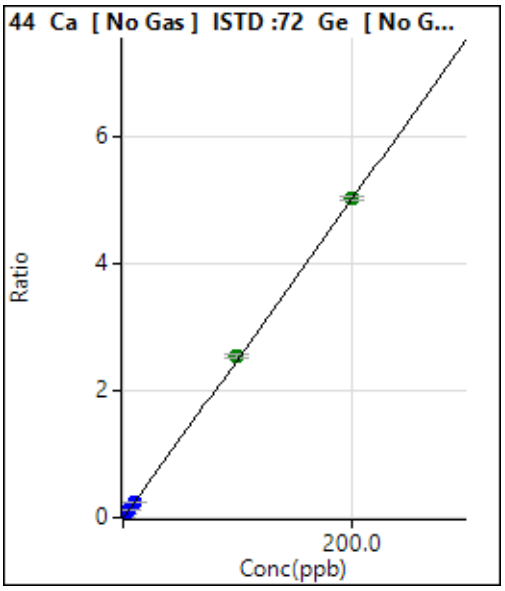


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	30.00	0.0001	P	33.3	
2	☐	200.000	231.304	473.35	0.0008	P	15.4	15.7
3	☐	500.000	437.220	866.71	0.0015	P	15.5	-12.6
4	☐	1000.000	1009.744	1946.84	0.0033	P	3.4	1.0
5	☐	10000.00	10074.11	19073.51	0.0329	P	3.6	0.7
6	☐	20000.00	19963.71	36862.89	0.0651	P	1.5	-0.2

y = 3.2560E-006 * x + 5.1364E-005
R = 1.0000
DL = 15.74 ppb
BEC = 15.78 ppb

Weight: <None>
Min Conc: <None>

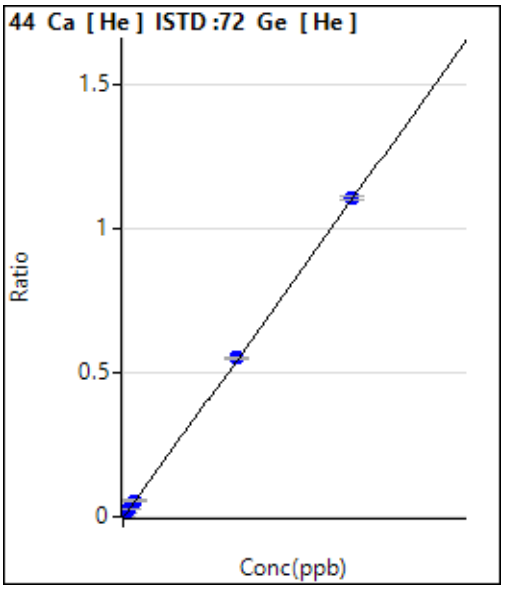
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	20345.27	0.0096	P	3.0	
2	☐	2.000	1.891	121297.54	0.0571	P	2.6	-5.4
3	☐	5.000	4.680	273855.74	0.1271	P	0.7	-6.4
4	☐	10.000	9.710	534201.80	0.2535	P	1.7	-2.9
5	☐	100.000	100.458	5293220.55	2.5340	A	2.4	0.5
6	☐	200.000	199.795	10213764.22	5.0302	A	1.6	-0.1

y = 0.0251 * x + 0.0096
R = 1.0000
DL = 0.03466 ppb
BEC = 0.3802 ppb

Weight: <None>
Min Conc: <None>

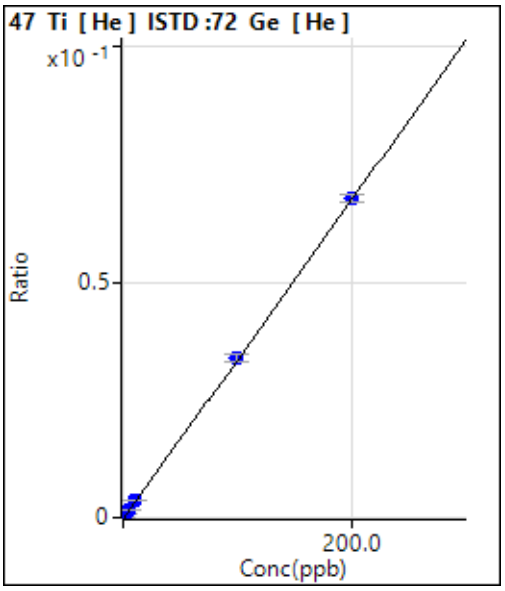


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	623.36	0.0011	P	12.1	
2	☐	200.000	192.001	6868.50	0.0117	P	2.5	-4.0
3	☐	500.000	492.950	16623.67	0.0283	P	0.2	-1.4
4	☐	1000.000	995.209	32679.05	0.0560	P	3.5	-0.5
5	☐	10000.00	9951.905	319819.03	0.5508	P	1.1	-0.5
6	☐	20000.00	20024.54	627413.48	1.1073	P	0.8	0.1

y = 5.5242E-005 * x + 0.0011
R = 1.0000
DL = 6.987 ppb
BEC = 19.32 ppb

Weight: <None>
Min Conc: <None>

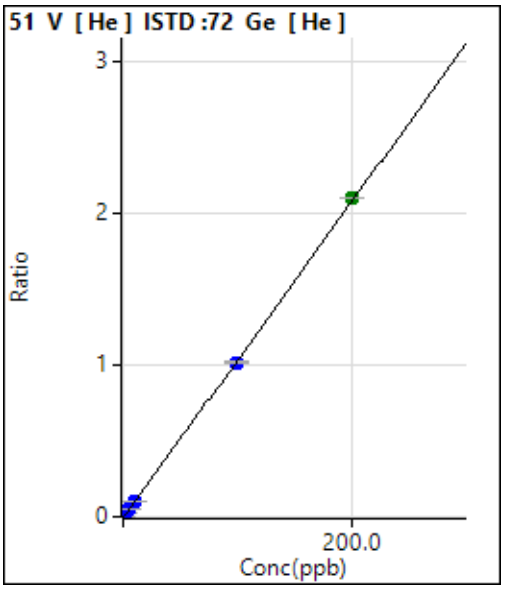
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	3.33	0.0000	P	173.2	
2	☐	2.000	1.905	383.34	0.0007	P	11.4	-4.8
3	☐	5.000	4.818	963.38	0.0016	P	13.6	-3.6
4	☐	10.000	10.932	2166.88	0.0037	P	5.4	9.3
5	☐	100.000	99.968	19701.06	0.0339	P	5.7	0.0
6	☐	200.000	199.975	38454.25	0.0679	P	2.5	0.0

y = 3.3940E-004 * x + 5.7200E-006
R = 1.0000
DL = 0.08757 ppb
BEC = 0.01685 ppb

Weight: <None>
Min Conc: <None>

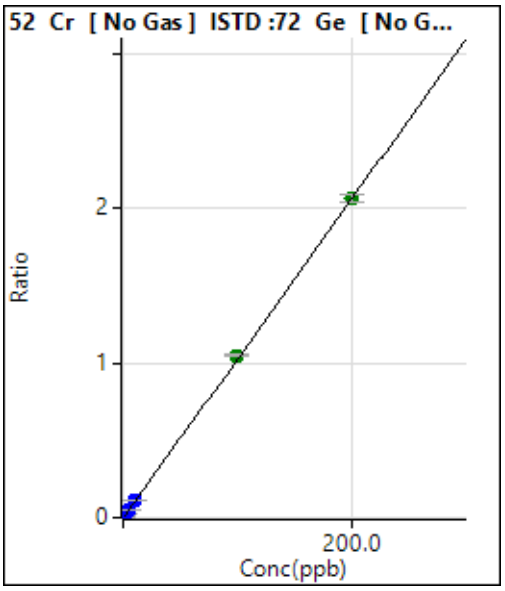


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1282.29	0.0022	P	3.1	
2	☐	2.000	1.902	12948.38	0.0220	P	3.7	-4.9
3	☐	5.000	4.735	30262.26	0.0515	P	0.5	-5.3
4	☐	10.000	9.674	60030.60	0.1030	P	1.3	-3.3
5	☐	100.000	97.243	589359.89	1.0151	P	1.4	-2.8
6	☐	200.000	201.402	1190021.38	2.1000	A	0.3	0.7

y = 0.0104 * x + 0.0022
R = 0.9999
DL = 0.01961 ppb
BEC = 0.2108 ppb

Weight: <None>
Min Conc: <None>

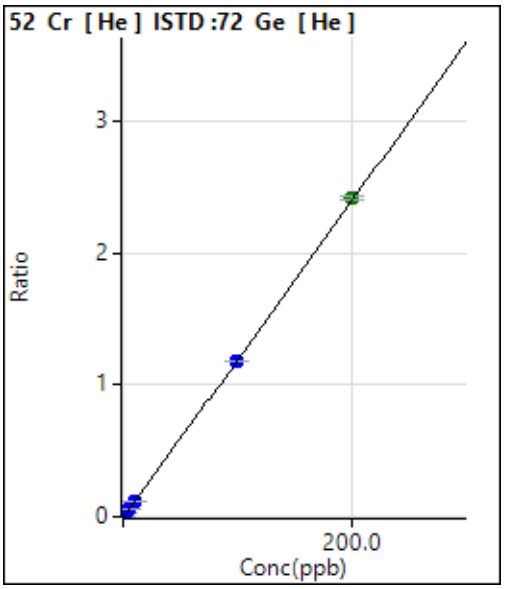
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	13460.17	0.0063	P	6.5	
2	☐	2.000	1.944	56105.15	0.0264	P	1.2	-2.8
3	☐	5.000	4.749	119252.40	0.0554	P	0.7	-5.0
4	☐	10.000	9.845	227530.69	0.1080	P	1.8	-1.5
5	☐	100.000	101.096	2194437.05	1.0503	A	1.5	1.1
6	☐	200.000	199.467	4194859.94	2.0662	A	2.6	-0.3

y = 0.0103 * x + 0.0063
R = 1.0000
DL = 0.1194 ppb
BEC = 0.6122 ppb

Weight: <None>
Min Conc: <None>

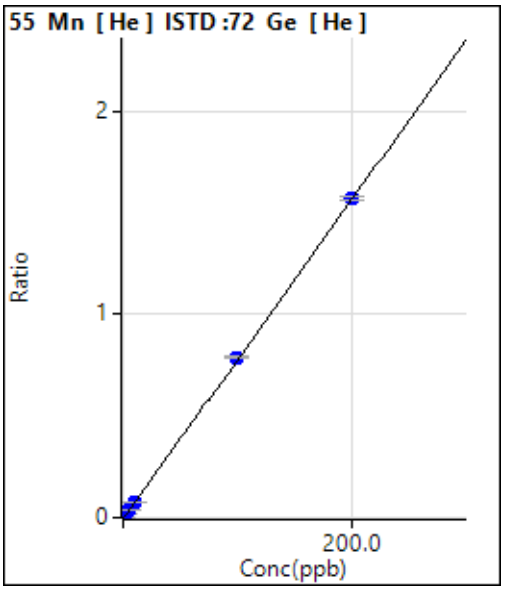


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	996.72	0.0017	P	5.1	
2	☐	2.000	1.897	14397.82	0.0245	P	5.2	-5.2
3	☐	5.000	4.843	35155.52	0.0599	P	1.6	-3.1
4	☐	10.000	9.790	69523.16	0.1192	P	1.2	-2.1
5	☐	100.000	98.061	684518.14	1.1790	P	1.0	-1.9
6	☐	200.000	200.985	1368203.00	2.4146	A	0.8	0.5

y = 0.0120 * x + 0.0017
R = 0.9999
DL = 0.02155 ppb
BEC = 0.1422 ppb

Weight: <None>
Min Conc: <None>

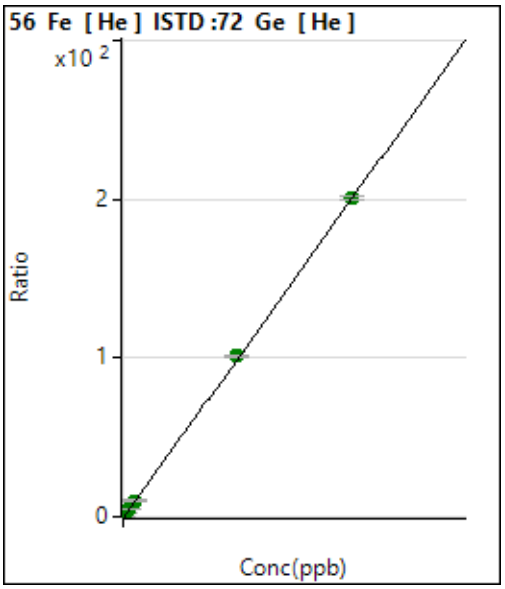
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	553.36	0.0009	P	12.1	
2	☐	2.000	1.945	9550.17	0.0162	P	4.5	-2.8
3	☐	5.000	4.965	23483.76	0.0400	P	2.3	-0.7
4	☐	10.000	10.038	46559.38	0.0799	P	0.9	0.4
5	☐	100.000	100.124	457546.11	0.7881	P	1.3	0.1
6	☐	200.000	199.937	891094.10	1.5727	P	1.2	0.0

y = 0.0079 * x + 9.4738E-004
R = 1.0000
DL = 0.04392 ppb
BEC = 0.1205 ppb

Weight: <None>
Min Conc: <None>

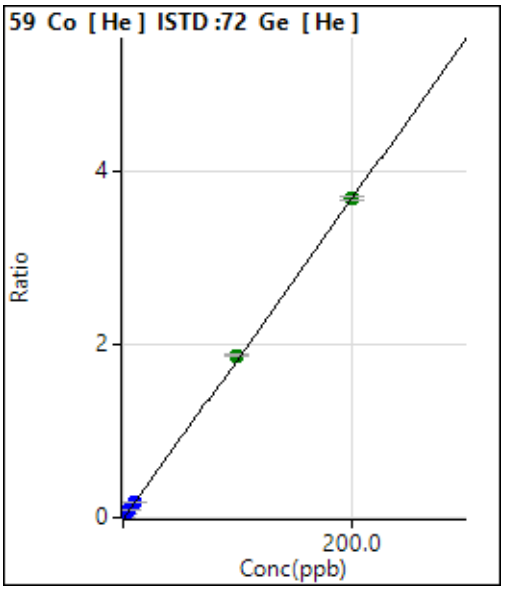


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	14945.06	0.0256	P	4.1	
2	☐	200.000	214.863	1286309.77	2.1859	A	1.1	7.4
3	☐	500.000	512.506	3041929.33	5.1786	A	1.1	2.5
4	☐	1000.000	1014.940	5964565.95	10.2303	A	1.0	1.5
5	☐	10000.00	10076.65	58840102.46	101.341	A	1.1	0.8
6	☐	20000.00	19960.46	113728828.3	200.718	A	1.0	-0.2

y = 0.0101 * x + 0.0256
R = 1.0000
DL = 0.3151 ppb
BEC = 2.545 ppb

Weight: <None>
Min Conc: <None>

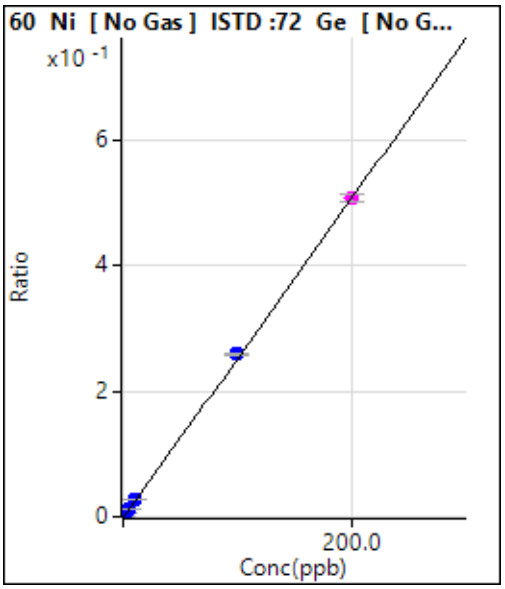
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	73.33	0.0001	P	64.5	
2	☐	2.000	1.976	21544.03	0.0366	P	2.4	-1.2
3	☐	5.000	4.889	53110.35	0.0904	P	1.9	-2.2
4	☐	10.000	10.041	108200.19	0.1856	P	1.2	0.4
5	☐	100.000	101.192	1085230.27	1.8691	A	0.8	1.2
6	☐	200.000	199.405	2086815.13	3.6831	A	1.6	-0.3

y = 0.0185 * x + 1.2565E-004
R = 1.0000
DL = 0.01317 ppb
BEC = 0.006803 ppb

Weight: <None>
Min Conc: <None>

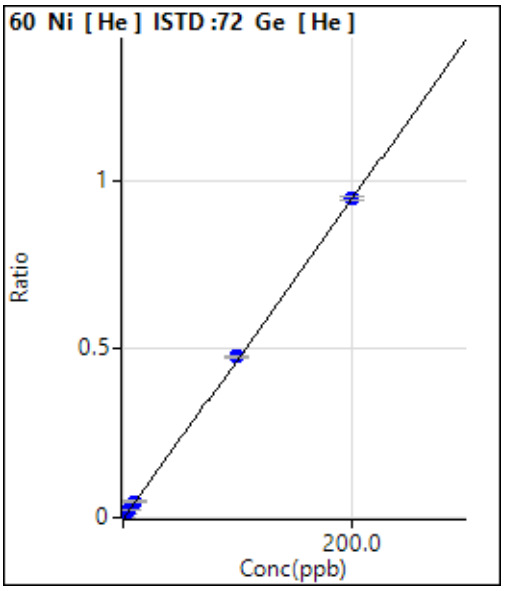


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	586.69	0.0003	P	2.5	
2	☐	2.000	2.126	12112.24	0.0057	P	2.5	6.3
3	☐	5.000	5.007	28102.68	0.0130	P	1.0	0.1
4	☐	10.000	10.278	55817.58	0.0265	P	1.4	2.8
5	☐	100.000	101.595	541942.27	0.2594	P	1.5	1.6
6	☐	200.000	199.187	1032066.75	0.5083	M	2.3	-0.4

y = 0.0026 * x + 2.7541E-004
R = 1.0000
DL = 0.007987 ppb
BEC = 0.108 ppb

Weight: <None>
Min Conc: <None>

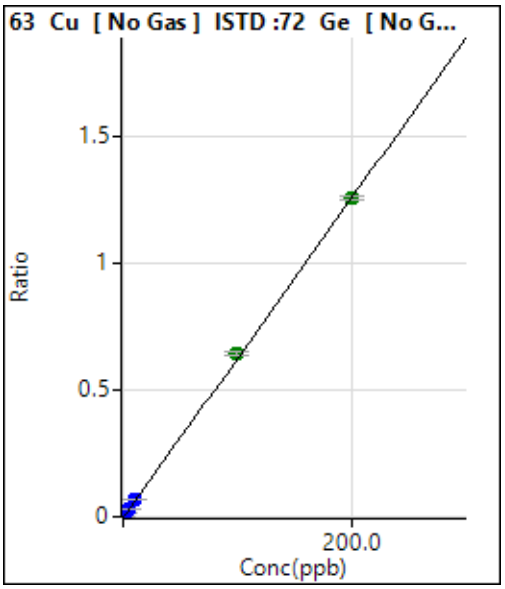
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	186.67	0.0003	P	26.9	
2	☐	2.000	2.035	5871.36	0.0100	P	2.6	1.8
3	☐	5.000	4.887	13810.53	0.0235	P	4.4	-2.3
4	☐	10.000	10.113	28169.45	0.0483	P	1.6	1.1
5	☐	100.000	100.500	277127.50	0.4773	P	1.3	0.5
6	☐	200.000	199.747	537348.50	0.9483	P	0.9	-0.1

y = 0.0047 * x + 3.1955E-004
R = 1.0000
DL = 0.05424 ppb
BEC = 0.06733 ppb

Weight: <None>
Min Conc: <None>

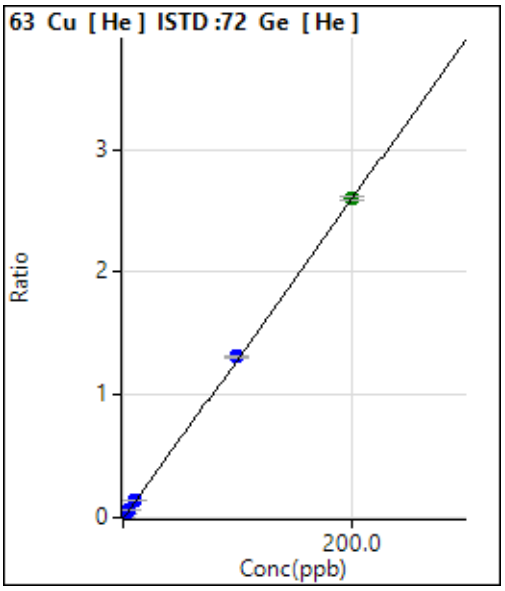


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	2673.64	0.0013	P	4.8	
2	☐	2.000	2.002	29572.48	0.0139	P	1.2	0.1
3	☐	5.000	4.888	69262.67	0.0322	P	1.2	-2.2
4	☐	10.000	10.131	137571.22	0.0653	P	2.5	1.3
5	☐	100.000	102.009	1349830.97	0.6462	A	1.9	2.0
6	☐	200.000	198.992	2556924.65	1.2593	A	1.8	-0.5

y = 0.0063 * x + 0.0013
R = 0.9999
DL = 0.02886 ppb
BEC = 0.1984 ppb

Weight: <None>
Min Conc: <None>

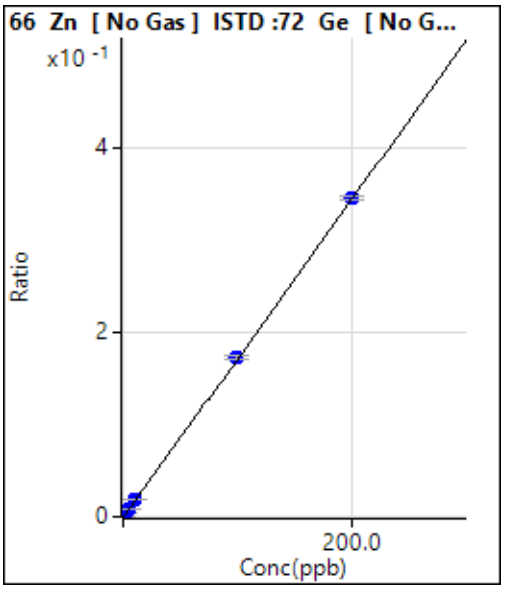
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1590.13	0.0027	P	4.4	
2	☐	2.000	1.924	16346.76	0.0278	P	1.5	-3.8
3	☐	5.000	4.926	39277.11	0.0669	P	3.2	-1.5
4	☐	10.000	10.174	78827.92	0.1352	P	0.7	1.7
5	☐	100.000	100.602	762115.53	1.3126	P	1.6	0.6
6	☐	200.000	199.693	1474813.10	2.6029	A	1.6	-0.2

y = 0.0130 * x + 0.0027
R = 1.0000
DL = 0.02788 ppb
BEC = 0.2091 ppb

Weight: <None>
Min Conc: <None>

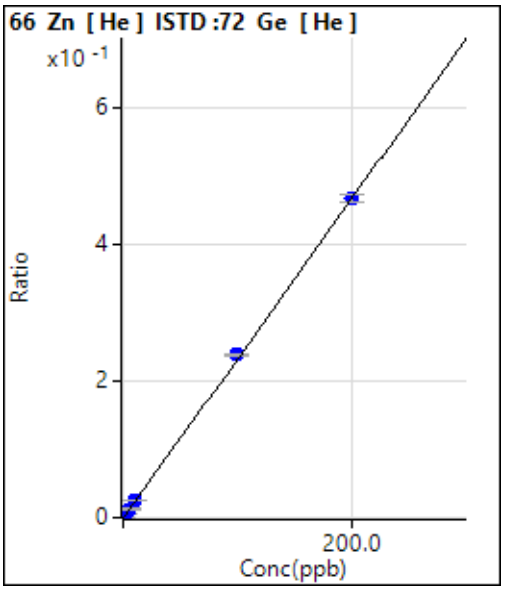


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1710.14	0.0008	P	8.4	
2	☐	2.000	1.909	8709.58	0.0041	P	3.1	-4.6
3	☐	5.000	4.791	19540.97	0.0091	P	1.2	-4.2
4	☐	10.000	10.162	38645.26	0.0183	P	1.9	1.6
5	☐	100.000	100.007	362249.30	0.1734	P	2.1	0.0
6	☐	200.000	199.994	702477.59	0.3460	P	1.5	0.0

y = 0.0017 * x + 8.0372E-004
R = 1.0000
DL = 0.1168 ppb
BEC = 0.4657 ppb

Weight: <None>
Min Conc: <None>

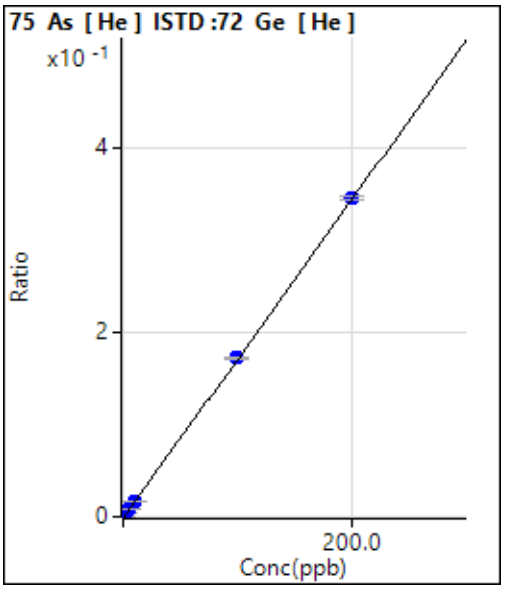
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	716.70	0.0012	P	12.9	
2	☐	2.000	1.932	3383.82	0.0058	P	3.5	-3.4
3	☐	5.000	4.824	7355.45	0.0125	P	6.5	-3.5
4	☐	10.000	10.152	14578.03	0.0250	P	2.8	1.5
5	☐	100.000	101.359	138547.84	0.2386	P	0.7	1.4
6	☐	200.000	199.318	265159.39	0.4681	P	2.8	-0.3

y = 0.0023 * x + 0.0012
R = 1.0000
DL = 0.2021 ppb
BEC = 0.524 ppb

Weight: <None>
Min Conc: <None>

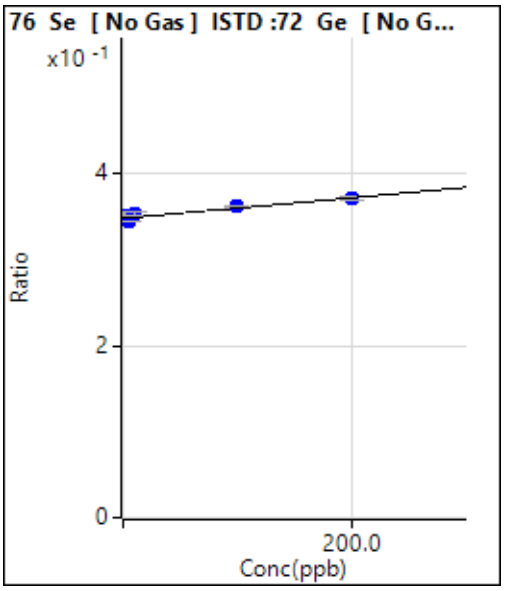


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	90.00	0.0002	P	0.2	
2	☐	2.000	2.030	2159.07	0.0037	P	2.0	1.5
3	☐	5.000	4.910	5082.10	0.0087	P	2.2	-1.8
4	☐	10.000	9.876	10054.88	0.0172	P	1.2	-1.2
5	☐	100.000	99.669	100241.22	0.1726	P	1.0	-0.3
6	☐	200.000	200.174	196376.60	0.3466	P	1.2	0.1

y = 0.0017 * x + 1.5410E-004
R = 1.0000
DL = 0.0005122 ppb
BEC = 0.08904 ppb

Weight: <None>
Min Conc: <None>

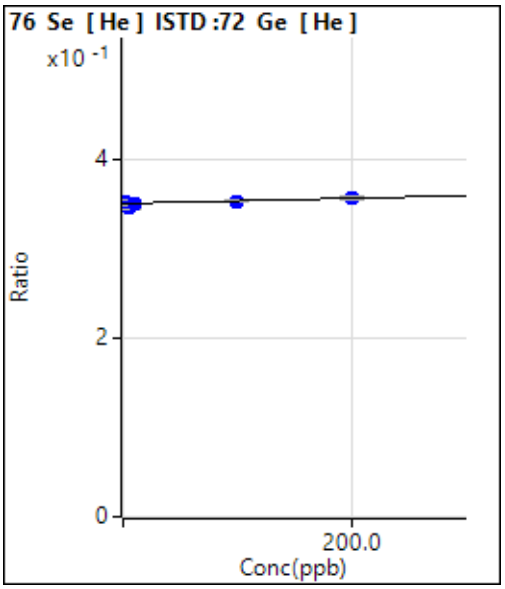
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	742361.91	0.3485	P	2.0	
2	☐	2.000	25.482	747324.47	0.3516	P	1.8	1174.1
3	☐	5.000	-27.600	743552.51	0.3452	P	0.3	-652.0
4	☐	10.000	40.336	744626.89	0.3534	P	1.2	303.4
5	☐	100.000	110.618	756061.89	0.3619	P	1.1	10.6
6	☐	200.000	193.754	755173.69	0.3719	P	1.3	-3.1

y = 1.2068E-004 * x + 0.3485
R = 0.9613
DL = 175.3 ppb
BEC = 2888 ppb

Weight: <None>
Min Conc: <None>

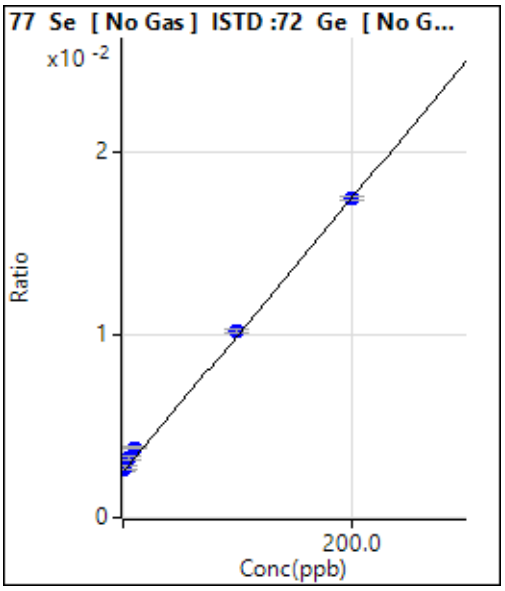


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	204884.58	0.3508	P	0.5	
2	☐	2.000	62.761	207544.58	0.3527	P	1.2	3038.0
3	☐	5.000	-164.441	203233.82	0.3460	P	1.1	-3388.
4	☐	10.000	-3.487	204480.18	0.3507	P	0.2	-134.9
5	☐	100.000	92.439	205273.44	0.3535	P	0.2	-7.6
6	☐	200.000	208.083	202286.93	0.3570	P	0.8	4.0

y = 2.9535E-005 * x + 0.3508
R = 0.7879
DL = 184.8 ppb
BEC = 1.188E+04 ppb

Weight: <None>
Min Conc: <None>

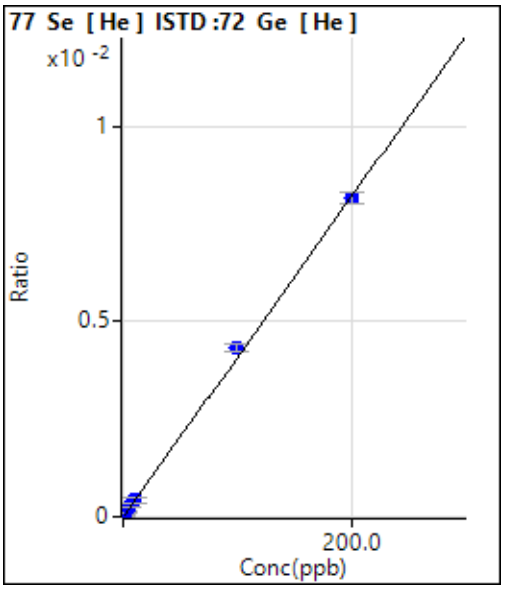
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	5524.57	0.0026	P	1.3	
2	☐	2.000	1.940	5818.04	0.0027	P	7.7	-3.0
3	☐	5.000	8.900	7021.97	0.0033	P	8.8	78.0
4	☐	10.000	16.381	8045.86	0.0038	P	2.1	63.8
5	☐	100.000	101.359	21267.15	0.0102	P	1.8	1.4
6	☐	200.000	198.905	35480.33	0.0175	P	1.8	-0.5

y = 7.4817E-005 * x + 0.0026
R = 0.9995
DL = 1.363 ppb
BEC = 34.66 ppb

Weight: <None>
Min Conc: <None>

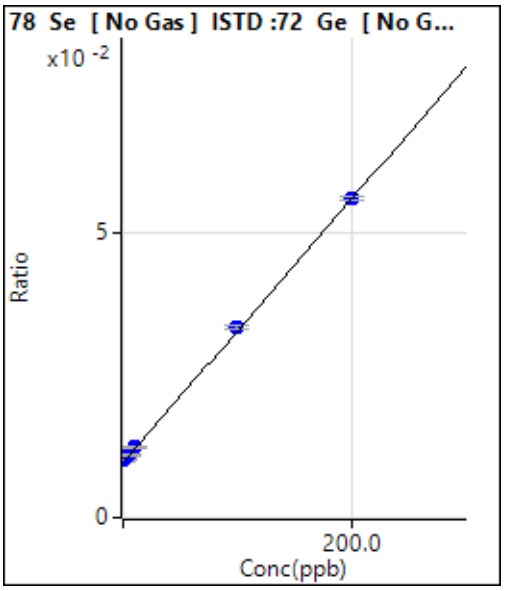


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	16.67	0.0000	P	34.7	
2	☐	2.000	2.055	66.67	0.0001	P	36.9	2.7
3	☐	5.000	4.960	136.67	0.0002	P	4.0	-0.8
4	☐	10.000	9.584	246.67	0.0004	P	26.9	-4.2
5	☐	100.000	104.086	2503.61	0.0043	P	4.5	4.1
6	☐	200.000	197.978	4634.22	0.0082	P	3.7	-1.0

y = 4.1149E-005 * x + 2.8546E-005
R = 0.9997
DL = 0.7228 ppb
BEC = 0.6937 ppb

Weight: <None>
Min Conc: <None>

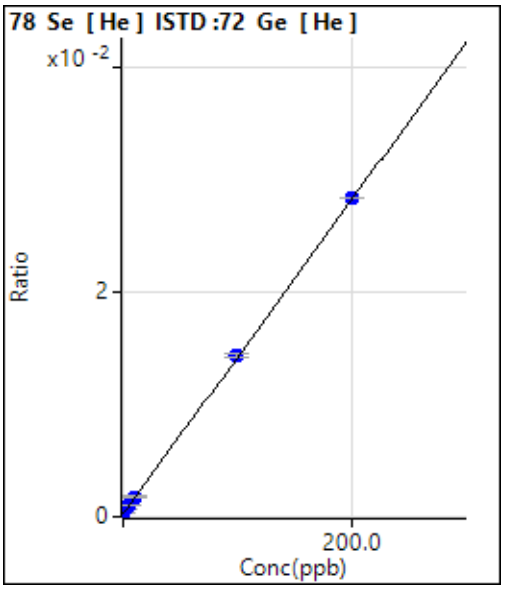
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	21357.24	0.0100	P	4.0	
2	☐	2.000	2.015	22308.85	0.0105	P	3.4	0.8
3	☐	5.000	4.372	23791.42	0.0110	P	1.7	-12.6
4	☐	10.000	10.786	26402.82	0.0125	P	2.7	7.9
5	☐	100.000	101.455	70128.92	0.0336	P	1.6	1.5
6	☐	200.000	199.249	114231.03	0.0563	P	1.4	-0.4

y = 2.3200E-004 * x + 0.0100
R = 0.9999
DL = 5.178 ppb
BEC = 43.24 ppb

Weight: <None>
Min Conc: <None>

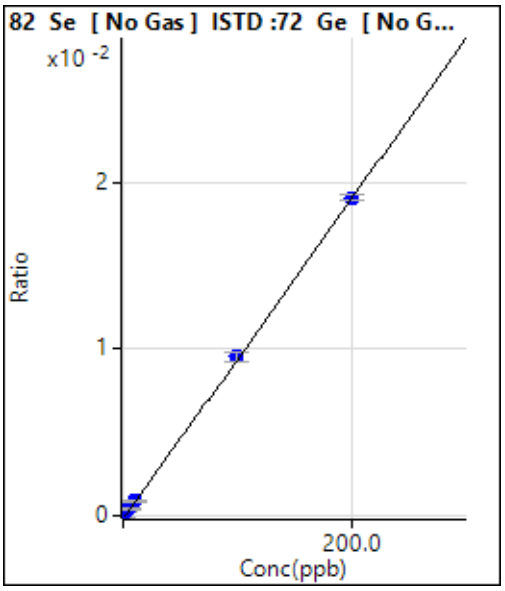


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	228.67	0.0004	P	2.7	
2	☐	2.000	2.118	404.68	0.0007	P	7.6	5.9
3	☐	5.000	4.652	612.68	0.0010	P	8.7	-7.0
4	☐	10.000	9.922	1038.71	0.0018	P	3.7	-0.8
5	☐	100.000	99.687	8333.93	0.0144	P	2.7	-0.3
6	☐	200.000	200.168	16110.29	0.0284	P	0.2	0.1

y = 1.4007E-004 * x + 3.9154E-004
R = 1.0000
DL = 0.2249 ppb
BEC = 2.795 ppb

Weight: <None>
Min Conc: <None>

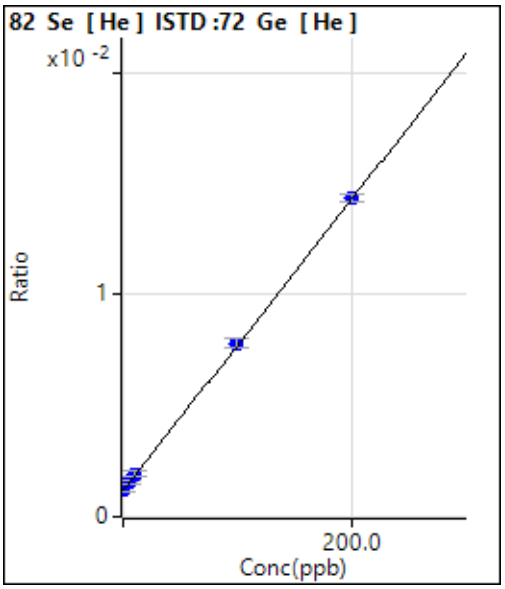
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	-361.80	-0.0002	P	-14.3	
2	☐	2.000	3.512	358.65	0.0002	P	48.7	75.6
3	☐	5.000	5.417	759.49	0.0004	P	38.8	8.3
4	☐	10.000	10.326	1740.95	0.0008	P	10.5	3.3
5	☐	100.000	100.302	19838.47	0.0095	P	6.0	0.3
6	☐	200.000	199.807	38775.17	0.0191	P	2.0	-0.1

y = 9.6412E-005 * x - 1.7021E-004
R = 1.0000
DL = 0.7589 ppb
BEC = -1.765 ppb

Weight: <None>
Min Conc: <None>

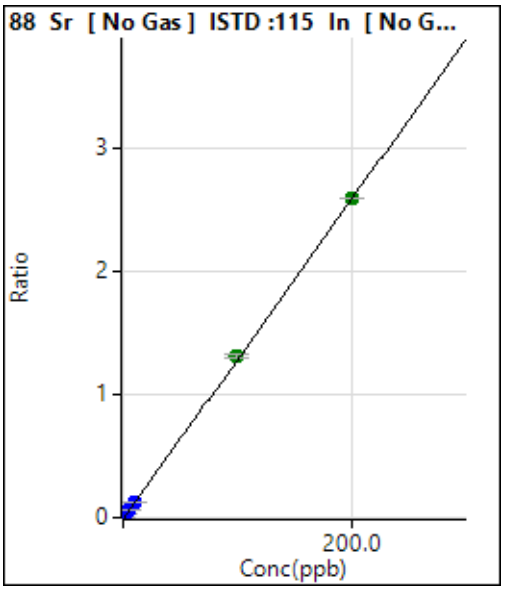


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	726.70	0.0012	P	17.8	
2	☐	2.000	3.890	883.38	0.0015	P	8.9	94.5
3	☐	5.000	4.391	900.05	0.0015	P	10.0	-12.2
4	☐	10.000	10.212	1116.74	0.0019	P	12.4	2.1
5	☐	100.000	100.239	4540.83	0.0078	P	5.9	0.2
6	☐	200.000	199.866	8135.90	0.0144	P	2.3	-0.1

y = 6.5615E-005 * x + 0.0012
R = 0.9999
DL = 10.12 ppb
BEC = 18.97 ppb

Weight: <None>
Min Conc: <None>

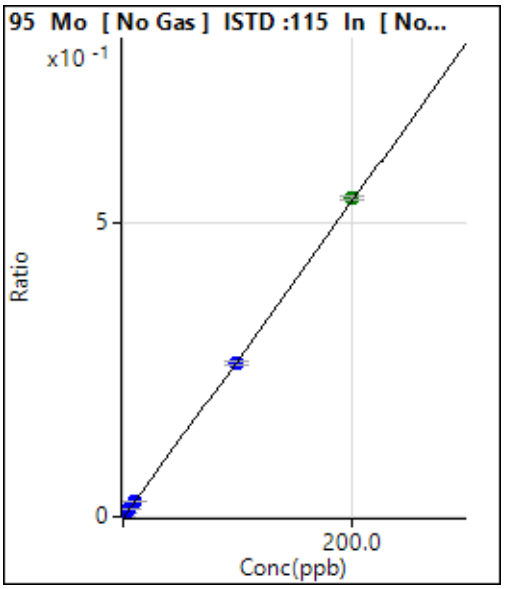
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1553.45	0.0006	P	9.7	
2	☐	2.000	1.979	63668.13	0.0264	P	1.6	-1.1
3	☐	5.000	4.837	153805.97	0.0635	P	1.0	-3.3
4	☐	10.000	9.903	312931.89	0.1294	P	0.6	-1.0
5	☐	100.000	100.841	3127788.81	1.3116	A	1.5	0.8
6	☐	200.000	199.588	6027426.58	2.5953	A	0.6	-0.2

y = 0.0130 * x + 6.4131E-004
R = 1.0000
DL = 0.01429 ppb
BEC = 0.04933 ppb

Weight: <None>
Min Conc: <None>

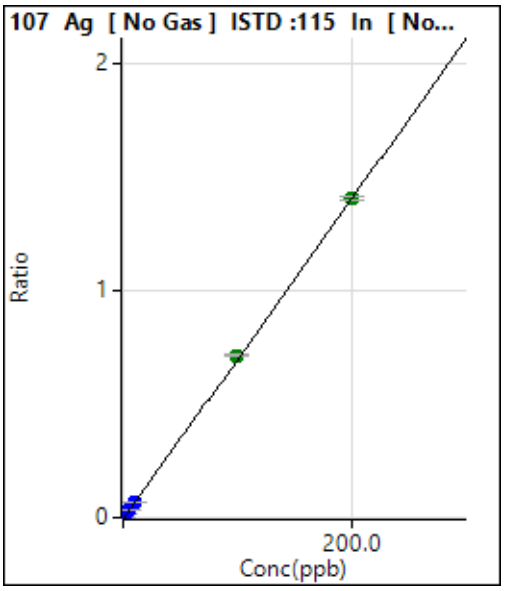


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	150.00	0.0001	P	23.4	
2	☐	2.000	1.835	12065.65	0.0050	P	3.0	-8.2
3	☐	5.000	4.628	30281.46	0.0125	P	2.7	-7.4
4	☐	10.000	9.468	61726.26	0.0255	P	1.5	-5.3
5	☐	100.000	97.174	623311.39	0.2614	P	1.6	-2.8
6	☐	200.000	201.450	1258302.92	0.5418	A	1.3	0.7

y = 0.0027 * x + 6.1944E-005
R = 0.9999
DL = 0.01619 ppb
BEC = 0.02303 ppb

Weight: <None>
Min Conc: <None>

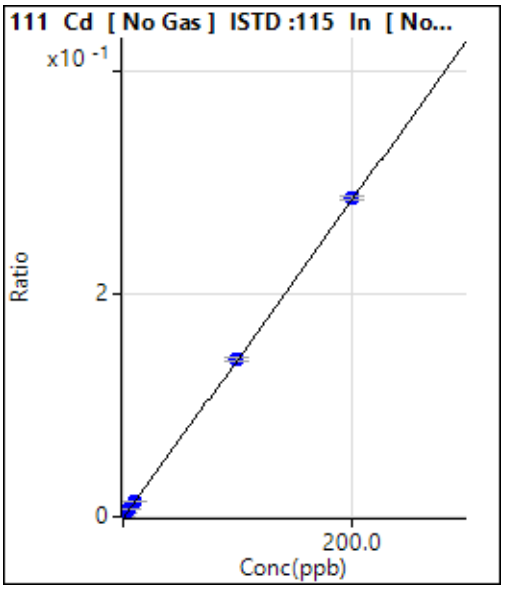
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	426.68	0.0002	P	16.9	
2	☐	2.000	1.958	33820.19	0.0140	P	2.0	-2.1
3	☐	5.000	4.848	83328.03	0.0344	P	1.9	-3.0
4	☐	10.000	9.742	166842.96	0.0690	P	1.5	-2.6
5	☐	100.000	101.184	1705066.12	0.7149	A	1.3	1.2
6	☐	200.000	199.425	3271769.85	1.4088	A	0.9	-0.3

y = 0.0071 * x + 1.7620E-004
R = 1.0000
DL = 0.01264 ppb
BEC = 0.02495 ppb

Weight: <None>
Min Conc: <None>

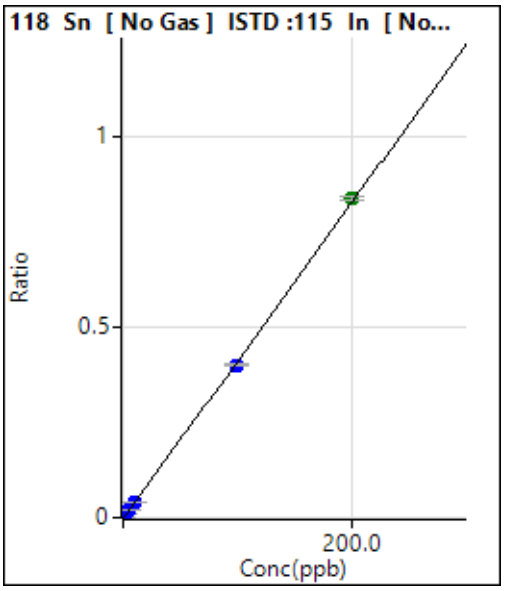


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	3.33	0.0000	P	173.2	
2	☐	2.000	1.931	6661.77	0.0028	P	1.9	-3.4
3	☐	5.000	5.028	17388.44	0.0072	P	1.3	0.6
4	☐	10.000	9.760	33706.74	0.0139	P	1.7	-2.4
5	☐	100.000	98.823	336462.72	0.1411	P	2.5	-1.2
6	☐	200.000	200.600	665203.72	0.2864	P	0.8	0.3

y = 0.0014 * x + 1.3806E-006
R = 1.0000
DL = 0.005024 ppb
BEC = 0.0009669 ppb

Weight: <None>
Min Conc: <None>

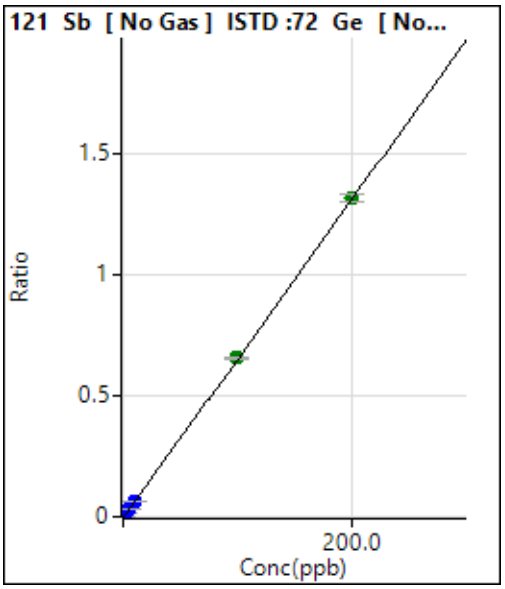
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	2183.56	0.0009	P	9.0	
2	☐	2.000	1.774	19928.76	0.0083	P	3.0	-11.3
3	☐	5.000	4.585	48195.40	0.0199	P	1.3	-8.3
4	☐	10.000	9.373	96149.97	0.0398	P	0.3	-6.3
5	☐	100.000	96.492	955909.10	0.4009	P	1.9	-3.5
6	☐	200.000	201.798	1944739.30	0.8374	A	1.5	0.9

y = 0.0041 * x + 9.0129E-004
R = 0.9998
DL = 0.05883 ppb
BEC = 0.2174 ppb

Weight: <None>
Min Conc: <None>

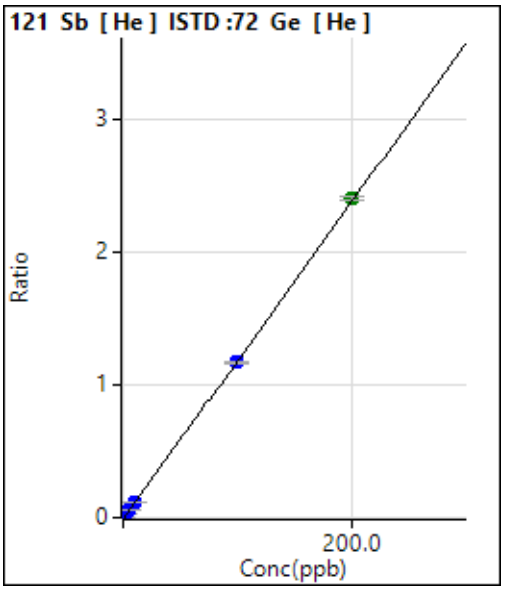


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1513.45	0.0007	P	7.5	
2	☐	2.000	1.951	28735.26	0.0135	P	1.2	-2.5
3	☐	5.000	4.763	68890.69	0.0320	P	1.0	-4.7
4	☐	10.000	9.816	137272.39	0.0652	P	1.9	-1.8
5	☐	100.000	99.847	1370982.58	0.6562	A	1.5	-0.2
6	☐	200.000	200.092	2668577.36	1.3143	A	1.8	0.0

y = 0.0066 * x + 7.1068E-004
R = 1.0000
DL = 0.0242 ppb
BEC = 0.1083 ppb

Weight: <None>
Min Conc: <None>

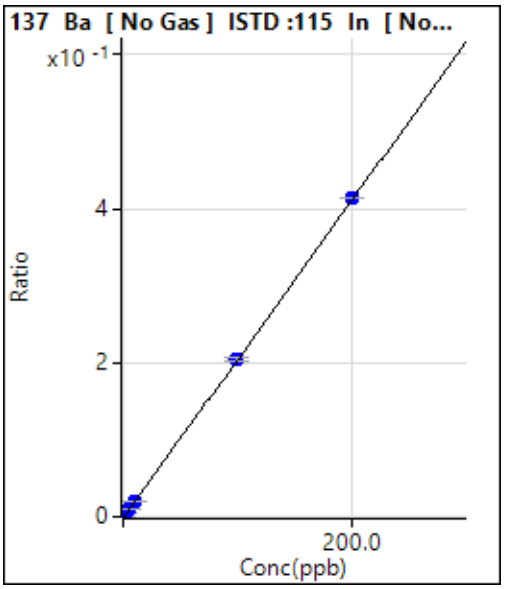
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	770.04	0.0013	P	22.2	
2	☐	2.000	1.934	14394.75	0.0245	P	4.1	-3.3
3	☐	5.000	4.865	34987.06	0.0596	P	2.5	-2.7
4	☐	10.000	9.935	70116.88	0.1203	P	0.2	-0.7
5	☐	100.000	97.552	678865.46	1.1692	P	0.7	-2.4
6	☐	200.000	201.231	1365988.11	2.4105	A	1.0	0.6

y = 0.0120 * x + 0.0013
R = 0.9999
DL = 0.07341 ppb
BEC = 0.1101 ppb

Weight: <None>
Min Conc: <None>

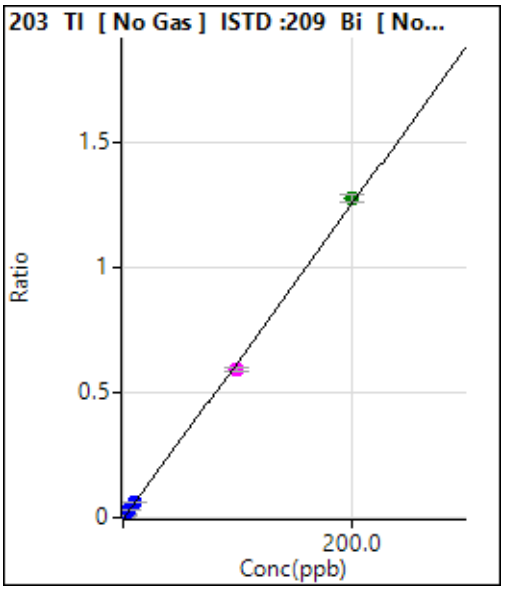


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	526.69	0.0002	P	18.5	
2	☐	2.000	1.952	10244.22	0.0042	P	4.2	-2.4
3	☐	5.000	4.855	24773.87	0.0102	P	0.2	-2.9
4	☐	10.000	9.880	49812.40	0.0206	P	3.0	-1.2
5	☐	100.000	98.663	485757.18	0.2037	P	2.5	-1.3
6	☐	200.000	200.678	961799.39	0.4141	P	0.4	0.3

y = 0.0021 * x + 2.1726E-004
R = 1.0000
DL = 0.05841 ppb
BEC = 0.1053 ppb

Weight: <None>
Min Conc: <None>

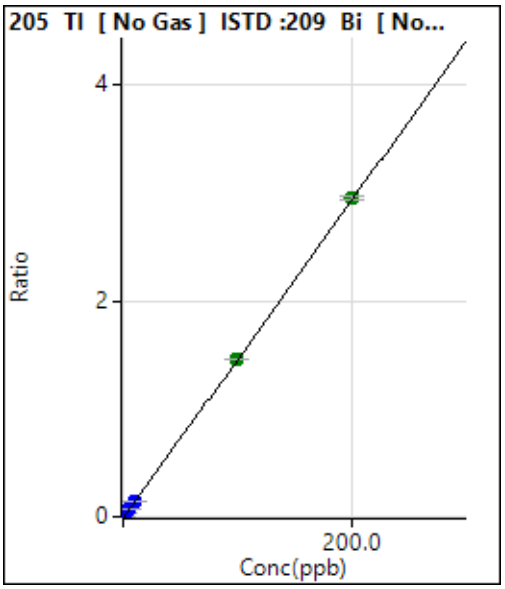
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	30.00	0.0000	P	31.9	
2	☐	2.000	1.834	23639.44	0.0115	P	1.1	-8.3
3	☐	5.000	4.599	58413.18	0.0289	P	1.2	-8.0
4	☐	10.000	9.429	119564.93	0.0593	P	0.6	-5.7
5	☐	100.000	94.324	1170006.94	0.5926	M	2.2	-5.7
6	☐	200.000	202.878	2411187.36	1.2746	A	2.2	1.4

y = 0.0063 * x + 1.5011E-005
R = 0.9995
DL = 0.002288 ppb
BEC = 0.002389 ppb

Weight: <None>
Min Conc: <None>

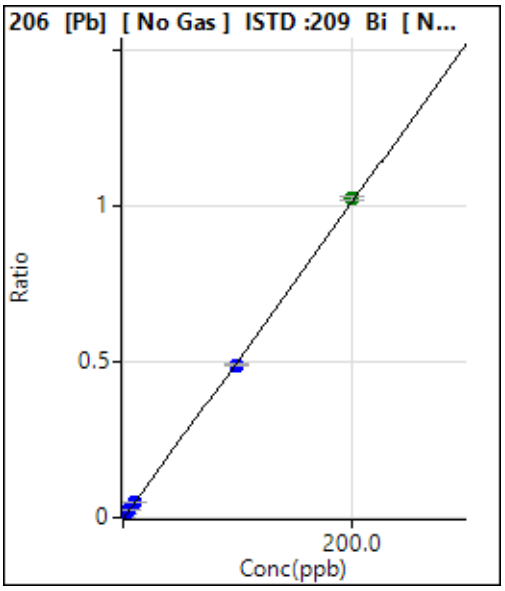


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	76.67	0.0000	P	53.6	
2	☐	2.000	1.879	56775.79	0.0277	P	0.8	-6.1
3	☐	5.000	4.711	140251.65	0.0694	P	1.9	-5.8
4	☐	10.000	9.621	285965.90	0.1417	P	1.2	-3.8
5	☐	100.000	98.984	2878249.75	1.4576	A	0.9	-1.0
6	☐	200.000	200.536	5585324.08	2.9530	A	1.2	0.3

y = 0.0147 * x + 3.8210E-005
R = 1.0000
DL = 0.004176 ppb
BEC = 0.002595 ppb

Weight: <None>
Min Conc: <None>

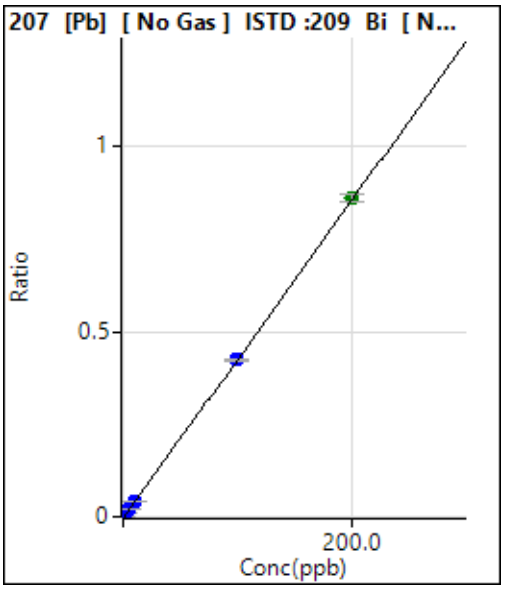
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	706.70	0.0004	P	14.5	
2	☐	2.000	1.835	19849.41	0.0097	P	1.4	-8.3
3	☐	5.000	4.649	48511.47	0.0240	P	0.3	-7.0
4	☐	10.000	9.421	97415.32	0.0483	P	1.8	-5.8
5	☐	100.000	96.526	970310.74	0.4914	P	0.6	-3.5
6	☐	200.000	201.776	1942034.87	1.0268	A	1.4	0.9

y = 0.0051 * x + 3.5451E-004
R = 0.9998
DL = 0.03026 ppb
BEC = 0.06969 ppb

Weight: <None>
Min Conc: <None>

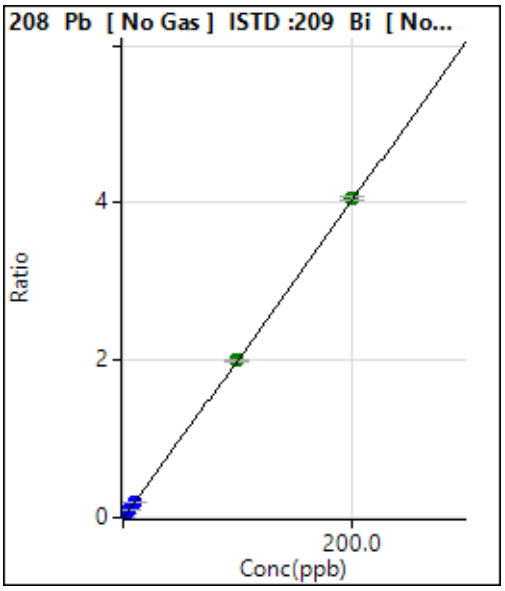


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	573.36	0.0003	P	10.8	
2	☐	2.000	1.936	17602.71	0.0086	P	2.5	-3.2
3	☐	5.000	4.822	42375.81	0.0210	P	1.2	-3.6
4	☐	10.000	9.861	85935.65	0.0426	P	1.3	-1.4
5	☐	100.000	98.875	838008.40	0.4244	P	1.0	-1.1
6	☐	200.000	200.575	1627673.98	0.8606	A	2.2	0.3

y = 0.0043 * x + 2.8783E-004
R = 1.0000
DL = 0.02165 ppb
BEC = 0.06711 ppb

Weight: <None>
Min Conc: <None>

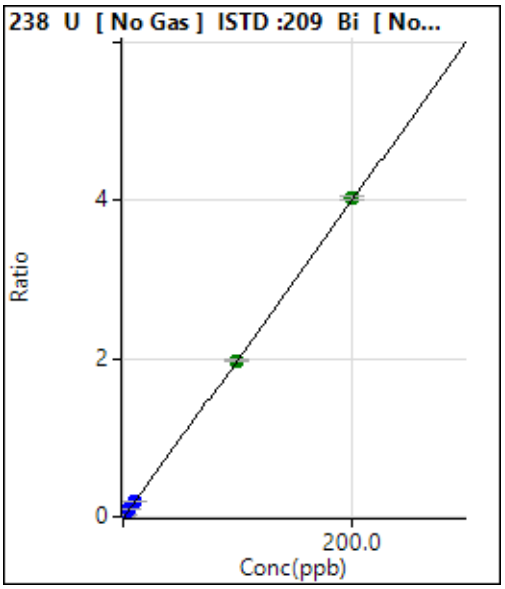
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	2630.16	0.0013	P	7.4	
2	☐	2.000	1.854	79449.93	0.0388	P	0.7	-7.3
3	☐	5.000	4.707	194842.54	0.0964	P	0.8	-5.9
4	☐	10.000	9.522	390840.74	0.1937	P	0.8	-4.8
5	☐	100.000	98.563	3934365.15	1.9926	A	1.5	-1.4
6	☐	200.000	200.751	7673365.25	4.0571	A	1.7	0.4

y = 0.0202 * x + 0.0013
R = 1.0000
DL = 0.01441 ppb
BEC = 0.06531 ppb

Weight: <None>
Min Conc: <None>

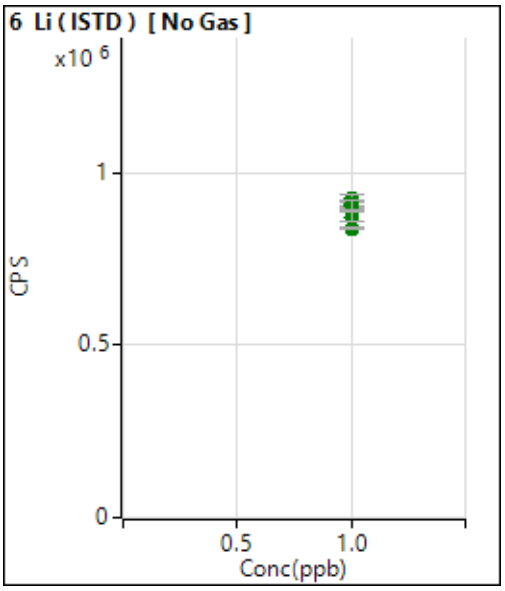


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	46.67	0.0000	P	14.3	
2	☐	2.000	1.799	73926.25	0.0361	P	1.4	-10.0
3	☐	5.000	4.625	187327.42	0.0927	P	1.0	-7.5
4	☐	10.000	9.446	382017.10	0.1893	P	1.6	-5.5
5	☐	100.000	98.339	3891230.05	1.9707	A	1.2	-1.7
6	☐	200.000	200.869	7613307.18	4.0254	A	1.8	0.4

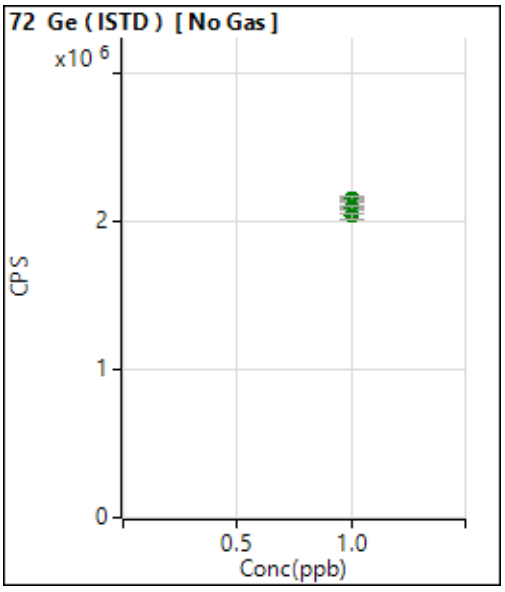
y = 0.0200 * x + 2.3452E-005
R = 1.0000
DL = 0.0005038 ppb
BEC = 0.00117 ppb

Weight: <None>
Min Conc: <None>

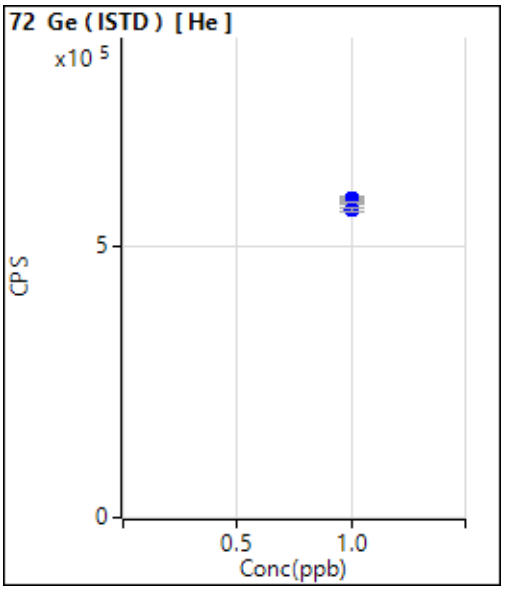
Calibration for 326_ICV.d



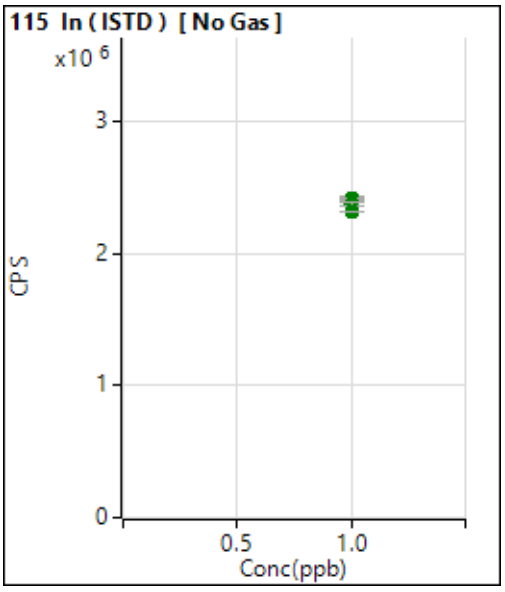
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		926739.71		A	2.0	
2	☐	1.000		910364.63		A	3.0	
3	☐	1.000		908397.15		A	1.3	
4	☐	1.000		907140.21		A	2.7	
5	☐	1.000		873637.64		A	2.7	
6	☐	1.000		838629.73		A	0.9	



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		2130598.46		A	2.5	
2	☐	1.000		2125919.03		A	2.0	
3	☐	1.000		2153938.72		A	0.7	
4	☐	1.000		2107239.19		A	1.5	
5	☐	1.000		2089468.77		A	1.7	
6	☐	1.000		2030691.74		A	1.4	

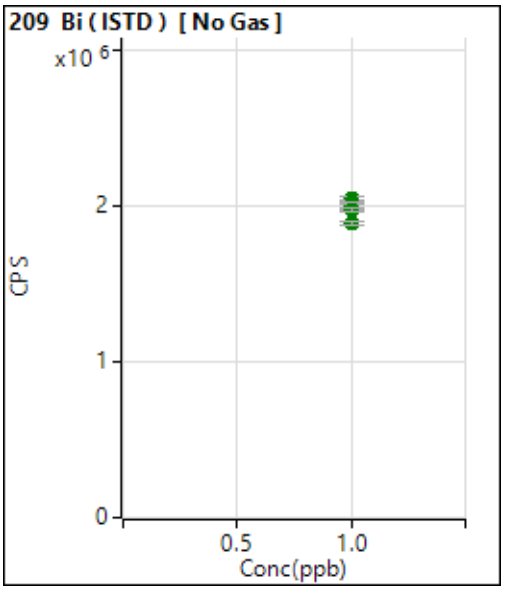


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		584023.34		P	0.2	
2	☐	1.000		588509.41		P	1.7	
3	☐	1.000		587431.84		P	0.7	
4	☐	1.000		583049.67		P	0.6	
5	☐	1.000		580619.85		P	0.5	
6	☐	1.000		566670.30		P	1.6	



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		2422741.32		A	0.5	
2	☐	1.000		2414940.23		A	1.5	
3	☐	1.000		2421331.79		A	1.0	
4	☐	1.000		2418716.94		A	0.8	
5	☐	1.000		2384968.85		A	1.3	
6	☐	1.000		2322445.65		A	0.4	

Calibration for 326_ICV.d



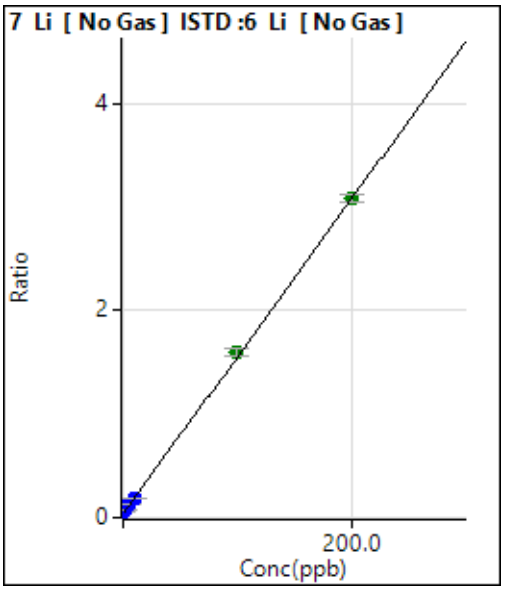
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		1994133.62		A	2.4	
2	☐	1.000		2049351.38		A	1.2	
3	☐	1.000		2020907.89		A	1.3	
4	☐	1.000		2017920.75		A	0.9	
5	☐	1.000		1974805.18		A	1.6	
6	☐	1.000		1891599.03		A	1.2	

Calibration for 229_ICV.d

Batch Folder: D:\Agilent\ICPMH\1\DATA\091222A.b\
Analysis File: 091222A.batch.bin
DA Date-Time: 09/12/2022 19:55:29
Calibration Title:
Calibration Method: External Calibration
VIS Interpolation Fit:

Level	Standard Data File	Sample Name	Acq. Date-Time
1	222CALB.d	CAL BLK	09/12/2022 19:41:51
2	223CALS.d	2/10/200	09/12/2022 19:43:44
3	224CALS.d	5/25/500	09/12/2022 19:45:37
4	225CALS.d	10/50/100	09/12/2022 19:47:30
5	226CALS.d	100/500/10K	09/12/2022 19:49:22
6	227CALS.d	200/1000/20K	09/12/2022 19:51:10

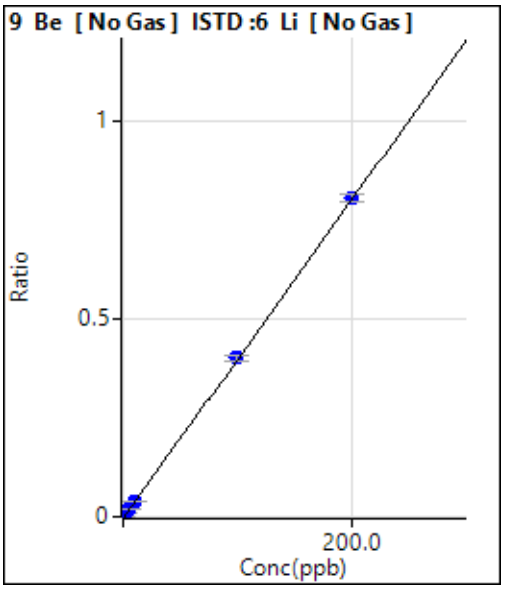
Calibration for 229_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	38584.48	0.0528	P	2.8	
2	☐	2.000	1.781	57404.90	0.0799	P	1.0	-11.0
3	☐	5.000	4.666	87018.91	0.1238	P	4.3	-6.7
4	☐	10.000	9.153	136793.26	0.1921	P	1.7	-8.5
5	☐	100.000	101.520	1096439.80	1.5974	A	4.1	1.5
6	☐	200.000	199.293	2083001.79	3.0849	A	2.5	-0.4

y = 0.0152 * x + 0.0528
R = 0.9999
DL = 0.2914 ppb
BEC = 3.474 ppb

Weight: <None>
Min Conc: <None>

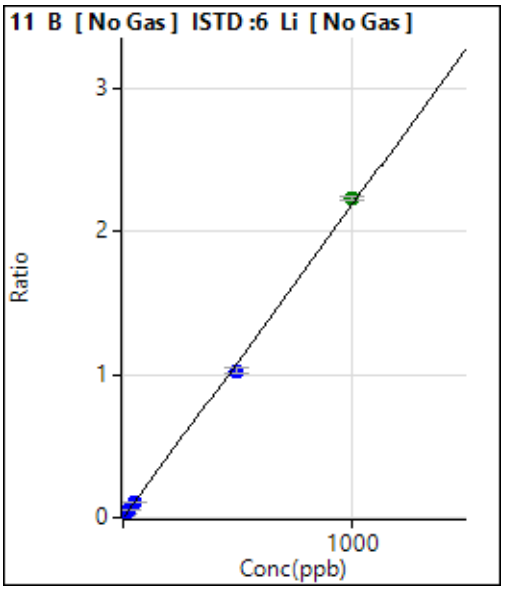


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	3.33	0.0000	P	86.6	
2	☐	2.000	1.908	5522.80	0.0077	P	3.3	-4.6
3	☐	5.000	4.817	13626.67	0.0194	P	7.0	-3.7
4	☐	10.000	9.527	27333.27	0.0384	P	1.4	-4.7
5	☐	100.000	99.623	275467.83	0.4013	P	3.5	-0.4
6	☐	200.000	200.218	544532.75	0.8065	P	3.0	0.1

y = 0.0040 * x + 4.5281E-006
R = 1.0000
DL = 0.002922 ppb
BEC = 0.001124 ppb

Weight: <None>
Min Conc: <None>

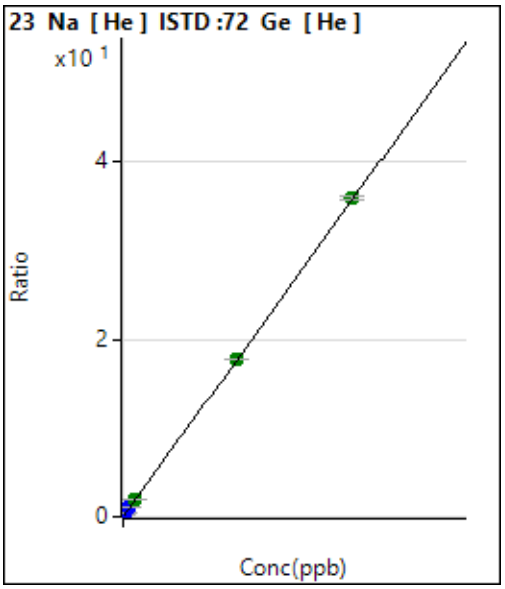
Calibration for 229_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	5807.92	0.0080	P	7.1	
2	☐	10.000	8.817	19565.35	0.0272	P	1.5	-11.8
3	☐	25.000	22.658	40393.00	0.0575	P	6.3	-9.4
4	☐	50.000	44.890	75587.31	0.1062	P	3.3	-10.2
5	☐	500.000	464.622	703114.29	1.0244	P	4.1	-7.1
6	☐	1000.000	1018.015	1509304.67	2.2350	A	1.5	1.8

y = 0.0022 * x + 0.0080
R = 0.9992
DL = 0.7728 ppb
BEC = 3.638 ppb

Weight: <None>
Min Conc: <None>

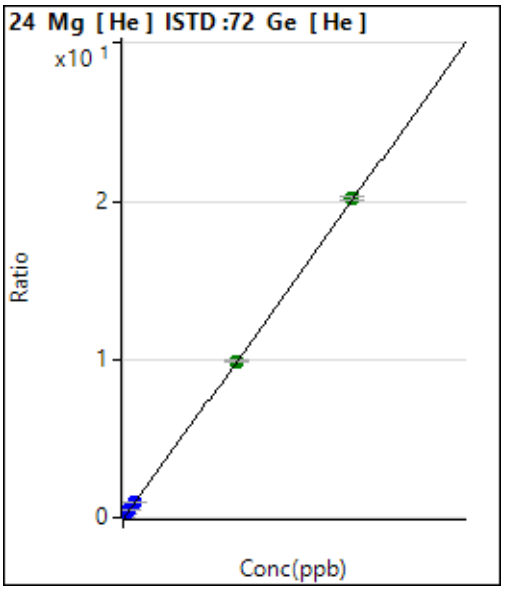


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	101460.51	0.1798	P	1.2	
2	☐	200.000	199.138	301016.16	0.5346	P	0.7	-0.4
3	☐	500.000	489.149	595424.65	1.0513	P	1.5	-2.2
4	☐	1000.000	1031.638	1127597.41	2.0178	A	1.7	3.2
5	☐	10000.00	9872.421	10101301.72	17.7686	A	0.6	-1.3
6	☐	20000.00	20062.48	19415260.96	35.9233	A	1.3	0.3

y = 0.0018 * x + 0.1798
R = 1.0000
DL = 3.686 ppb
BEC = 100.9 ppb

Weight: <None>
Min Conc: <None>

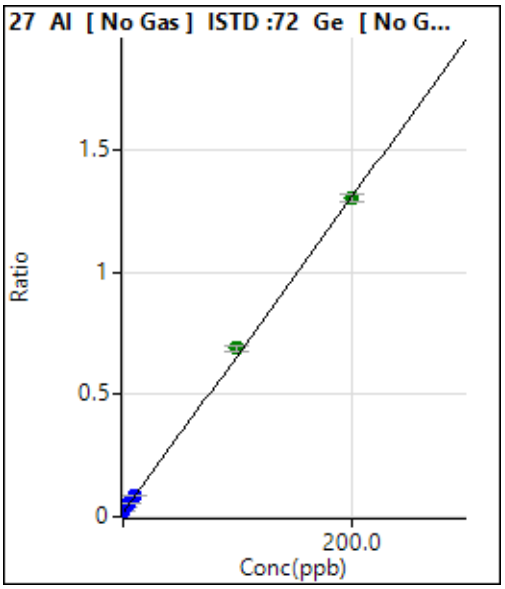
Calibration for 229_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	753.37	0.0013	P	8.7	
2	☐	200.000	196.830	112206.00	0.1993	P	1.3	-1.6
3	☐	500.000	483.827	276311.74	0.4879	P	1.9	-3.2
4	☐	1000.000	975.981	549212.17	0.9828	P	1.5	-2.4
5	☐	10000.00	9844.478	5628533.25	9.9008	A	0.8	-1.6
6	☐	20000.00	20079.39	10914314.42	20.1929	A	1.0	0.4

y = 0.0010 * x + 0.0013
R = 1.0000
DL = 0.3452 ppb
BEC = 1.328 ppb

Weight: <None>
Min Conc: <None>

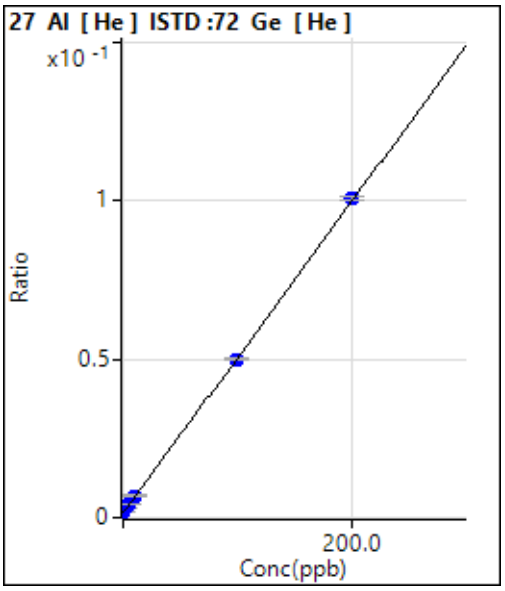


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	49066.68	0.0243	P	3.3	
2	☐	2.000	1.952	74143.64	0.0369	P	0.6	-2.4
3	☐	5.000	4.713	109522.05	0.0547	P	1.7	-5.7
4	☐	10.000	9.762	172630.98	0.0873	P	0.3	-2.4
5	☐	100.000	102.995	1354334.77	0.6893	A	3.4	3.0
6	☐	200.000	198.522	2521692.51	1.3061	A	2.0	-0.7

y = 0.0065 * x + 0.0243
R = 0.9998
DL = 0.3767 ppb
BEC = 3.758 ppb

Weight: <None>
Min Conc: <None>

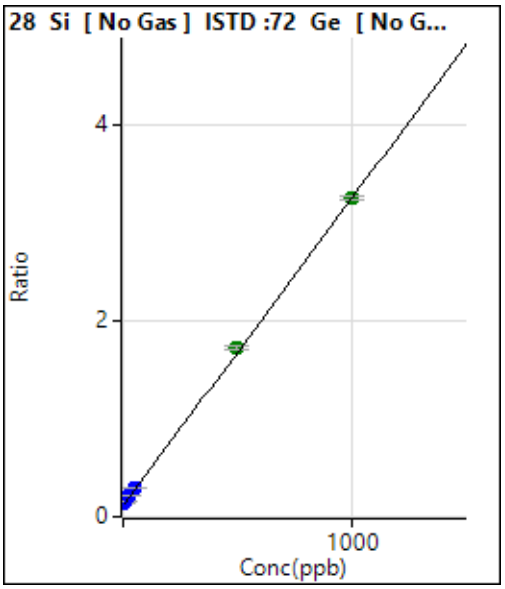
Calibration for 229_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1080.06	0.0019	P	8.5	
2	☐	2.000	2.201	1686.81	0.0030	P	12.3	10.0
3	☐	5.000	5.041	2486.94	0.0044	P	7.0	0.8
4	☐	10.000	10.070	3833.92	0.0069	P	6.6	0.7
5	☐	100.000	97.819	28422.71	0.0500	P	0.4	-2.2
6	☐	200.000	201.084	54459.97	0.1008	P	0.9	0.5

y = 4.9155E-004 * x + 0.0019
R = 0.9999
DL = 0.9968 ppb
BEC = 3.891 ppb

Weight: <None>
Min Conc: <None>

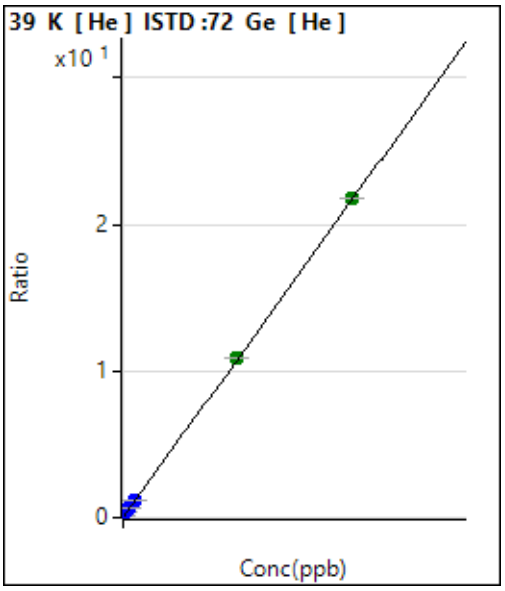


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	263524.94	0.1303	P	0.7	
2	☐	10.000	11.317	333458.37	0.1658	P	0.2	13.2
3	☐	25.000	24.890	417341.54	0.2084	P	1.7	-0.4
4	☐	50.000	53.357	588704.64	0.2977	P	4.0	6.7
5	☐	500.000	506.932	3381313.39	1.7207	A	2.2	1.4
6	☐	1000.000	996.356	6286684.70	3.2562	A	0.8	-0.4

y = 0.0031 * x + 0.1303
R = 1.0000
DL = 0.8927 ppb
BEC = 41.54 ppb

Weight: <None>
Min Conc: <None>

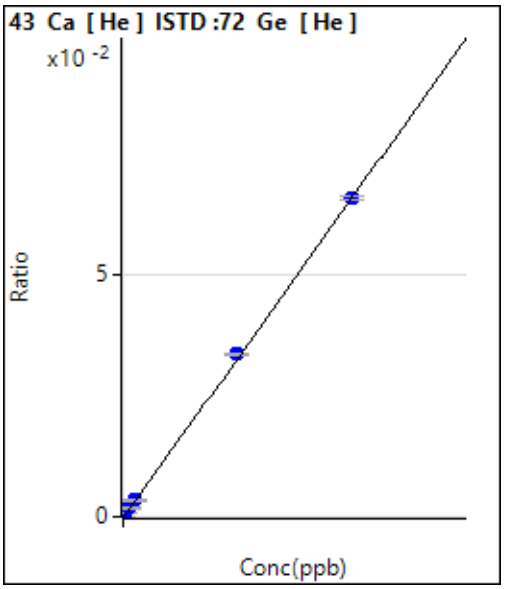
Calibration for 229_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	70664.02	0.1252	P	1.6	
2	☐	200.000	198.880	191662.54	0.3404	P	0.6	-0.6
3	☐	500.000	496.010	374847.63	0.6618	P	1.8	-0.8
4	☐	1000.000	1005.155	677662.57	1.2127	P	1.8	0.5
5	☐	10000.00	9949.288	6190581.99	10.8890	A	0.8	-0.5
6	☐	20000.00	20025.20	11777365.24	21.7897	A	0.6	0.1

y = 0.0011 * x + 0.1252
R = 1.0000
DL = 5.549 ppb
BEC = 115.7 ppb

Weight: <None>
Min Conc: <None>

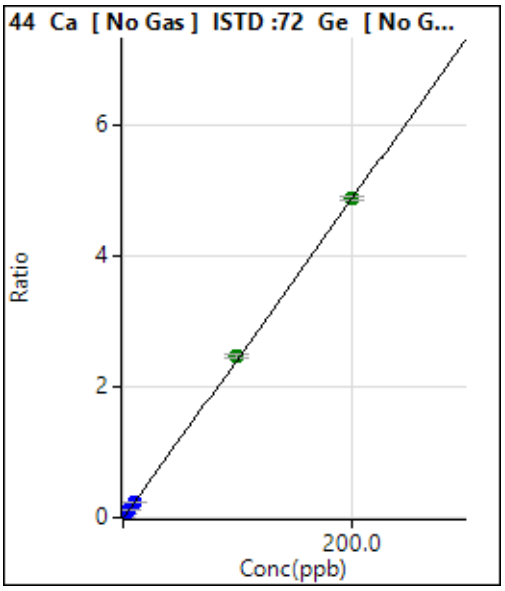


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	20.00	0.0000	P	50.8	
2	☐	200.000	220.197	430.01	0.0008	P	27.1	10.1
3	☐	500.000	532.244	1016.72	0.0018	P	10.2	6.4
4	☐	1000.000	1018.412	1903.50	0.0034	P	4.4	1.8
5	☐	10000.00	10149.32	19110.26	0.0336	P	0.7	1.5
6	☐	20000.00	19923.41	35646.51	0.0660	P	1.6	-0.4

y = 3.3086E-006 * x + 3.5544E-005
R = 1.0000
DL = 16.36 ppb
BEC = 10.74 ppb

Weight: <None>
Min Conc: <None>

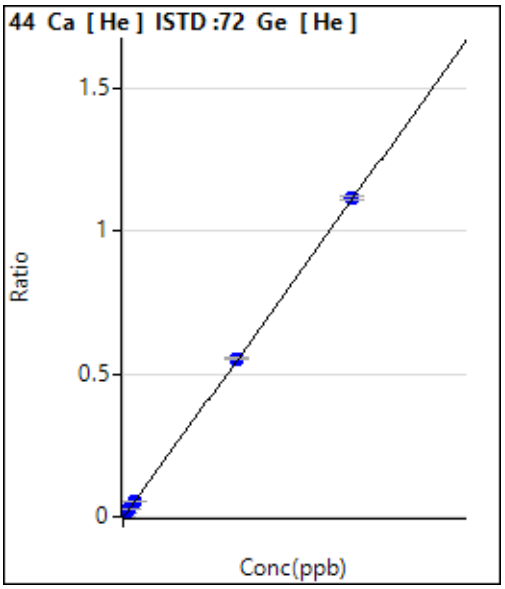
Calibration for 229_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	19020.09	0.0094	P	0.5	
2	☐	2.000	1.887	111535.64	0.0555	P	1.1	-5.6
3	☐	5.000	4.832	255027.59	0.1274	P	1.2	-3.4
4	☐	10.000	9.685	486068.21	0.2458	P	1.0	-3.2
5	☐	100.000	101.041	4864956.18	2.4757	A	2.0	1.0
6	☐	200.000	199.501	9419312.78	4.8790	A	1.6	-0.2

y = 0.0244 * x + 0.0094
R = 1.0000
DL = 0.006061 ppb
BEC = 0.3854 ppb

Weight: <None>
Min Conc: <None>

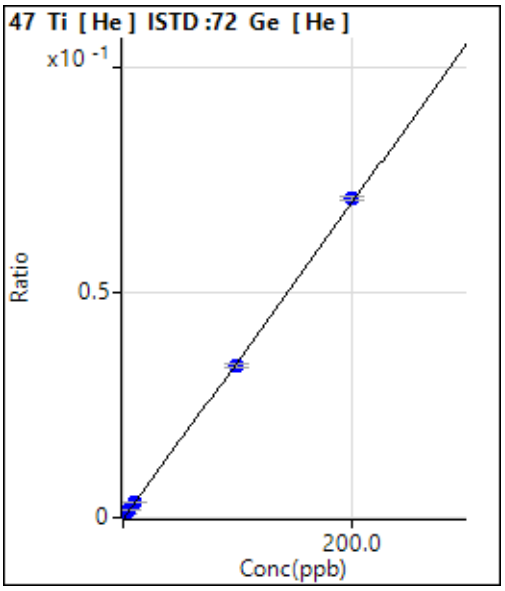


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	586.69	0.0010	P	21.6	
2	☐	200.000	192.759	6631.72	0.0118	P	2.0	-3.6
3	☐	500.000	487.919	15986.23	0.0282	P	1.3	-2.4
4	☐	1000.000	999.274	31690.18	0.0567	P	0.5	-0.1
5	☐	10000.00	9939.068	315315.31	0.5546	P	0.3	-0.6
6	☐	20000.00	20030.87	603597.06	1.1167	P	0.6	0.2

y = 5.5699E-005 * x + 0.0010
R = 1.0000
DL = 12.1 ppb
BEC = 18.67 ppb

Weight: <None>
Min Conc: <None>

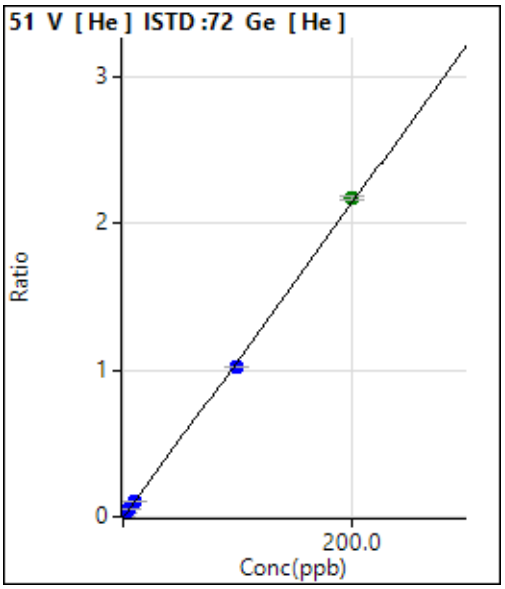
Calibration for 229_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	0.00	0.0000	P		
2	☐	2.000	2.040	403.35	0.0007	P	13.8	2.0
3	☐	5.000	4.893	973.39	0.0017	P	8.6	-2.1
4	☐	10.000	9.547	1873.49	0.0034	P	0.7	-4.5
5	☐	100.000	96.057	19170.19	0.0337	P	1.9	-3.9
6	☐	200.000	201.996	38330.48	0.0709	P	0.7	1.0

y = 3.5108E-004 * x + 0.0000E+000
R = 0.9997
DL = 0 ppb
BEC = 0 ppb

Weight: <None>
Min Conc: <None>

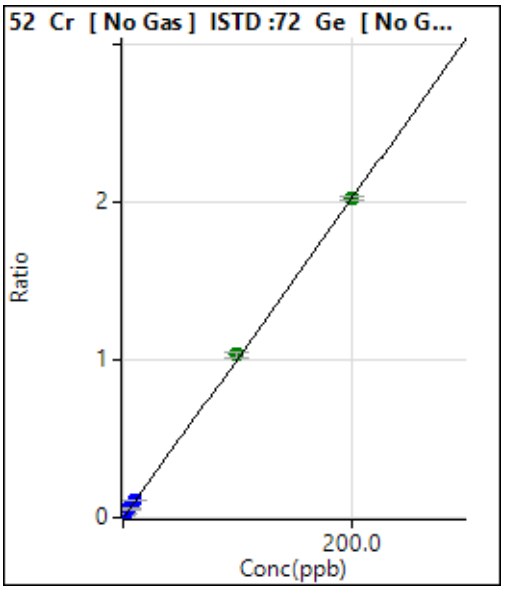


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	2215.75	0.0039	P	6.5	
2	☐	2.000	1.902	13671.29	0.0243	P	1.6	-4.9
3	☐	5.000	4.659	30470.48	0.0538	P	0.9	-6.8
4	☐	10.000	9.443	58671.46	0.1050	P	1.6	-5.6
5	☐	100.000	95.128	581023.45	1.0220	P	0.6	-4.9
6	☐	200.000	202.474	1173351.76	2.1709	A	0.7	1.2

y = 0.0107 * x + 0.0039
R = 0.9996
DL = 0.07109 ppb
BEC = 0.367 ppb

Weight: <None>
Min Conc: <None>

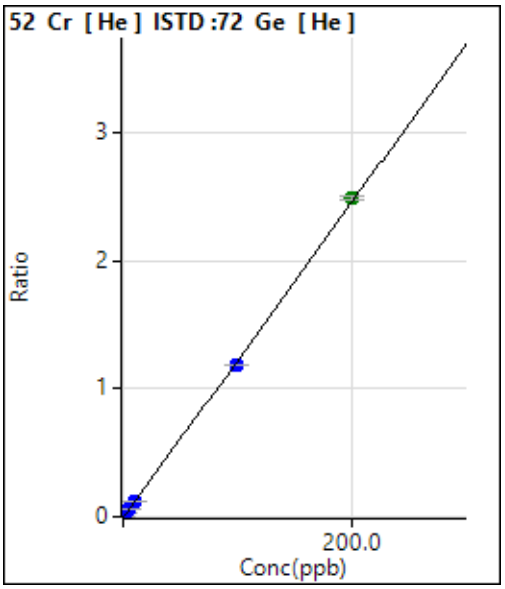
Calibration for 229_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	14164.24	0.0070	P	1.9	
2	☐	2.000	1.906	52835.38	0.0263	P	2.7	-4.7
3	☐	5.000	4.779	110788.88	0.0553	P	2.1	-4.4
4	☐	10.000	9.794	209680.19	0.1060	P	0.7	-2.1
5	☐	100.000	101.546	2031154.97	1.0338	A	3.6	1.5
6	☐	200.000	199.244	3903102.54	2.0217	A	1.6	-0.4

y = 0.0101 * x + 0.0070
R = 1.0000
DL = 0.03884 ppb
BEC = 0.6927 ppb

Weight: <None>
Min Conc: <None>

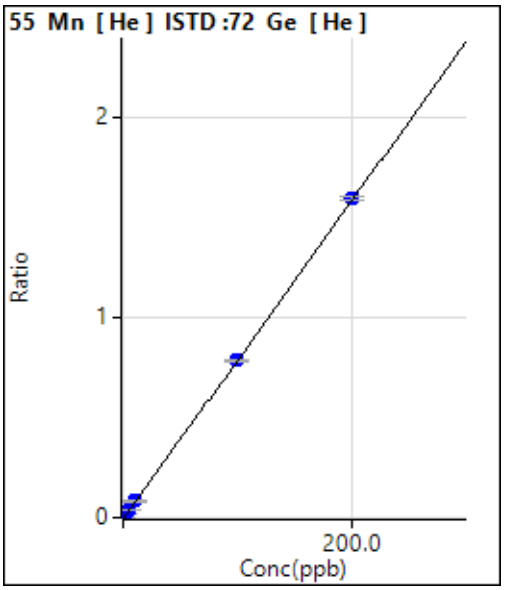


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1030.06	0.0018	P	1.7	
2	☐	2.000	1.915	14331.11	0.0254	P	4.2	-4.3
3	☐	5.000	4.722	34035.95	0.0601	P	1.7	-5.6
4	☐	10.000	9.696	67881.12	0.1215	P	1.8	-3.0
5	☐	100.000	96.399	677261.71	1.1913	P	0.4	-3.6
6	☐	200.000	201.824	1346920.19	2.4922	A	1.4	0.9

y = 0.0123 * x + 0.0018
R = 0.9998
DL = 0.00768 ppb
BEC = 0.1479 ppb

Weight: <None>
Min Conc: <None>

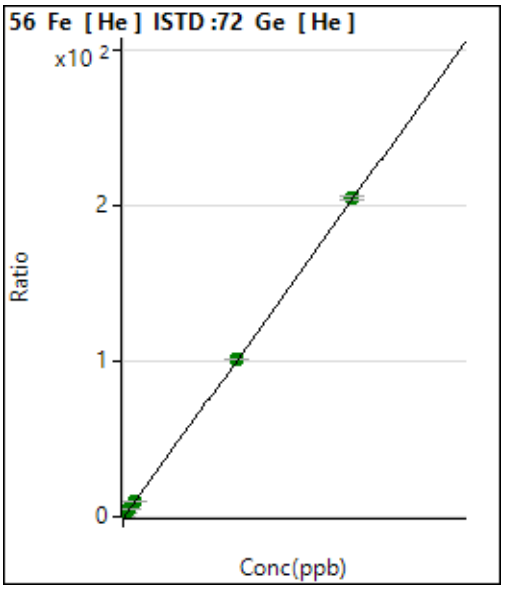
Calibration for 229_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	310.01	0.0005	P	12.5	
2	☐	2.000	2.097	9680.27	0.0172	P	0.8	4.8
3	☐	5.000	4.958	22602.22	0.0399	P	1.6	-0.8
4	☐	10.000	10.230	45686.65	0.0818	P	1.3	2.3
5	☐	100.000	98.660	445506.36	0.7837	P	1.1	-1.3
6	☐	200.000	200.659	861157.33	1.5933	P	0.7	0.3

y = 0.0079 * x + 5.4915E-004
R = 1.0000
DL = 0.02595 ppb
BEC = 0.06918 ppb

Weight: <None>
Min Conc: <None>

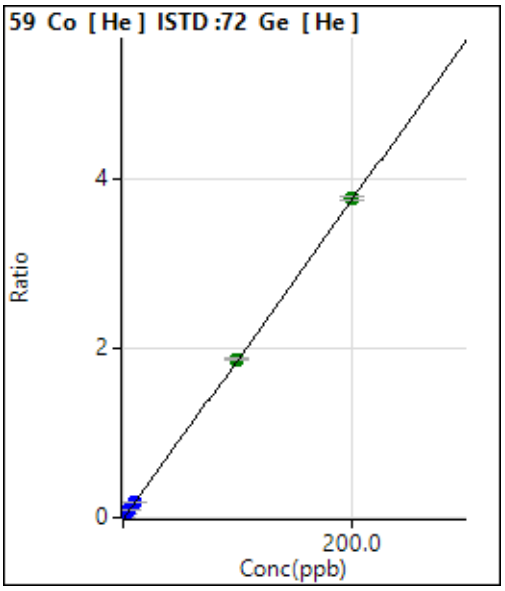


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	13593.72	0.0241	P	1.4	
2	☐	200.000	211.324	1231450.94	2.1870	A	0.9	5.7
3	☐	500.000	515.326	3000945.38	5.2984	A	1.6	3.1
4	☐	1000.000	1013.171	5808367.00	10.3938	A	1.9	1.3
5	☐	10000.00	9899.312	57612494.14	101.342	A	0.7	-1.0
6	☐	20000.00	20049.18	110922035.0	205.225	A	1.0	0.2

y = 0.0102 * x + 0.0241
R = 1.0000
DL = 0.09626 ppb
BEC = 2.353 ppb

Weight: <None>
Min Conc: <None>

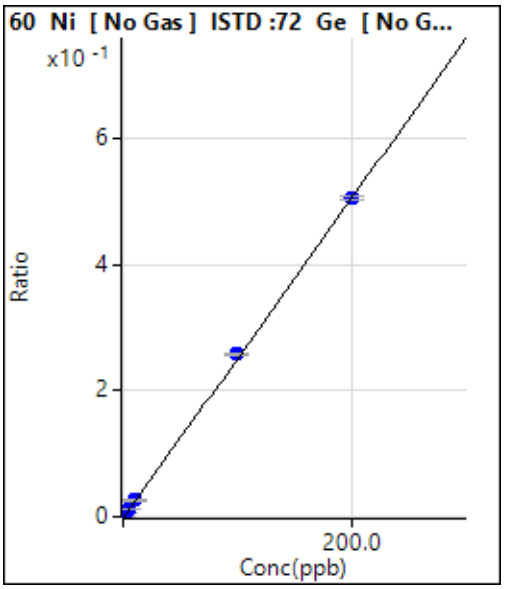
Calibration for 229_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	36.67	0.0001	P	56.0	
2	☐	2.000	2.018	21407.09	0.0380	P	2.1	0.9
3	☐	5.000	4.961	52866.03	0.0934	P	3.2	-0.8
4	☐	10.000	10.053	105690.77	0.1891	P	1.3	0.5
5	☐	100.000	99.410	1062803.42	1.8695	A	1.2	-0.6
6	☐	200.000	200.293	2035730.39	3.7665	A	1.0	0.1

y = 0.0188 * x + 6.4829E-005
R = 1.0000
DL = 0.005795 ppb
BEC = 0.003447 ppb

Weight: <None>
Min Conc: <None>

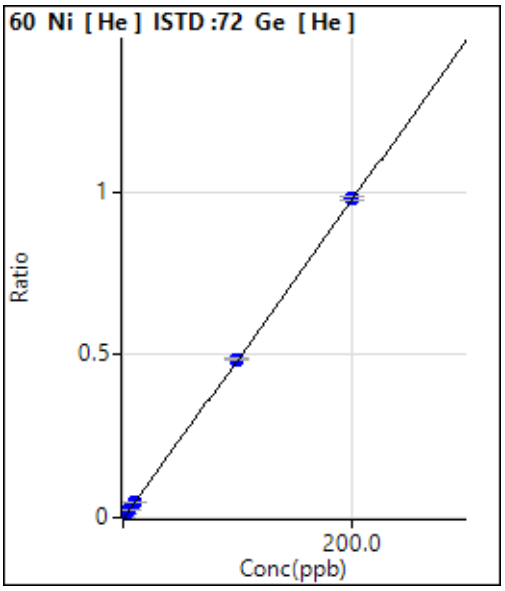


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	453.35	0.0002	P	11.7	
2	☐	2.000	2.029	10791.13	0.0054	P	2.1	1.4
3	☐	5.000	4.978	25714.48	0.0128	P	3.3	-0.4
4	☐	10.000	10.228	51708.10	0.0262	P	3.0	2.3
5	☐	100.000	101.628	506729.34	0.2579	P	1.8	1.6
6	☐	200.000	199.175	975236.78	0.5051	P	1.2	-0.4

y = 0.0025 * x + 2.2427E-004
R = 1.0000
DL = 0.03098 ppb
BEC = 0.08847 ppb

Weight: <None>
Min Conc: <None>

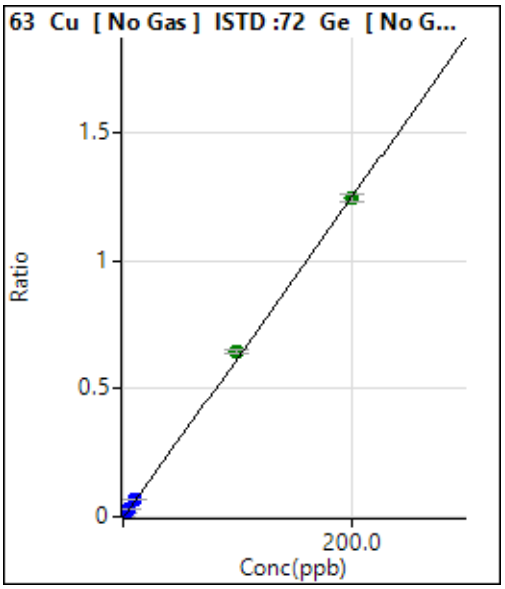
Calibration for 229_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	246.67	0.0004	P	28.4	
2	☐	2.000	1.934	5571.23	0.0099	P	7.0	-3.3
3	☐	5.000	4.885	13780.51	0.0243	P	0.6	-2.3
4	☐	10.000	9.896	27294.21	0.0488	P	0.7	-1.0
5	☐	100.000	99.446	276725.96	0.4868	P	1.1	-0.6
6	☐	200.000	200.286	529663.97	0.9800	P	0.9	0.1

y = 0.0049 * x + 4.3690E-004
R = 1.0000
DL = 0.07624 ppb
BEC = 0.08933 ppb

Weight: <None>
Min Conc: <None>

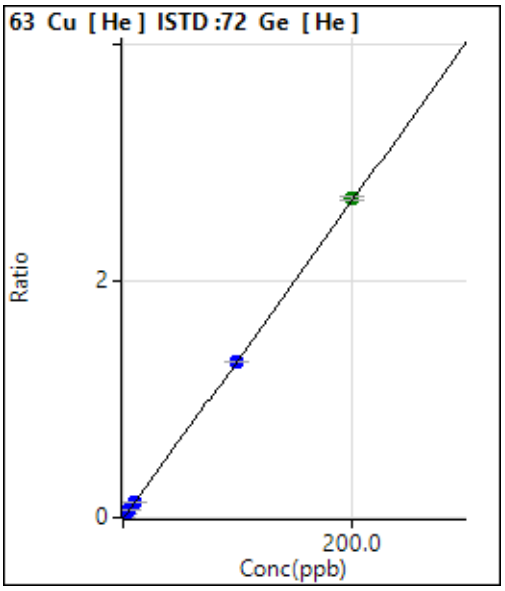


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	2040.19	0.0010	P	9.2	
2	☐	2.000	1.981	26950.38	0.0134	P	3.2	-1.0
3	☐	5.000	4.862	62949.32	0.0314	P	0.7	-2.8
4	☐	10.000	10.102	126999.16	0.0642	P	1.4	1.0
5	☐	100.000	102.711	1264953.39	0.6438	A	2.5	2.7
6	☐	200.000	198.643	2401678.03	1.2441	A	2.5	-0.7

y = 0.0063 * x + 0.0010
R = 0.9999
DL = 0.04442 ppb
BEC = 0.1612 ppb

Weight: <None>
Min Conc: <None>

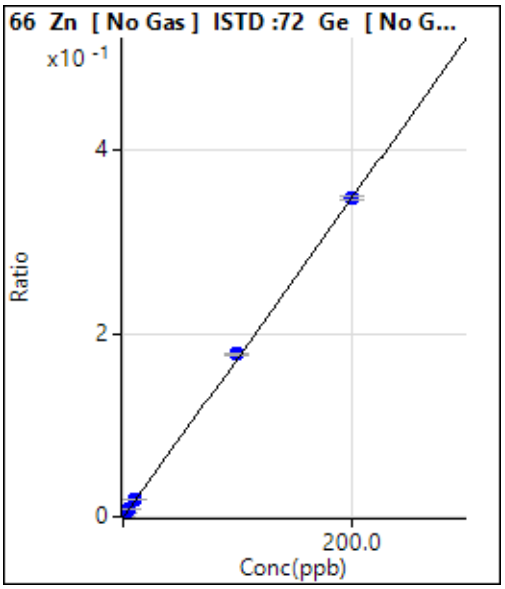
Calibration for 229_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	990.05	0.0018	P	12.3	
2	☐	2.000	1.999	16109.76	0.0286	P	1.0	-0.1
3	☐	5.000	4.801	37528.75	0.0663	P	2.3	-4.0
4	☐	10.000	9.945	75659.77	0.1354	P	1.2	-0.5
5	☐	100.000	98.066	750029.50	1.3193	P	0.5	-1.9
6	☐	200.000	200.975	1460378.63	2.7020	A	1.3	0.5

y = 0.0134 * x + 0.0018
R = 0.9999
DL = 0.04816 ppb
BEC = 0.1306 ppb

Weight: <None>
Min Conc: <None>

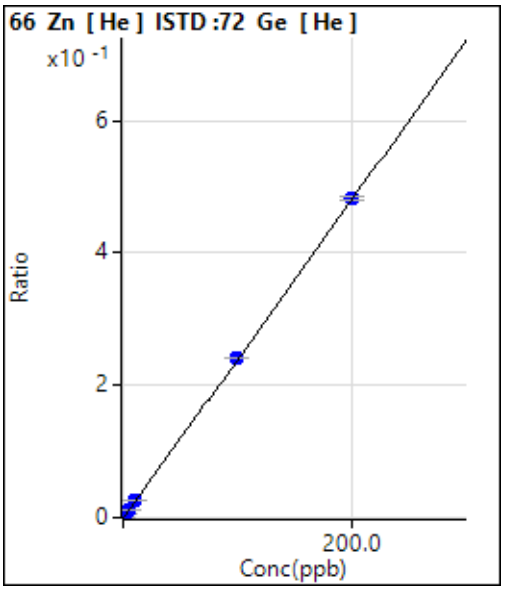


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1416.77	0.0007	P	7.0	
2	☐	2.000	1.888	8029.19	0.0040	P	3.3	-5.6
3	☐	5.000	4.823	18242.47	0.0091	P	1.6	-3.5
4	☐	10.000	10.013	35914.60	0.0182	P	1.2	0.1
5	☐	100.000	101.530	349323.21	0.1778	P	1.6	1.5
6	☐	200.000	199.240	672142.07	0.3481	P	0.9	-0.4

y = 0.0017 * x + 7.0043E-004
R = 1.0000
DL = 0.08486 ppb
BEC = 0.4017 ppb

Weight: <None>
Min Conc: <None>

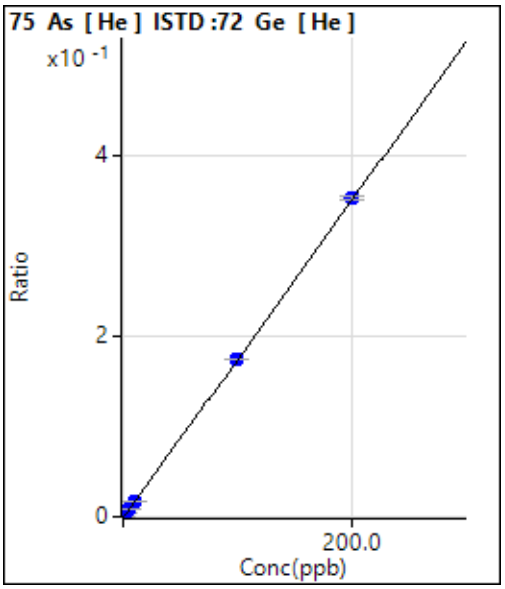
Calibration for 229_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	616.69	0.0011	P	2.9	
2	☐	2.000	1.797	3050.39	0.0054	P	7.1	-10.2
3	☐	5.000	4.642	6945.23	0.0123	P	4.6	-7.2
4	☐	10.000	10.057	14137.55	0.0253	P	1.2	0.6
5	☐	100.000	99.836	137215.05	0.2414	P	0.4	-0.2
6	☐	200.000	200.090	260862.19	0.4826	P	1.0	0.0

y = 0.0024 * x + 0.0011
R = 1.0000
DL = 0.0389 ppb
BEC = 0.454 ppb

Weight: <None>
Min Conc: <None>

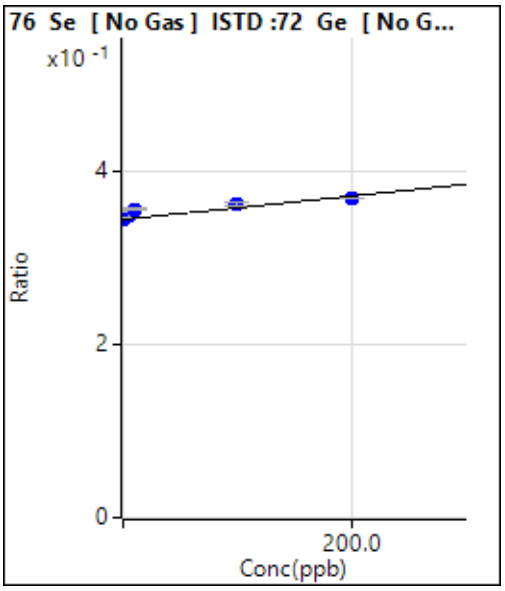


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	116.67	0.0002	P	14.8	
2	☐	2.000	1.966	2060.17	0.0037	P	1.9	-1.7
3	☐	5.000	4.809	4898.69	0.0086	P	1.2	-3.8
4	☐	10.000	9.807	9740.21	0.0174	P	2.3	-1.9
5	☐	100.000	98.704	98626.19	0.1735	P	0.3	-1.3
6	☐	200.000	200.663	190513.52	0.3525	P	0.8	0.3

y = 0.0018 * x + 2.0672E-004
R = 1.0000
DL = 0.05222 ppb
BEC = 0.1178 ppb

Weight: <None>
Min Conc: <None>

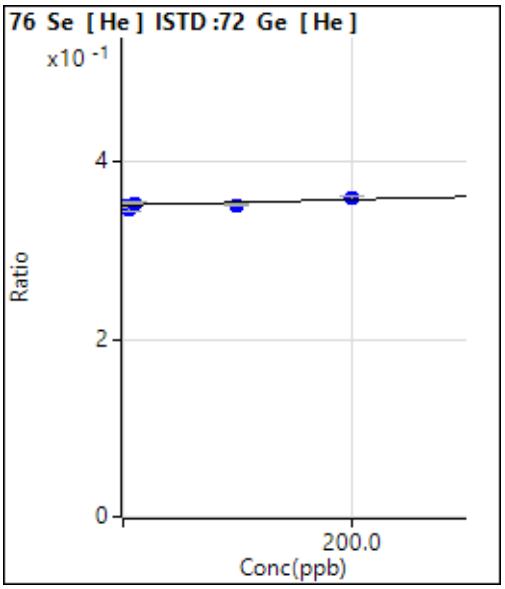
Calibration for 229_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	697468.64	0.3449	P	0.4	
2	☐	2.000	34.688	703100.14	0.3497	P	0.4	1634.4
3	☐	5.000	39.679	701538.58	0.3504	P	1.5	693.6
4	☐	10.000	86.716	705469.65	0.3568	P	1.0	767.2
5	☐	100.000	131.072	713048.79	0.3628	P	0.9	31.1
6	☐	200.000	179.434	713262.26	0.3694	P	0.3	-10.3

y = 1.3639E-004 * x + 0.3449
R = 0.9178
DL = 26.58 ppb
BEC = 2529 ppb

Weight: <None>
Min Conc: <None>

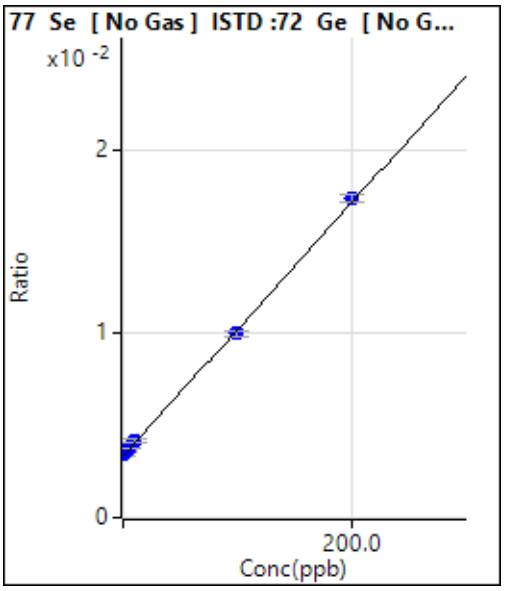


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	198344.57	0.3515	P	1.1	
2	☐	2.000	-44.269	197111.29	0.3501	P	0.5	-2313.
3	☐	5.000	-163.814	196116.05	0.3462	P	1.2	-3376.
4	☐	10.000	67.642	197627.97	0.3536	P	0.6	576.4
5	☐	100.000	-7.526	199664.73	0.3512	P	0.6	-107.5
6	☐	200.000	255.564	194354.96	0.3596	P	0.9	27.8

y = 3.1843E-005 * x + 0.3515
R = 0.7818
DL = 352 ppb
BEC = 1.104E+04 ppb

Weight: <None>
Min Conc: <None>

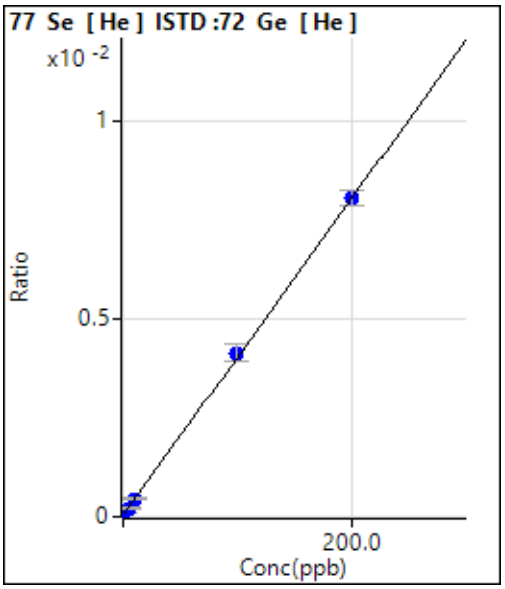
Calibration for 229_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	6968.62	0.0034	P	4.6	
2	☐	2.000	1.742	7172.03	0.0036	P	2.6	-12.9
3	☐	5.000	5.130	7608.97	0.0038	P	0.5	2.6
4	☐	10.000	9.919	8165.93	0.0041	P	5.1	-0.8
5	☐	100.000	95.368	19644.63	0.0100	P	2.6	-4.6
6	☐	200.000	202.320	33475.32	0.0173	P	2.6	1.2

y = 6.8671E-005 * x + 0.0034
R = 0.9996
DL = 6.924 ppb
BEC = 50.2 ppb

Weight: <None>
Min Conc: <None>

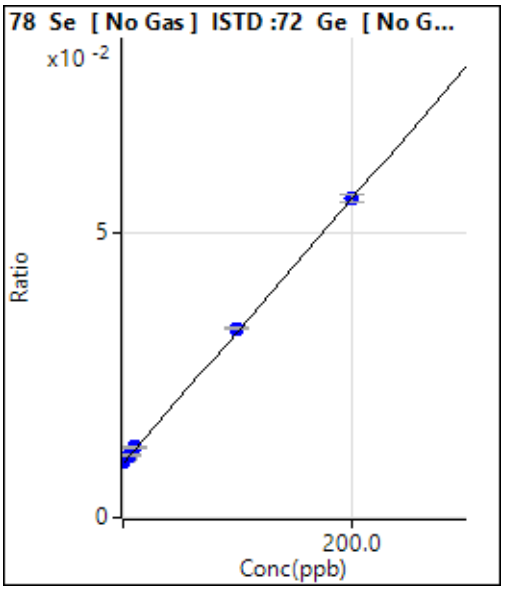


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	46.67	0.0001	P	11.6	
2	☐	2.000	1.487	80.00	0.0001	P	57.2	-25.6
3	☐	5.000	3.386	123.33	0.0002	P	17.7	-32.3
4	☐	10.000	9.115	250.01	0.0004	P	9.6	-8.8
5	☐	100.000	101.547	2353.58	0.0041	P	10.9	1.5
6	☐	200.000	199.316	4350.77	0.0081	P	4.9	-0.3

y = 3.9975E-005 * x + 8.2637E-005
R = 0.9999
DL = 0.7218 ppb
BEC = 2.067 ppb

Weight: <None>
Min Conc: <None>

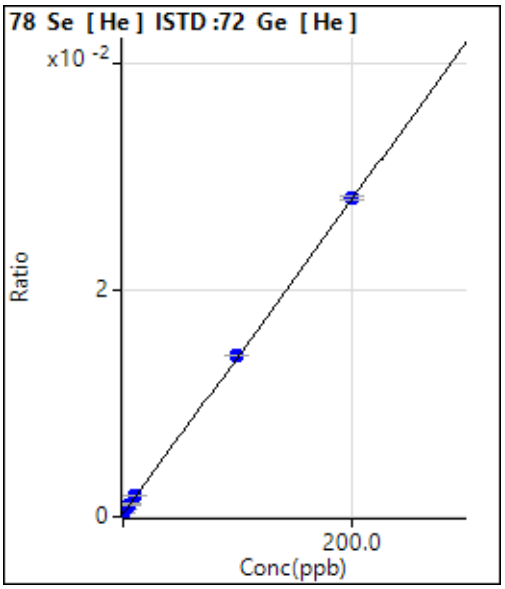
Calibration for 229_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	19838.24	0.0098	P	0.9	
2	☐	2.000	2.329	20809.67	0.0104	P	2.6	16.4
3	☐	5.000	4.913	21921.43	0.0109	P	3.9	-1.7
4	☐	10.000	11.019	24449.15	0.0124	P	3.0	10.2
5	☐	100.000	101.034	65254.30	0.0332	P	1.5	1.0
6	☐	200.000	199.431	108084.71	0.0560	P	2.5	-0.3

y = 2.3155E-004 * x + 0.0098
R = 1.0000
DL = 1.205 ppb
BEC = 42.37 ppb

Weight: <None>
Min Conc: <None>

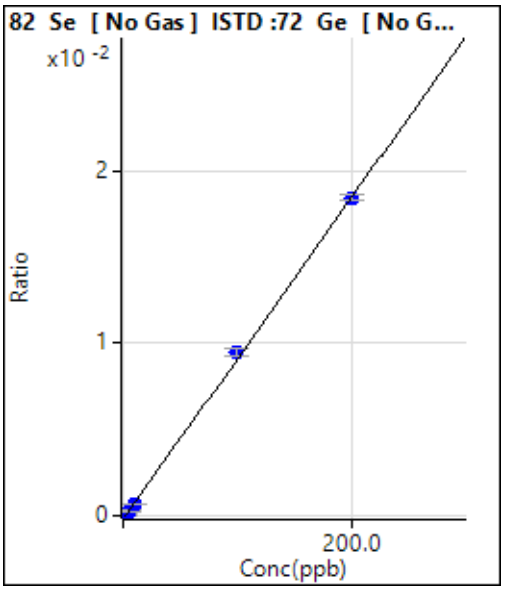


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	215.33	0.0004	P	10.2	
2	☐	2.000	1.895	362.67	0.0006	P	14.5	-5.2
3	☐	5.000	5.117	617.35	0.0011	P	6.0	2.3
4	☐	10.000	10.477	1024.04	0.0018	P	5.3	4.8
5	☐	100.000	99.741	8072.44	0.0142	P	0.8	-0.3
6	☐	200.000	200.104	15191.23	0.0281	P	1.5	0.1

y = 1.3854E-004 * x + 3.8142E-004
R = 1.0000
DL = 0.8448 ppb
BEC = 2.753 ppb

Weight: <None>
Min Conc: <None>

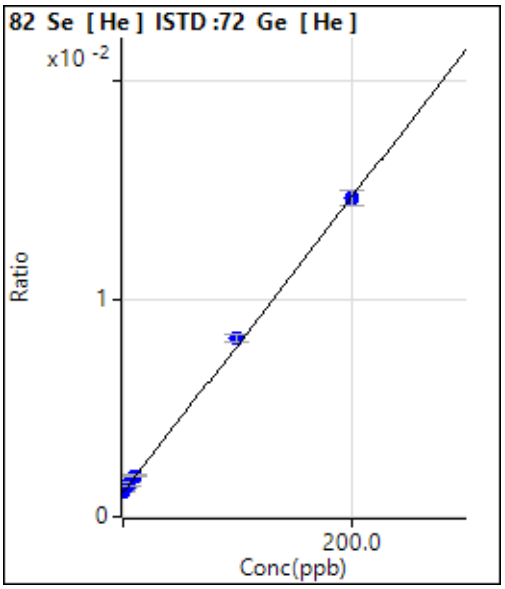
Calibration for 229_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	-188.85	-0.0001	P	-130.	
2	☐	2.000	1.295	53.57	0.0000	P	366.9	-35.3
3	☐	5.000	3.669	496.98	0.0002	P	42.1	-26.6
4	☐	10.000	8.767	1432.34	0.0007	P	3.4	-12.3
5	☐	100.000	102.704	18633.86	0.0095	P	4.4	2.7
6	☐	200.000	198.750	35604.83	0.0184	P	1.5	-0.6

y = 9.3263E-005 * x - 9.3474E-005
R = 0.9998
DL = 3.91 ppb
BEC = -1.002 ppb

Weight: <None>
Min Conc: <None>

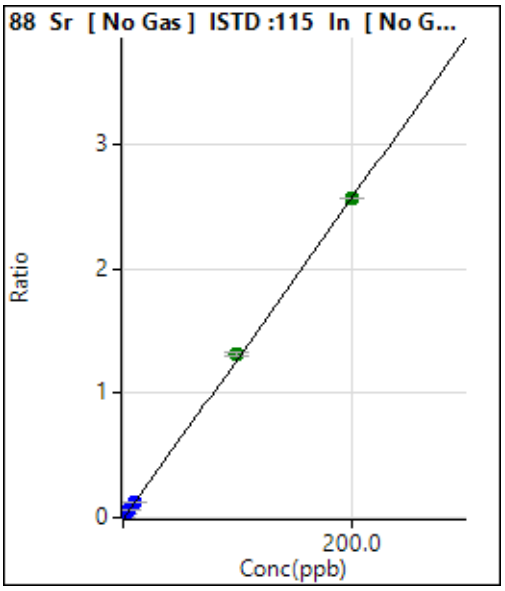


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	670.03	0.0012	P	7.7	
2	☐	2.000	2.220	753.37	0.0013	P	7.2	11.0
3	☐	5.000	4.617	850.04	0.0015	P	13.4	-7.7
4	☐	10.000	10.382	1056.73	0.0019	P	5.9	3.8
5	☐	100.000	103.032	4644.24	0.0082	P	4.0	3.0
6	☐	200.000	198.472	7912.45	0.0146	P	4.7	-0.8

y = 6.7752E-005 * x + 0.0012
R = 0.9998
DL = 4.068 ppb
BEC = 17.53 ppb

Weight: <None>
Min Conc: <None>

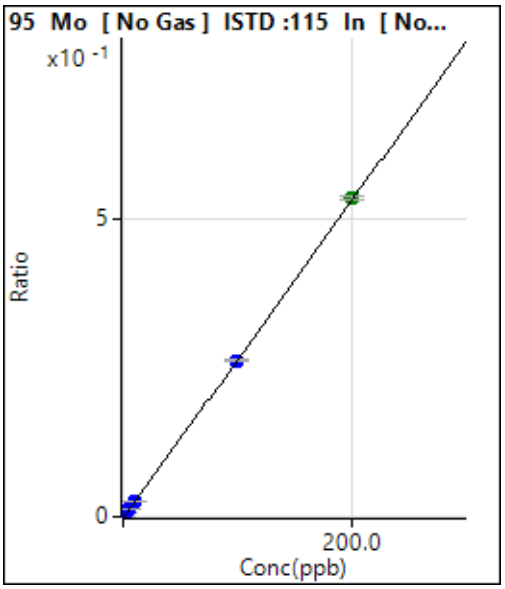
Calibration for 229_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1623.46	0.0007	P	5.8	
2	☐	2.000	1.915	60258.90	0.0254	P	1.0	-4.2
3	☐	5.000	4.842	147890.00	0.0632	P	1.2	-3.2
4	☐	10.000	9.815	296850.53	0.1274	P	0.4	-1.9
5	☐	100.000	102.139	3009732.04	1.3195	A	2.7	2.1
6	☐	200.000	198.945	5755242.00	2.5694	A	0.5	-0.5

y = 0.0129 * x + 6.9490E-004
R = 0.9999
DL = 0.009293 ppb
BEC = 0.05382 ppb

Weight: <None>
Min Conc: <None>

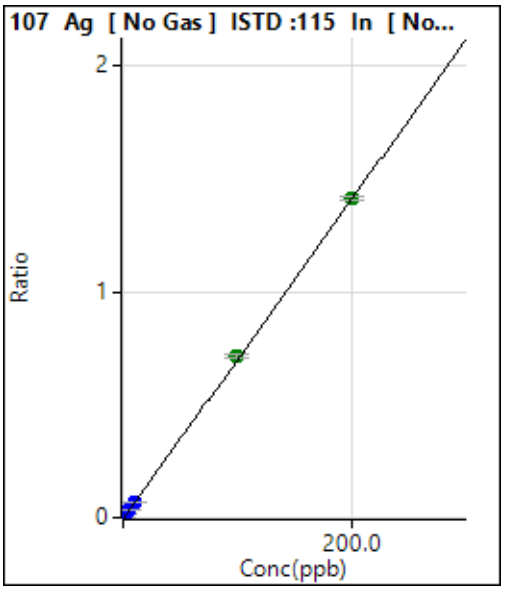


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	140.00	0.0001	P	21.6	
2	☐	2.000	1.847	11805.40	0.0050	P	0.7	-7.6
3	☐	5.000	4.731	29619.94	0.0127	P	2.7	-5.4
4	☐	10.000	9.587	59626.77	0.0256	P	0.7	-4.1
5	☐	100.000	98.478	598520.72	0.2624	P	2.1	-1.5
6	☐	200.000	200.790	1198097.98	0.5349	A	1.3	0.4

y = 0.0027 * x + 5.9942E-005
R = 1.0000
DL = 0.01459 ppb
BEC = 0.0225 ppb

Weight: <None>
Min Conc: <None>

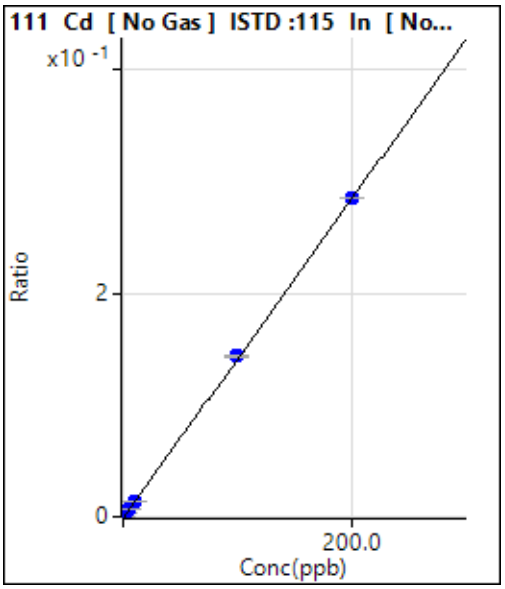
Calibration for 229_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	180.01	0.0001	P	16.0	
2	☐	2.000	1.902	32099.18	0.0135	P	1.5	-4.9
3	☐	5.000	4.872	80879.75	0.0346	P	0.5	-2.6
4	☐	10.000	9.822	162158.19	0.0696	P	1.7	-1.8
5	☐	100.000	100.627	1625427.94	0.7125	A	2.1	0.6
6	☐	200.000	199.700	3167018.81	1.4139	A	0.8	-0.2

y = 0.0071 * x + 7.7007E-005
R = 1.0000
DL = 0.005222 ppb
BEC = 0.01088 ppb

Weight: <None>
Min Conc: <None>

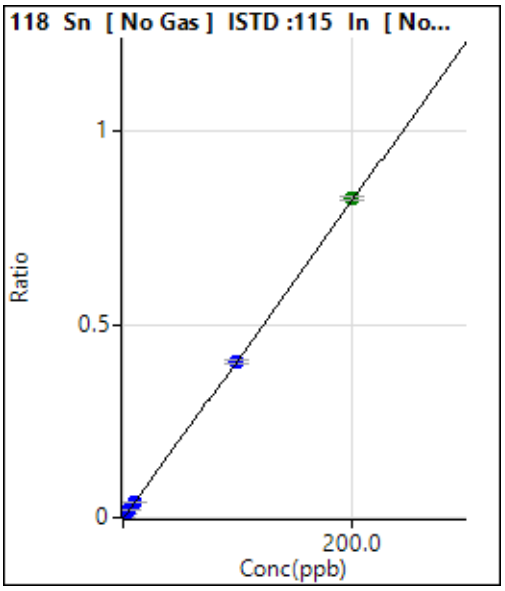


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	10.00	0.0000	P	173.2	
2	☐	2.000	1.955	6621.78	0.0028	P	5.6	-2.3
3	☐	5.000	4.707	15726.28	0.0067	P	2.7	-5.9
4	☐	10.000	9.767	32490.34	0.0139	P	0.8	-2.3
5	☐	100.000	100.693	327892.74	0.1437	P	1.7	0.7
6	☐	200.000	199.673	638385.67	0.2850	P	0.3	-0.2

y = 0.0014 * x + 4.3034E-006
R = 1.0000
DL = 0.01567 ppb
BEC = 0.003015 ppb

Weight: <None>
Min Conc: <None>

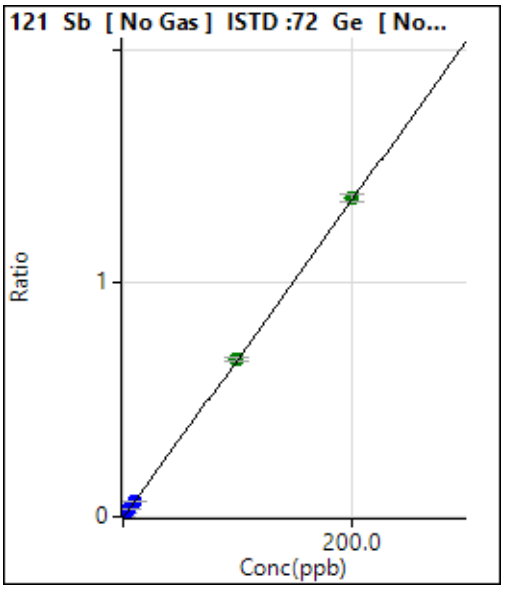
Calibration for 229_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	2080.20	0.0009	P	8.6	
2	☐	2.000	1.772	19364.61	0.0082	P	1.8	-11.4
3	☐	5.000	4.574	46040.94	0.0197	P	1.5	-8.5
4	☐	10.000	9.531	93272.73	0.0400	P	0.8	-4.7
5	☐	100.000	98.342	923500.79	0.4048	P	2.2	-1.7
6	☐	200.000	200.865	1850070.13	0.8259	A	1.4	0.4

y = 0.0041 * x + 8.9066E-004
R = 1.0000
DL = 0.05617 ppb
BEC = 0.2168 ppb

Weight: <None>
Min Conc: <None>

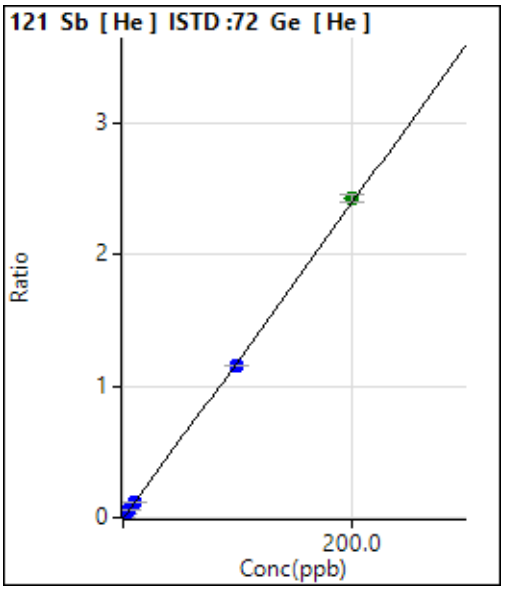


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	2366.92	0.0012	P	7.3	
2	☐	2.000	1.955	29092.56	0.0145	P	2.3	-2.2
3	☐	5.000	4.830	68103.07	0.0340	P	3.1	-3.4
4	☐	10.000	9.677	132433.74	0.0670	P	2.3	-3.2
5	☐	100.000	98.855	1323304.77	0.6734	A	1.9	-1.1
6	☐	200.000	200.593	2635571.47	1.3653	A	2.5	0.3

y = 0.0068 * x + 0.0012
R = 1.0000
DL = 0.03784 ppb
BEC = 0.1722 ppb

Weight: <None>
Min Conc: <None>

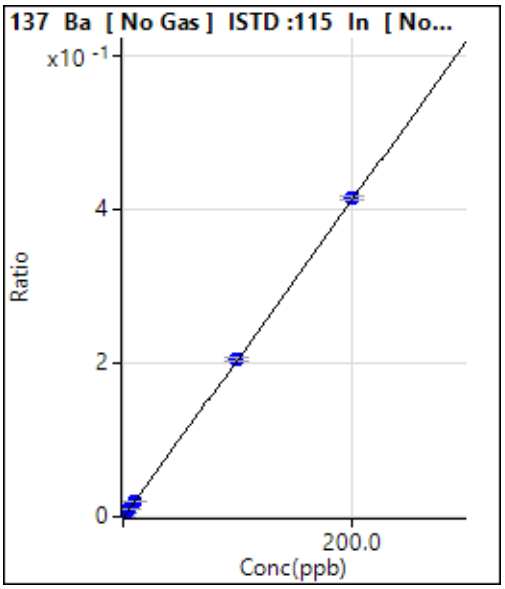
Calibration for 229_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1220.08	0.0022	P	2.4	
2	☐	2.000	1.974	14548.27	0.0258	P	3.3	-1.3
3	☐	5.000	4.834	34064.47	0.0601	P	2.1	-3.3
4	☐	10.000	9.847	67228.85	0.1203	P	0.4	-1.5
5	☐	100.000	95.799	654555.59	1.1514	P	0.2	-4.2
6	☐	200.000	202.113	1311611.18	2.4268	A	1.9	1.1

y = 0.0120 * x + 0.0022
R = 0.9997
DL = 0.01307 ppb
BEC = 0.1802 ppb

Weight: <None>
Min Conc: <None>

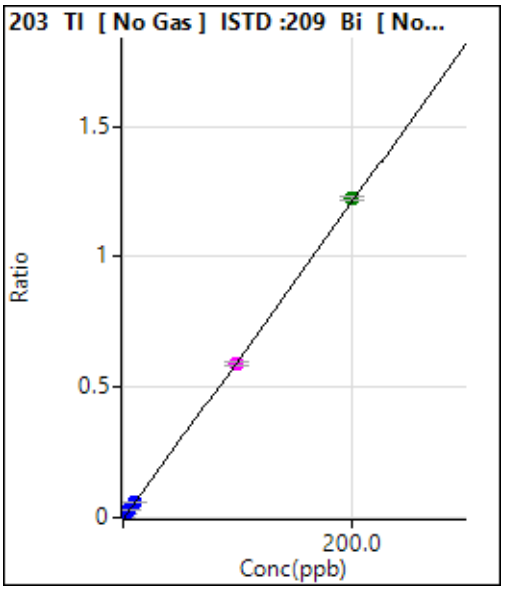


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	486.69	0.0002	P	14.3	
2	☐	2.000	1.835	9503.64	0.0040	P	2.2	-8.2
3	☐	5.000	4.706	23281.14	0.0100	P	4.2	-5.9
4	☐	10.000	9.516	46389.57	0.0199	P	0.6	-4.8
5	☐	100.000	98.714	466740.59	0.2046	P	2.3	-1.3
6	☐	200.000	200.676	931204.31	0.4157	P	0.6	0.3

y = 0.0021 * x + 2.0847E-004
R = 1.0000
DL = 0.0432 ppb
BEC = 0.1007 ppb

Weight: <None>
Min Conc: <None>

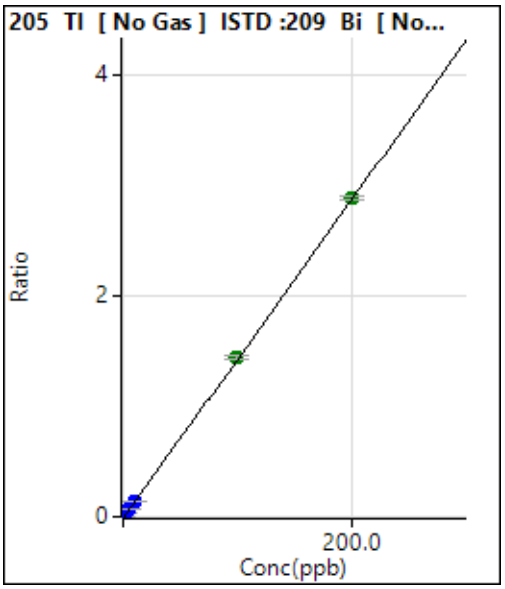
Calibration for 229_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	36.67	0.0000	P	41.9	
2	☐	2.000	1.893	23115.11	0.0115	P	2.1	-5.3
3	☐	5.000	4.682	57887.51	0.0285	P	1.2	-6.4
4	☐	10.000	9.613	118306.48	0.0584	P	1.9	-3.9
5	☐	100.000	96.888	1175671.88	0.5887	M	3.2	-3.1
6	☐	200.000	201.584	2362620.95	1.2248	A	0.6	0.8

y = 0.0061 * x + 1.8339E-005
R = 0.9998
DL = 0.003793 ppb
BEC = 0.003018 ppb

Weight: <None>
Min Conc: <None>

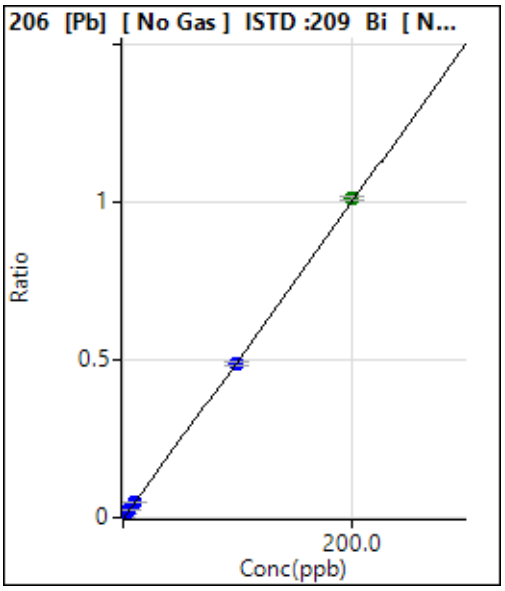


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	60.00	0.0000	P	67.5	
2	☐	2.000	1.910	55413.05	0.0276	P	1.6	-4.5
3	☐	5.000	4.761	139911.07	0.0688	P	1.3	-4.8
4	☐	10.000	9.741	284981.53	0.1407	P	1.9	-2.6
5	☐	100.000	99.778	2878935.58	1.4414	A	2.2	-0.2
6	☐	200.000	200.131	5576188.04	2.8910	A	1.5	0.1

y = 0.0144 * x + 3.0234E-005
R = 1.0000
DL = 0.004236 ppb
BEC = 0.002093 ppb

Weight: <None>
Min Conc: <None>

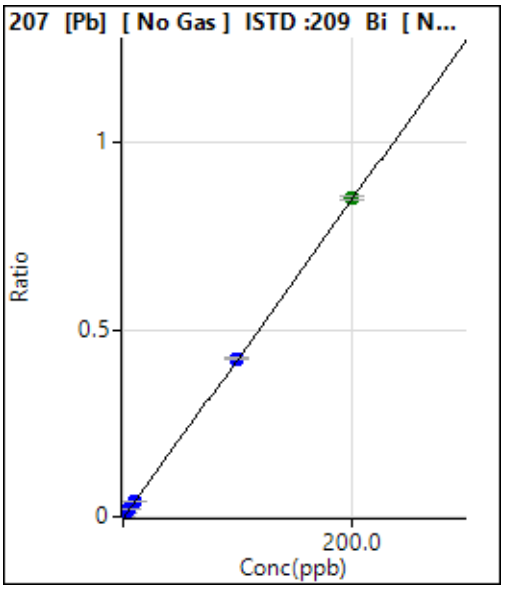
Calibration for 229_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	283.34	0.0001	P	13.0	
2	☐	2.000	1.916	19625.68	0.0098	P	1.3	-4.2
3	☐	5.000	4.693	48313.77	0.0238	P	1.5	-6.1
4	☐	10.000	9.680	98919.96	0.0489	P	1.4	-3.2
5	☐	100.000	97.071	975965.09	0.4886	P	1.8	-2.9
6	☐	200.000	201.489	1955977.83	1.0140	A	1.0	0.7

y = 0.0050 * x + 1.4173E-004
R = 0.9999
DL = 0.01101 ppb
BEC = 0.02817 ppb

Weight: <None>
Min Conc: <None>

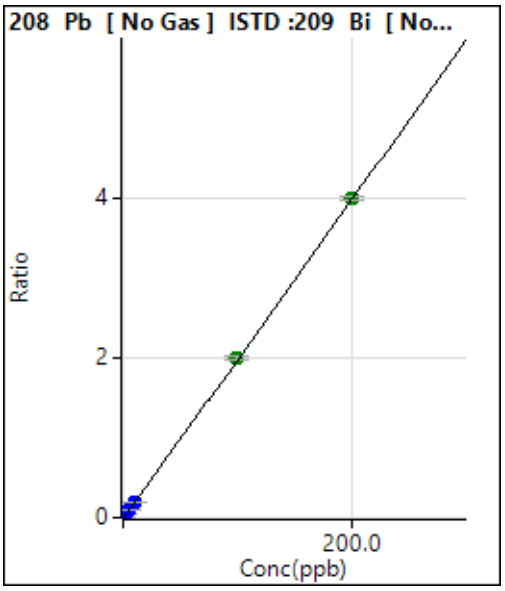


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	170.01	0.0001	P	8.4	
2	☐	2.000	1.953	16851.70	0.0084	P	0.8	-2.3
3	☐	5.000	4.775	41509.30	0.0204	P	2.6	-4.5
4	☐	10.000	9.862	85180.02	0.0421	P	1.7	-1.4
5	☐	100.000	99.449	845823.89	0.4235	P	2.1	-0.6
6	☐	200.000	200.288	1644803.99	0.8528	A	1.8	0.1

y = 0.0043 * x + 8.4983E-005
R = 1.0000
DL = 0.005019 ppb
BEC = 0.01996 ppb

Weight: <None>
Min Conc: <None>

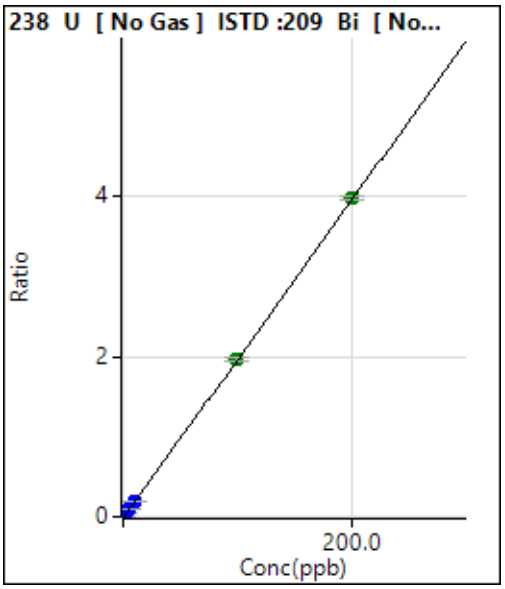
Calibration for 229_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1080.05	0.0005	P	5.7	
2	☐	2.000	1.912	77698.96	0.0387	P	0.8	-4.4
3	☐	5.000	4.679	191136.68	0.0940	P	2.2	-6.4
4	☐	10.000	9.622	390231.89	0.1927	P	1.7	-3.8
5	☐	100.000	100.032	3992104.10	1.9985	A	1.7	0.0
6	☐	200.000	200.012	7706707.59	3.9955	A	1.4	0.0

y = 0.0200 * x + 5.4024E-004
R = 1.0000
DL = 0.004609 ppb
BEC = 0.02705 ppb

Weight: <None>
Min Conc: <None>

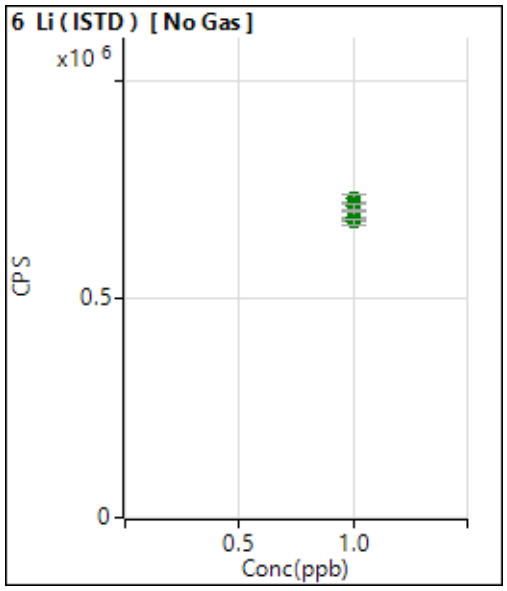


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	26.67	0.0000	P	78.9	
2	☐	2.000	1.868	74489.55	0.0371	P	1.5	-6.6
3	☐	5.000	4.710	190388.11	0.0936	P	1.4	-5.8
4	☐	10.000	9.557	384567.65	0.1899	P	2.4	-4.4
5	☐	100.000	99.189	3937417.44	1.9712	A	2.1	-0.8
6	☐	200.000	200.436	7683670.09	3.9833	A	1.4	0.2

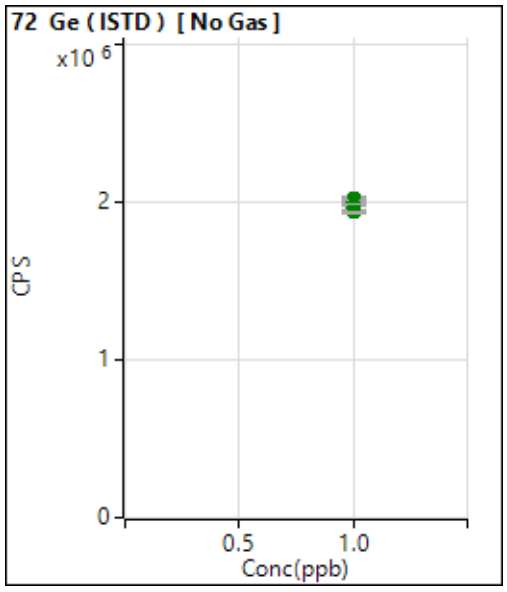
y = 0.0199 * x + 1.3370E-005
R = 1.0000
DL = 0.001593 ppb
BEC = 0.0006728 ppb

Weight: <None>
Min Conc: <None>

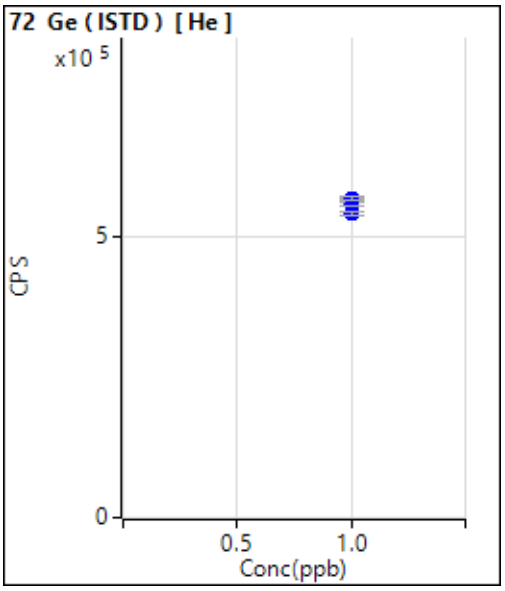
Calibration for 229_ICV.d



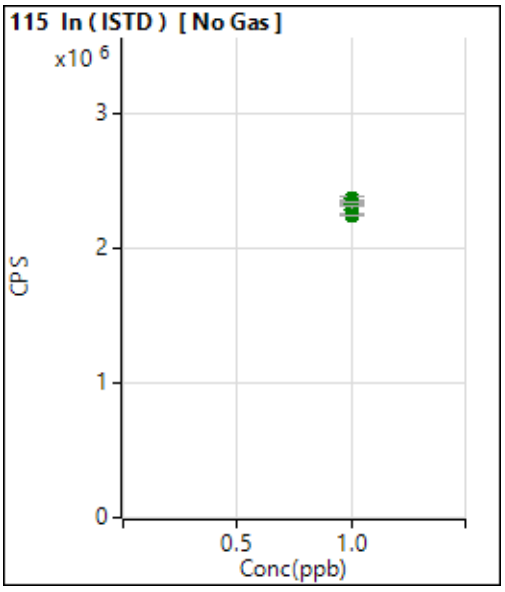
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		730364.66		A	2.1	
2	☐	1.000		718073.04		A	0.5	
3	☐	1.000		703745.69		A	5.4	
4	☐	1.000		712229.32		A	1.8	
5	☐	1.000		686922.01		A	3.1	
6	☐	1.000		675464.91		A	2.3	



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		2022024.35		A	0.7	
2	☐	1.000		2010789.97		A	1.0	
3	☐	1.000		2002643.51		A	1.3	
4	☐	1.000		1977512.99		A	0.9	
5	☐	1.000		1965520.75		A	1.8	
6	☐	1.000		1930766.06		A	1.0	

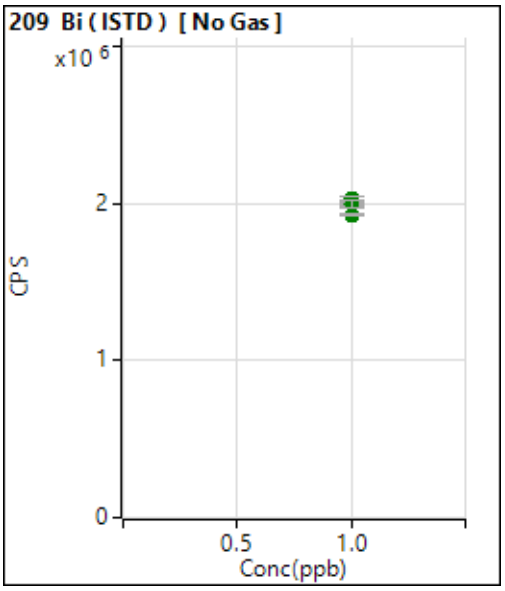


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		564375.83		P	0.9	
2	☐	1.000		563098.15		P	0.4	
3	☐	1.000		566473.51		P	1.5	
4	☐	1.000		558906.58		P	1.2	
5	☐	1.000		568499.13		P	0.8	
6	☐	1.000		540506.91		P	0.9	



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		2335977.51		A	0.8	
2	☐	1.000		2370528.23		A	1.1	
3	☐	1.000		2339702.32		A	0.9	
4	☐	1.000		2329705.97		A	1.0	
5	☐	1.000		2281991.01		A	2.5	
6	☐	1.000		2239926.07		A	0.4	

Calibration for 229_ICV.d



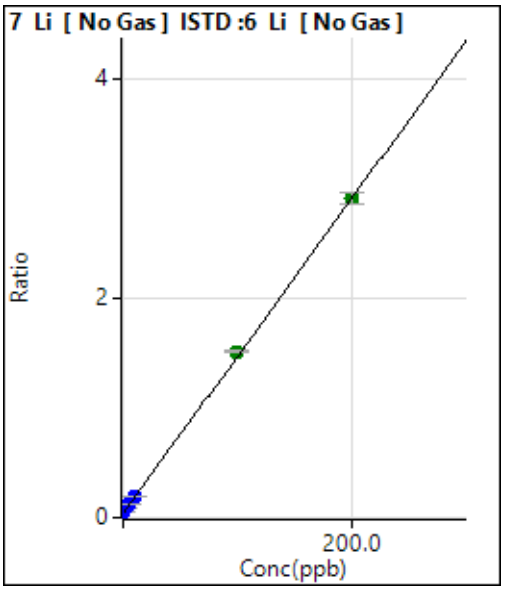
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		1998592.32		A	1.7	
2	☐	1.000		2006137.00		A	0.4	
3	☐	1.000		2033712.94		A	1.2	
4	☐	1.000		2025245.80		A	1.9	
5	☐	1.000		1998098.15		A	2.5	
6	☐	1.000		1928987.47		A	1.0	

Calibration for 022_ICV.d

Batch Folder: D:\Agilent\ICPMH\1\DATA\091222A.b\
Analysis File: 091222A.batch.bin
DA Date-Time: 09/12/2022 11:40:42
Calibration Title:
Calibration Method: External Calibration
VIS Interpolation Fit:

Level	Standard Data File	Sample Name	Acq. Date-Time
1	015CALB.d	CAL BLK	09/12/2022 11:24:30
2	016CALS.d	2/10/200	09/12/2022 11:26:23
3	017CALS.d	5/25/500	09/12/2022 11:28:16
4	018CALS.d	10/50/100	09/12/2022 11:30:09
5	019CALS.d	100/500/10K	09/12/2022 11:32:02
6	020CALS.d	200/1000/20K	09/12/2022 11:33:50

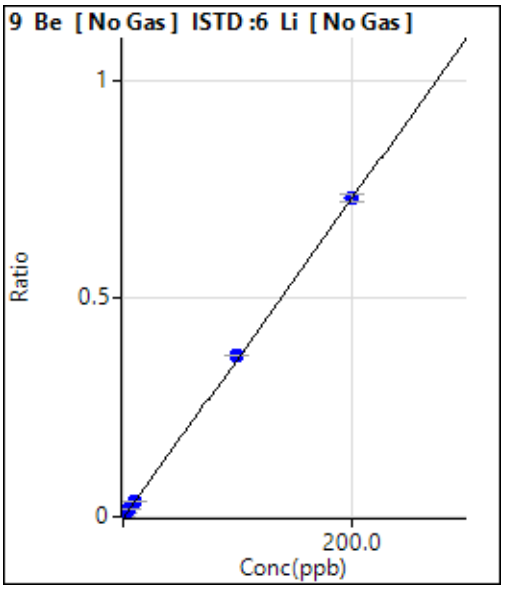
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	53216.85	0.0534	P	2.3	
2	☐	2.000	1.836	79506.42	0.0798	P	1.0	-8.2
3	☐	5.000	4.771	118833.45	0.1220	P	1.2	-4.6
4	☐	10.000	9.471	186401.20	0.1896	P	2.0	-5.3
5	☐	100.000	101.749	1485901.18	1.5170	A	1.2	1.7
6	☐	200.000	199.159	2906303.50	2.9181	A	3.1	-0.4

y = 0.0144 * x + 0.0534
R = 0.9999
DL = 0.2599 ppb
BEC = 3.711 ppb

Weight: <None>
Min Conc: <None>

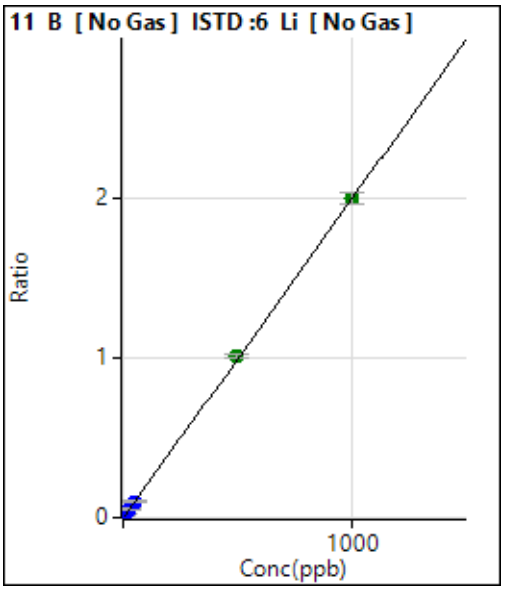


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	20.00	0.0000	P	43.0	
2	☐	2.000	1.895	6933.43	0.0070	P	0.1	-5.2
3	☐	5.000	4.959	17699.55	0.0182	P	2.6	-0.8
4	☐	10.000	9.864	35508.11	0.0361	P	3.8	-1.4
5	☐	100.000	100.902	361846.79	0.3694	P	0.5	0.9
6	☐	200.000	199.558	727634.62	0.7306	P	2.8	-0.2

y = 0.0037 * x + 2.0047E-005
R = 1.0000
DL = 0.007068 ppb
BEC = 0.005476 ppb

Weight: <None>
Min Conc: <None>

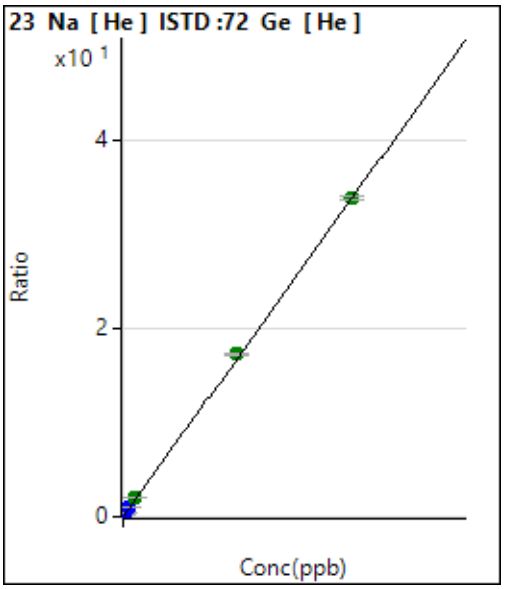
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	6748.33	0.0068	P	0.8	
2	☐	10.000	9.088	24820.29	0.0249	P	1.8	-9.1
3	☐	25.000	23.372	52016.05	0.0534	P	3.9	-6.5
4	☐	50.000	47.296	99434.69	0.1012	P	4.1	-5.4
5	☐	500.000	504.863	993862.02	1.0145	A	2.3	1.0
6	☐	1000.000	997.754	1990342.63	1.9984	A	3.1	-0.2

y = 0.0020 * x + 0.0068
R = 1.0000
DL = 0.08244 ppb
BEC = 3.39 ppb

Weight: <None>
Min Conc: <None>

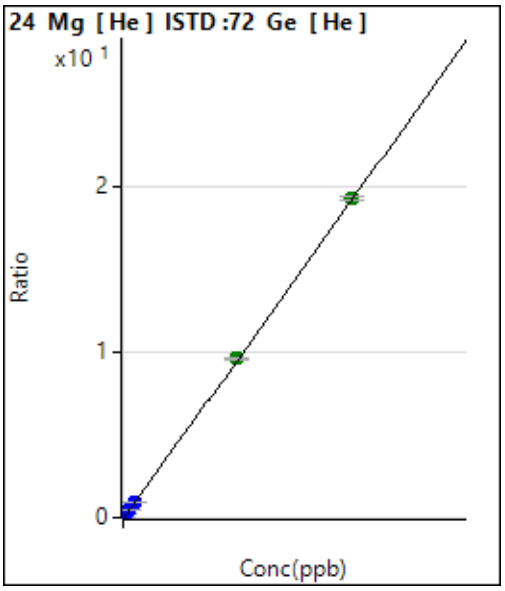


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	99496.36	0.1688	P	0.4	
2	☐	200.000	195.817	297291.48	0.5005	P	0.5	-2.1
3	☐	500.000	492.433	589679.73	1.0029	P	0.7	-1.5
4	☐	1000.000	1071.600	1163482.87	1.9839	A	1.2	7.2
5	☐	10000.00	10116.49	9994430.89	17.3038	A	1.4	1.2
6	☐	20000.00	19938.40	19219895.96	33.9398	A	0.7	-0.3

y = 0.0017 * x + 0.1688
R = 1.0000
DL = 1.154 ppb
BEC = 99.67 ppb

Weight: <None>
Min Conc: <None>

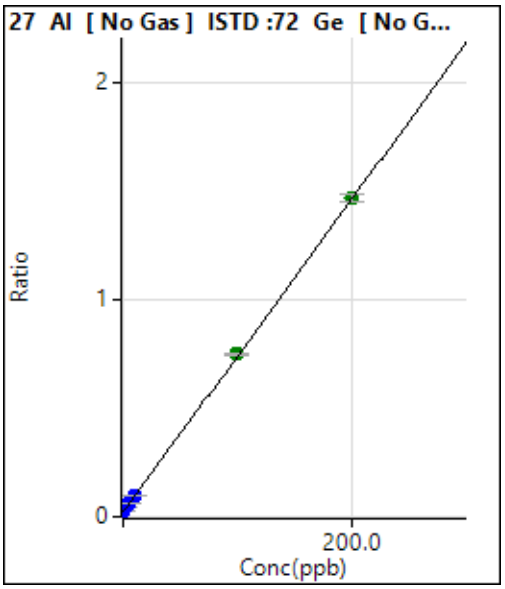
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	680.03	0.0012	P	9.8	
2	☐	200.000	195.925	113099.36	0.1904	P	1.0	-2.0
3	☐	500.000	495.527	282098.40	0.4798	P	0.7	-0.9
4	☐	1000.000	1008.088	571741.49	0.9749	P	0.4	0.8
5	☐	10000.00	9952.545	5553071.59	9.6142	A	1.9	-0.5
6	☐	20000.00	20023.47	10952672.34	19.3416	A	1.1	0.1

y = 9.6589E-004 * x + 0.0012
R = 1.0000
DL = 0.3518 ppb
BEC = 1.194 ppb

Weight: <None>
Min Conc: <None>

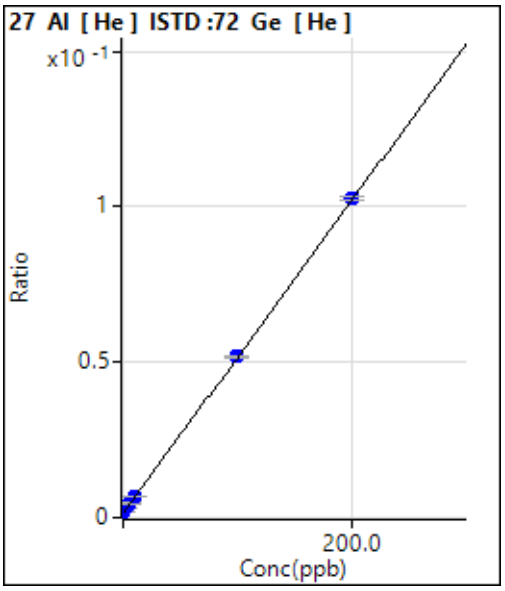


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	59667.89	0.0286	P	2.3	
2	☐	2.000	2.009	89523.60	0.0431	P	3.3	0.4
3	☐	5.000	4.694	131476.11	0.0625	P	1.5	-6.1
4	☐	10.000	10.052	207377.90	0.1011	P	0.7	0.5
5	☐	100.000	100.210	1562473.36	0.7507	A	0.8	0.2
6	☐	200.000	199.900	2965054.75	1.4690	A	2.4	-0.1

y = 0.0072 * x + 0.0286
R = 1.0000
DL = 0.2705 ppb
BEC = 3.974 ppb

Weight: <None>
Min Conc: <None>

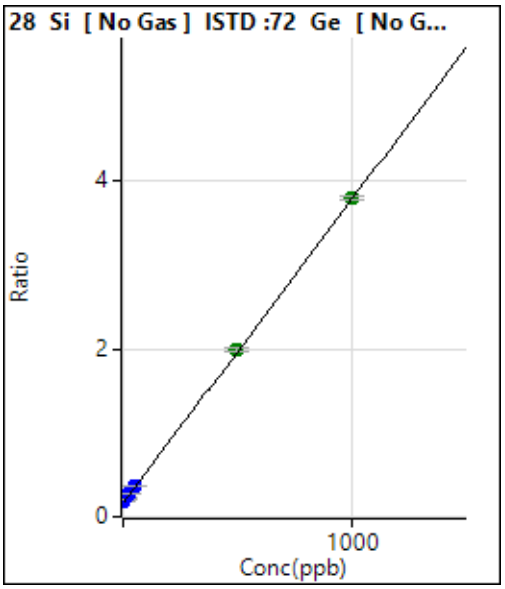
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1130.07	0.0019	P	12.7	
2	☐	2.000	2.059	1753.48	0.0030	P	3.5	3.0
3	☐	5.000	5.349	2706.97	0.0046	P	7.8	7.0
4	☐	10.000	9.452	3910.61	0.0067	P	2.4	-5.5
5	☐	100.000	99.044	29869.11	0.0517	P	1.1	-1.0
6	☐	200.000	200.496	58158.13	0.1027	P	1.2	0.2

y = 5.0269E-004 * x + 0.0019
R = 1.0000
DL = 1.45 ppb
BEC = 3.813 ppb

Weight: <None>
Min Conc: <None>

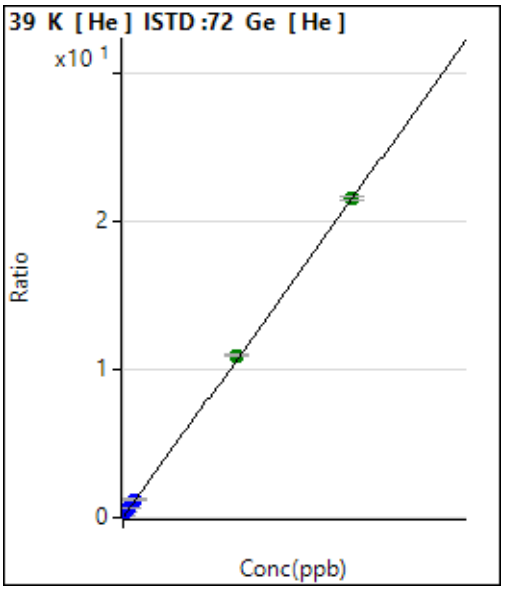


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	379456.09	0.1821	P	1.4	
2	☐	10.000	10.185	454837.15	0.2190	P	2.3	1.9
3	☐	25.000	23.749	564441.50	0.2681	P	1.1	-5.0
4	☐	50.000	51.749	758302.04	0.3695	P	0.6	3.5
5	☐	500.000	499.725	4146653.79	1.9924	A	1.8	-0.1
6	☐	1000.000	1000.080	7681003.43	3.8050	A	1.3	0.0

y = 0.0036 * x + 0.1821
R = 1.0000
DL = 2.162 ppb
BEC = 50.26 ppb

Weight: <None>
Min Conc: <None>

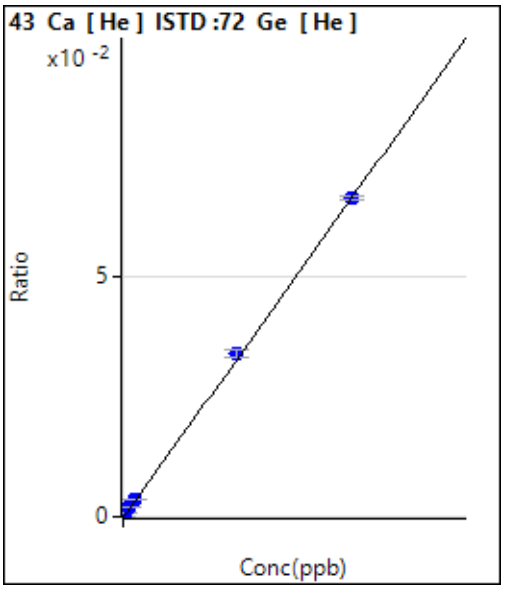
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	76102.47	0.1291	P	1.2	
2	☐	200.000	201.826	205234.99	0.3455	P	0.7	0.9
3	☐	500.000	506.130	394982.58	0.6718	P	0.6	1.2
4	☐	1000.000	1027.876	722059.13	1.2311	P	0.5	2.8
5	☐	10000.00	10071.75	6311806.57	10.9273	A	1.1	0.7
6	☐	20000.00	19962.55	12193396.90	21.5315	A	0.7	-0.2

y = 0.0011 * x + 0.1291
R = 1.0000
DL = 4.392 ppb
BEC = 120.4 ppb

Weight: <None>
Min Conc: <None>

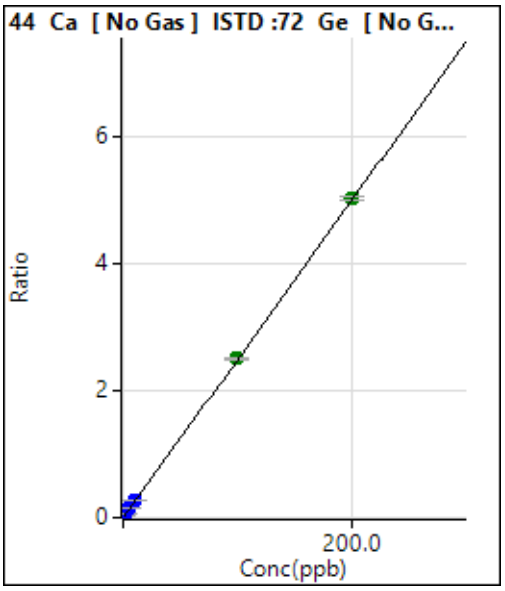


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	26.67	0.0000	P	43.5	
2	☐	200.000	187.147	396.68	0.0007	P	5.4	-6.4
3	☐	500.000	547.133	1096.73	0.0019	P	6.3	9.4
4	☐	1000.000	1062.802	2100.21	0.0036	P	1.5	6.3
5	☐	10000.00	10174.81	19574.14	0.0339	P	4.0	1.7
6	☐	20000.00	19908.40	37531.31	0.0663	P	1.1	-0.5

y = 3.3265E-006 * x + 4.5274E-005
R = 0.9999
DL = 17.78 ppb
BEC = 13.61 ppb

Weight: <None>
Min Conc: <None>

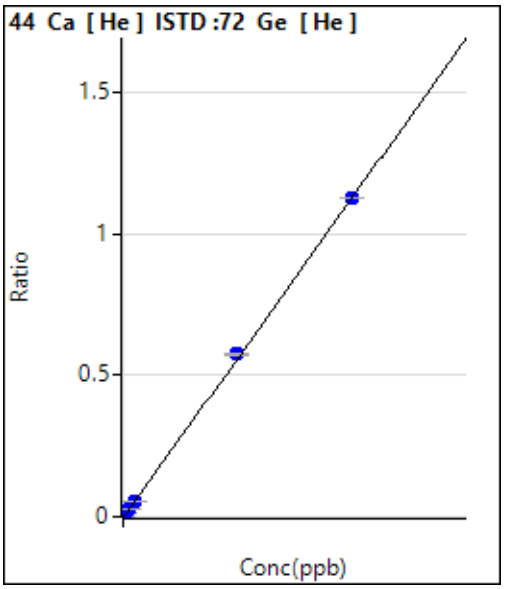
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	44455.61	0.0213	P	3.9	
2	☐	2.000	1.960	146065.87	0.0703	P	3.0	-2.0
3	☐	5.000	4.805	297812.99	0.1415	P	1.7	-3.9
4	☐	10.000	9.994	556477.55	0.2712	P	1.3	-0.1
5	☐	100.000	99.287	5210819.09	2.5036	A	1.1	-0.7
6	☐	200.000	200.362	10155351.30	5.0305	A	0.8	0.2

y = 0.0250 * x + 0.0213
R = 1.0000
DL = 0.09885 ppb
BEC = 0.8535 ppb

Weight: <None>
Min Conc: <None>

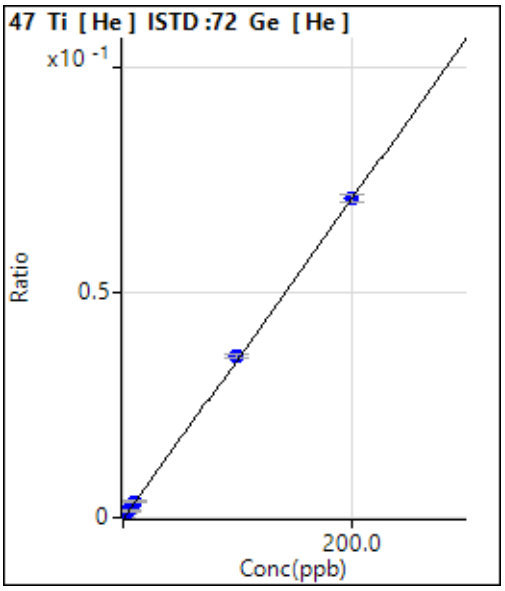


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	756.70	0.0013	P	10.1	
2	☐	200.000	201.351	7512.21	0.0126	P	4.9	0.7
3	☐	500.000	491.064	17047.52	0.0290	P	2.5	-1.8
4	☐	1000.000	973.827	32986.54	0.0562	P	1.0	-2.6
5	☐	10000.00	10150.74	331606.30	0.5741	P	1.5	1.5
6	☐	20000.00	19926.14	637529.17	1.1258	P	0.4	-0.4

y = 5.6433E-005 * x + 0.0013
R = 1.0000
DL = 6.878 ppb
BEC = 22.76 ppb

Weight: <None>
Min Conc: <None>

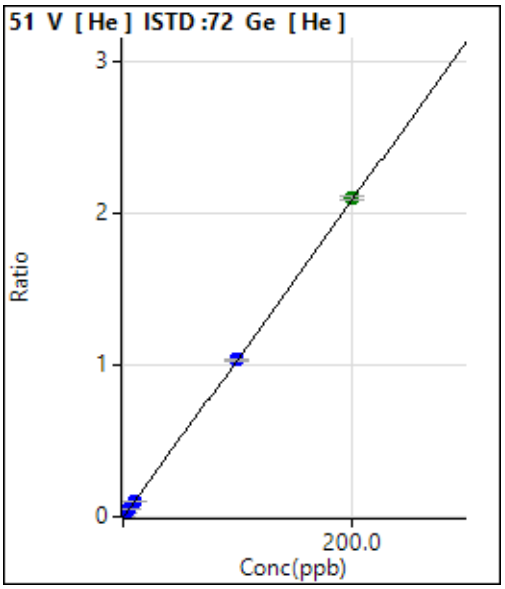
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	16.67	0.0000	P	69.5	
2	☐	2.000	1.831	403.35	0.0007	P	7.5	-8.4
3	☐	5.000	4.484	953.38	0.0016	P	16.5	-10.3
4	☐	10.000	10.049	2110.20	0.0036	P	4.9	0.5
5	☐	100.000	100.907	20719.23	0.0359	P	2.7	0.9
6	☐	200.000	199.558	40158.99	0.0709	P	2.8	-0.2

y = 3.5526E-004 * x + 2.8306E-005
R = 1.0000
DL = 0.1661 ppb
BEC = 0.07968 ppb

Weight: <None>
Min Conc: <None>

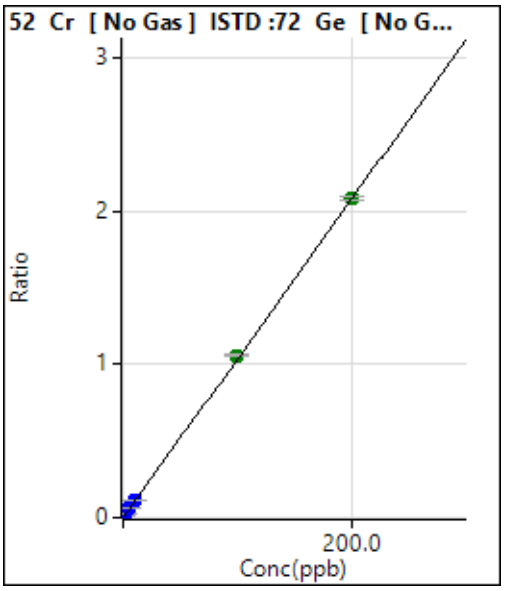


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	2609.16	0.0044	P	0.5	
2	☐	2.000	1.899	14388.71	0.0242	P	1.7	-5.0
3	☐	5.000	4.719	31523.95	0.0536	P	2.3	-5.6
4	☐	10.000	9.710	61960.47	0.1056	P	0.5	-2.9
5	☐	100.000	98.479	595502.65	1.0310	P	1.4	-1.5
6	☐	200.000	200.783	1187845.13	2.0975	A	0.7	0.4

y = 0.0104 * x + 0.0044
R = 1.0000
DL = 0.006944 ppb
BEC = 0.4247 ppb

Weight: <None>
Min Conc: <None>

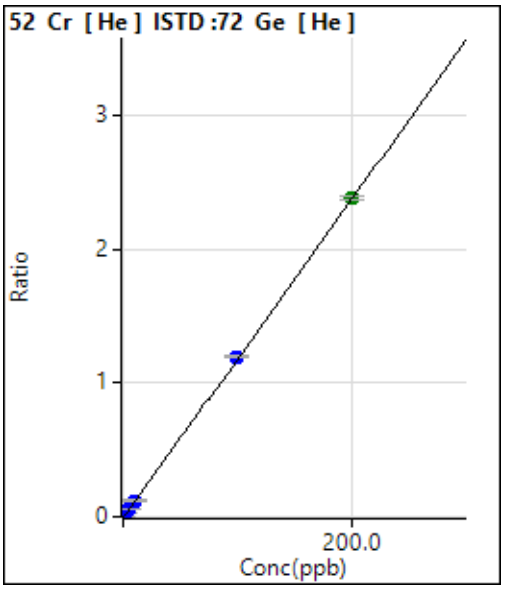
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	19337.26	0.0093	P	2.7	
2	☐	2.000	2.000	62549.55	0.0301	P	1.3	0.0
3	☐	5.000	5.010	129366.53	0.0614	P	0.4	0.2
4	☐	10.000	10.274	238575.78	0.1163	P	1.3	2.7
5	☐	100.000	101.042	2209281.63	1.0615	A	0.9	1.0
6	☐	200.000	199.465	4211430.87	2.0863	A	1.7	-0.3

y = 0.0104 * x + 0.0093
R = 1.0000
DL = 0.07262 ppb
BEC = 0.8912 ppb

Weight: <None>
Min Conc: <None>

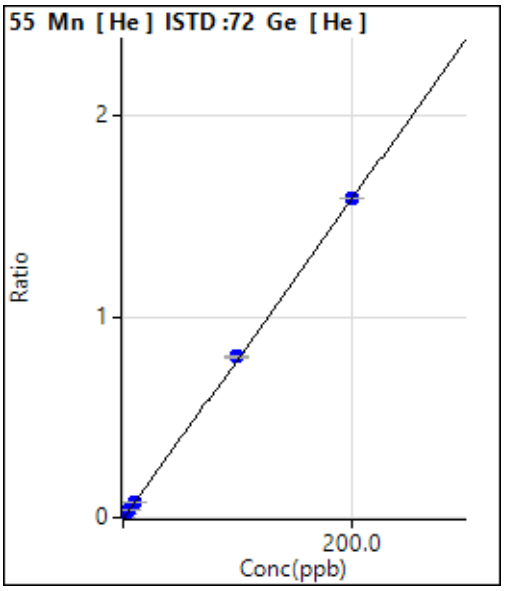


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1003.39	0.0017	P	3.4	
2	☐	2.000	1.955	14838.27	0.0250	P	4.4	-2.3
3	☐	5.000	4.862	35038.47	0.0596	P	1.7	-2.8
4	☐	10.000	10.015	70943.22	0.1210	P	1.8	0.2
5	☐	100.000	100.157	689842.46	1.1944	P	1.5	0.2
6	☐	200.000	199.924	1349080.34	2.3824	A	1.5	0.0

y = 0.0119 * x + 0.0017
R = 1.0000
DL = 0.01469 ppb
BEC = 0.143 ppb

Weight: <None>
Min Conc: <None>

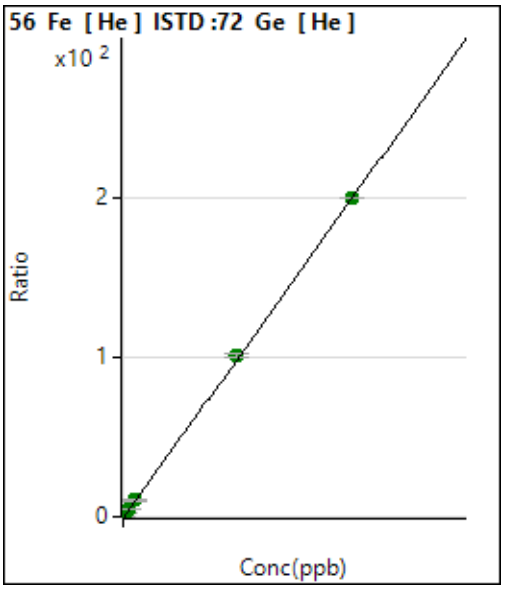
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	320.01	0.0005	P	39.0	
2	☐	2.000	2.026	9903.78	0.0167	P	2.8	1.3
3	☐	5.000	4.975	23610.69	0.0402	P	1.3	-0.5
4	☐	10.000	10.099	47469.18	0.0809	P	0.8	1.0
5	☐	100.000	100.691	463285.38	0.8021	P	1.8	0.7
6	☐	200.000	199.650	900387.59	1.5899	P	0.0	-0.2

y = 0.0080 * x + 5.4283E-004
R = 1.0000
DL = 0.07983 ppb
BEC = 0.06819 ppb

Weight: <None>
Min Conc: <None>

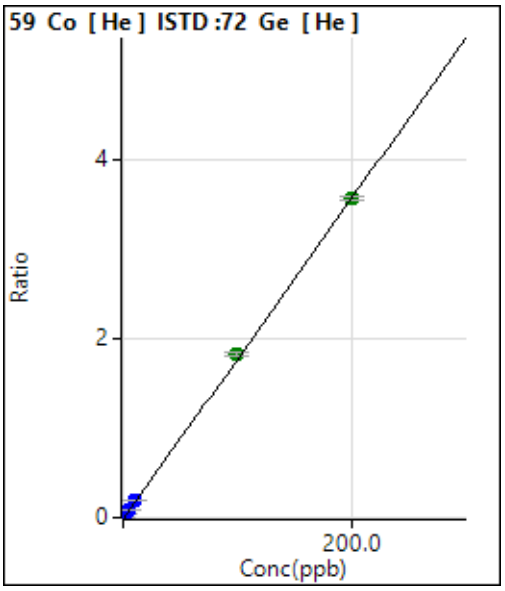


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	13476.78	0.0229	P	1.2	
2	☐	200.000	209.877	1262705.45	2.1258	A	1.3	4.9
3	☐	500.000	512.140	3030781.83	5.1544	A	0.1	2.4
4	☐	1000.000	1022.787	6023989.70	10.2710	A	1.1	2.3
5	☐	10000.00	10095.06	58433695.80	101.173	A	2.1	1.0
6	☐	20000.00	19950.92	113218091.6	199.927	A	0.3	-0.2

y = 0.0100 * x + 0.0229
R = 1.0000
DL = 0.07988 ppb
BEC = 2.282 ppb

Weight: <None>
Min Conc: <None>

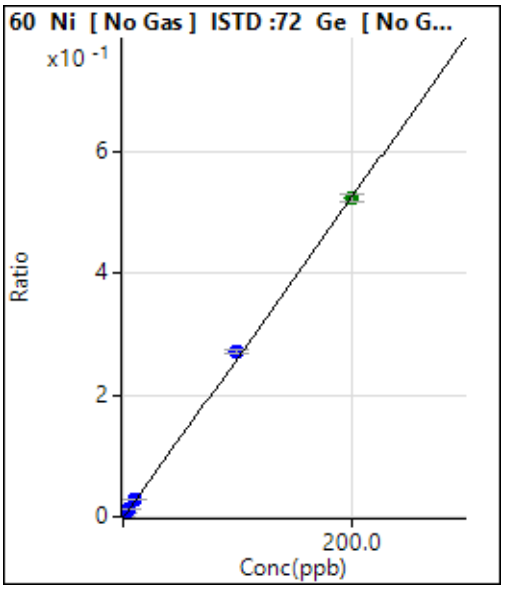
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	56.67	0.0001	P	44.7	
2	☐	2.000	2.062	22061.51	0.0371	P	0.5	3.1
3	☐	5.000	5.102	53956.93	0.0918	P	1.4	2.0
4	☐	10.000	10.412	109776.30	0.1872	P	1.9	4.1
5	☐	100.000	101.928	1057860.87	1.8315	A	1.7	1.9
6	☐	200.000	199.012	2024906.43	3.5759	A	1.7	-0.5

y = 0.0180 * x + 9.6267E-005
R = 0.9999
DL = 0.007182 ppb
BEC = 0.005358 ppb

Weight: <None>
Min Conc: <None>

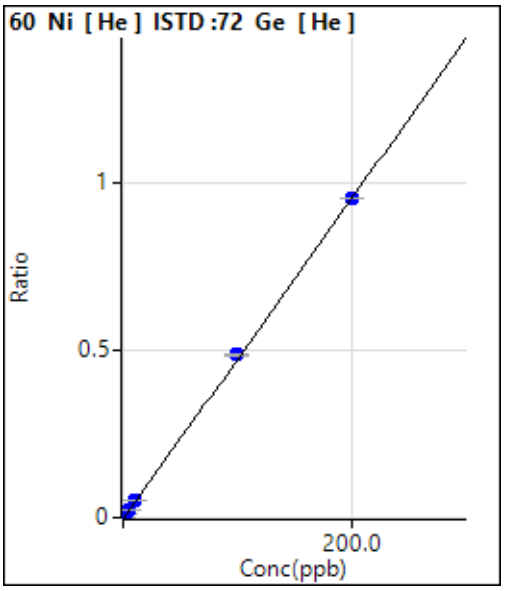


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	513.36	0.0002	P	16.6	
2	☐	2.000	2.079	11885.39	0.0057	P	5.8	3.9
3	☐	5.000	5.138	29014.57	0.0138	P	1.9	2.8
4	☐	10.000	10.482	57173.12	0.0279	P	0.9	4.8
5	☐	100.000	102.664	563426.70	0.2707	P	2.1	2.7
6	☐	200.000	198.640	1056830.37	0.5236	A	2.3	-0.7

y = 0.0026 * x + 2.4639E-004
R = 0.9999
DL = 0.04671 ppb
BEC = 0.09352 ppb

Weight: <None>
Min Conc: <None>

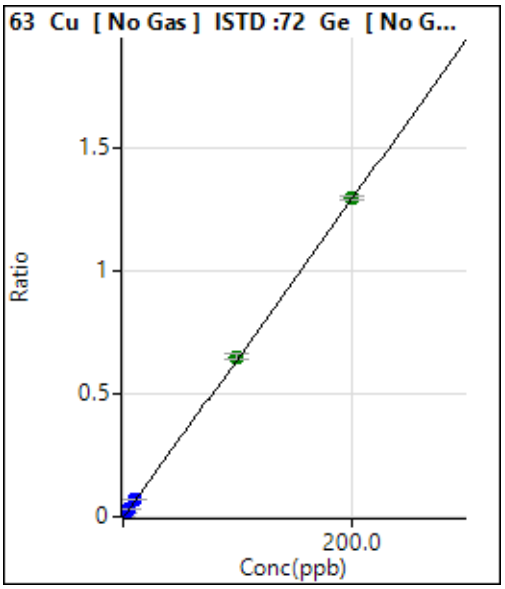
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	216.67	0.0004	P	11.1	
2	☐	2.000	2.093	6174.82	0.0104	P	0.6	4.7
3	☐	5.000	5.105	14594.69	0.0248	P	3.7	2.1
4	☐	10.000	10.280	29098.06	0.0496	P	1.5	2.8
5	☐	100.000	101.626	281431.24	0.4872	P	1.5	1.6
6	☐	200.000	199.169	540569.97	0.9546	P	0.2	-0.4

y = 0.0048 * x + 3.6776E-004
R = 1.0000
DL = 0.02554 ppb
BEC = 0.07676 ppb

Weight: <None>
Min Conc: <None>

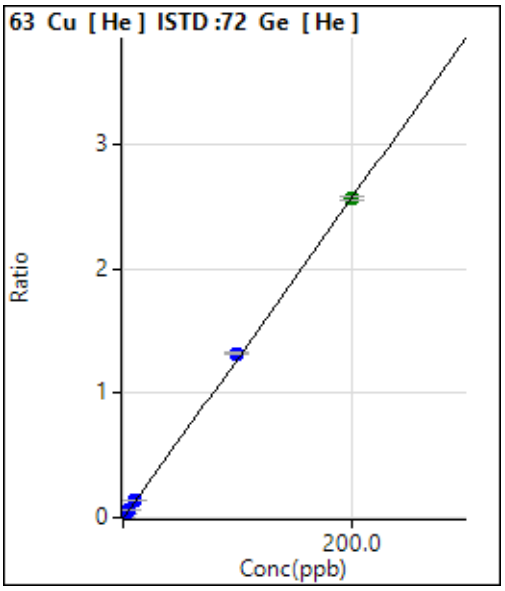


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	4044.02	0.0019	P	10.0	
2	☐	2.000	2.070	31790.77	0.0153	P	5.9	3.5
3	☐	5.000	5.015	72312.12	0.0343	P	1.0	0.3
4	☐	10.000	10.673	145481.64	0.0709	P	3.0	6.7
5	☐	100.000	100.096	1350062.27	0.6488	A	3.1	0.1
6	☐	200.000	199.917	2611852.67	1.2938	A	0.6	0.0

y = 0.0065 * x + 0.0019
R = 1.0000
DL = 0.08972 ppb
BEC = 0.3003 ppb

Weight: <None>
Min Conc: <None>

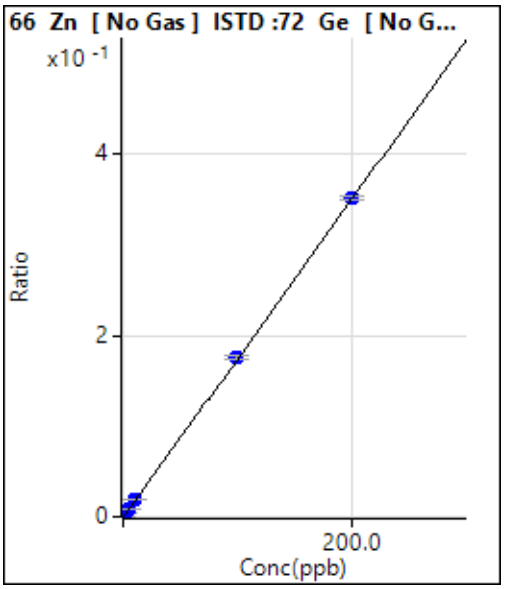
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	2200.22	0.0037	P	3.9	
2	☐	2.000	1.986	17451.47	0.0294	P	3.1	-0.7
3	☐	5.000	5.082	40794.90	0.0694	P	0.6	1.6
4	☐	10.000	10.348	80588.18	0.1374	P	0.7	3.5
5	☐	100.000	102.179	764525.72	1.3236	P	0.7	2.2
6	☐	200.000	198.891	1456987.32	2.5728	A	1.2	-0.6

y = 0.0129 * x + 0.0037
R = 0.9999
DL = 0.03418 ppb
BEC = 0.289 ppb

Weight: <None>
Min Conc: <None>

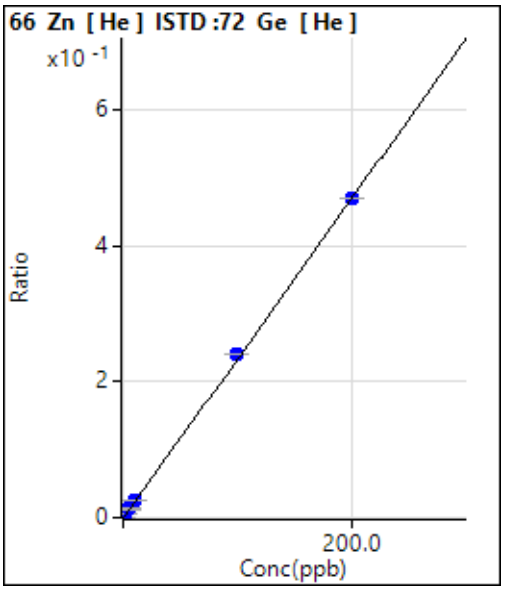


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1533.45	0.0007	P	5.2	
2	☐	2.000	2.013	8866.37	0.0043	P	3.7	0.6
3	☐	5.000	4.863	19524.28	0.0093	P	1.6	-2.7
4	☐	10.000	10.236	38391.34	0.0187	P	0.8	2.4
5	☐	100.000	100.107	367334.36	0.1765	P	2.2	0.1
6	☐	200.000	199.938	710111.86	0.3518	P	1.5	0.0

y = 0.0018 * x + 7.3540E-004
R = 1.0000
DL = 0.06506 ppb
BEC = 0.4188 ppb

Weight: <None>
Min Conc: <None>

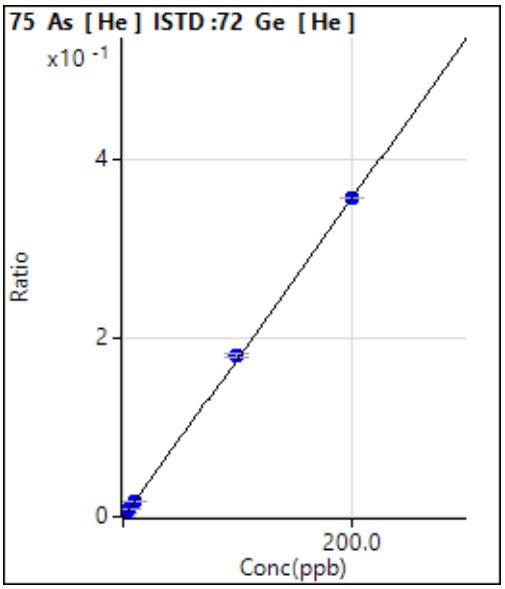
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	633.36	0.0011	P	3.7	
2	☐	2.000	1.958	3380.48	0.0057	P	5.6	-2.1
3	☐	5.000	5.046	7628.96	0.0130	P	4.6	0.9
4	☐	10.000	9.933	14367.84	0.0245	P	1.1	-0.7
5	☐	100.000	101.591	138993.25	0.2406	P	0.5	1.6
6	☐	200.000	199.207	266613.68	0.4708	P	0.5	-0.4

y = 0.0024 * x + 0.0011
R = 1.0000
DL = 0.0509 ppb
BEC = 0.4558 ppb

Weight: <None>
Min Conc: <None>

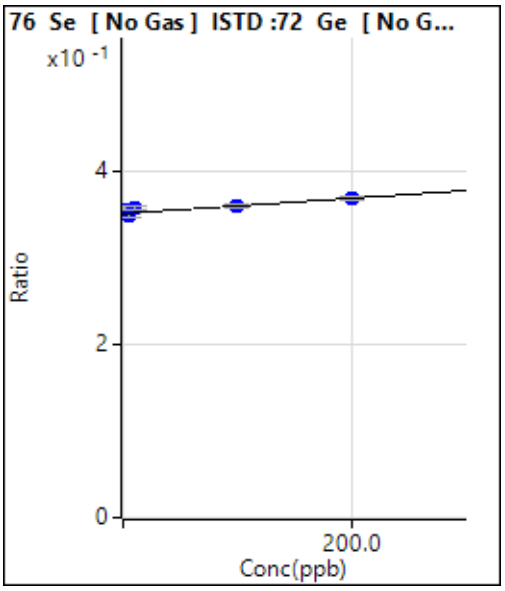


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	146.67	0.0002	P	19.0	
2	☐	2.000	1.920	2189.08	0.0037	P	7.2	-4.0
3	☐	5.000	4.848	5247.71	0.0089	P	4.4	-3.0
4	☐	10.000	9.784	10416.28	0.0178	P	2.7	-2.2
5	☐	100.000	100.994	104543.32	0.1810	P	1.5	1.0
6	☐	200.000	199.518	202354.52	0.3573	P	0.3	-0.2

y = 0.0018 * x + 2.4872E-004
R = 1.0000
DL = 0.07908 ppb
BEC = 0.139 ppb

Weight: <None>
Min Conc: <None>

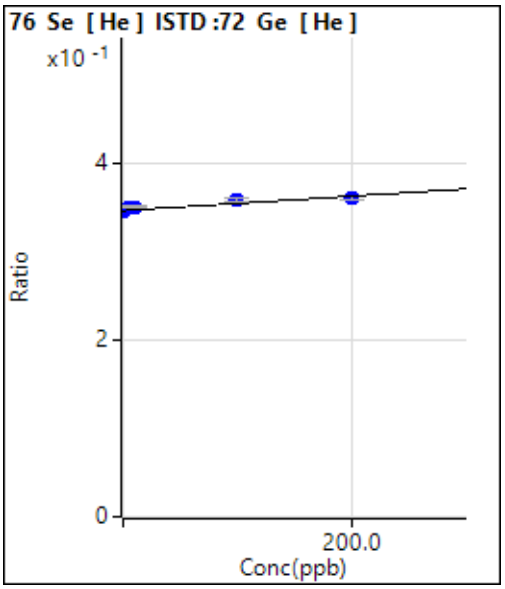
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	730957.57	0.3507	P	1.2	
2	☐	2.000	39.941	735921.89	0.3543	P	1.8	1897.0
3	☐	5.000	-29.777	732819.86	0.3481	P	1.5	-695.5
4	☐	10.000	70.987	732568.66	0.3570	P	0.7	609.9
5	☐	100.000	99.505	748270.80	0.3595	P	1.7	-0.5
6	☐	200.000	197.688	743322.36	0.3682	P	0.8	-1.2

y = 8.8421E-005 * x + 0.3507
R = 0.9130
DL = 147.6 ppb
BEC = 3967 ppb

Weight: <None>
Min Conc: <None>

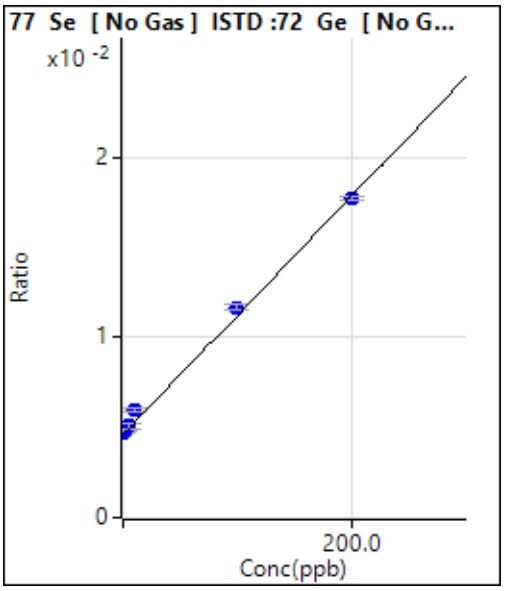


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	203852.71	0.3459	P	1.1	
2	☐	2.000	10.799	205991.25	0.3468	P	0.4	439.9
3	☐	5.000	53.326	205956.86	0.3503	P	1.1	966.5
4	☐	10.000	48.188	205193.14	0.3499	P	0.5	381.9
5	☐	100.000	146.606	206770.00	0.3580	P	0.6	46.6
6	☐	200.000	173.491	203979.88	0.3602	P	0.7	-13.3

y = 8.2372E-005 * x + 0.3459
R = 0.9313
DL = 143.2 ppb
BEC = 4199 ppb

Weight: <None>
Min Conc: <None>

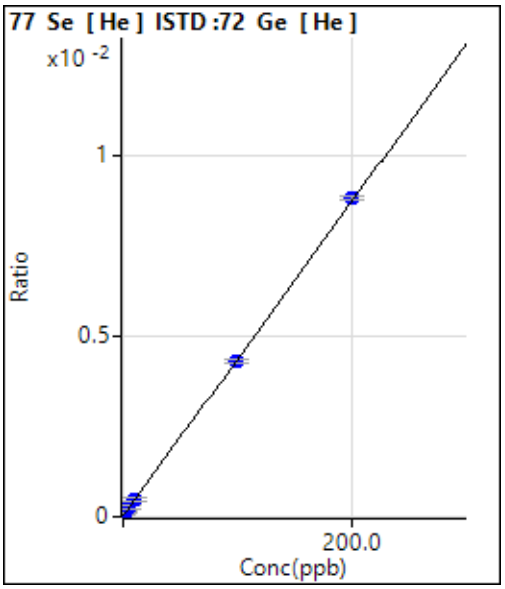
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	9810.39	0.0047	P	2.4	
2	☐	2.000	1.693	10017.25	0.0048	P	2.9	-15.3
3	☐	5.000	5.674	10697.77	0.0051	P	5.3	13.5
4	☐	10.000	18.967	12229.08	0.0060	P	4.4	89.7
5	☐	100.000	105.453	24302.19	0.0117	P	3.5	5.5
6	☐	200.000	196.811	35764.48	0.0177	P	1.0	-1.6

y = 6.6095E-005 * x + 0.0047
R = 0.9986
DL = 5.206 ppb
BEC = 71.22 ppb

Weight: <None>
Min Conc: <None>

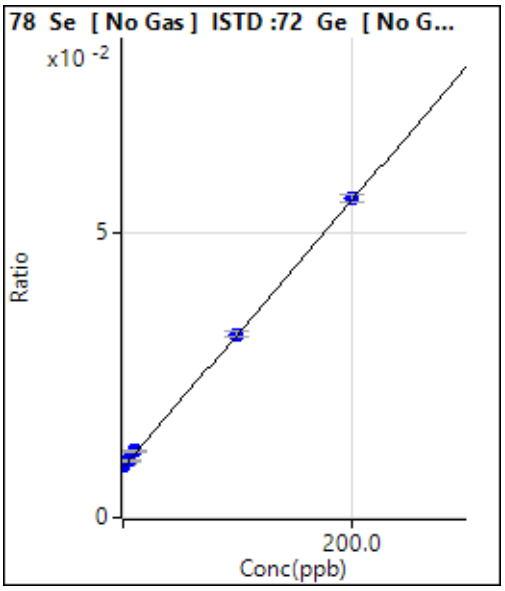


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	40.00	0.0001	P	25.1	
2	☐	2.000	1.024	66.67	0.0001	P	46.1	-48.8
3	☐	5.000	4.704	160.00	0.0003	P	33.1	-5.9
4	☐	10.000	9.291	276.68	0.0005	P	17.3	-7.1
5	☐	100.000	97.401	2483.61	0.0043	P	3.2	-2.6
6	☐	200.000	201.352	4991.01	0.0088	P	0.9	0.7

y = 4.3435E-005 * x + 6.7873E-005
R = 0.9999
DL = 1.176 ppb
BEC = 1.563 ppb

Weight: <None>
Min Conc: <None>

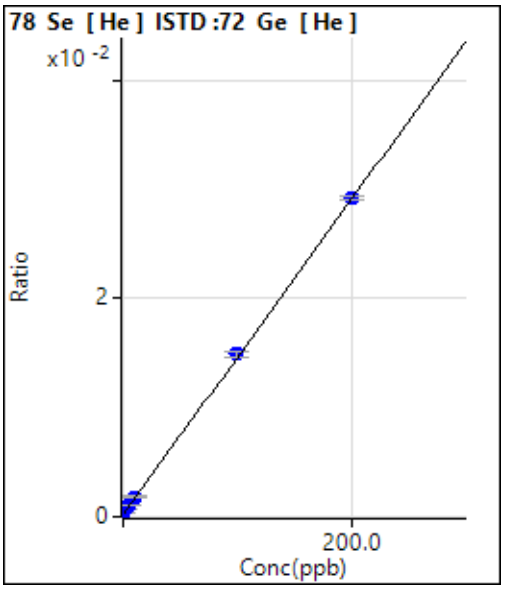
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	19003.61	0.0091	P	2.4	
2	☐	2.000	2.421	20128.67	0.0097	P	3.1	21.0
3	☐	5.000	4.003	21176.95	0.0101	P	3.7	-19.9
4	☐	10.000	11.254	24138.56	0.0118	P	2.3	12.5
5	☐	100.000	98.772	67294.50	0.0323	P	3.3	-1.2
6	☐	200.000	200.572	113572.28	0.0563	P	2.5	0.3

y = 2.3507E-004 * x + 0.0091
R = 0.9999
DL = 2.842 ppb
BEC = 38.79 ppb

Weight: <None>
Min Conc: <None>

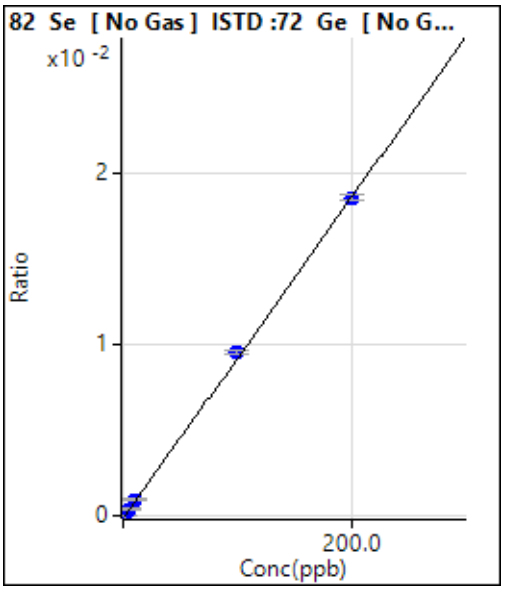


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	198.67	0.0003	P	2.1	
2	☐	2.000	2.270	395.34	0.0007	P	6.8	13.5
3	☐	5.000	4.866	612.02	0.0010	P	9.3	-2.7
4	☐	10.000	10.017	1048.04	0.0018	P	7.1	0.2
5	☐	100.000	100.530	8598.09	0.0149	P	2.8	0.5
6	☐	200.000	199.735	16561.52	0.0292	P	1.4	-0.1

y = 1.4474E-004 * x + 3.3706E-004
R = 1.0000
DL = 0.1469 ppb
BEC = 2.329 ppb

Weight: <None>
Min Conc: <None>

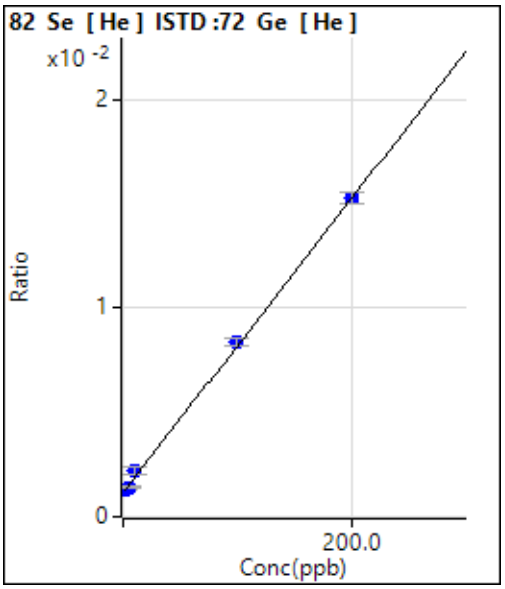
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	-128.90	-0.0001	P	-238.	
2	☐	2.000	-0.400	-214.12	-0.0001	P	-142.	-120.0
3	☐	5.000	4.737	803.23	0.0004	P	26.8	-5.3
4	☐	10.000	10.708	1932.39	0.0009	P	5.4	7.1
5	☐	100.000	102.673	19934.78	0.0096	P	2.4	2.7
6	☐	200.000	198.659	37532.19	0.0186	P	1.7	-0.7

y = 9.3916E-005 * x - 6.3709E-005
R = 0.9998
DL = 4.861 ppb
BEC = -0.6784 ppb

Weight: <None>
Min Conc: <None>

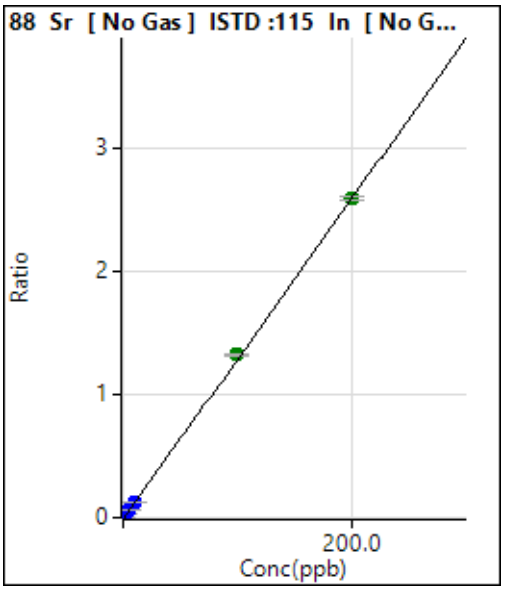


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	736.70	0.0013	P	14.2	
2	☐	2.000	0.492	763.37	0.0013	P	5.6	-75.4
3	☐	5.000	2.199	826.71	0.0014	P	5.4	-56.0
4	☐	10.000	13.646	1296.75	0.0022	P	13.1	36.5
5	☐	100.000	101.352	4847.65	0.0084	P	3.9	1.4
6	☐	200.000	199.227	8659.58	0.0153	P	3.5	-0.4

y = 7.0490E-005 * x + 0.0013
R = 0.9996
DL = 7.532 ppb
BEC = 17.74 ppb

Weight: <None>
Min Conc: <None>

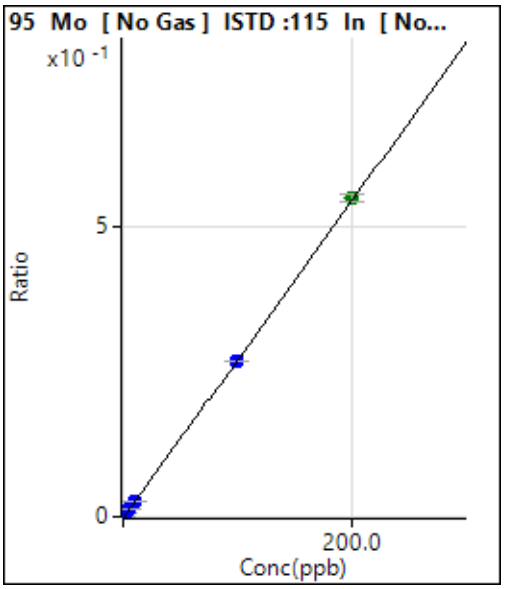
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1546.79	0.0007	P	12.0	
2	☐	2.000	1.972	61866.17	0.0264	P	0.9	-1.4
3	☐	5.000	4.963	152335.72	0.0654	P	0.6	-0.7
4	☐	10.000	9.992	305432.55	0.1310	P	1.2	-0.1
5	☐	100.000	101.538	3038884.33	1.3249	A	0.5	1.5
6	☐	200.000	199.233	5804446.16	2.5990	A	1.6	-0.4

y = 0.0130 * x + 6.5880E-004
R = 1.0000
DL = 0.01826 ppb
BEC = 0.05051 ppb

Weight: <None>
Min Conc: <None>

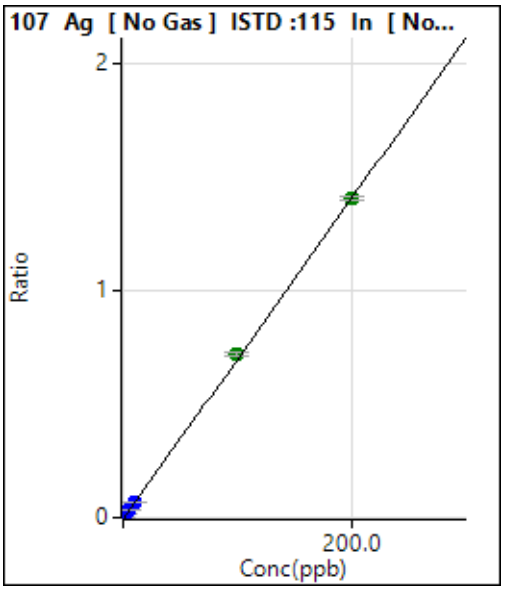


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	140.00	0.0001	P	14.1	
2	☐	2.000	1.881	12219.12	0.0052	P	4.7	-6.0
3	☐	5.000	4.663	29883.86	0.0128	P	2.6	-6.7
4	☐	10.000	9.555	61153.56	0.0262	P	2.2	-4.4
5	☐	100.000	97.979	615482.13	0.2683	P	1.0	-2.0
6	☐	200.000	201.042	1229637.90	0.5505	A	2.6	0.5

y = 0.0027 * x + 5.9611E-005
R = 0.9999
DL = 0.009232 ppb
BEC = 0.02177 ppb

Weight: <None>
Min Conc: <None>

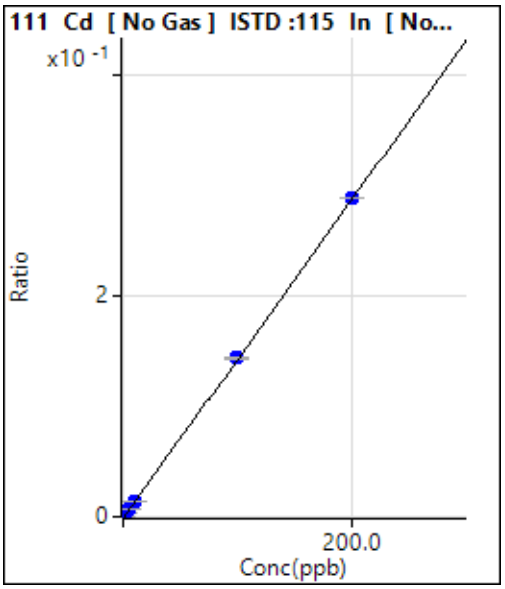
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	436.68	0.0002	P	28.7	
2	☐	2.000	2.011	33830.23	0.0144	P	0.4	0.5
3	☐	5.000	5.021	83261.26	0.0357	P	0.4	0.4
4	☐	10.000	10.079	166873.36	0.0716	P	1.1	0.8
5	☐	100.000	102.020	1657171.90	0.7226	A	1.9	2.0
6	☐	200.000	198.986	3147202.45	1.4091	A	0.9	-0.5

y = 0.0071 * x + 1.8642E-004
R = 0.9999
DL = 0.02264 ppb
BEC = 0.02633 ppb

Weight: <None>
Min Conc: <None>

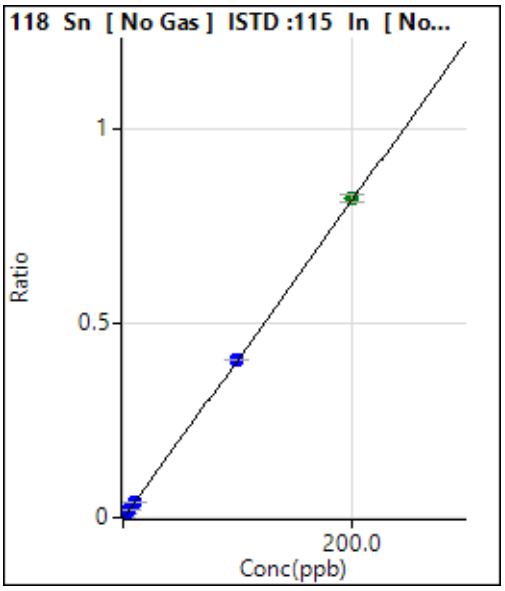


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	10.00	0.0000	P	1.4	
2	☐	2.000	1.988	6721.83	0.0029	P	3.7	-0.6
3	☐	5.000	4.866	16337.08	0.0070	P	4.0	-2.7
4	☐	10.000	9.814	32968.13	0.0141	P	3.0	-1.9
5	☐	100.000	99.565	328898.47	0.1434	P	0.4	-0.4
6	☐	200.000	200.230	644051.71	0.2884	P	0.6	0.1

y = 0.0014 * x + 4.2593E-006
R = 1.0000
DL = 0.0001224 ppb
BEC = 0.002957 ppb

Weight: <None>
Min Conc: <None>

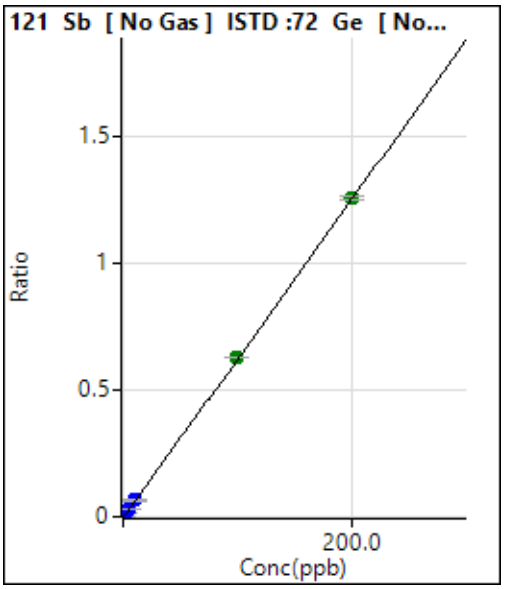
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1930.18	0.0008	P	5.4	
2	☐	2.000	1.839	19558.11	0.0083	P	0.7	-8.1
3	☐	5.000	4.674	46439.24	0.0199	P	2.3	-6.5
4	☐	10.000	9.730	94696.56	0.0406	P	0.6	-2.7
5	☐	100.000	98.863	928971.50	0.4050	P	0.9	-1.1
6	☐	200.000	200.592	1833452.89	0.8209	A	1.9	0.3

y = 0.0041 * x + 8.2170E-004
R = 1.0000
DL = 0.03245 ppb
BEC = 0.201 ppb

Weight: <None>
Min Conc: <None>

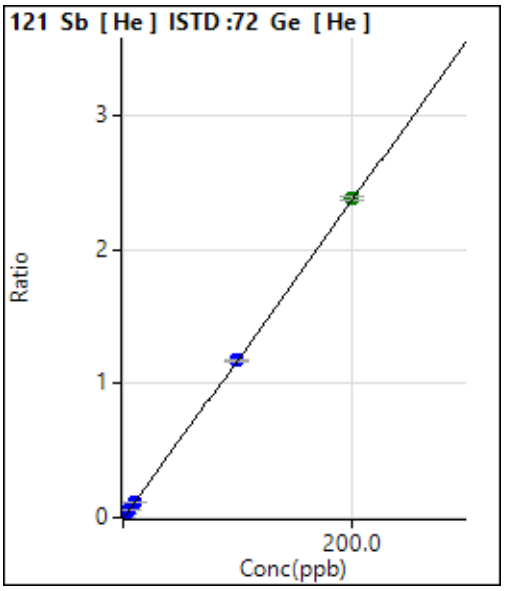


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1673.48	0.0008	P	6.9	
2	☐	2.000	2.052	28457.92	0.0137	P	2.6	2.6
3	☐	5.000	4.951	67188.58	0.0319	P	1.4	-1.0
4	☐	10.000	10.192	133070.15	0.0649	P	2.3	1.9
5	☐	100.000	100.007	1309846.98	0.6293	A	0.6	0.0
6	☐	200.000	199.987	2538681.94	1.2576	A	1.7	0.0

y = 0.0063 * x + 8.0353E-004
R = 1.0000
DL = 0.02638 ppb
BEC = 0.1279 ppb

Weight: <None>
Min Conc: <None>

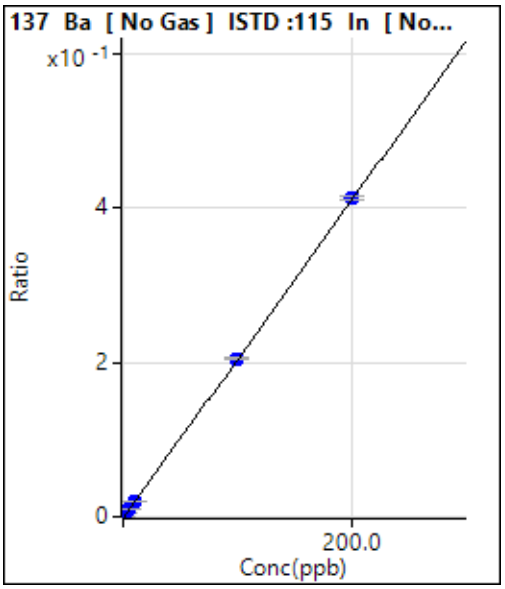
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	790.04	0.0013	P	7.2	
2	☐	2.000	2.004	14955.39	0.0252	P	0.9	0.2
3	☐	5.000	4.934	35287.87	0.0600	P	0.6	-1.3
4	☐	10.000	9.893	69781.95	0.1190	P	0.8	-1.1
5	☐	100.000	98.683	678592.99	1.1748	P	1.2	-1.3
6	☐	200.000	200.666	1352145.29	2.3876	A	1.3	0.3

y = 0.0119 * x + 0.0013
R = 1.0000
DL = 0.02427 ppb
BEC = 0.1127 ppb

Weight: <None>
Min Conc: <None>

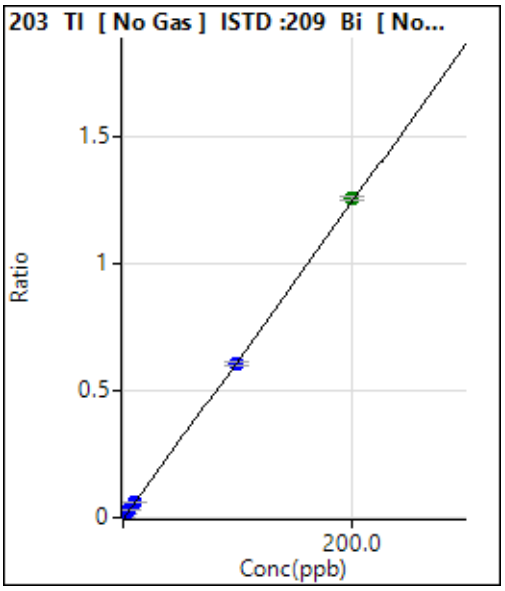


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	283.34	0.0001	P	13.9	
2	☐	2.000	1.902	9483.63	0.0040	P	4.8	-4.9
3	☐	5.000	4.898	23825.36	0.0102	P	2.7	-2.0
4	☐	10.000	9.703	46965.32	0.0201	P	1.6	-3.0
5	☐	100.000	99.237	469874.56	0.2049	P	1.0	-0.8
6	☐	200.000	200.400	923694.67	0.4136	P	1.1	0.2

y = 0.0021 * x + 1.2062E-004
R = 1.0000
DL = 0.02443 ppb
BEC = 0.05847 ppb

Weight: <None>
Min Conc: <None>

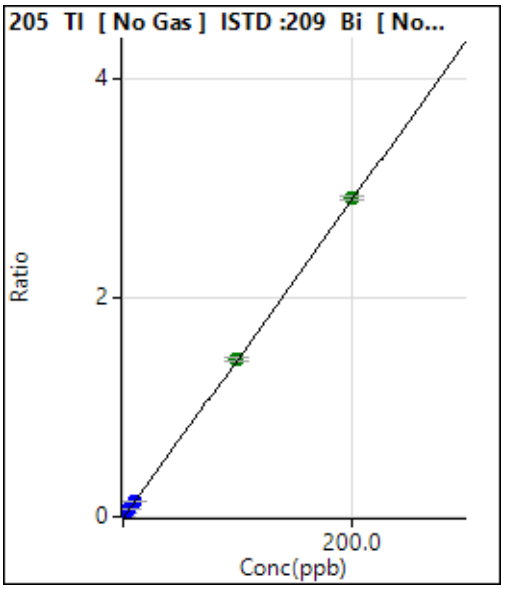
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	23.33	0.0000	P	64.6	
2	☐	2.000	1.893	22073.19	0.0118	P	2.6	-5.3
3	☐	5.000	4.703	55010.89	0.0294	P	0.6	-5.9
4	☐	10.000	9.408	110949.87	0.0588	P	1.6	-5.9
5	☐	100.000	96.876	1115373.40	0.6056	P	2.3	-3.1
6	☐	200.000	201.600	2204439.76	1.2603	A	1.7	0.8

y = 0.0063 * x + 1.2382E-005
R = 0.9998
DL = 0.003838 ppb
BEC = 0.001981 ppb

Weight: <None>
Min Conc: <None>

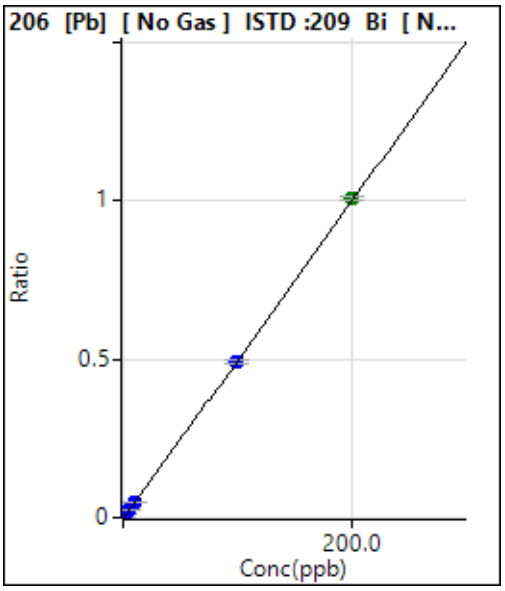


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	70.00	0.0000	P	50.5	
2	☐	2.000	1.929	52282.82	0.0281	P	0.8	-3.5
3	☐	5.000	4.837	131471.22	0.0703	P	0.7	-3.3
4	☐	10.000	9.761	267418.49	0.1418	P	2.1	-2.4
5	☐	100.000	99.011	2648021.32	1.4379	A	2.6	-1.0
6	☐	200.000	200.511	5093288.78	2.9119	A	0.7	0.3

y = 0.0145 * x + 3.7180E-005
R = 1.0000
DL = 0.003882 ppb
BEC = 0.00256 ppb

Weight: <None>
Min Conc: <None>

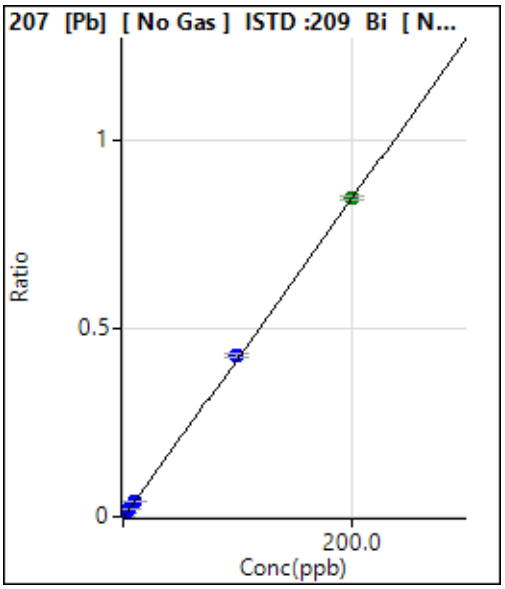
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	333.34	0.0002	P	23.9	
2	☐	2.000	1.909	18176.87	0.0098	P	3.8	-4.6
3	☐	5.000	4.867	46018.43	0.0246	P	2.0	-2.7
4	☐	10.000	9.564	90866.24	0.0482	P	1.6	-4.4
5	☐	100.000	98.124	907381.57	0.4927	P	2.2	-1.9
6	☐	200.000	200.964	1764623.10	1.0088	A	1.6	0.5

y = 0.0050 * x + 1.7744E-004
R = 0.9999
DL = 0.02537 ppb
BEC = 0.03535 ppb

Weight: <None>
Min Conc: <None>

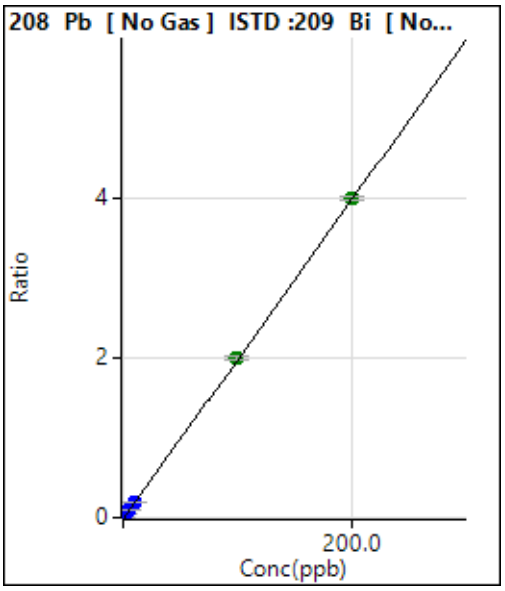


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	280.01	0.0001	P	4.5	
2	☐	2.000	2.040	16401.08	0.0088	P	1.5	2.0
3	☐	5.000	4.953	39546.50	0.0211	P	2.1	-0.9
4	☐	10.000	9.974	80036.28	0.0424	P	1.6	-0.3
5	☐	100.000	100.868	787826.39	0.4278	P	2.1	0.9
6	☐	200.000	199.568	1480028.83	0.8462	A	1.0	-0.2

y = 0.0042 * x + 1.4925E-004
R = 1.0000
DL = 0.004773 ppb
BEC = 0.03521 ppb

Weight: <None>
Min Conc: <None>

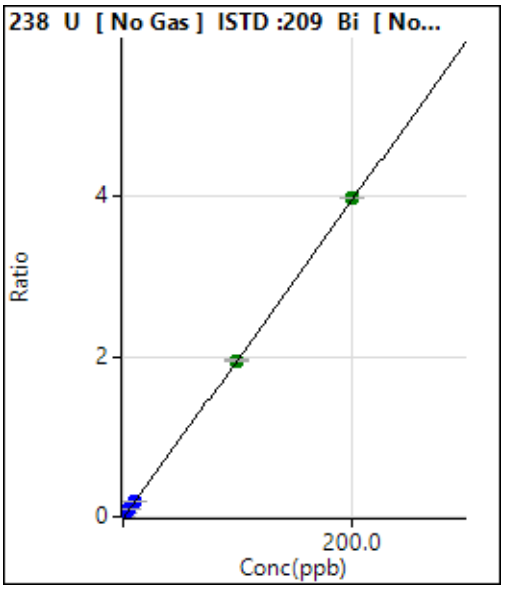
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1136.71	0.0006	P	4.3	
2	☐	2.000	1.943	73418.77	0.0394	P	1.9	-2.8
3	☐	5.000	4.845	182036.94	0.0973	P	1.3	-3.1
4	☐	10.000	9.709	366717.91	0.1944	P	1.9	-2.9
5	☐	100.000	100.006	3677591.84	1.9971	A	3.2	0.0
6	☐	200.000	200.016	6985424.68	3.9938	A	0.6	0.0

y = 0.0200 * x + 6.0570E-004
R = 1.0000
DL = 0.003915 ppb
BEC = 0.03034 ppb

Weight: <None>
Min Conc: <None>

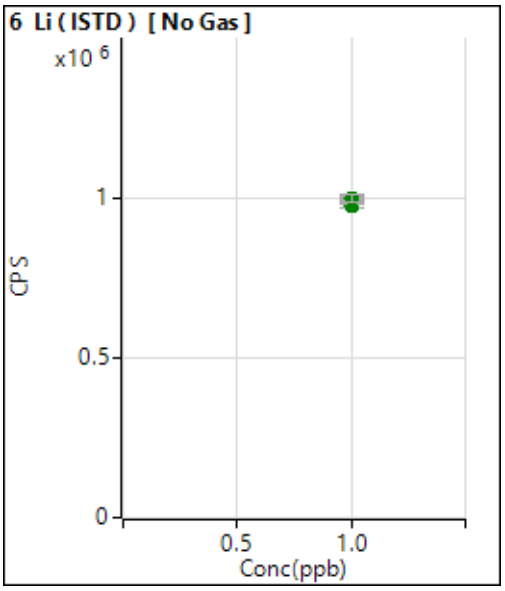


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	43.33	0.0000	P	35.9	
2	☐	2.000	1.943	71752.94	0.0385	P	2.4	-2.9
3	☐	5.000	4.750	176011.90	0.0941	P	1.6	-5.0
4	☐	10.000	9.631	359874.94	0.1908	P	1.9	-3.7
5	☐	100.000	98.548	3595629.84	1.9522	A	1.7	-1.5
6	☐	200.000	200.751	6955741.77	3.9768	A	0.4	0.4

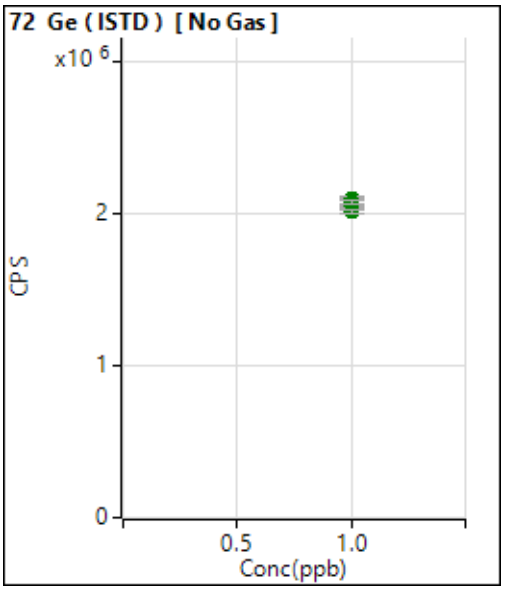
y = 0.0198 * x + 2.3120E-005
R = 1.0000
DL = 0.001258 ppb
BEC = 0.001167 ppb

Weight: <None>
Min Conc: <None>

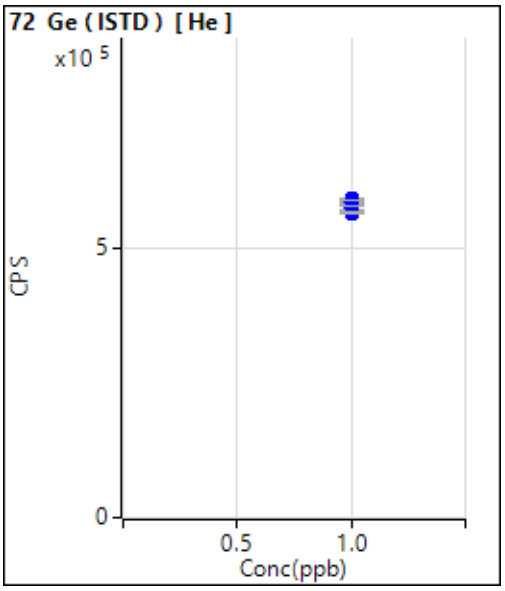
Calibration for 022_ICV.d



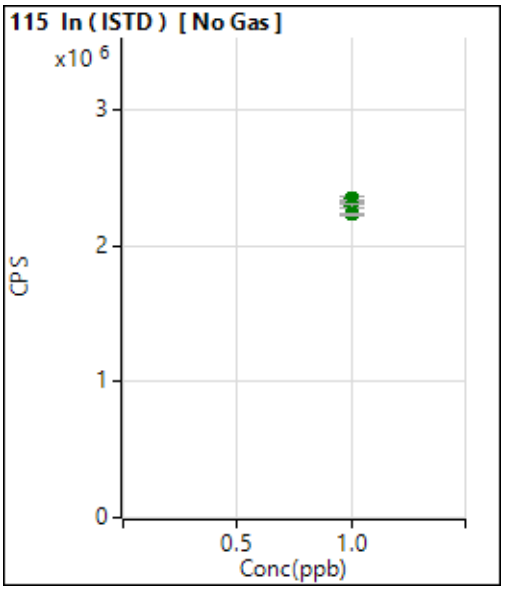
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		997075.72		A	1.7	
2	☐	1.000		996508.90		A	1.0	
3	☐	1.000		974065.88		A	1.6	
4	☐	1.000		983382.62		A	3.0	
5	☐	1.000		979565.41		A	0.6	
6	☐	1.000		996469.17		A	2.6	



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		2084400.96		A	1.8	
2	☐	1.000		2077893.30		A	2.5	
3	☐	1.000		2105344.71		A	0.7	
4	☐	1.000		2052061.74		A	1.2	
5	☐	1.000		2081502.36		A	1.2	
6	☐	1.000		2018879.50		A	1.4	

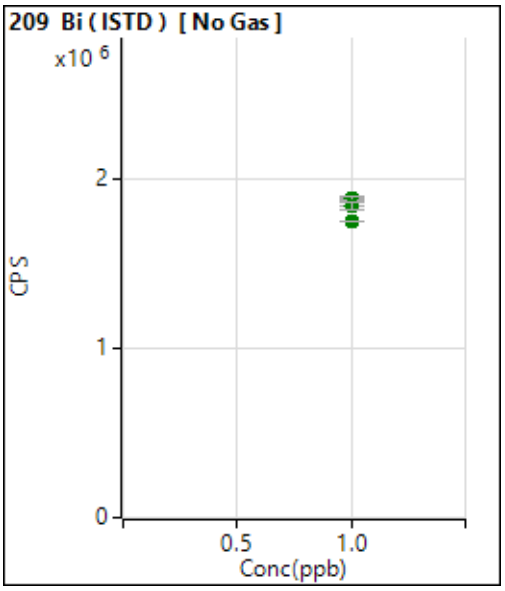


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		589370.58		P	0.5	
2	☐	1.000		594016.52		P	0.4	
3	☐	1.000		587999.29		P	0.9	
4	☐	1.000		586498.91		P	0.8	
5	☐	1.000		577652.87		P	1.3	
6	☐	1.000		566305.30		P	0.8	



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		2348124.35		A	1.4	
2	☐	1.000		2345249.22		A	1.8	
3	☐	1.000		2329868.21		A	0.3	
4	☐	1.000		2332183.48		A	0.7	
5	☐	1.000		2293716.76		A	0.8	
6	☐	1.000		2233492.20		A	0.7	

Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		1876649.71		A	1.0	
2	☐	1.000		1863950.08		A	2.4	
3	☐	1.000		1870453.62		A	1.1	
4	☐	1.000		1886190.33		A	0.9	
5	☐	1.000		1842298.93		A	2.3	
6	☐	1.000		1749115.08		A	0.5	

Calibration Blank Report

Sample Table

Sample Name	CAL BLK
Data File Name	015CALB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T11:24:30-05:00
Sample Type	CalBlk
Level	1
Dilution	1
Comment	

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Li	7	1	No Gas	53217	0.00
Be	9	1	No Gas	20	216.51
V	51	2	He	2609	0.04
Cr	52	2	He	1003	0.32
Fe	56	2	He	13477	0.01
Se	78	2	He	199	1.28
As	75	2	He	147	13.24
Ca	44	2	He	757	1.29
Na	23	2	He	99496	0.00
Mg	24	2	He	680	1.51
K	39	2	He	76102	0.00
Mn	55	2	He	320	12.20
Co	59	2	He	57	78.37
Ni	60	2	He	217	4.92
Cu	63	2	He	2200	0.18
Zn	66	2	He	633	0.52
Al	27	2	He	1130	1.15
B	11	1	No Gas	6748	0.04
Al	27	1	No Gas	59668	0.00
Si	28	1	No Gas	379456	0.00
Ag	107	1	No Gas	437	6.34
Cd	111	1	No Gas	10	0.00
Sr	88	1	No Gas	1547	0.77
Mo	95	1	No Gas	140	10.20
Sn	118	1	No Gas	1930	0.34
Sb	121	1	No Gas	1673	0.30
Ba	137	1	No Gas	283	5.03
Tl	205	1	No Gas	70	73.58
Tl	203	1	No Gas	23	280.57
Pb	208	1	No Gas	1137	0.39
U	238	1	No Gas	43	81.35
Ca	43	2	He	27	162.38
Sb	121	2	He	790	0.89
Ti	47	2	He	17	415.69
Cu	63	1	No Gas	4044	0.24

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD

Calibration Blank Report

Li	6	1	No Gas	997076	1.65
Ge	72	2	He	589371	0.46
Ge	72	1	No Gas	2084401	1.84
In	115	1	No Gas	2348124	1.39

Calibration Blank Report

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Bi	209	1	No Gas	1876650	0.96

Calibration Standard Report

Sample Table

Sample Name	2/10/200
Data File Name	016CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T11:26:23-05:00
Sample Type	CalStd
Level	2
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	No Gas	6933	0.01
V	51	2	He	14389	0.01
Cr	52	2	He	14838	0.03
Fe	56	2	He	1262705	0.00
Se	78	2	He	395	1.62
As	75	2	He	2189	0.35
Ca	44	2	He	7512	0.06
Na	23	2	He	297291	0.00
Mg	24	2	He	113099	0.00
K	39	2	He	205235	0.00
Mn	55	2	He	9904	0.03
Co	59	2	He	22062	0.00
Ni	60	2	He	6175	0.00
Cu	63	2	He	17451	0.02
Zn	66	2	He	3380	0.17
Al	27	2	He	1753	0.19
B	11	1	No Gas	24820	0.01
Al	27	1	No Gas	89524	0.00
Si	28	1	No Gas	454837	0.00
Ag	107	1	No Gas	33830	0.00
Cd	111	1	No Gas	6722	0.04
Sr	88	1	No Gas	61866	0.00
Mo	95	1	No Gas	12219	0.04
Sn	118	1	No Gas	19558	0.01
Sb	121	1	No Gas	28458	0.00
Ba	137	1	No Gas	9484	0.05
Tl	205	1	No Gas	52283	0.00
Tl	203	1	No Gas	22073	0.00
Pb	208	1	No Gas	73419	0.00
U	238	1	No Gas	71753	0.00
Ca	43	2	He	397	1.32
Sb	121	2	He	14955	0.01
Cu	63	1	No Gas	31791	0.01

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	996509	0.99	997076	99.94	70	120	
Ge	72	2	He	594017	0.44	589371	100.79	70	120	
Ge	72	1	No Gas	2077893	2.46	2084401	99.69	70	120	

Calibration Standard Report

In	115	1	No Gas	2345249	1.79	2348124	99.88	70	120	
Bi	209	1	No Gas	1863950	2.45	1876650	99.32	70	120	

Calibration Standard Report

Sample Table

Sample Name	5/25/500
Data File Name	017CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T11:28:16-05:00
Sample Type	CalStd
Level	3
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	No Gas	17700	0.01
V	51	2	He	31524	0.00
Cr	52	2	He	35038	0.00
Fe	56	2	He	3030782	0.00
Se	78	2	He	612	1.39
As	75	2	He	5248	0.09
Ca	44	2	He	17048	0.01
Na	23	2	He	589680	0.00
Mg	24	2	He	282098	0.00
K	39	2	He	394983	0.00
Mn	55	2	He	23611	0.01
Co	59	2	He	53957	0.00
Ni	60	2	He	14595	0.02
Cu	63	2	He	40795	0.00
Zn	66	2	He	7629	0.07
Al	27	2	He	2707	0.26
B	11	1	No Gas	52016	0.00
Al	27	1	No Gas	131476	0.00
Si	28	1	No Gas	564442	0.00
Ag	107	1	No Gas	83261	0.00
Cd	111	1	No Gas	16337	0.02
Sr	88	1	No Gas	152336	0.00
Mo	95	1	No Gas	29884	0.01
Sn	118	1	No Gas	46439	0.01
Sb	121	1	No Gas	67189	0.00
Ba	137	1	No Gas	23825	0.01
Tl	205	1	No Gas	131471	0.00
Tl	203	1	No Gas	55011	0.00
Pb	208	1	No Gas	182037	0.00
U	238	1	No Gas	176012	0.00
Ca	43	2	He	1097	0.57
Sb	121	2	He	35288	0.00
Cu	63	1	No Gas	72312	0.00

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	974066	1.58	997076	97.69	70	120	
Ge	72	2	He	587999	0.86	589371	99.77	70	120	
Ge	72	1	No Gas	2105345	0.73	2084401	101.00	70	120	

Calibration Standard Report

In	115	1	No Gas	2329868	0.29	2348124	99.22	70	120	
Bi	209	1	No Gas	1870454	1.05	1876650	99.67	70	120	

Calibration Standard Report

Sample Table

Sample Name	10/50/100
Data File Name	018CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T11:30:09-05:00
Sample Type	CalStd
Level	4
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	No Gas	35508	0.01
V	51	2	He	61960	0.00
Cr	52	2	He	70943	0.00
Fe	56	2	He	6023990	0.00
Se	78	2	He	1048	0.69
As	75	2	He	10416	0.03
Ca	44	2	He	32987	0.01
Na	23	2	He	1163483	0.00
Mg	24	2	He	571741	0.00
K	39	2	He	722059	0.00
Mn	55	2	He	47469	0.00
Co	59	2	He	109776	0.00
Ni	60	2	He	29098	0.00
Cu	63	2	He	80588	0.00
Zn	66	2	He	14368	0.01
Al	27	2	He	3911	0.05
B	11	1	No Gas	99435	0.00
Al	27	1	No Gas	207378	0.00
Si	28	1	No Gas	758302	0.00
Ag	107	1	No Gas	166873	0.00
Cd	111	1	No Gas	32968	0.01
Sr	88	1	No Gas	305433	0.00
Mo	95	1	No Gas	61154	0.00
Sn	118	1	No Gas	94697	0.00
Sb	121	1	No Gas	133070	0.00
Ba	137	1	No Gas	46965	0.00
Tl	205	1	No Gas	267418	0.00
Tl	203	1	No Gas	110950	0.00
Pb	208	1	No Gas	366718	0.00
U	238	1	No Gas	359875	0.00
Ca	43	2	He	2100	0.10
Sb	121	2	He	69782	0.00
Cu	63	1	No Gas	145482	0.00

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	983383	3.01	997076	98.63	70	120	
Ge	72	2	He	586499	0.76	589371	99.51	70	120	
Ge	72	1	No Gas	2052062	1.18	2084401	98.45	70	120	

Calibration Standard Report

In	115	1	No Gas	2332183	0.68	2348124	99.32	70	120	
Bi	209	1	No Gas	1886190	0.92	1876650	100.51	70	120	

Calibration Standard Report

Sample Table

Sample Name	100/500/10K
Data File Name	019CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T11:32:02-05:00
Sample Type	CalStd
Level	5
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	No Gas	361847	0.00
V	51	2	He	595503	0.00
Cr	52	2	He	689842	0.00
Fe	56	2	He	58433696	0.00
Se	78	2	He	8598	0.02
As	75	2	He	104543	0.00
Ca	44	2	He	331606	0.00
Na	23	2	He	9994431	0.00
Mg	24	2	He	5553072	0.00
K	39	2	He	6311807	0.00
Mn	55	2	He	463285	0.00
Co	59	2	He	1057861	0.00
Ni	60	2	He	281431	0.00
Cu	63	2	He	764526	0.00
Zn	66	2	He	138993	0.00
Al	27	2	He	29869	0.01
B	11	1	No Gas	993862	0.00
Al	27	1	No Gas	1562473	0.00
Si	28	1	No Gas	4146654	0.00
Ag	107	1	No Gas	1657172	0.00
Cd	111	1	No Gas	328898	0.00
Sr	88	1	No Gas	3038884	0.00
Mo	95	1	No Gas	615482	0.00
Sn	118	1	No Gas	928971	0.00
Sb	121	1	No Gas	1309847	0.00
Ba	137	1	No Gas	469875	0.00
Tl	205	1	No Gas	2648021	0.00
Tl	203	1	No Gas	1115373	0.00
Pb	208	1	No Gas	3677592	0.00
U	238	1	No Gas	3595630	0.00
Ca	43	2	He	19574	0.02
Sb	121	2	He	678593	0.00
Cu	63	1	No Gas	1350062	0.00

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	979565	0.60	997076	98.24	70	120	
Ge	72	2	He	577653	1.32	589371	98.01	70	120	
Ge	72	1	No Gas	2081502	1.16	2084401	99.86	70	120	

Calibration Standard Report

In	115	1	No Gas	2293717	0.83	2348124	97.68	70	120	
Bi	209	1	No Gas	1842299	2.25	1876650	98.17	70	120	

Calibration Standard Report

Sample Table

Sample Name	200/1000/20K
Data File Name	020CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T11:33:50-05:00
Sample Type	CalStd
Level	6
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	No Gas	727635	0.00
V	51	2	He	1187845	0.00
Cr	52	2	He	1349080	0.00
Fe	56	2	He	113218092	0.00
Se	78	2	He	16562	0.01
As	75	2	He	202355	0.00
Ca	44	2	He	637529	0.00
Na	23	2	He	19219896	0.00
Mg	24	2	He	10952672	0.00
K	39	2	He	12193397	0.00
Mn	55	2	He	900388	0.00
Co	59	2	He	2024906	0.00
Ni	60	2	He	540570	0.00
Cu	63	2	He	1456987	0.00
Zn	66	2	He	266614	0.00
Al	27	2	He	58158	0.00
B	11	1	No Gas	1990343	0.00
Al	27	1	No Gas	2965055	0.00
Si	28	1	No Gas	7681003	0.00
Ag	107	1	No Gas	3147202	0.00
Cd	111	1	No Gas	644052	0.00
Sr	88	1	No Gas	5804446	0.00
Mo	95	1	No Gas	1229638	0.00
Sn	118	1	No Gas	1833453	0.00
Sb	121	1	No Gas	2538682	0.00
Ba	137	1	No Gas	923695	0.00
Tl	205	1	No Gas	5093289	0.00
Tl	203	1	No Gas	2204440	0.00
Pb	208	1	No Gas	6985425	0.00
U	238	1	No Gas	6955742	0.00
Ca	43	2	He	37531	0.00
Sb	121	2	He	1352145	0.00
Cu	63	1	No Gas	2611853	0.00

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	996469	2.57	997076	99.94	70	120	
Ge	72	2	He	566305	0.77	589371	96.09	70	120	
Ge	72	1	No Gas	2018880	1.37	2084401	96.86	70	120	

Calibration Standard Report

In	115	1	No Gas	2233492	0.65	2348124	95.12	70	120	
Bi	209	1	No Gas	1749115	0.52	1876650	93.20	70	120	

Initial Calibration Verification (ICV) Report

Sample Table

Sample Name	ICV
Data File Name	022_ICV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T11:40:03-05:00
Sample Type	ICV
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High	QC Flag
Li	7	1	No Gas	104.651	1.831	1582517	1.50	100	104.7	90	110	
Be	9	1	No Gas	100.821	0.892	374746	0.41	100	100.8	90	110	
V	51	2	He	95.950	1.092	579879	0.41	100	96.0	90	110	
Cr	52	2	He	98.847	0.429	680396	0.72	100	98.8	90	110	
Fe	56	2	He	9944.440	1.552	57524666	1.11	10000	99.4	90	110	
Se	78	2	He	101.470	1.238	8671	0.38	100	101.5	90	110	
As	75	2	He	103.749	1.589	107314	0.93	100	103.7	90	110	
Ca	44	2	He	9978.361	1.050	325765	0.57	10000	99.8	90	110	
Na	23	2	He	9919.170	0.665	9795012	0.79	10000	99.2	90	110	
Mg	24	2	He	10079.570	1.825	5619715	0.84	10000	100.8	90	110	
K	39	2	He	10053.227	1.639	6295534	1.01	10000	100.5	90	110	
Mn	55	2	He	100.066	0.683	460122	0.55	100	100.1	90	110	
Co	59	2	He	100.436	1.769	1041818	2.54	100	100.4	90	110	
Ni	60	2	He	100.319	1.668	277606	0.60	100	100.3	90	110	
Cu	63	2	He	100.394	0.794	750677	0.98	100	100.4	90	110	
Zn	66	2	He	100.447	2.109	137319	1.03	100	100.4	90	110	
Al	27	2	He	98.823	2.214	29786	3.12	100	98.8	90	110	
B	11	1	No Gas	506.347	1.894	1033053	1.57	500	101.3	90	110	
Al	27	1	No Gas	102.330	0.780	1567389	0.54	100	102.3	90	110	
Si	28	1	No Gas	514.559	0.798	4187216	1.07	500	102.9	90	110	
Ag	107	1	No Gas	103.404	0.689	1653290	1.19	100	103.4	90	110	
Cd	111	1	No Gas	99.810	0.826	324489	0.22	100	99.8	90	110	
Sr	88	1	No Gas	103.634	0.398	3052563	0.63	100	103.6	90	110	
Mo	95	1	No Gas	96.641	1.035	597460	0.05	100	96.6	90	110	
Sn	118	1	No Gas	102.168	1.433	944765	0.67	100	102.2	90	110	
Sb	121	1	No Gas	106.093	1.128	1365975	0.75	100	106.1	90	110	
Ba	137	1	No Gas	100.415	0.778	467948	0.99	100	100.4	90	110	
Tl	205	1	No Gas	103.119	0.504	2695682	0.30	100	103.1	90	110	
Tl	203	1	No Gas	99.020	0.032	1114301	0.64	100	99.0	90	110	
Pb	208	1	No Gas	101.452	1.739	3646777	1.32	100	101.5	90	110	
U	238	1	No Gas	96.985	1.125	3458243	0.90	100	97.0	90	110	
Ca	43	2	He	10264.144	0.888	19734	1.15	10000	102.6	90	110	
Sb	121	2	He	102.087	1.759	701446	0.99	100	102.1	90	110	
Ti	47	2	He	97.588	0.934	20028	1.43	100	97.6	90	110	
Cu	63	1	No Gas	101.736	0.848	1349229	0.47	100	101.7	90	110	
Se	82	1	No Gas	105.259	3.187	20097	2.90	100	105.3	90	110	

QC ISTD Table

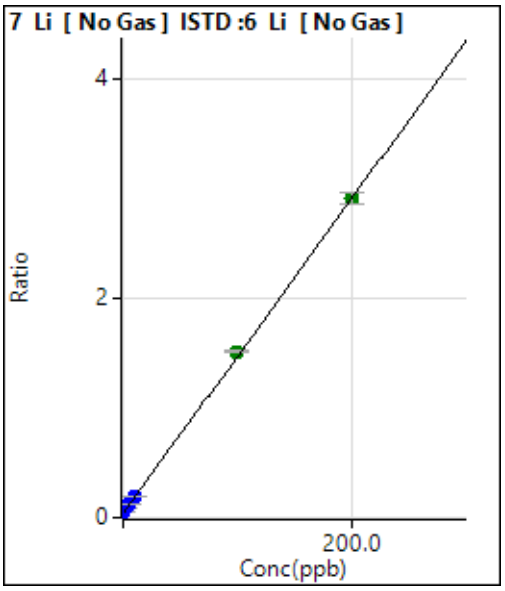
Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1015319	0.50	997076	101.83	70	120	
Ge	72	2	He	577230	1.09	589371	97.94	70	120	
Ge	72	1	No Gas	2046350	0.38	2084401	98.17	70	120	
In	115	1	No Gas	2257484	0.99	2348124	96.14	70	120	
Bi	209	1	No Gas	1800069	0.61	1876650	95.92	70	120	

Calibration for 022_ICV.d

Batch Folder: D:\Agilent\ICPMH\1\DATA\091222A.b\
Analysis File: 091222A.batch.bin
DA Date-Time: 09/12/2022 11:40:42
Calibration Title:
Calibration Method: External Calibration
VIS Interpolation Fit:

Level	Standard Data File	Sample Name	Acq. Date-Time
1	015CALB.d	CAL BLK	09/12/2022 11:24:30
2	016CALS.d	2/10/200	09/12/2022 11:26:23
3	017CALS.d	5/25/500	09/12/2022 11:28:16
4	018CALS.d	10/50/100	09/12/2022 11:30:09
5	019CALS.d	100/500/10K	09/12/2022 11:32:02
6	020CALS.d	200/1000/20K	09/12/2022 11:33:50

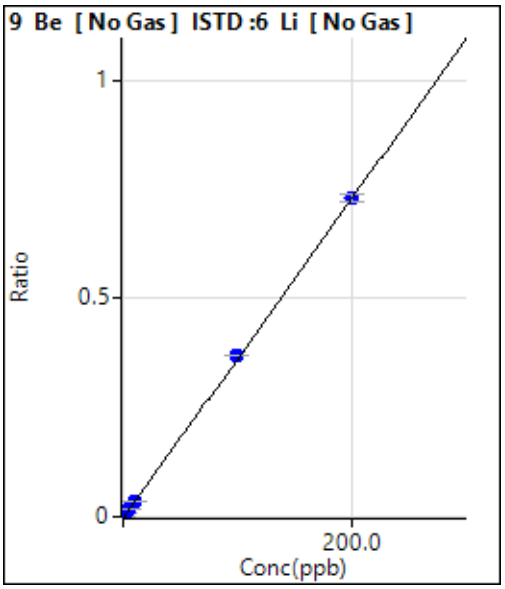
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	53216.85	0.0534	P	2.3	
2	☐	2.000	1.836	79506.42	0.0798	P	1.0	-8.2
3	☐	5.000	4.771	118833.45	0.1220	P	1.2	-4.6
4	☐	10.000	9.471	186401.20	0.1896	P	2.0	-5.3
5	☐	100.000	101.749	1485901.18	1.5170	A	1.2	1.7
6	☐	200.000	199.159	2906303.50	2.9181	A	3.1	-0.4

y = 0.0144 * x + 0.0534
R = 0.9999
DL = 0.2599 ppb
BEC = 3.711 ppb

Weight: <None>
Min Conc: <None>

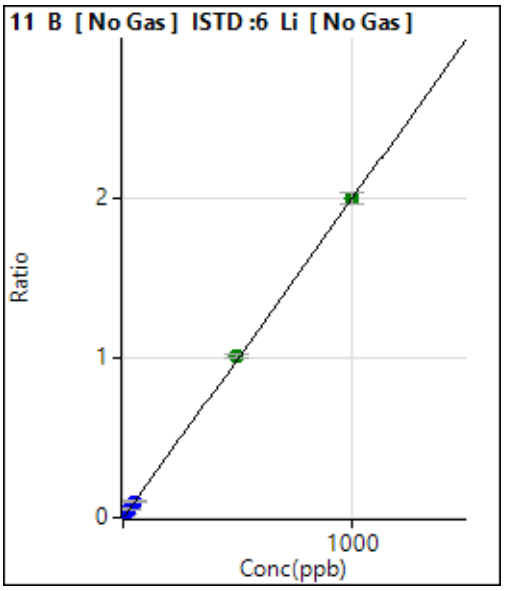


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	20.00	0.0000	P	43.0	
2	☐	2.000	1.895	6933.43	0.0070	P	0.1	-5.2
3	☐	5.000	4.959	17699.55	0.0182	P	2.6	-0.8
4	☐	10.000	9.864	35508.11	0.0361	P	3.8	-1.4
5	☐	100.000	100.902	361846.79	0.3694	P	0.5	0.9
6	☐	200.000	199.558	727634.62	0.7306	P	2.8	-0.2

y = 0.0037 * x + 2.0047E-005
R = 1.0000
DL = 0.007068 ppb
BEC = 0.005476 ppb

Weight: <None>
Min Conc: <None>

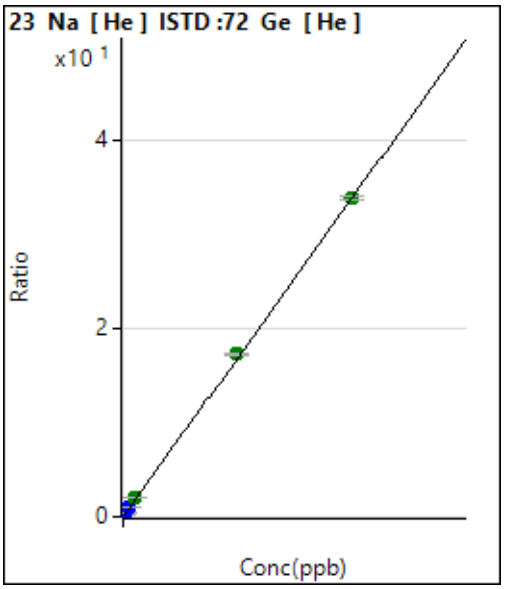
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	6748.33	0.0068	P	0.8	
2	☐	10.000	9.088	24820.29	0.0249	P	1.8	-9.1
3	☐	25.000	23.372	52016.05	0.0534	P	3.9	-6.5
4	☐	50.000	47.296	99434.69	0.1012	P	4.1	-5.4
5	☐	500.000	504.863	993862.02	1.0145	A	2.3	1.0
6	☐	1000.000	997.754	1990342.63	1.9984	A	3.1	-0.2

y = 0.0020 * x + 0.0068
R = 1.0000
DL = 0.08244 ppb
BEC = 3.39 ppb

Weight: <None>
Min Conc: <None>

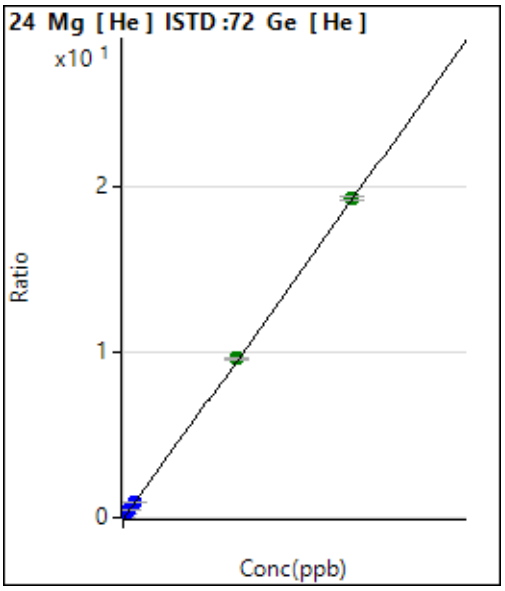


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	99496.36	0.1688	P	0.4	
2	☐	200.000	195.817	297291.48	0.5005	P	0.5	-2.1
3	☐	500.000	492.433	589679.73	1.0029	P	0.7	-1.5
4	☐	1000.000	1071.600	1163482.87	1.9839	A	1.2	7.2
5	☐	10000.00	10116.49	9994430.89	17.3038	A	1.4	1.2
6	☐	20000.00	19938.40	19219895.96	33.9398	A	0.7	-0.3

y = 0.0017 * x + 0.1688
R = 1.0000
DL = 1.154 ppb
BEC = 99.67 ppb

Weight: <None>
Min Conc: <None>

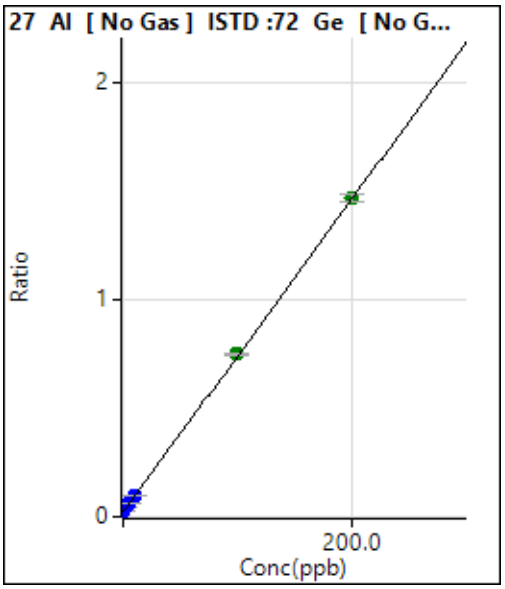
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	680.03	0.0012	P	9.8	
2	☐	200.000	195.925	113099.36	0.1904	P	1.0	-2.0
3	☐	500.000	495.527	282098.40	0.4798	P	0.7	-0.9
4	☐	1000.000	1008.088	571741.49	0.9749	P	0.4	0.8
5	☐	10000.00	9952.545	5553071.59	9.6142	A	1.9	-0.5
6	☐	20000.00	20023.47	10952672.34	19.3416	A	1.1	0.1

y = 9.6589E-004 * x + 0.0012
R = 1.0000
DL = 0.3518 ppb
BEC = 1.194 ppb

Weight: <None>
Min Conc: <None>

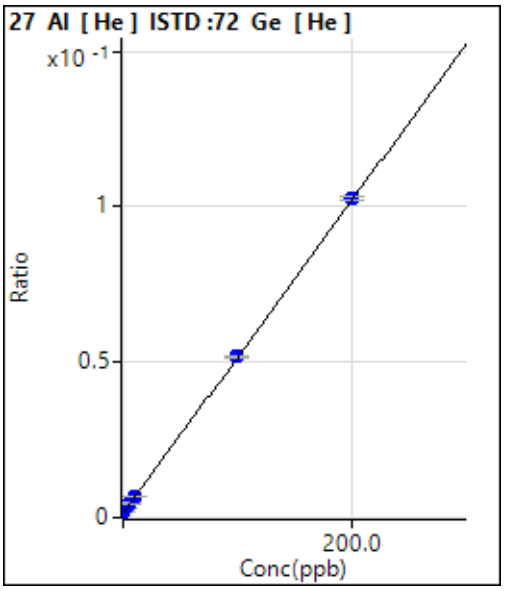


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	59667.89	0.0286	P	2.3	
2	☐	2.000	2.009	89523.60	0.0431	P	3.3	0.4
3	☐	5.000	4.694	131476.11	0.0625	P	1.5	-6.1
4	☐	10.000	10.052	207377.90	0.1011	P	0.7	0.5
5	☐	100.000	100.210	1562473.36	0.7507	A	0.8	0.2
6	☐	200.000	199.900	2965054.75	1.4690	A	2.4	-0.1

y = 0.0072 * x + 0.0286
R = 1.0000
DL = 0.2705 ppb
BEC = 3.974 ppb

Weight: <None>
Min Conc: <None>

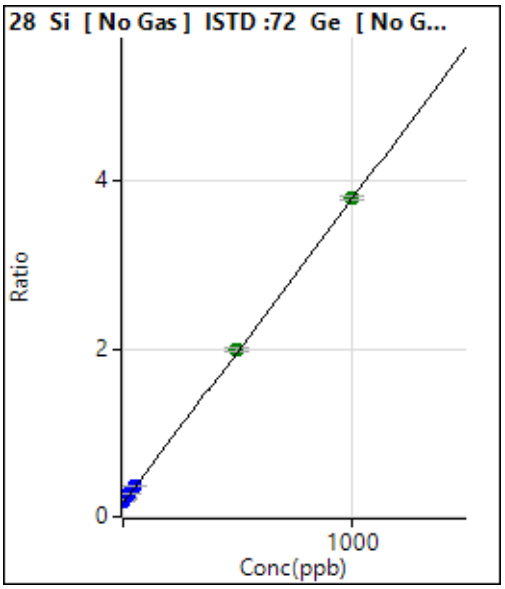
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1130.07	0.0019	P	12.7	
2	☐	2.000	2.059	1753.48	0.0030	P	3.5	3.0
3	☐	5.000	5.349	2706.97	0.0046	P	7.8	7.0
4	☐	10.000	9.452	3910.61	0.0067	P	2.4	-5.5
5	☐	100.000	99.044	29869.11	0.0517	P	1.1	-1.0
6	☐	200.000	200.496	58158.13	0.1027	P	1.2	0.2

y = 5.0269E-004 * x + 0.0019
R = 1.0000
DL = 1.45 ppb
BEC = 3.813 ppb

Weight: <None>
Min Conc: <None>

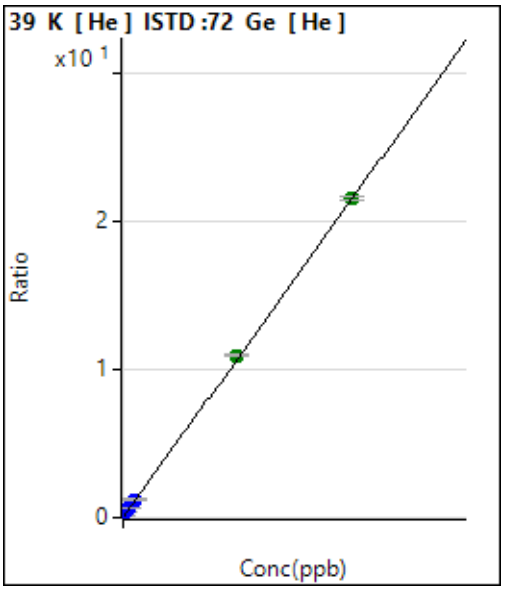


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	379456.09	0.1821	P	1.4	
2	☐	10.000	10.185	454837.15	0.2190	P	2.3	1.9
3	☐	25.000	23.749	564441.50	0.2681	P	1.1	-5.0
4	☐	50.000	51.749	758302.04	0.3695	P	0.6	3.5
5	☐	500.000	499.725	4146653.79	1.9924	A	1.8	-0.1
6	☐	1000.000	1000.080	7681003.43	3.8050	A	1.3	0.0

y = 0.0036 * x + 0.1821
R = 1.0000
DL = 2.162 ppb
BEC = 50.26 ppb

Weight: <None>
Min Conc: <None>

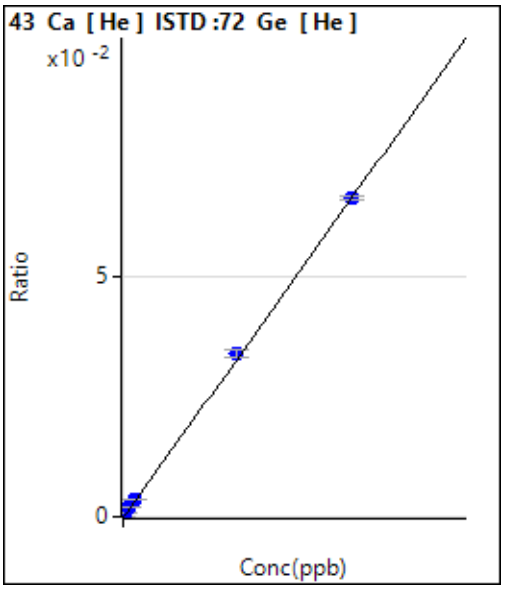
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	76102.47	0.1291	P	1.2	
2	☐	200.000	201.826	205234.99	0.3455	P	0.7	0.9
3	☐	500.000	506.130	394982.58	0.6718	P	0.6	1.2
4	☐	1000.000	1027.876	722059.13	1.2311	P	0.5	2.8
5	☐	10000.00	10071.75	6311806.57	10.9273	A	1.1	0.7
6	☐	20000.00	19962.55	12193396.90	21.5315	A	0.7	-0.2

y = 0.0011 * x + 0.1291
R = 1.0000
DL = 4.392 ppb
BEC = 120.4 ppb

Weight: <None>
Min Conc: <None>

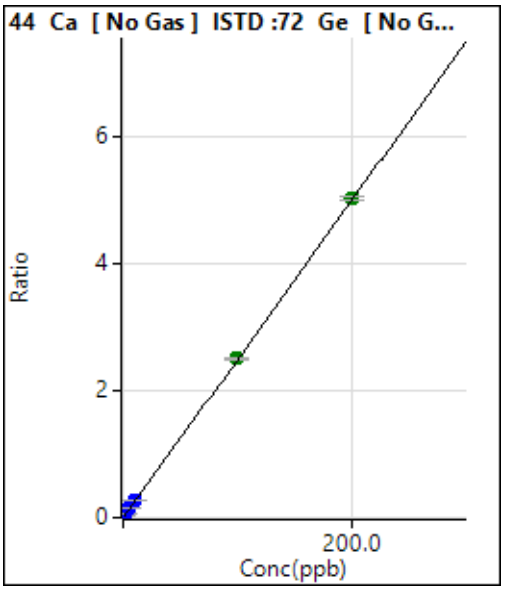


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	26.67	0.0000	P	43.5	
2	☐	200.000	187.147	396.68	0.0007	P	5.4	-6.4
3	☐	500.000	547.133	1096.73	0.0019	P	6.3	9.4
4	☐	1000.000	1062.802	2100.21	0.0036	P	1.5	6.3
5	☐	10000.00	10174.81	19574.14	0.0339	P	4.0	1.7
6	☐	20000.00	19908.40	37531.31	0.0663	P	1.1	-0.5

y = 3.3265E-006 * x + 4.5274E-005
R = 0.9999
DL = 17.78 ppb
BEC = 13.61 ppb

Weight: <None>
Min Conc: <None>

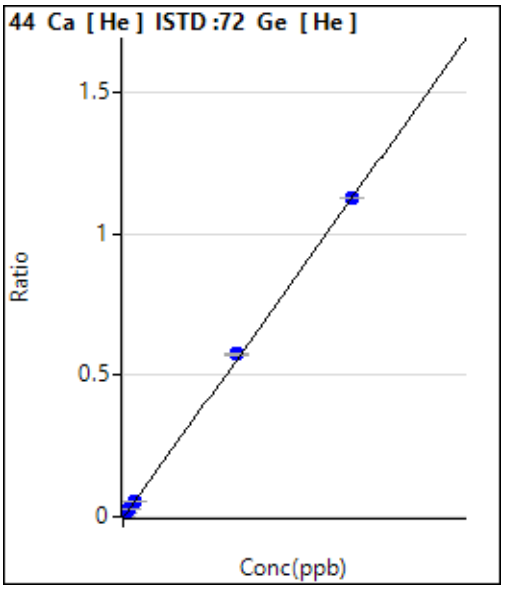
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	44455.61	0.0213	P	3.9	
2	☐	2.000	1.960	146065.87	0.0703	P	3.0	-2.0
3	☐	5.000	4.805	297812.99	0.1415	P	1.7	-3.9
4	☐	10.000	9.994	556477.55	0.2712	P	1.3	-0.1
5	☐	100.000	99.287	5210819.09	2.5036	A	1.1	-0.7
6	☐	200.000	200.362	10155351.30	5.0305	A	0.8	0.2

y = 0.0250 * x + 0.0213
R = 1.0000
DL = 0.09885 ppb
BEC = 0.8535 ppb

Weight: <None>
Min Conc: <None>

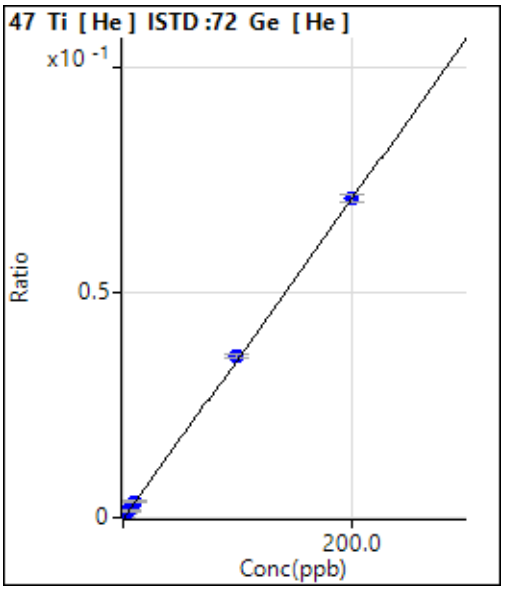


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	756.70	0.0013	P	10.1	
2	☐	200.000	201.351	7512.21	0.0126	P	4.9	0.7
3	☐	500.000	491.064	17047.52	0.0290	P	2.5	-1.8
4	☐	1000.000	973.827	32986.54	0.0562	P	1.0	-2.6
5	☐	10000.00	10150.74	331606.30	0.5741	P	1.5	1.5
6	☐	20000.00	19926.14	637529.17	1.1258	P	0.4	-0.4

y = 5.6433E-005 * x + 0.0013
R = 1.0000
DL = 6.878 ppb
BEC = 22.76 ppb

Weight: <None>
Min Conc: <None>

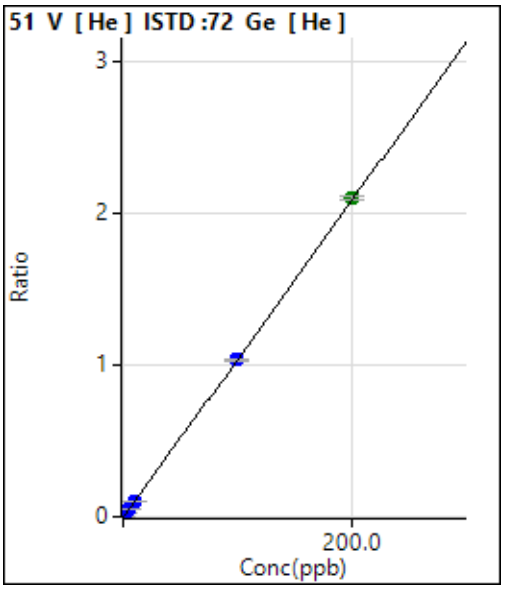
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	16.67	0.0000	P	69.5	
2	☐	2.000	1.831	403.35	0.0007	P	7.5	-8.4
3	☐	5.000	4.484	953.38	0.0016	P	16.5	-10.3
4	☐	10.000	10.049	2110.20	0.0036	P	4.9	0.5
5	☐	100.000	100.907	20719.23	0.0359	P	2.7	0.9
6	☐	200.000	199.558	40158.99	0.0709	P	2.8	-0.2

y = 3.5526E-004 * x + 2.8306E-005
R = 1.0000
DL = 0.1661 ppb
BEC = 0.07968 ppb

Weight: <None>
Min Conc: <None>

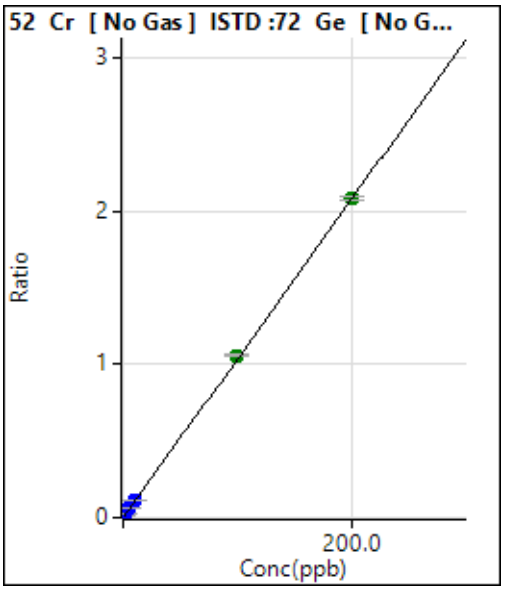


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	2609.16	0.0044	P	0.5	
2	☐	2.000	1.899	14388.71	0.0242	P	1.7	-5.0
3	☐	5.000	4.719	31523.95	0.0536	P	2.3	-5.6
4	☐	10.000	9.710	61960.47	0.1056	P	0.5	-2.9
5	☐	100.000	98.479	595502.65	1.0310	P	1.4	-1.5
6	☐	200.000	200.783	1187845.13	2.0975	A	0.7	0.4

y = 0.0104 * x + 0.0044
R = 1.0000
DL = 0.006944 ppb
BEC = 0.4247 ppb

Weight: <None>
Min Conc: <None>

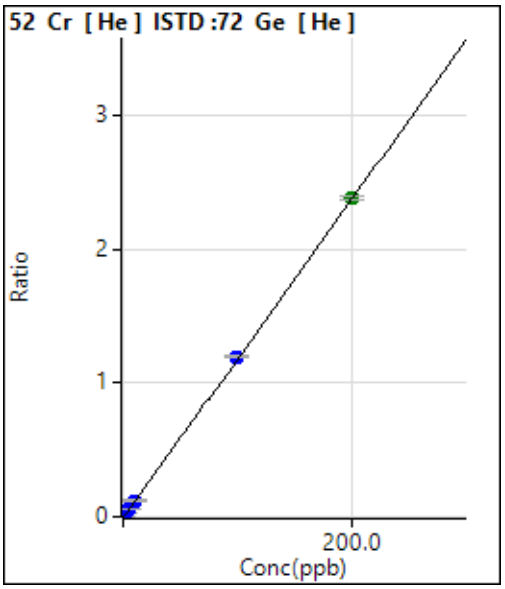
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	19337.26	0.0093	P	2.7	
2	☐	2.000	2.000	62549.55	0.0301	P	1.3	0.0
3	☐	5.000	5.010	129366.53	0.0614	P	0.4	0.2
4	☐	10.000	10.274	238575.78	0.1163	P	1.3	2.7
5	☐	100.000	101.042	2209281.63	1.0615	A	0.9	1.0
6	☐	200.000	199.465	4211430.87	2.0863	A	1.7	-0.3

y = 0.0104 * x + 0.0093
R = 1.0000
DL = 0.07262 ppb
BEC = 0.8912 ppb

Weight: <None>
Min Conc: <None>

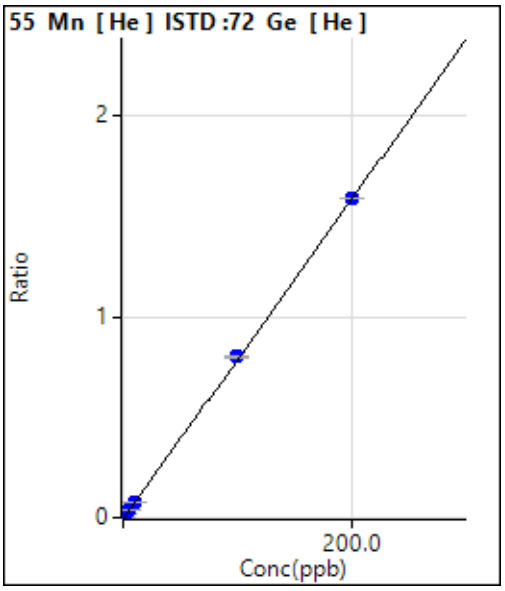


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1003.39	0.0017	P	3.4	
2	☐	2.000	1.955	14838.27	0.0250	P	4.4	-2.3
3	☐	5.000	4.862	35038.47	0.0596	P	1.7	-2.8
4	☐	10.000	10.015	70943.22	0.1210	P	1.8	0.2
5	☐	100.000	100.157	689842.46	1.1944	P	1.5	0.2
6	☐	200.000	199.924	1349080.34	2.3824	A	1.5	0.0

y = 0.0119 * x + 0.0017
R = 1.0000
DL = 0.01469 ppb
BEC = 0.143 ppb

Weight: <None>
Min Conc: <None>

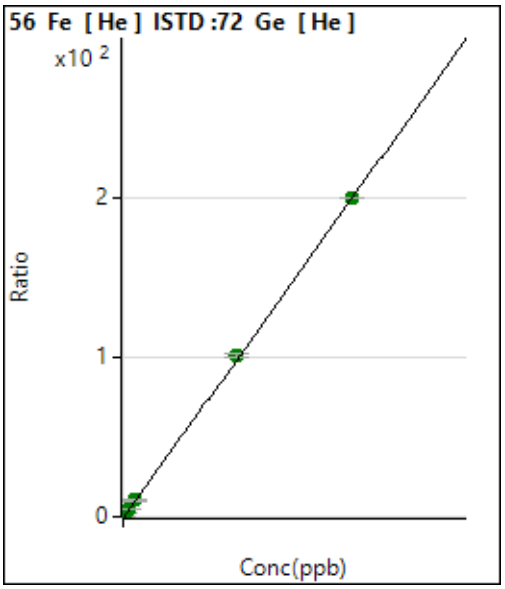
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	320.01	0.0005	P	39.0	
2	☐	2.000	2.026	9903.78	0.0167	P	2.8	1.3
3	☐	5.000	4.975	23610.69	0.0402	P	1.3	-0.5
4	☐	10.000	10.099	47469.18	0.0809	P	0.8	1.0
5	☐	100.000	100.691	463285.38	0.8021	P	1.8	0.7
6	☐	200.000	199.650	900387.59	1.5899	P	0.0	-0.2

y = 0.0080 * x + 5.4283E-004
R = 1.0000
DL = 0.07983 ppb
BEC = 0.06819 ppb

Weight: <None>
Min Conc: <None>

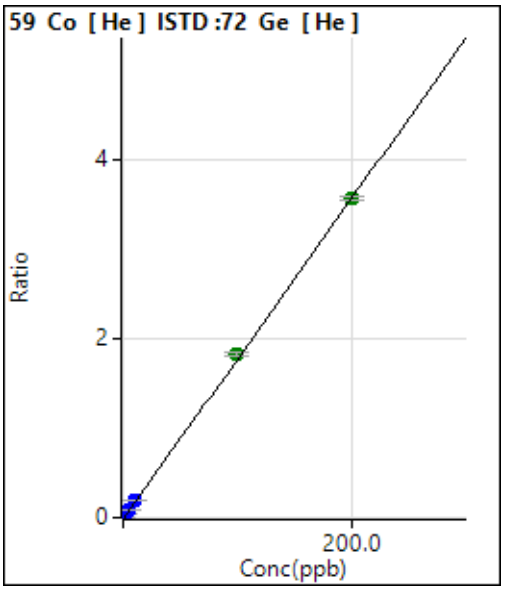


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	13476.78	0.0229	P	1.2	
2	☐	200.000	209.877	1262705.45	2.1258	A	1.3	4.9
3	☐	500.000	512.140	3030781.83	5.1544	A	0.1	2.4
4	☐	1000.000	1022.787	6023989.70	10.2710	A	1.1	2.3
5	☐	10000.00	10095.06	58433695.80	101.173	A	2.1	1.0
6	☐	20000.00	19950.92	113218091.6	199.927	A	0.3	-0.2

y = 0.0100 * x + 0.0229
R = 1.0000
DL = 0.07988 ppb
BEC = 2.282 ppb

Weight: <None>
Min Conc: <None>

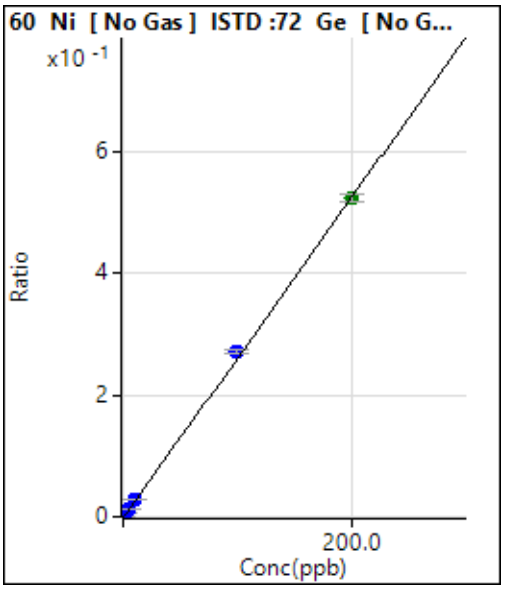
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	56.67	0.0001	P	44.7	
2	☐	2.000	2.062	22061.51	0.0371	P	0.5	3.1
3	☐	5.000	5.102	53956.93	0.0918	P	1.4	2.0
4	☐	10.000	10.412	109776.30	0.1872	P	1.9	4.1
5	☐	100.000	101.928	1057860.87	1.8315	A	1.7	1.9
6	☐	200.000	199.012	2024906.43	3.5759	A	1.7	-0.5

y = 0.0180 * x + 9.6267E-005
R = 0.9999
DL = 0.007182 ppb
BEC = 0.005358 ppb

Weight: <None>
Min Conc: <None>

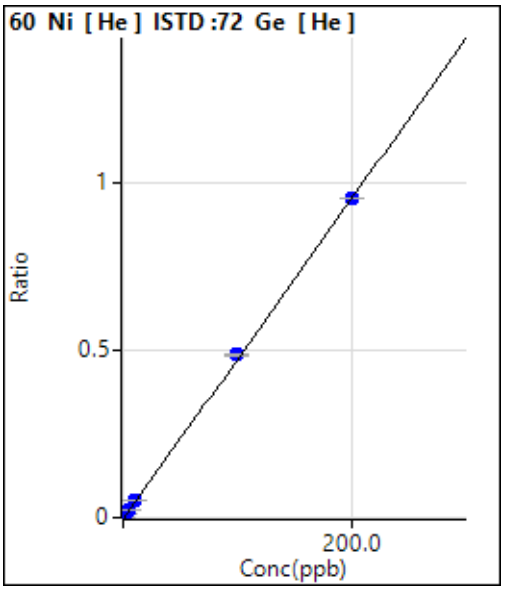


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	513.36	0.0002	P	16.6	
2	☐	2.000	2.079	11885.39	0.0057	P	5.8	3.9
3	☐	5.000	5.138	29014.57	0.0138	P	1.9	2.8
4	☐	10.000	10.482	57173.12	0.0279	P	0.9	4.8
5	☐	100.000	102.664	563426.70	0.2707	P	2.1	2.7
6	☐	200.000	198.640	1056830.37	0.5236	A	2.3	-0.7

y = 0.0026 * x + 2.4639E-004
R = 0.9999
DL = 0.04671 ppb
BEC = 0.09352 ppb

Weight: <None>
Min Conc: <None>

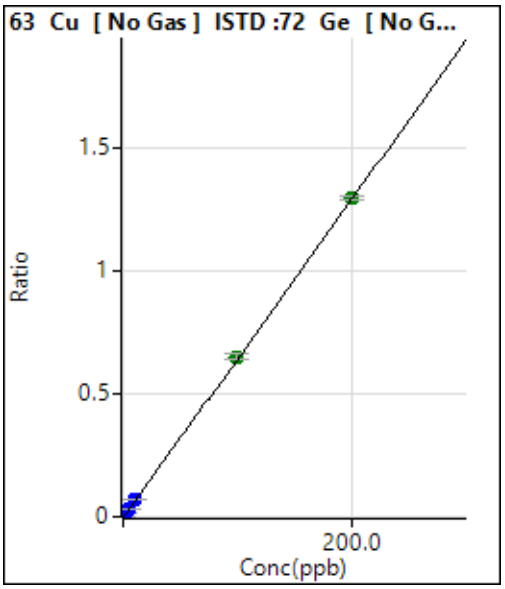
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	216.67	0.0004	P	11.1	
2	☐	2.000	2.093	6174.82	0.0104	P	0.6	4.7
3	☐	5.000	5.105	14594.69	0.0248	P	3.7	2.1
4	☐	10.000	10.280	29098.06	0.0496	P	1.5	2.8
5	☐	100.000	101.626	281431.24	0.4872	P	1.5	1.6
6	☐	200.000	199.169	540569.97	0.9546	P	0.2	-0.4

y = 0.0048 * x + 3.6776E-004
R = 1.0000
DL = 0.02554 ppb
BEC = 0.07676 ppb

Weight: <None>
Min Conc: <None>

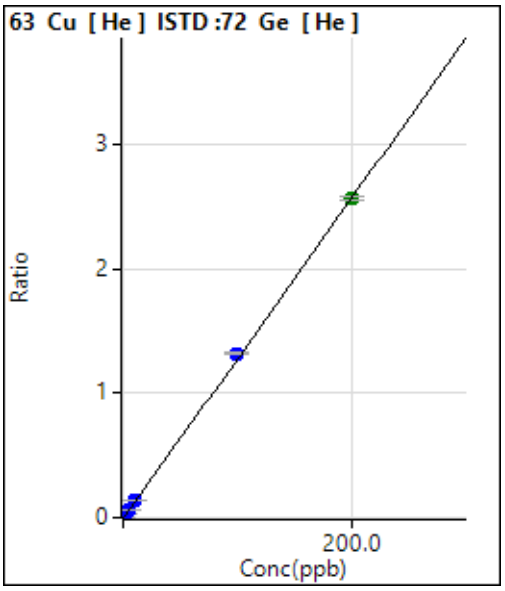


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	4044.02	0.0019	P	10.0	
2	☐	2.000	2.070	31790.77	0.0153	P	5.9	3.5
3	☐	5.000	5.015	72312.12	0.0343	P	1.0	0.3
4	☐	10.000	10.673	145481.64	0.0709	P	3.0	6.7
5	☐	100.000	100.096	1350062.27	0.6488	A	3.1	0.1
6	☐	200.000	199.917	2611852.67	1.2938	A	0.6	0.0

y = 0.0065 * x + 0.0019
R = 1.0000
DL = 0.08972 ppb
BEC = 0.3003 ppb

Weight: <None>
Min Conc: <None>

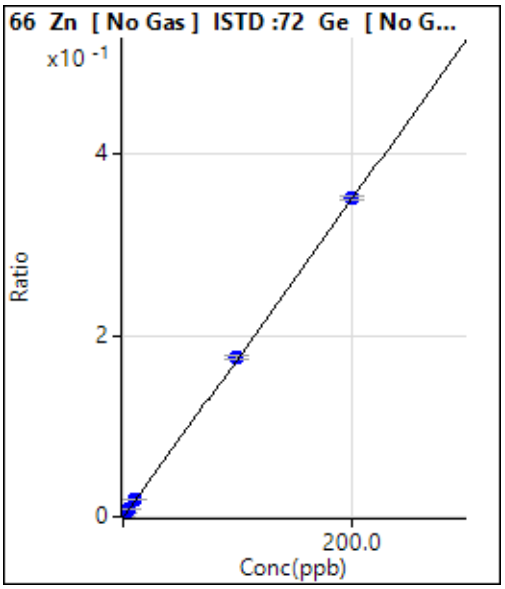
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	2200.22	0.0037	P	3.9	
2	☐	2.000	1.986	17451.47	0.0294	P	3.1	-0.7
3	☐	5.000	5.082	40794.90	0.0694	P	0.6	1.6
4	☐	10.000	10.348	80588.18	0.1374	P	0.7	3.5
5	☐	100.000	102.179	764525.72	1.3236	P	0.7	2.2
6	☐	200.000	198.891	1456987.32	2.5728	A	1.2	-0.6

y = 0.0129 * x + 0.0037
R = 0.9999
DL = 0.03418 ppb
BEC = 0.289 ppb

Weight: <None>
Min Conc: <None>

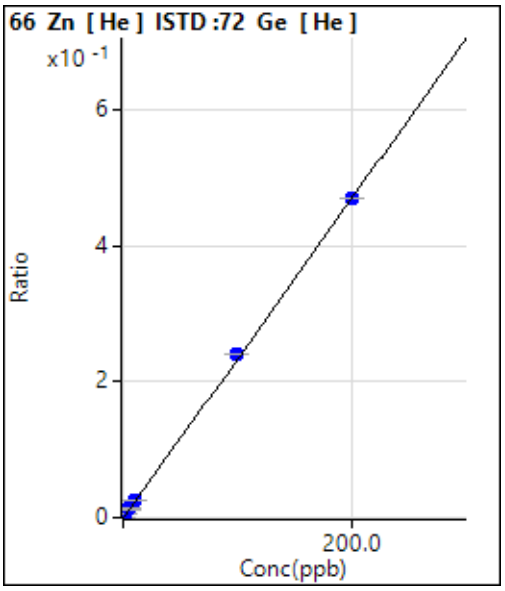


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1533.45	0.0007	P	5.2	
2	☐	2.000	2.013	8866.37	0.0043	P	3.7	0.6
3	☐	5.000	4.863	19524.28	0.0093	P	1.6	-2.7
4	☐	10.000	10.236	38391.34	0.0187	P	0.8	2.4
5	☐	100.000	100.107	367334.36	0.1765	P	2.2	0.1
6	☐	200.000	199.938	710111.86	0.3518	P	1.5	0.0

y = 0.0018 * x + 7.3540E-004
R = 1.0000
DL = 0.06506 ppb
BEC = 0.4188 ppb

Weight: <None>
Min Conc: <None>

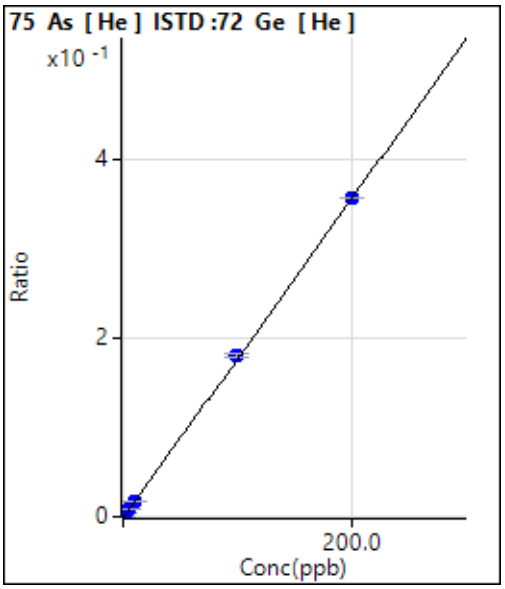
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	633.36	0.0011	P	3.7	
2	☐	2.000	1.958	3380.48	0.0057	P	5.6	-2.1
3	☐	5.000	5.046	7628.96	0.0130	P	4.6	0.9
4	☐	10.000	9.933	14367.84	0.0245	P	1.1	-0.7
5	☐	100.000	101.591	138993.25	0.2406	P	0.5	1.6
6	☐	200.000	199.207	266613.68	0.4708	P	0.5	-0.4

y = 0.0024 * x + 0.0011
R = 1.0000
DL = 0.0509 ppb
BEC = 0.4558 ppb

Weight: <None>
Min Conc: <None>

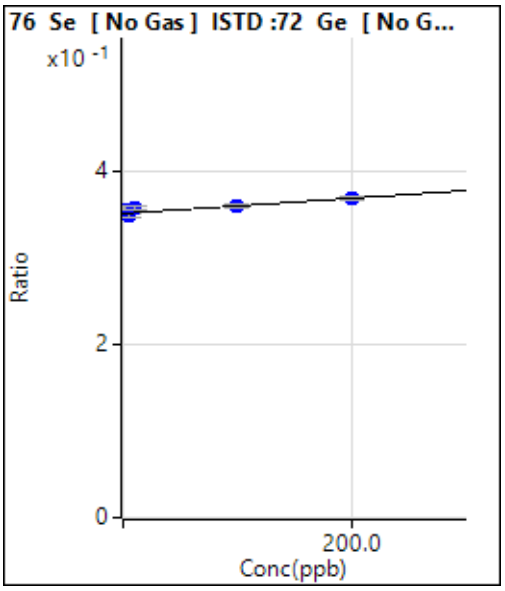


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	146.67	0.0002	P	19.0	
2	☐	2.000	1.920	2189.08	0.0037	P	7.2	-4.0
3	☐	5.000	4.848	5247.71	0.0089	P	4.4	-3.0
4	☐	10.000	9.784	10416.28	0.0178	P	2.7	-2.2
5	☐	100.000	100.994	104543.32	0.1810	P	1.5	1.0
6	☐	200.000	199.518	202354.52	0.3573	P	0.3	-0.2

y = 0.0018 * x + 2.4872E-004
R = 1.0000
DL = 0.07908 ppb
BEC = 0.139 ppb

Weight: <None>
Min Conc: <None>

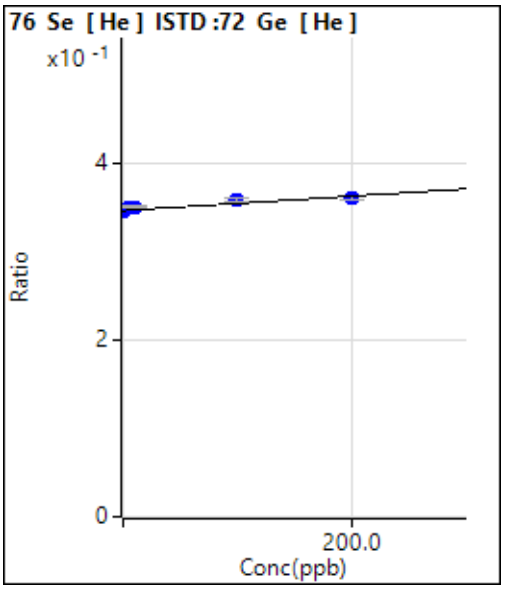
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	730957.57	0.3507	P	1.2	
2	☐	2.000	39.941	735921.89	0.3543	P	1.8	1897.0
3	☐	5.000	-29.777	732819.86	0.3481	P	1.5	-695.5
4	☐	10.000	70.987	732568.66	0.3570	P	0.7	609.9
5	☐	100.000	99.505	748270.80	0.3595	P	1.7	-0.5
6	☐	200.000	197.688	743322.36	0.3682	P	0.8	-1.2

y = 8.8421E-005 * x + 0.3507
R = 0.9130
DL = 147.6 ppb
BEC = 3967 ppb

Weight: <None>
Min Conc: <None>

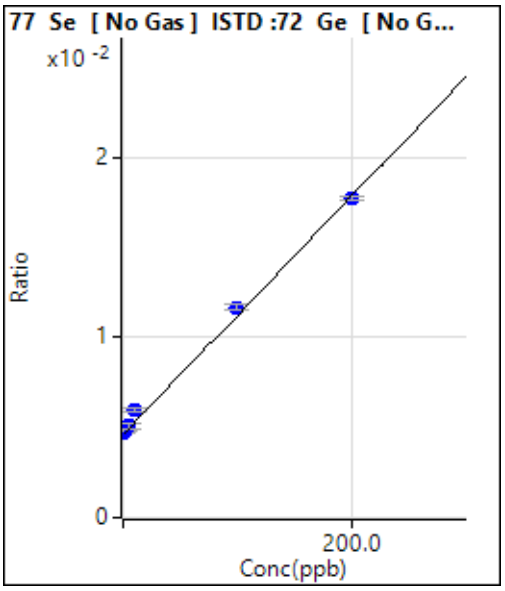


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	203852.71	0.3459	P	1.1	
2	☐	2.000	10.799	205991.25	0.3468	P	0.4	439.9
3	☐	5.000	53.326	205956.86	0.3503	P	1.1	966.5
4	☐	10.000	48.188	205193.14	0.3499	P	0.5	381.9
5	☐	100.000	146.606	206770.00	0.3580	P	0.6	46.6
6	☐	200.000	173.491	203979.88	0.3602	P	0.7	-13.3

y = 8.2372E-005 * x + 0.3459
R = 0.9313
DL = 143.2 ppb
BEC = 4199 ppb

Weight: <None>
Min Conc: <None>

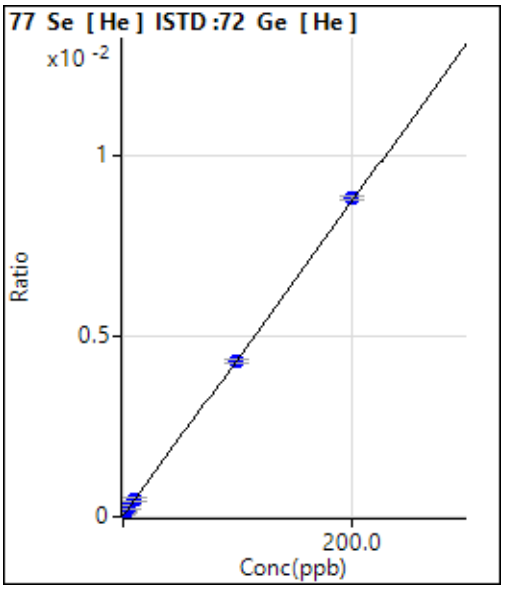
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	9810.39	0.0047	P	2.4	
2	☐	2.000	1.693	10017.25	0.0048	P	2.9	-15.3
3	☐	5.000	5.674	10697.77	0.0051	P	5.3	13.5
4	☐	10.000	18.967	12229.08	0.0060	P	4.4	89.7
5	☐	100.000	105.453	24302.19	0.0117	P	3.5	5.5
6	☐	200.000	196.811	35764.48	0.0177	P	1.0	-1.6

y = 6.6095E-005 * x + 0.0047
R = 0.9986
DL = 5.206 ppb
BEC = 71.22 ppb

Weight: <None>
Min Conc: <None>

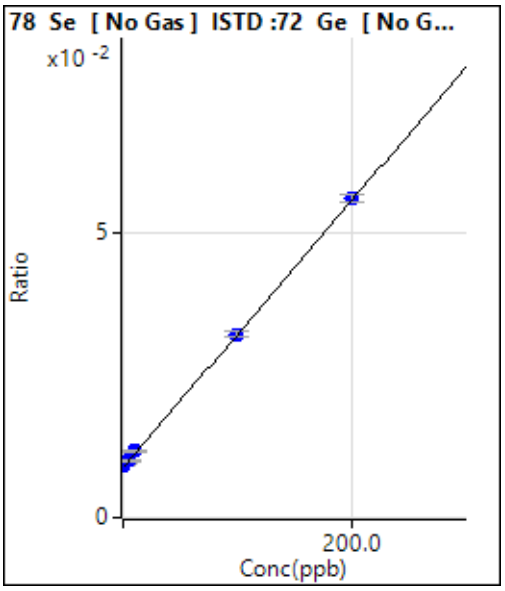


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	40.00	0.0001	P	25.1	
2	☐	2.000	1.024	66.67	0.0001	P	46.1	-48.8
3	☐	5.000	4.704	160.00	0.0003	P	33.1	-5.9
4	☐	10.000	9.291	276.68	0.0005	P	17.3	-7.1
5	☐	100.000	97.401	2483.61	0.0043	P	3.2	-2.6
6	☐	200.000	201.352	4991.01	0.0088	P	0.9	0.7

y = 4.3435E-005 * x + 6.7873E-005
R = 0.9999
DL = 1.176 ppb
BEC = 1.563 ppb

Weight: <None>
Min Conc: <None>

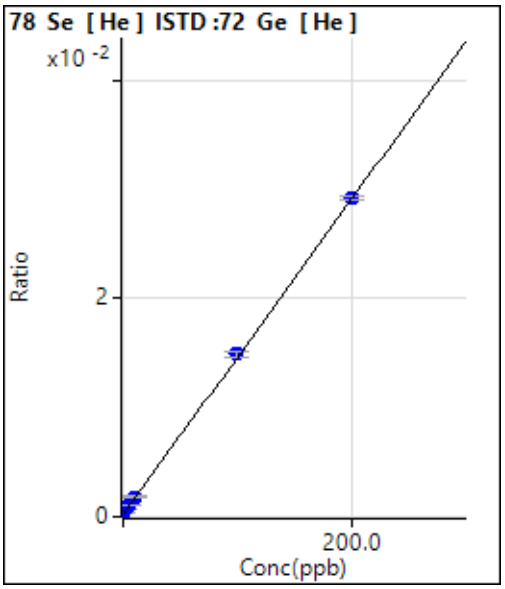
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	19003.61	0.0091	P	2.4	
2	☐	2.000	2.421	20128.67	0.0097	P	3.1	21.0
3	☐	5.000	4.003	21176.95	0.0101	P	3.7	-19.9
4	☐	10.000	11.254	24138.56	0.0118	P	2.3	12.5
5	☐	100.000	98.772	67294.50	0.0323	P	3.3	-1.2
6	☐	200.000	200.572	113572.28	0.0563	P	2.5	0.3

y = 2.3507E-004 * x + 0.0091
R = 0.9999
DL = 2.842 ppb
BEC = 38.79 ppb

Weight: <None>
Min Conc: <None>

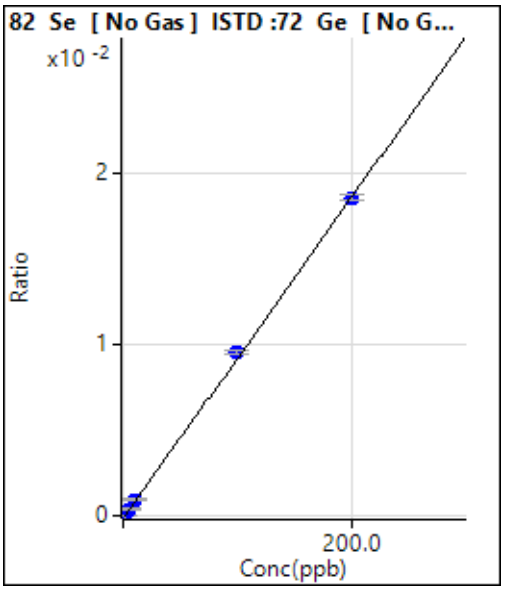


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	198.67	0.0003	P	2.1	
2	☐	2.000	2.270	395.34	0.0007	P	6.8	13.5
3	☐	5.000	4.866	612.02	0.0010	P	9.3	-2.7
4	☐	10.000	10.017	1048.04	0.0018	P	7.1	0.2
5	☐	100.000	100.530	8598.09	0.0149	P	2.8	0.5
6	☐	200.000	199.735	16561.52	0.0292	P	1.4	-0.1

y = 1.4474E-004 * x + 3.3706E-004
R = 1.0000
DL = 0.1469 ppb
BEC = 2.329 ppb

Weight: <None>
Min Conc: <None>

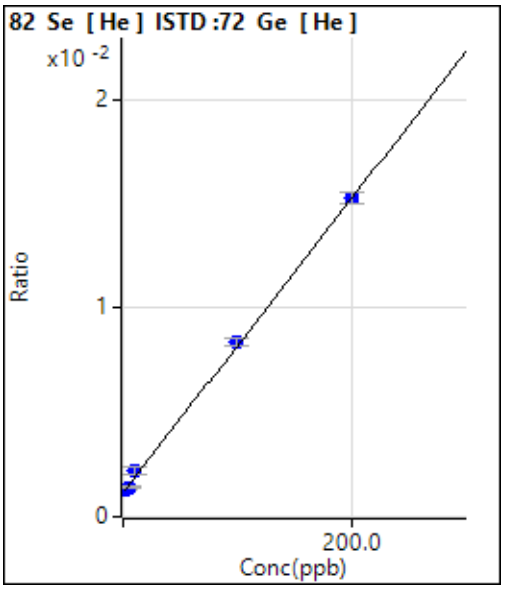
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	-128.90	-0.0001	P	-238.	
2	☐	2.000	-0.400	-214.12	-0.0001	P	-142.	-120.0
3	☐	5.000	4.737	803.23	0.0004	P	26.8	-5.3
4	☐	10.000	10.708	1932.39	0.0009	P	5.4	7.1
5	☐	100.000	102.673	19934.78	0.0096	P	2.4	2.7
6	☐	200.000	198.659	37532.19	0.0186	P	1.7	-0.7

y = 9.3916E-005 * x - 6.3709E-005
R = 0.9998
DL = 4.861 ppb
BEC = -0.6784 ppb

Weight: <None>
Min Conc: <None>

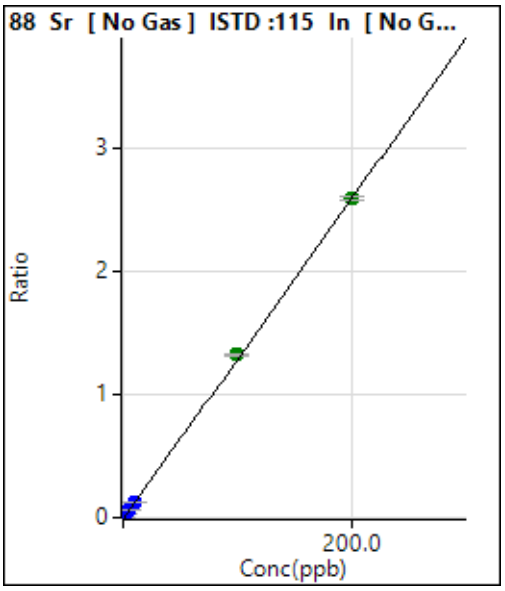


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	736.70	0.0013	P	14.2	
2	☐	2.000	0.492	763.37	0.0013	P	5.6	-75.4
3	☐	5.000	2.199	826.71	0.0014	P	5.4	-56.0
4	☐	10.000	13.646	1296.75	0.0022	P	13.1	36.5
5	☐	100.000	101.352	4847.65	0.0084	P	3.9	1.4
6	☐	200.000	199.227	8659.58	0.0153	P	3.5	-0.4

y = 7.0490E-005 * x + 0.0013
R = 0.9996
DL = 7.532 ppb
BEC = 17.74 ppb

Weight: <None>
Min Conc: <None>

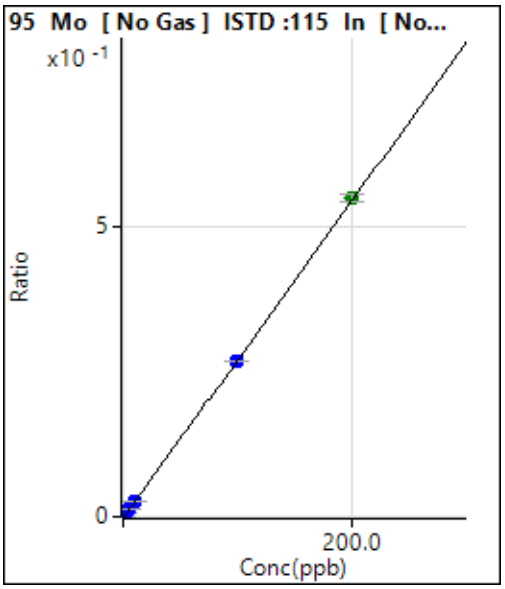
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1546.79	0.0007	P	12.0	
2	☐	2.000	1.972	61866.17	0.0264	P	0.9	-1.4
3	☐	5.000	4.963	152335.72	0.0654	P	0.6	-0.7
4	☐	10.000	9.992	305432.55	0.1310	P	1.2	-0.1
5	☐	100.000	101.538	3038884.33	1.3249	A	0.5	1.5
6	☐	200.000	199.233	5804446.16	2.5990	A	1.6	-0.4

y = 0.0130 * x + 6.5880E-004
R = 1.0000
DL = 0.01826 ppb
BEC = 0.05051 ppb

Weight: <None>
Min Conc: <None>

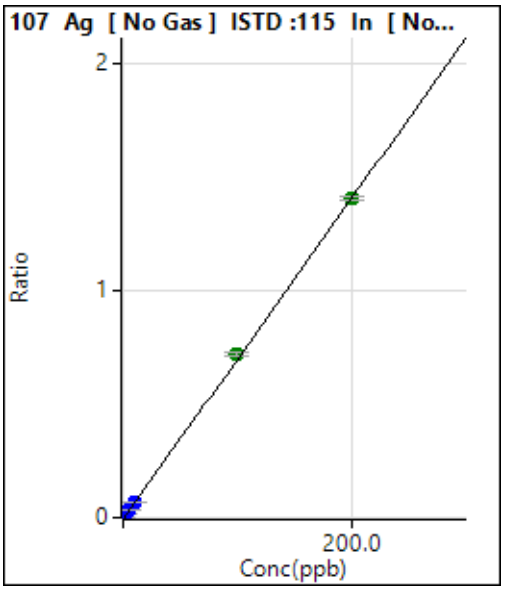


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	140.00	0.0001	P	14.1	
2	☐	2.000	1.881	12219.12	0.0052	P	4.7	-6.0
3	☐	5.000	4.663	29883.86	0.0128	P	2.6	-6.7
4	☐	10.000	9.555	61153.56	0.0262	P	2.2	-4.4
5	☐	100.000	97.979	615482.13	0.2683	P	1.0	-2.0
6	☐	200.000	201.042	1229637.90	0.5505	A	2.6	0.5

y = 0.0027 * x + 5.9611E-005
R = 0.9999
DL = 0.009232 ppb
BEC = 0.02177 ppb

Weight: <None>
Min Conc: <None>

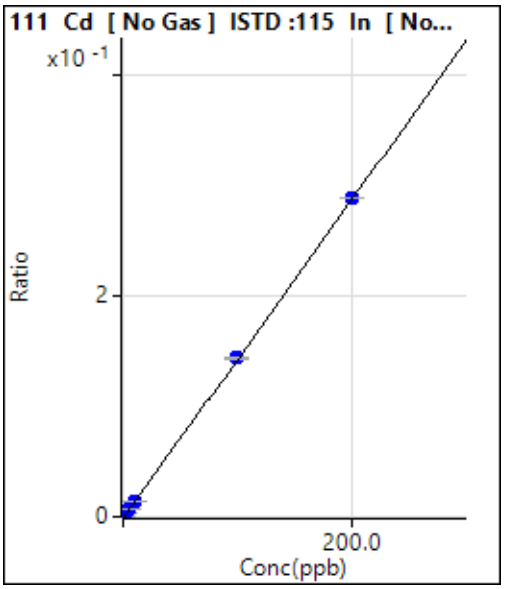
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	436.68	0.0002	P	28.7	
2	☐	2.000	2.011	33830.23	0.0144	P	0.4	0.5
3	☐	5.000	5.021	83261.26	0.0357	P	0.4	0.4
4	☐	10.000	10.079	166873.36	0.0716	P	1.1	0.8
5	☐	100.000	102.020	1657171.90	0.7226	A	1.9	2.0
6	☐	200.000	198.986	3147202.45	1.4091	A	0.9	-0.5

y = 0.0071 * x + 1.8642E-004
R = 0.9999
DL = 0.02264 ppb
BEC = 0.02633 ppb

Weight: <None>
Min Conc: <None>

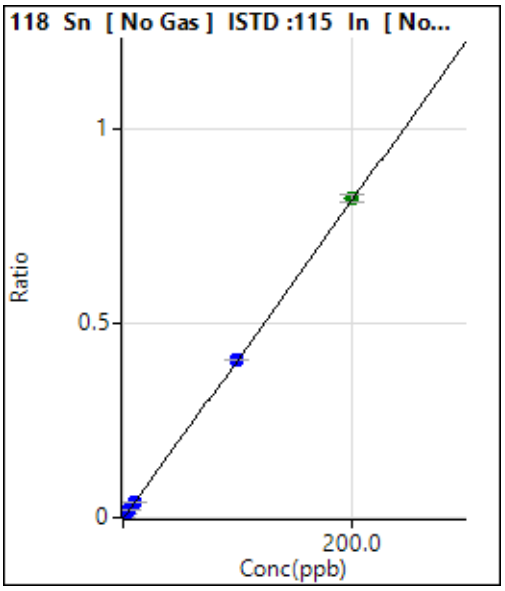


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	10.00	0.0000	P	1.4	
2	☐	2.000	1.988	6721.83	0.0029	P	3.7	-0.6
3	☐	5.000	4.866	16337.08	0.0070	P	4.0	-2.7
4	☐	10.000	9.814	32968.13	0.0141	P	3.0	-1.9
5	☐	100.000	99.565	328898.47	0.1434	P	0.4	-0.4
6	☐	200.000	200.230	644051.71	0.2884	P	0.6	0.1

y = 0.0014 * x + 4.2593E-006
R = 1.0000
DL = 0.0001224 ppb
BEC = 0.002957 ppb

Weight: <None>
Min Conc: <None>

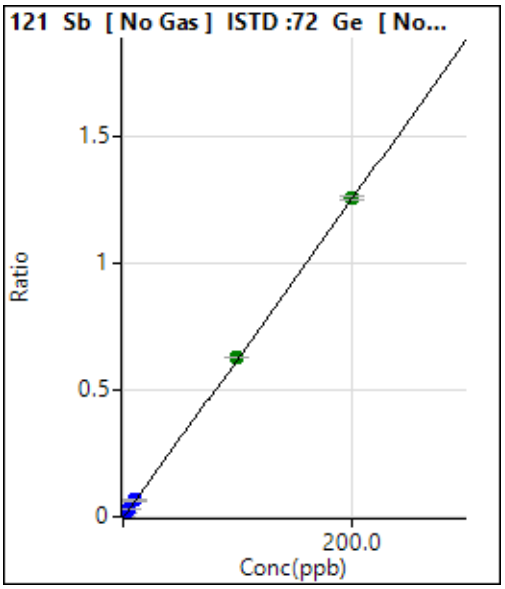
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1930.18	0.0008	P	5.4	
2	☐	2.000	1.839	19558.11	0.0083	P	0.7	-8.1
3	☐	5.000	4.674	46439.24	0.0199	P	2.3	-6.5
4	☐	10.000	9.730	94696.56	0.0406	P	0.6	-2.7
5	☐	100.000	98.863	928971.50	0.4050	P	0.9	-1.1
6	☐	200.000	200.592	1833452.89	0.8209	A	1.9	0.3

y = 0.0041 * x + 8.2170E-004
R = 1.0000
DL = 0.03245 ppb
BEC = 0.201 ppb

Weight: <None>
Min Conc: <None>

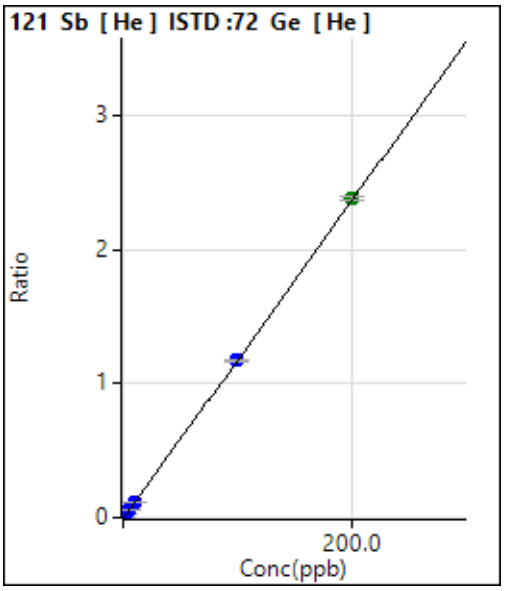


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1673.48	0.0008	P	6.9	
2	☐	2.000	2.052	28457.92	0.0137	P	2.6	2.6
3	☐	5.000	4.951	67188.58	0.0319	P	1.4	-1.0
4	☐	10.000	10.192	133070.15	0.0649	P	2.3	1.9
5	☐	100.000	100.007	1309846.98	0.6293	A	0.6	0.0
6	☐	200.000	199.987	2538681.94	1.2576	A	1.7	0.0

y = 0.0063 * x + 8.0353E-004
R = 1.0000
DL = 0.02638 ppb
BEC = 0.1279 ppb

Weight: <None>
Min Conc: <None>

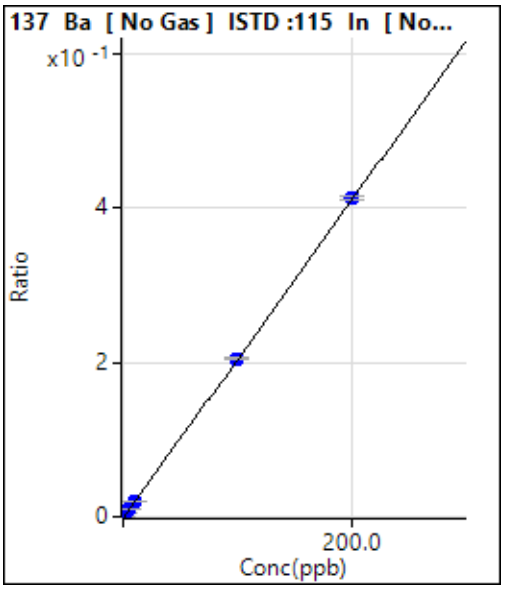
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	790.04	0.0013	P	7.2	
2	☐	2.000	2.004	14955.39	0.0252	P	0.9	0.2
3	☐	5.000	4.934	35287.87	0.0600	P	0.6	-1.3
4	☐	10.000	9.893	69781.95	0.1190	P	0.8	-1.1
5	☐	100.000	98.683	678592.99	1.1748	P	1.2	-1.3
6	☐	200.000	200.666	1352145.29	2.3876	A	1.3	0.3

y = 0.0119 * x + 0.0013
R = 1.0000
DL = 0.02427 ppb
BEC = 0.1127 ppb

Weight: <None>
Min Conc: <None>

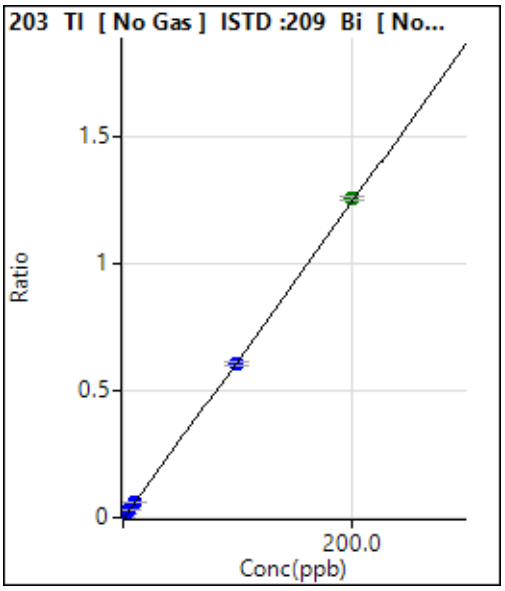


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	283.34	0.0001	P	13.9	
2	☐	2.000	1.902	9483.63	0.0040	P	4.8	-4.9
3	☐	5.000	4.898	23825.36	0.0102	P	2.7	-2.0
4	☐	10.000	9.703	46965.32	0.0201	P	1.6	-3.0
5	☐	100.000	99.237	469874.56	0.2049	P	1.0	-0.8
6	☐	200.000	200.400	923694.67	0.4136	P	1.1	0.2

y = 0.0021 * x + 1.2062E-004
R = 1.0000
DL = 0.02443 ppb
BEC = 0.05847 ppb

Weight: <None>
Min Conc: <None>

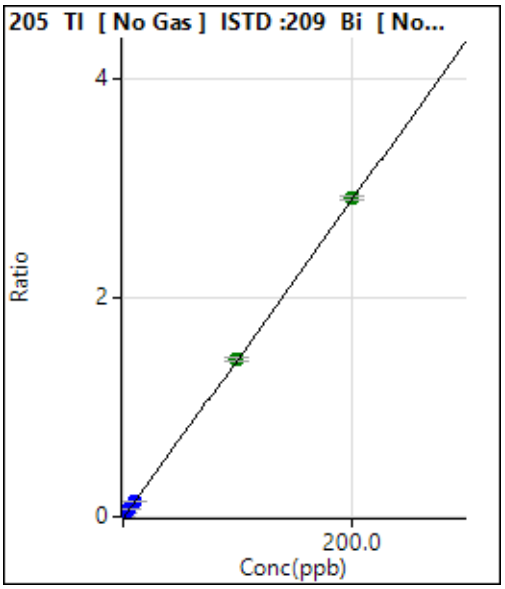
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	23.33	0.0000	P	64.6	
2	☐	2.000	1.893	22073.19	0.0118	P	2.6	-5.3
3	☐	5.000	4.703	55010.89	0.0294	P	0.6	-5.9
4	☐	10.000	9.408	110949.87	0.0588	P	1.6	-5.9
5	☐	100.000	96.876	1115373.40	0.6056	P	2.3	-3.1
6	☐	200.000	201.600	2204439.76	1.2603	A	1.7	0.8

y = 0.0063 * x + 1.2382E-005
R = 0.9998
DL = 0.003838 ppb
BEC = 0.001981 ppb

Weight: <None>
Min Conc: <None>

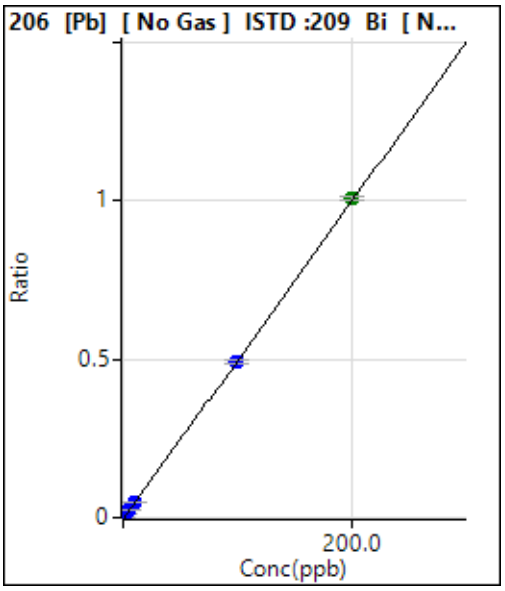


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	70.00	0.0000	P	50.5	
2	☐	2.000	1.929	52282.82	0.0281	P	0.8	-3.5
3	☐	5.000	4.837	131471.22	0.0703	P	0.7	-3.3
4	☐	10.000	9.761	267418.49	0.1418	P	2.1	-2.4
5	☐	100.000	99.011	2648021.32	1.4379	A	2.6	-1.0
6	☐	200.000	200.511	5093288.78	2.9119	A	0.7	0.3

y = 0.0145 * x + 3.7180E-005
R = 1.0000
DL = 0.003882 ppb
BEC = 0.00256 ppb

Weight: <None>
Min Conc: <None>

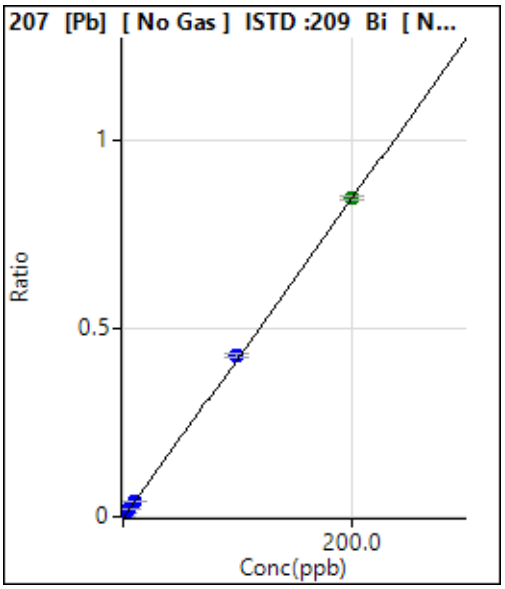
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	333.34	0.0002	P	23.9	
2	☐	2.000	1.909	18176.87	0.0098	P	3.8	-4.6
3	☐	5.000	4.867	46018.43	0.0246	P	2.0	-2.7
4	☐	10.000	9.564	90866.24	0.0482	P	1.6	-4.4
5	☐	100.000	98.124	907381.57	0.4927	P	2.2	-1.9
6	☐	200.000	200.964	1764623.10	1.0088	A	1.6	0.5

y = 0.0050 * x + 1.7744E-004
R = 0.9999
DL = 0.02537 ppb
BEC = 0.03535 ppb

Weight: <None>
Min Conc: <None>

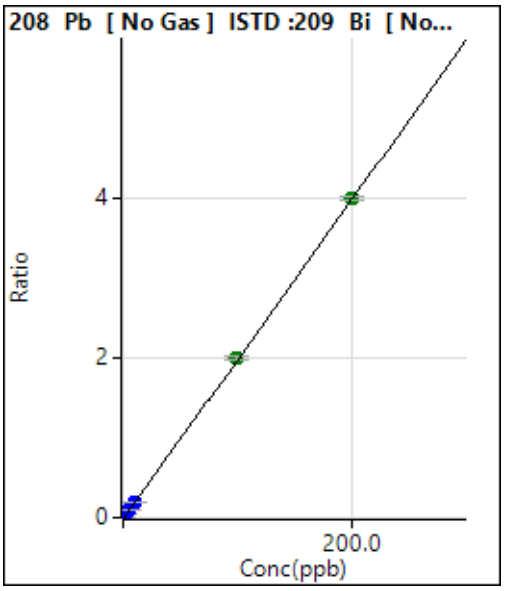


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	280.01	0.0001	P	4.5	
2	☐	2.000	2.040	16401.08	0.0088	P	1.5	2.0
3	☐	5.000	4.953	39546.50	0.0211	P	2.1	-0.9
4	☐	10.000	9.974	80036.28	0.0424	P	1.6	-0.3
5	☐	100.000	100.868	787826.39	0.4278	P	2.1	0.9
6	☐	200.000	199.568	1480028.83	0.8462	A	1.0	-0.2

y = 0.0042 * x + 1.4925E-004
R = 1.0000
DL = 0.004773 ppb
BEC = 0.03521 ppb

Weight: <None>
Min Conc: <None>

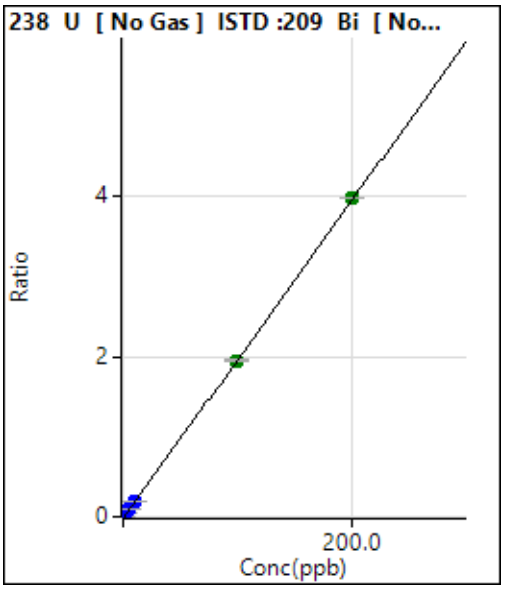
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1136.71	0.0006	P	4.3	
2	☐	2.000	1.943	73418.77	0.0394	P	1.9	-2.8
3	☐	5.000	4.845	182036.94	0.0973	P	1.3	-3.1
4	☐	10.000	9.709	366717.91	0.1944	P	1.9	-2.9
5	☐	100.000	100.006	3677591.84	1.9971	A	3.2	0.0
6	☐	200.000	200.016	6985424.68	3.9938	A	0.6	0.0

y = 0.0200 * x + 6.0570E-004
R = 1.0000
DL = 0.003915 ppb
BEC = 0.03034 ppb

Weight: <None>
Min Conc: <None>

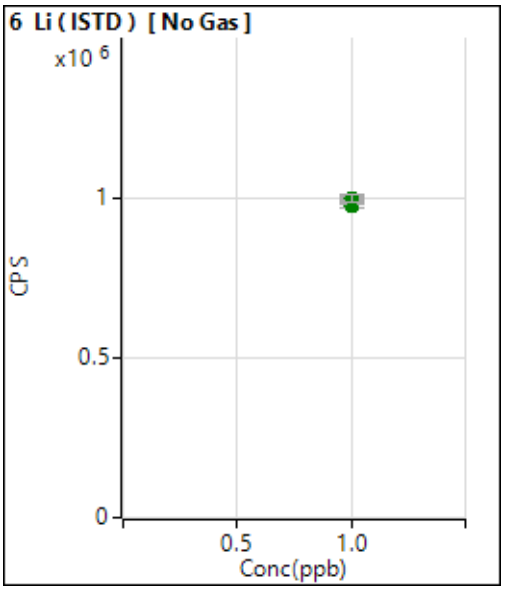


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	43.33	0.0000	P	35.9	
2	☐	2.000	1.943	71752.94	0.0385	P	2.4	-2.9
3	☐	5.000	4.750	176011.90	0.0941	P	1.6	-5.0
4	☐	10.000	9.631	359874.94	0.1908	P	1.9	-3.7
5	☐	100.000	98.548	3595629.84	1.9522	A	1.7	-1.5
6	☐	200.000	200.751	6955741.77	3.9768	A	0.4	0.4

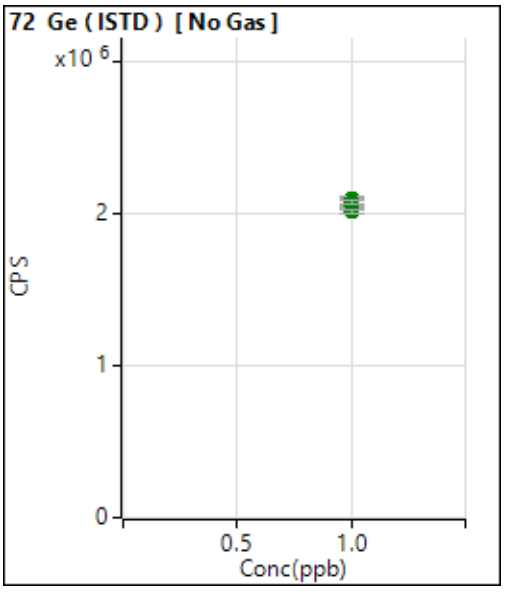
y = 0.0198 * x + 2.3120E-005
R = 1.0000
DL = 0.001258 ppb
BEC = 0.001167 ppb

Weight: <None>
Min Conc: <None>

Calibration for 022_ICV.d

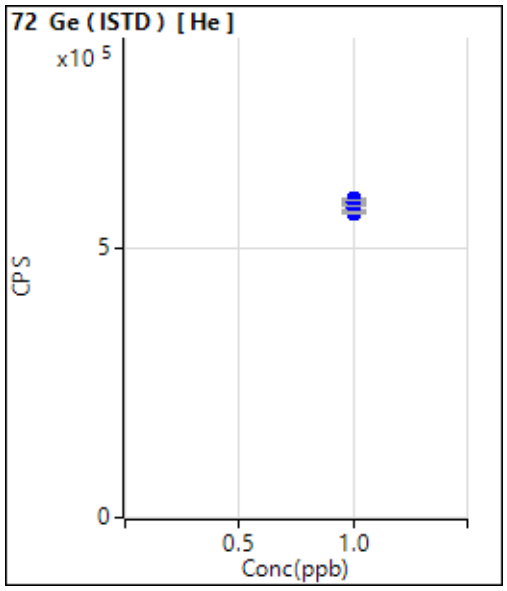


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		997075.72		A	1.7	
2	☐	1.000		996508.90		A	1.0	
3	☐	1.000		974065.88		A	1.6	
4	☐	1.000		983382.62		A	3.0	
5	☐	1.000		979565.41		A	0.6	
6	☐	1.000		996469.17		A	2.6	

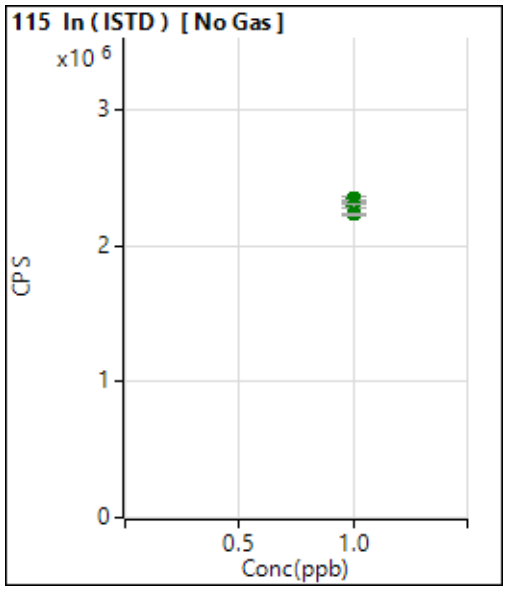


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		2084400.96		A	1.8	
2	☐	1.000		2077893.30		A	2.5	
3	☐	1.000		2105344.71		A	0.7	
4	☐	1.000		2052061.74		A	1.2	
5	☐	1.000		2081502.36		A	1.2	
6	☐	1.000		2018879.50		A	1.4	

Calibration for 022_ICV.d

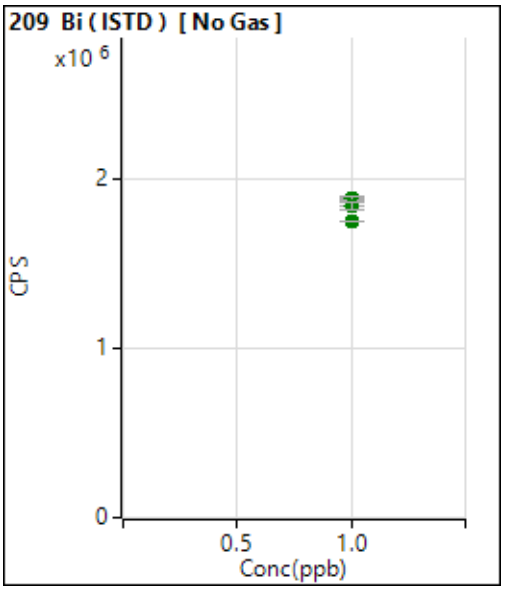


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		589370.58		P	0.5	
2	☐	1.000		594016.52		P	0.4	
3	☐	1.000		587999.29		P	0.9	
4	☐	1.000		586498.91		P	0.8	
5	☐	1.000		577652.87		P	1.3	
6	☐	1.000		566305.30		P	0.8	



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		2348124.35		A	1.4	
2	☐	1.000		2345249.22		A	1.8	
3	☐	1.000		2329868.21		A	0.3	
4	☐	1.000		2332183.48		A	0.7	
5	☐	1.000		2293716.76		A	0.8	
6	☐	1.000		2233492.20		A	0.7	

Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		1876649.71		A	1.0	
2	☐	1.000		1863950.08		A	2.4	
3	☐	1.000		1870453.62		A	1.1	
4	☐	1.000		1886190.33		A	0.9	
5	☐	1.000		1842298.93		A	2.3	
6	☐	1.000		1749115.08		A	0.5	

Sample Report

Sample Table

Sample Name	LLICV2
Data File Name	023LCV2.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T11:41:51-05:00
Sample Type	LLCCV2
Dilution	1
Comment	
ISTD Ref FileName	015CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	2.005	2.005	6.35	85010	0.00	2	
Be	9	1	No Gas	1.894	1.894	0.53	7190	0.03	2	
V	51	2	He	1.744	1.744	0.79	13048	0.01	2	
Cr	52	2	He	1.940	1.940	1.23	14318	0.01	2	
Fe	56	2	He	213.133	213.133	0.86	1246030	0.02	200	
Se	78	2	He	2.203	2.203	6.60	379	0.58	2	
As	75	2	He	1.877	1.877	1.04	2082	0.09	2	
Ca	44	2	He	195.349	195.349	2.49	7105	2.75	200	
Na	23	2	He	187.941	187.941	1.24	281216	0.07	200	
Mg	24	2	He	199.508	199.508	1.05	111910	0.18	200	
K	39	2	He	209.773	209.773	1.18	204378	0.10	200	
Mn	55	2	He	1.990	1.990	3.62	9460	0.02	2	
Co	59	2	He	2.026	2.026	5.25	21070	0.01	2	
Ni	60	2	He	1.956	1.956	2.91	5621	0.03	2	
Cu	63	2	He	1.950	1.950	3.68	16694	0.01	2	
Zn	66	2	He	1.981	1.981	5.69	3317	0.06	2	
Al	27	2	He	2.068	2.068	10.46	1707	0.12	2	
B	11	1	No Gas	21.762	21.762	6.14	51912	0.04	10	NewName Main CR1 Failed
Al	27	1	No Gas	2.041	2.041	5.06	89517	0.00	2	
Si	28	1	No Gas	14.332	14.332	9.55	483317	0.00	10	NewName Main CR1 Failed
Ag	107	1	No Gas	1.967	1.967	1.78	32597	0.01	2	
Cd	111	1	No Gas	2.010	2.010	7.16	6692	0.03	2	
Sr	88	1	No Gas	1.986	1.986	2.33	61317	0.00	2	
Mo	95	1	No Gas	1.860	1.860	4.07	11895	0.02	2	
Sn	118	1	No Gas	1.921	1.921	2.55	20036	0.01	2	
Sb	121	1	No Gas	2.146	2.146	1.77	29520	0.01	2	
Ba	137	1	No Gas	1.936	1.936	6.56	9497	0.02	2	
Tl	205	1	No Gas	1.939	1.939	1.49	51975	0.00	2	
Tl	203	1	No Gas	1.910	1.910	4.02	22023	0.01	2	
Pb	208	1	No Gas	1.979	1.979	0.63	73924	0.00	2	
U	238	1	No Gas	1.932	1.932	0.54	70569	0.00	2	
Ca	43	2	He	222.475	222.475	4.93	453	49.07	200	
Sb	121	2	He	2.202	2.202	2.51	15893	0.01	2	
Ti	47	2	He	1.903	1.903	11.53	407	0.47	200	
Cu	63	1	No Gas	2.007	2.007	1.00	30805	0.01	2	
Se	82	1	No Gas	2.592	2.592	46.28	369	0.70	2	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1034179	2.61	997076	103.72	70	120	
Ge	72	2	He	577283	0.28	589371	97.95	70	120	
Ge	72	1	No Gas	2065825	1.26	2084401	99.11	70	120	
In	115	1	No Gas	2309815	1.99	2348124	98.37	70	120	
Bi	209	1	No Gas	1843295	1.03	1876650	98.22	70	120	

Sample Report

Sample Table

Sample Name	LLICV5
Data File Name	024LCV5.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T11:43:44-05:00
Sample Type	LLCCV5
Dilution	1
Comment	
ISTD Ref FileName	015CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	4.830	4.830	2.12	123562	0.00	5	
Be	9	1	No Gas	4.898	4.898	1.60	18053	0.03	5	
V	51	2	He	4.554	4.554	1.64	30268	0.02	5	
Cr	52	2	He	4.880	4.880	1.17	34885	0.01	5	
Fe	56	2	He	512.436	512.436	3.15	3007294	0.02	500	
Se	78	2	He	5.130	5.130	11.23	629	0.82	5	
As	75	2	He	4.852	4.852	3.06	5211	0.09	5	
Ca	44	2	He	491.381	491.381	3.22	16927	2.90	500	
Na	23	2	He	481.613	481.613	1.65	574193	0.08	500	
Mg	24	2	He	489.874	489.874	1.69	276618	0.18	500	
K	39	2	He	503.885	503.885	1.87	390364	0.13	500	
Mn	55	2	He	4.867	4.867	1.43	22920	0.02	5	
Co	59	2	He	5.061	5.061	1.31	53090	0.01	5	
Ni	60	2	He	5.106	5.106	3.67	14485	0.04	5	
Cu	63	2	He	4.882	4.882	2.91	38956	0.01	5	
Zn	66	2	He	4.956	4.956	6.96	7442	0.07	5	
Al	27	2	He	4.959	4.959	22.72	2570	0.19	5	
B	11	1	No Gas	29.582	29.582	1.99	66197	0.04	25	
Al	27	1	No Gas	4.724	4.724	1.23	129533	0.00	5	
Si	28	1	No Gas	27.264	27.264	3.12	580439	0.00	25	
Ag	107	1	No Gas	4.929	4.929	3.20	81309	0.01	5	
Cd	111	1	No Gas	4.927	4.927	4.01	16461	0.03	5	
Sr	88	1	No Gas	4.905	4.905	1.22	149791	0.00	5	
Mo	95	1	No Gas	4.654	4.654	2.28	29673	0.02	5	
Sn	118	1	No Gas	4.718	4.718	2.14	46606	0.01	5	
Sb	121	1	No Gas	5.123	5.123	1.05	68204	0.01	5	
Ba	137	1	No Gas	4.954	4.954	3.25	23962	0.02	5	
Tl	205	1	No Gas	4.855	4.855	0.24	131458	0.00	5	
Tl	203	1	No Gas	4.680	4.680	1.06	54542	0.01	5	
Pb	208	1	No Gas	4.777	4.777	1.23	178827	0.00	5	
U	238	1	No Gas	4.718	4.718	0.25	174180	0.00	5	
Ca	43	2	He	479.189	479.189	7.45	957	50.09	500	
Sb	121	2	He	4.994	4.994	5.27	35408	0.01	5	
Ti	47	2	He	4.906	4.906	22.60	1033	0.47	5	
Cu	63	1	No Gas	4.992	4.992	0.37	70687	0.01	5	
Se	82	1	No Gas	5.767	5.767	20.21	989	0.58	5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1005779	0.70	997076	100.87	70	120	
Ge	72	2	He	583275	1.40	589371	98.97	70	120	
Ge	72	1	No Gas	2066915	0.99	2084401	99.16	70	120	

Sample Report

In	115	1	No Gas	2317802	1.45	2348124	98.71	70	120	
Bi	209	1	No Gas	1863405	0.50	1876650	99.29	70	120	

Initial Calibration Blank (ICB) Report

Sample Table

Sample Name	ICB
Data File Name	025_ICB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T11:45:37-05:00
Sample Type	ICB
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	-0.011	-1330.9	54031	1.3	0.5	
Be	9	1	No Gas	0.001	279.0	25	52.9	0.5	
V	51	2	He	-0.129	-10.3	1782	3.3	2.5	
Cr	52	2	He	-0.018	-45.9	860	6.2	2.5	
Fe	56	2	He	0.832	3.3	18049	1.9	100	
Se	78	2	He	0.293	100.9	219	10.6	1	
As	75	2	He	-0.022	-28.8	121	6.4	2.5	
Ca	44	2	He	-2.220	-68.2	670	6.5	100	
Na	23	2	He	-6.821	-40.6	90942	1.8	100	
Mg	24	2	He	0.941	27.1	1193	12.6	100	
K	39	2	He	1.358	246.1	75516	1.6	100	
Mn	55	2	He	0.055	37.4	567	16.0	2.5	
Co	59	2	He	0.002	44.9	80	12.5	2.5	
Ni	60	2	He	0.007	230.2	233	21.1	2.5	
Cu	63	2	He	-0.078	-43.0	1577	14.9	1	
Zn	66	2	He	0.265	34.1	983	13.5	2.5	
Al	27	2	He	-0.670	-29.3	913	5.2	5	
B	11	1	No Gas	5.555	4.5	18130	1.0	0.5	ICB Main CR1 Failed
Al	27	1	No Gas	-1.137	-1.5	41950	0.5	5	
Si	28	1	No Gas	-0.791	-37.1	367774	0.5	10	
Ag	107	1	No Gas	-0.004	-77.3	360	15.5	2.5	
Cd	111	1	No Gas	-0.002	-89.5	3	173.2	1	
Sr	88	1	No Gas	-0.020	-9.5	917	7.7	2.5	
Mo	95	1	No Gas	0.012	27.8	217	9.6	2.5	
Sn	118	1	No Gas	0.022	56.3	2117	4.7	5	
Sb	121	1	No Gas	0.041	18.6	2177	4.2	2.5	
Ba	137	1	No Gas	0.080	30.0	660	16.0	2.5	
Tl	205	1	No Gas	0.008	31.9	277	23.5	1	
Tl	203	1	No Gas	0.007	60.2	100	45.8	1	
Pb	208	1	No Gas	0.003	101.3	1247	8.4	2.5	
U	238	1	No Gas	0.001	57.1	63	18.2	2.5	
Ca	43	2	He	5.394	196.6	37	56.8	100	
Sb	121	2	He	0.051	22.7	1127	6.8	2.5	
Ti	47	2	He	0.017	275.3	20	50.0	2.5	
Se	82	1	No Gas	0.226	598.9	-88	-296.0	1	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1015974	3.68	997076	101.90	70	120	
Ge	72	2	He	578420	1.19	589371	98.14	70	120	
Ge	72	1	No Gas	2052223	0.94	2084401	98.46	70	120	
In	115	1	No Gas	2320398	1.55	2348124	98.82	70	120	
Bi	209	1	No Gas	1880671	1.30	1876650	100.21	70	120	

Interference Check Solution A (ICS-A) Report

Sample Table

Sample Name	ICSA
Data File Name	026ICSA.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T11:47:30-05:00
Sample Type	ICSA
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	0.428	6.2	60206	2.2	0	ICSA Main CR1 Failed
Be	9	1	No Gas	0.021	25.3	98	19.3	0	ICSA Main CR1 Failed
V	51	2	He	-0.129	-2.6	1697	0.2	0	ICSA Main CR1 Failed
Cr	52	2	He	1.576	1.1	11275	2.0	0	ICSA Main CR1 Failed
Fe	56	2	He	104982.499	1.0	579425005	0.2	0	
Se	78	2	He	0.236	160.4	205	15.6	0	ICSA Main CR1 Failed
As	75	2	He	0.177	19.1	311	10.8	0	ICSA Main CR1 Failed
Ca	44	2	He	106081.625	1.7	3298176	1.2	0	
Na	23	2	He	106673.444	0.6	99620105	0.8	0	
Mg	24	2	He	106575.743	0.5	56704439	0.5	0	
K	39	2	He	106521.979	0.6	62979522	0.4	0	
Mn	55	2	He	0.368	5.8	1914	4.1	0	ICSA Main CR1 Failed
Co	59	2	He	0.118	11.4	1220	10.1	0	ICSA Main CR1 Failed
Ni	60	2	He	0.489	2.3	1493	1.0	0	ICSA Main CR1 Failed
Cu	63	2	He	0.308	23.0	4244	11.4	0	ICSA Main CR1 Failed
Zn	66	2	He	0.771	0.6	1593	1.3	0	ICSA Main CR1 Failed
Al	27	2	He	99366.397	0.7	27515327	0.2	0	
B	11	1	No Gas	5.875	1.4	18698	1.3	0	
Al	27	1	No Gas	102176.563	1.6	1439730859	0.6	0	
Si	28	1	No Gas	27.796	3.0	552982	0.3	0	
Ag	107	1	No Gas	0.103	15.3	1977	13.0	0	ICSA Main CR1 Failed
Cd	111	1	No Gas	0.931	11.4	2894	12.6	0	ICSA Main CR1 Failed
Sr	88	1	No Gas	0.837	1.1	24877	0.4	0	ICSA Main CR1 Failed
Mo	95	1	No Gas	2026.850	0.4	11930533	1.0	0	
Sn	118	1	No Gas	0.262	5.2	4074	3.8	0	ICSA Main CR1 Failed
Sb	121	1	No Gas	0.338	2.0	5728	2.6	0	ICSA Main CR1 Failed
Ba	137	1	No Gas	0.457	7.0	2284	5.6	0	ICSA Main CR1 Failed
Tl	205	1	No Gas	0.035	19.7	953	19.5	0	ICSA Main CR1 Failed
Tl	203	1	No Gas	0.033	21.1	380	18.4	0	ICSA Main CR1 Failed
Pb	208	1	No Gas	0.124	4.3	5324	3.9	0	ICSA Main CR1 Failed
U	238	1	No Gas	0.061	9.3	2130	9.4	0	ICSA Main CR1 Failed
Ca	43	2	He	102888.380	0.3	188557	0.7	0	
Sb	121	2	He	0.373	5.6	3180	4.9	0	ICSA Main CR1 Failed
Ti	47	2	He	2136.740	1.1	418157	1.2	0	
Se	82	1	No Gas	0.131	884.5	-101	-212.6	0	ICSA Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1011043	1.72	997076	101.40	70	120	
Ge	72	2	He	550858	0.95	589371	93.47	70	120	
Ge	72	1	No Gas	1955764	1.33	2084401	93.83	70	120	
In	115	1	No Gas	2149781	1.34	2348124	91.55	70	120	
Bi	209	1	No Gas	1726998	1.83	1876650	92.03	70	120	

Interference Check Solution AB (ICS-AB) Report

Sample Table

Sample Name	ICSAB
Data File Name	027ICSB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T11:49:31-05:00
Sample Type	ICSB
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High	QC Flag
Li	7	1	No Gas	105.162	1.081	1476466	1.35	100	105.2	180	120	ICSB Main CR1 Failed
Be	9	1	No Gas	103.035	1.225	355610	0.67	100	103.0	80	120	
V	51	2	He	100.184	1.090	576992	0.12	100	100.2	80	120	
Cr	52	2	He	103.049	0.499	676053	0.69	100	103.0	80	120	
Fe	56	2	He	114979.725	0.408	633855924	0.67	100	114979.7	80	120	
Se	78	2	He	103.397	2.786	8418	1.85	100	103.4	80	120	
As	75	2	He	102.478	0.694	101040	0.34	100	102.5	80	120	
Ca	44	2	He	115664.926	0.734	3591927	1.02	100	115664.9	80	120	
Na	23	2	He	116662.993	1.261	108801325	0.44	100	116663.0	80	120	
Mg	24	2	He	116497.572	0.672	61907332	0.40	100	116497.6	80	120	
K	39	2	He	115694.891	1.045	68311771	0.31	100	115694.9	80	120	
Mn	55	2	He	103.107	0.628	451891	0.49	100	103.1	80	120	
Co	59	2	He	98.986	1.183	978532	0.45	100	99.0	80	120	
Ni	60	2	He	99.930	1.697	263580	0.96	100	99.9	80	120	
Cu	63	2	He	101.177	0.966	721054	0.18	100	101.2	80	120	
Zn	66	2	He	103.092	0.736	134336	1.12	100	103.1	80	120	
Al	27	2	He	97967.264	1.476	27093681	0.60	100	97967.3	80	120	ICSB Main CR1 Failed
B	11	1	No Gas	558.746	1.202	1057960	1.83	100	558.7	80	120	
Al	27	1	No Gas	98710.793	0.866	1392206379	1.26	100	98710.8	80	120	ICSB Main CR1 Failed
Si	28	1	No Gas	542.339	2.375	4201342	0.92	100	542.3	80	120	
Ag	107	1	No Gas	97.228	1.455	1509188	1.74	100	97.2	80	120	
Cd	111	1	No Gas	101.244	0.485	319551	0.85	100	101.2	80	120	
Sr	88	1	No Gas	107.400	0.802	3071082	0.98	100	107.4	80	120	
Mo	95	1	No Gas	2098.478	0.237	12592381	0.48	100	2098.5	80	120	ICSB Main CR1 Failed
Sn	118	1	No Gas	105.098	0.651	943496	0.98	100	105.1	80	120	
Sb	121	1	No Gas	107.089	1.207	1318804	1.10	100	107.1	80	120	
Ba	137	1	No Gas	103.628	0.913	468815	1.04	100	103.6	80	120	
Tl	205	1	No Gas	102.881	0.679	2605637	1.06	100	102.9	80	120	
Tl	203	1	No Gas	99.695	0.513	1086909	0.89	100	99.7	80	120	
Pb	208	1	No Gas	104.206	0.474	3629111	0.95	100	104.2	80	120	
U	238	1	No Gas	107.691	0.688	3720221	0.15	100	107.7	80	120	
Ca	43	2	He	112012.881	1.258	205015	0.41	100	112012.9	80	120	
Sb	121	2	He	103.517	0.711	677984	0.40	100	103.5	80	120	
Ti	47	2	He	2202.686	0.534	430535	0.62	100	2202.7	80	120	ICSB Main CR1 Failed
Cu	63	1	No Gas	99.773	2.378	1265815	2.87	100	99.8	80	120	
Se	82	1	No Gas	106.853	3.898	19512	2.71	100	106.9	80	120	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	942804	1.01	997076	94.56	70	120	
Ge	72	2	He	550190	1.02	589371	93.35	70	120	
Ge	72	1	No Gas	1957403	1.34	2084401	93.91	70	120	
In	115	1	No Gas	2191512	0.38	2348124	93.33	70	120	
Bi	209	1	No Gas	1743918	0.61	1876650	92.93	70	120	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	029_CCV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T11:58:09-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Li	7	1	No Gas	102.526	2.401	1528333	1.38	100	102.5	90	110	
Be	9	1	No Gas	100.804	0.996	369124	0.64	100	100.8	90	110	
V	51	2	He	97.758	0.923	580269	0.16	100	97.8	90	110	
Cr	52	2	He	100.264	1.534	677827	0.57	100	100.3	90	110	
Fe	56	2	He	10156.387	1.694	57704762	0.66	10000	101.6	90	110	
Se	78	2	He	101.268	1.360	8501	1.41	100	101.3	90	110	
As	75	2	He	99.883	1.209	101488	0.74	100	99.9	90	110	
Ca	44	2	He	10055.234	0.350	322466	1.33	10000	100.6	90	110	
Na	23	2	He	10138.380	0.822	9831389	0.50	10000	101.4	90	110	
Mg	24	2	He	10163.304	0.588	5566335	0.85	10000	101.6	90	110	
K	39	2	He	10168.280	0.833	6253876	0.20	10000	101.7	90	110	
Mn	55	2	He	101.086	1.516	456528	0.61	100	101.1	90	110	
Co	59	2	He	101.627	3.467	1035209	2.89	100	101.6	90	110	
Ni	60	2	He	101.510	1.242	275920	0.31	100	101.5	90	110	
Cu	63	2	He	102.678	0.973	754047	0.40	100	102.7	90	110	
Zn	66	2	He	101.748	0.434	136636	0.69	100	101.7	90	110	
Al	27	2	He	102.481	2.151	30293	1.89	100	102.5	90	110	
B	11	1	No Gas	510.508	1.885	1026022	1.48	500	102.1	90	110	
Al	27	1	No Gas	102.569	0.552	1568780	0.60	100	102.6	90	110	
Si	28	1	No Gas	510.254	1.280	4149321	0.07	5000	10.2	90	110	CCV Main CR1-2 Failed
Ag	107	1	No Gas	102.469	0.957	1659379	0.59	100	102.5	90	110	
Cd	111	1	No Gas	100.018	1.038	329356	0.70	100	100.0	90	110	
Sr	88	1	No Gas	100.753	0.507	3005953	0.37	100	100.8	90	110	
Mo	95	1	No Gas	97.646	1.251	611453	0.80	100	97.6	90	110	
Sn	118	1	No Gas	98.439	1.163	922106	0.71	100	98.4	90	110	
Sb	121	1	No Gas	101.218	0.662	1301557	1.10	100	101.2	90	110	
Ba	137	1	No Gas	99.466	1.479	469480	1.06	100	99.5	90	110	
Tl	205	1	No Gas	100.272	0.769	2694001	0.42	100	100.3	90	110	
Tl	203	1	No Gas	96.511	0.785	1116189	0.44	100	96.5	90	110	
Pb	208	1	No Gas	100.351	1.399	3707280	0.63	100	100.4	90	110	
U	238	1	No Gas	100.204	0.802	3672353	1.14	100	100.2	90	110	
Ca	43	2	He	10315.186	5.661	19474	4.76	10000	103.2	90	110	
Sb	121	2	He	99.560	0.316	672028	1.13	100	99.6	90	110	
Ti	47	2	He	100.222	0.933	20202	0.27	100	100.2	90	110	
Cu	63	1	No Gas	101.726	1.565	1347163	0.45	100	101.7	90	110	
Se	82	1	No Gas	102.721	1.850	19583	1.16	100	102.7	90	110	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1000299	1.31	997076	100.32	70	120	
Ge	72	2	He	566978	1.02	589371	96.20	70	120	
Ge	72	1	No Gas	2043612	1.12	2084401	98.04	70	120	
In	115	1	No Gas	2286522	0.48	2348124	97.38	70	120	
Bi	209	1	No Gas	1850093	1.13	1876650	98.58	70	120	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	030_CCB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T11:59:57-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	0.047	84.7	54697	0.4	0.5	
Be	9	1	No Gas	0.005	194.2	37	87.7	0.5	
V	51	2	He	-0.063	-22.6	2132	4.4	2.5	
Cr	52	2	He	0.021	33.6	1103	3.8	2.5	
Fe	56	2	He	0.851	7.3	17735	2.6	100	
Se	78	2	He	0.111	269.6	199	11.6	2	
As	75	2	He	-0.021	-68.4	119	11.3	2.5	
Ca	44	2	He	-3.612	-42.8	610	7.5	100	
Na	23	2	He	9.478	21.0	104422	2.2	100	
Mg	24	2	He	0.730	4.4	1050	2.5	100	
K	39	2	He	4.862	14.0	75878	0.8	100	
Mn	55	2	He	0.053	68.8	543	29.8	2.5	
Co	59	2	He	0.009	56.9	147	35.0	2.5	
Ni	60	2	He	-0.003	-345.6	200	13.2	2.5	
Cu	63	2	He	0.008	88.3	2167	3.3	2	
Zn	66	2	He	-0.121	-43.7	447	16.8	2.5	
Al	27	2	He	-1.052	-35.4	783	12.6	5	
B	11	1	No Gas	12.313	13.2	31691	9.2	0.5	CCB Main CR1 Failed
Al	27	1	No Gas	-1.243	-1.8	40085	1.6	5	
Si	28	1	No Gas	-4.541	-13.0	337358	0.6	10	
Ag	107	1	No Gas	0.021	30.0	767	11.1	2.5	
Cd	111	1	No Gas	0.011	81.2	47	65.5	1	
Sr	88	1	No Gas	-0.017	-20.2	1003	9.0	2.5	
Mo	95	1	No Gas	0.028	58.3	313	32.0	2.5	
Sn	118	1	No Gas	0.054	13.7	2404	3.2	5	
Sb	121	1	No Gas	0.235	12.6	4648	7.4	2.5	
Ba	137	1	No Gas	-0.007	-109.0	243	13.2	2.5	
Tl	205	1	No Gas	0.026	8.3	773	6.5	1	
Tl	203	1	No Gas	0.024	13.6	300	12.0	1	
Pb	208	1	No Gas	0.013	30.8	1630	8.4	2.5	
U	238	1	No Gas	0.007	16.7	303	13.3	2.5	
Ca	43	2	He	-1.212	-241.6	23	24.7	100	
Sb	121	2	He	0.202	12.0	2110	6.7	2.5	
Ti	47	2	He	0.003	1883.0	17	69.3	2.5	
Cu	63	1	No Gas	0.004	756.0	3997	7.7	2.5	
Se	82	1	No Gas	-0.086	-503.7	-147	-57.5	2	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1011832	1.41	997076	101.48	70	120	
Ge	72	2	He	564835	1.09	589371	95.84	70	120	
Ge	72	1	No Gas	2037105	1.64	2084401	97.73	70	120	
In	115	1	No Gas	2308239	2.13	2348124	98.30	70	120	
Bi	209	1	No Gas	1873891	1.11	1876650	99.85	70	120	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	041_CCV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T12:22:38-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Li	7	1	No Gas	104.796	2.734	1497977	1.10	100	104.8	90	110	
Be	9	1	No Gas	102.838	1.701	361381	0.84	100	102.8	90	110	
V	51	2	He	98.099	0.322	592118	0.51	100	98.1	90	110	
Cr	52	2	He	100.475	0.614	690741	0.25	100	100.5	90	110	
Fe	56	2	He	10143.813	0.527	58608887	0.26	10000	101.4	90	110	
Se	78	2	He	100.960	0.556	8619	0.20	100	101.0	90	110	
As	75	2	He	99.777	0.807	103094	0.94	100	99.8	90	110	
Ca	44	2	He	10083.061	0.804	328781	0.27	10000	100.8	90	110	
Na	23	2	He	10320.967	0.280	10175690	0.80	10000	103.2	90	110	
Mg	24	2	He	10233.057	1.004	5698761	0.46	10000	102.3	90	110	
K	39	2	He	10238.623	1.294	6403251	1.84	10000	102.4	90	110	
Mn	55	2	He	101.294	1.114	465191	0.49	100	101.3	90	110	
Co	59	2	He	101.921	1.833	1055801	1.63	100	101.9	90	110	
Ni	60	2	He	101.292	0.152	279985	0.73	100	101.3	90	110	
Cu	63	2	He	102.454	1.168	765082	0.69	100	102.5	90	110	
Zn	66	2	He	101.406	1.049	138470	0.80	100	101.4	90	110	
Al	27	2	He	101.833	0.243	30617	0.69	100	101.8	90	110	
B	11	1	No Gas	515.332	2.801	993728	0.63	500	103.1	90	110	
Al	27	1	No Gas	102.205	1.314	1568287	0.10	100	102.2	90	110	
Si	28	1	No Gas	502.123	1.670	4101983	0.37	5000	10.0	90	110	CCV Main CR1-2 Failed
Ag	107	1	No Gas	101.814	1.475	1637423	0.79	100	101.8	90	110	
Cd	111	1	No Gas	100.474	1.446	328580	0.76	100	100.5	90	110	
Sr	88	1	No Gas	102.624	0.383	3040887	1.01	100	102.6	90	110	
Mo	95	1	No Gas	97.560	0.607	606748	0.51	100	97.6	90	110	
Sn	118	1	No Gas	98.489	1.290	916263	1.08	100	98.5	90	110	
Sb	121	1	No Gas	101.230	0.455	1305827	0.87	100	101.2	90	110	
Ba	137	1	No Gas	99.476	0.875	466320	0.46	100	99.5	90	110	
Tl	205	1	No Gas	100.879	2.882	2684212	1.52	100	100.9	90	110	
Tl	203	1	No Gas	97.248	2.357	1113927	0.93	100	97.2	90	110	
Pb	208	1	No Gas	101.145	1.003	3701407	0.51	100	101.1	90	110	
U	238	1	No Gas	100.622	1.973	3652384	0.92	100	100.6	90	110	
Ca	43	2	He	10084.745	1.560	19367	1.96	10000	100.8	90	110	
Sb	121	2	He	97.865	0.065	671715	0.57	100	97.9	90	110	
Ti	47	2	He	99.406	0.531	20375	0.39	100	99.4	90	110	
Cu	63	1	No Gas	102.482	0.670	1361569	0.83	100	102.5	90	110	
Se	82	1	No Gas	101.758	5.324	19454	4.23	100	101.8	90	110	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	960144	2.50	997076	96.30	70	120	
Ge	72	2	He	576520	0.63	589371	97.82	70	120	
Ge	72	1	No Gas	2050120	1.29	2084401	98.36	70	120	
In	115	1	No Gas	2270874	0.70	2348124	96.71	70	120	
Bi	209	1	No Gas	1832656	1.43	1876650	97.66	70	120	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	042_CCB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T12:24:26-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	0.123	60.1	53329	1.2	0.5	
Be	9	1	No Gas	0.004	127.7	35	57.1	0.5	
V	51	2	He	0.244	15.8	3966	4.8	2.5	
Cr	52	2	He	0.019	144.1	1097	17.8	2.5	
Fe	56	2	He	0.931	7.5	18333	1.4	100	
Se	78	2	He	0.289	132.0	216	15.8	2	
As	75	2	He	0.017	275.9	159	29.7	2.5	
Ca	44	2	He	-5.520	-64.9	553	20.2	100	
Na	23	2	He	26.599	6.2	121771	0.7	100	
Mg	24	2	He	0.625	11.6	1000	3.0	100	
K	39	2	He	0.261	377.8	73686	1.2	100	
Mn	55	2	He	0.039	65.1	487	23.1	2.5	
Co	59	2	He	0.011	12.3	167	9.2	2.5	
Ni	60	2	He	-0.001	-1526.2	207	18.3	2.5	
Cu	63	2	He	-0.013	-64.0	2034	2.5	2	
Zn	66	2	He	-0.158	-34.3	400	19.5	2.5	
Al	27	2	He	-1.126	-36.4	770	16.3	5	
B	11	1	No Gas	12.118	12.3	29941	9.9	0.5	CCB Main CR1 Failed
Al	27	1	No Gas	-1.278	-9.5	39777	2.7	5	
Si	28	1	No Gas	-5.233	-9.7	334208	0.8	10	
Ag	107	1	No Gas	0.007	34.6	547	6.9	2.5	
Cd	111	1	No Gas	0.009	66.1	40	50.0	1	
Sr	88	1	No Gas	-0.012	-7.5	1143	2.2	2.5	
Mo	95	1	No Gas	0.015	48.2	230	19.0	2.5	
Sn	118	1	No Gas	0.026	72.1	2130	8.6	5	
Sb	121	1	No Gas	0.270	3.9	5121	1.1	2.5	
Ba	137	1	No Gas	-0.014	-53.0	210	17.2	2.5	
Tl	205	1	No Gas	0.025	15.7	747	13.7	1	
Tl	203	1	No Gas	0.023	17.0	287	14.5	1	
Pb	208	1	No Gas	0.006	86.1	1353	13.8	2.5	
U	238	1	No Gas	0.007	15.0	287	14.1	2.5	
Ca	43	2	He	-8.368	-62.3	10	100.0	100	
Sb	121	2	He	0.219	14.8	2244	9.3	2.5	
Ti	47	2	He	-0.047	-60.8	7	86.6	2.5	
Cu	63	1	No Gas	0.021	90.1	4251	7.0	2.5	
Se	82	1	No Gas	-0.096	-1128.6	-151	-138.9	2	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	967078	0.89	997076	96.99	70	120	
Ge	72	2	He	569424	1.17	589371	96.62	70	120	
Ge	72	1	No Gas	2049106	1.76	2084401	98.31	70	120	
In	115	1	No Gas	2299694	0.55	2348124	97.94	70	120	
Bi	209	1	No Gas	1851909	1.51	1876650	98.68	70	120	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	053_CCV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T12:45:25-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Li	7	1	No Gas	103.567	3.152	1541711	1.37	100	103.6	90	110	
Be	9	1	No Gas	100.525	2.458	367700	0.31	100	100.5	90	110	
V	51	2	He	98.476	0.403	615394	0.10	100	98.5	90	110	
Cr	52	2	He	100.826	0.763	717660	0.47	100	100.8	90	110	
Fe	56	2	He	10353.470	0.682	61936691	0.91	10000	103.5	90	110	
Se	78	2	He	98.800	0.928	8737	0.49	100	98.8	90	110	
As	75	2	He	99.587	0.802	106537	0.93	100	99.6	90	110	
Ca	44	2	He	10095.993	0.687	340850	0.60	10000	101.0	90	110	
Na	23	2	He	10736.396	0.274	10955496	0.67	10000	107.4	90	110	
Mg	24	2	He	10550.783	1.274	6083564	1.12	10000	105.5	90	110	
K	39	2	He	10379.353	0.700	6719293	0.30	10000	103.8	90	110	
Mn	55	2	He	101.057	0.892	480531	0.73	100	101.1	90	110	
Co	59	2	He	104.790	2.380	1123879	2.05	100	104.8	90	110	
Ni	60	2	He	101.983	0.189	291859	0.41	100	102.0	90	110	
Cu	63	2	He	102.932	0.928	795837	0.49	100	102.9	90	110	
Zn	66	2	He	102.988	0.426	145598	0.82	100	103.0	90	110	
Al	27	2	He	101.624	1.802	31636	1.56	100	101.6	90	110	
B	11	1	No Gas	520.651	5.313	1044650	2.77	500	104.1	90	110	
Al	27	1	No Gas	102.501	1.281	1650785	1.18	100	102.5	90	110	
Si	28	1	No Gas	490.195	1.552	4212880	1.41	5000	9.8	90	110	CCV Main CR1-2 Failed
Ag	107	1	No Gas	103.580	1.651	1751618	1.86	100	103.6	90	110	
Cd	111	1	No Gas	100.852	0.445	346795	0.46	100	100.9	90	110	
Sr	88	1	No Gas	104.015	0.877	3240459	0.81	100	104.0	90	110	
Mo	95	1	No Gas	98.143	0.362	641759	0.24	100	98.1	90	110	
Sn	118	1	No Gas	99.038	0.929	968748	0.88	100	99.0	90	110	
Sb	121	1	No Gas	102.340	0.871	1385629	0.97	100	102.3	90	110	
Ba	137	1	No Gas	99.970	1.030	492743	1.04	100	100.0	90	110	
Tl	205	1	No Gas	100.845	0.927	2896124	0.62	100	100.8	90	110	
Tl	203	1	No Gas	96.742	0.121	1195996	0.55	100	96.7	90	110	
Pb	208	1	No Gas	101.360	0.234	4002938	0.84	100	101.4	90	110	
U	238	1	No Gas	101.775	0.580	3986889	0.25	100	101.8	90	110	
Ca	43	2	He	10371.853	3.800	20619	3.36	10000	103.7	90	110	
Sb	121	2	He	98.481	0.509	699838	0.67	100	98.5	90	110	
Ti	47	2	He	98.615	2.273	20929	2.61	100	98.6	90	110	
Cu	63	1	No Gas	102.691	0.652	1432016	0.51	100	102.7	90	110	
Se	82	1	No Gas	101.918	0.863	20459	0.88	100	101.9	90	110	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	999555	2.58	997076	100.25	70	120	
Ge	72	2	He	596905	0.45	589371	101.28	70	120	
Ge	72	1	No Gas	2151741	0.14	2084401	103.23	70	120	
In	115	1	No Gas	2387619	0.26	2348124	101.68	70	120	
Bi	209	1	No Gas	1977551	0.66	1876650	105.38	70	120	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	054_CCB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T12:47:13-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	0.211	50.0	58305	0.8	0.5	
Be	9	1	No Gas	0.002	41.2	28	10.2	0.5	
V	51	2	He	-0.208	-6.1	1366	6.4	2.5	
Cr	52	2	He	0.005	798.0	1063	25.3	2.5	
Fe	56	2	He	0.760	9.6	18423	2.5	100	
Se	78	2	He	0.004	2367.9	204	2.6	2	
As	75	2	He	-0.040	-33.7	107	13.6	2.5	
Ca	44	2	He	-3.405	-132.1	660	23.3	100	
Na	23	2	He	86.672	5.0	190764	2.1	100	
Mg	24	2	He	0.730	7.7	1123	3.7	100	
K	39	2	He	0.691	398.9	78496	2.2	100	
Mn	55	2	He	0.052	58.1	577	24.8	2.5	
Co	59	2	He	0.004	104.2	97	41.8	2.5	
Ni	60	2	He	-0.020	-79.3	163	27.6	2.5	
Cu	63	2	He	0.099	37.0	3030	10.4	2	
Zn	66	2	He	-0.095	-56.1	513	14.4	2.5	
Al	27	2	He	-0.980	-50.0	860	16.4	5	
B	11	1	No Gas	10.198	17.6	27995	11.5	0.5	CCB Main CR1 Failed
Al	27	1	No Gas	-1.412	-8.1	40185	2.6	5	
Si	28	1	No Gas	-9.095	-15.8	324778	2.7	10	
Ag	107	1	No Gas	0.026	7.8	910	3.8	2.5	
Cd	111	1	No Gas	0.002	182.0	17	69.3	1	
Sr	88	1	No Gas	-0.007	-68.0	1390	11.3	2.5	
Mo	95	1	No Gas	0.009	90.9	203	27.1	2.5	
Sn	118	1	No Gas	0.033	76.0	2334	10.2	5	
Sb	121	1	No Gas	0.287	13.3	5671	7.5	2.5	
Ba	137	1	No Gas	-0.003	-550.0	280	25.8	2.5	
Tl	205	1	No Gas	0.019	20.4	640	16.5	1	
Tl	203	1	No Gas	0.022	20.2	297	18.6	1	
Pb	208	1	No Gas	0.005	88.0	1423	11.4	2.5	
U	238	1	No Gas	0.005	36.8	237	28.1	2.5	
Ca	43	2	He	-6.929	-111.0	13	114.6	100	
Sb	121	2	He	0.239	1.2	2530	1.2	2.5	
Ti	47	2	He	-0.064	-41.7	3	173.2	2.5	
Cu	63	1	No Gas	0.133	6.3	6095	3.2	2.5	
Se	82	1	No Gas	-0.386	-229.3	-216	-81.3	2	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1033680	1.86	997076	103.67	70	120	
Ge	72	2	He	604453	0.98	589371	102.56	70	120	
Ge	72	1	No Gas	2178501	1.94	2084401	104.51	70	120	
In	115	1	No Gas	2436274	1.32	2348124	103.75	70	120	
Bi	209	1	No Gas	2009640	1.41	1876650	107.09	70	120	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	077_CCV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T13:32:40-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Li	7	1	No Gas	104.314	1.659	1478907	1.44	100	104.3	90	110	
Be	9	1	No Gas	100.295	0.730	349470	0.56	100	100.3	90	110	
V	51	2	He	98.085	0.850	580232	0.45	100	98.1	90	110	
Cr	52	2	He	101.293	1.071	682477	0.57	100	101.3	90	110	
Fe	56	2	He	10315.940	0.898	58415712	0.41	10000	103.2	90	110	
Se	78	2	He	98.208	1.432	8223	1.79	100	98.2	90	110	
As	75	2	He	98.991	0.734	100243	0.28	100	99.0	90	110	
Ca	44	2	He	9866.307	0.851	315324	0.37	10000	98.7	90	110	
Na	23	2	He	10788.180	0.580	10419949	0.18	10000	107.9	90	110	
Mg	24	2	He	10641.932	0.461	5808570	0.24	10000	106.4	90	110	
K	39	2	He	10055.832	1.397	6164494	1.02	10000	100.6	90	110	
Mn	55	2	He	100.768	0.990	453571	0.63	100	100.8	90	110	
Co	59	2	He	106.003	0.563	1076252	0.67	100	106.0	90	110	
Ni	60	2	He	102.312	1.528	277157	1.03	100	102.3	90	110	
Cu	63	2	He	102.936	0.947	753376	0.57	100	102.9	90	110	
Zn	66	2	He	102.718	0.894	137461	0.40	100	102.7	90	110	
Al	27	2	He	100.521	0.894	29635	1.12	100	100.5	90	110	
B	11	1	No Gas	536.923	1.960	1026545	1.97	500	107.4	90	110	
Al	27	1	No Gas	101.053	1.895	1561004	1.11	100	101.1	90	110	
Si	28	1	No Gas	473.123	1.376	3911187	0.35	5000	9.5	90	110	CCV Main CR1-2 Failed
Ag	107	1	No Gas	101.946	2.196	1714461	1.75	100	101.9	90	110	
Cd	111	1	No Gas	98.815	1.612	337921	0.89	100	98.8	90	110	
Sr	88	1	No Gas	99.452	1.538	3081329	0.85	100	99.5	90	110	
Mo	95	1	No Gas	94.658	1.814	615563	1.03	100	94.7	90	110	
Sn	118	1	No Gas	98.132	2.371	954547	1.15	100	98.1	90	110	
Sb	121	1	No Gas	107.579	0.833	1396457	1.83	100	107.6	90	110	
Ba	137	1	No Gas	99.010	2.028	485310	1.18	100	99.0	90	110	
Tl	205	1	No Gas	100.760	2.402	2981546	1.28	100	100.8	90	110	
Tl	203	1	No Gas	95.775	2.820	1219992	2.14	100	95.8	90	110	
Pb	208	1	No Gas	100.765	2.844	4099951	1.72	100	100.8	90	110	
U	238	1	No Gas	102.263	2.575	4127550	1.47	100	102.3	90	110	
Ca	43	2	He	9814.974	1.848	18473	1.35	10000	98.1	90	110	
Sb	121	2	He	99.915	0.574	672097	0.13	100	99.9	90	110	
Ti	47	2	He	100.128	0.623	20115	0.69	100	100.1	90	110	
Cu	63	1	No Gas	100.539	1.130	1344201	0.80	100	100.5	90	110	
Se	82	1	No Gas	100.262	1.348	19293	1.14	100	100.3	90	110	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	951828	1.18	997076	95.46	70	120	
Ge	72	2	He	565039	0.49	589371	95.87	70	120	
Ge	72	1	No Gas	2062984	1.03	2084401	98.97	70	120	
In	115	1	No Gas	2374787	1.49	2348124	101.14	70	120	
Bi	209	1	No Gas	2037897	1.14	1876650	108.59	70	120	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	078_CCB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T13:34:27-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	0.013	497.3	51880	0.8	0.5	
Be	9	1	No Gas	0.001	146.2	22	13.3	0.5	
V	51	2	He	-0.026	-65.3	2367	4.6	2.5	
Cr	52	2	He	-0.003	-382.2	947	10.0	2.5	
Fe	56	2	He	0.693	6.8	16974	1.9	100	
Se	78	2	He	0.064	523.5	197	14.8	2	
As	75	2	He	-0.002	-360.8	140	4.8	2.5	
Ca	44	2	He	-8.746	-15.1	450	8.9	100	
Na	23	2	He	75.203	1.7	168643	0.5	100	
Mg	24	2	He	0.714	36.7	1050	14.4	100	
K	39	2	He	4.051	25.7	75995	1.0	100	
Mn	55	2	He	0.066	17.2	610	9.1	2.5	
Co	59	2	He	0.001	438.4	63	59.8	2.5	
Ni	60	2	He	-0.016	-12.9	167	3.5	2.5	
Cu	63	2	He	-0.071	-16.8	1603	5.4	2	
Zn	66	2	He	-0.140	-39.2	423	16.8	2.5	
Al	27	2	He	-1.136	-68.9	767	29.6	5	
B	11	1	No Gas	22.860	8.3	50705	5.0	0.5	CCB Main CR1 Failed
Al	27	1	No Gas	-1.589	-5.6	35594	3.0	5	
Si	28	1	No Gas	-11.168	-6.6	293420	1.8	10	
Ag	107	1	No Gas	0.007	34.3	570	7.6	2.5	
Cd	111	1	No Gas	0.008	79.4	37	56.8	1	
Sr	88	1	No Gas	-0.011	-58.1	1233	15.9	2.5	
Mo	95	1	No Gas	0.018	34.4	260	15.4	2.5	
Sn	118	1	No Gas	0.047	46.7	2440	9.2	5	
Sb	121	1	No Gas	0.284	7.5	5365	4.8	2.5	
Ba	137	1	No Gas	-0.005	-105.6	267	9.4	2.5	
Tl	205	1	No Gas	0.015	17.8	520	14.5	1	
Tl	203	1	No Gas	0.021	9.7	297	7.8	1	
Pb	208	1	No Gas	0.005	69.9	1447	10.3	2.5	
U	238	1	No Gas	0.006	15.7	287	12.3	2.5	
Ca	43	2	He	-3.025	-176.8	20	50.0	100	
Sb	121	2	He	0.225	14.2	2287	8.9	2.5	
Ti	47	2	He	-0.063	-44.7	3	173.2	2.5	
Cu	63	1	No Gas	-0.086	-8.7	2867	4.4	2.5	
Se	82	1	No Gas	-0.255	-1280.7	-181	-352.8	2	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	968738	2.36	997076	97.16	70	120	
Ge	72	2	He	569385	0.75	589371	96.61	70	120	
Ge	72	1	No Gas	2071982	0.98	2084401	99.40	70	120	
In	115	1	No Gas	2406384	0.85	2348124	102.48	70	120	
Bi	209	1	No Gas	2077411	1.17	1876650	110.70	70	120	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	088_CCV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T13:57:09-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Li	7	1	No Gas	103.436	3.772	1414649	1.85	100	103.4	90	110	
Be	9	1	No Gas	100.029	1.787	336202	0.30	100	100.0	90	110	
V	51	2	He	98.203	0.357	569577	0.89	100	98.2	90	110	
Cr	52	2	He	100.471	0.667	663731	1.06	100	100.5	90	110	
Fe	56	2	He	10331.925	0.251	57362617	0.50	10000	103.3	90	110	
Se	78	2	He	98.246	2.436	8064	1.91	100	98.2	90	110	
As	75	2	He	98.517	0.296	97815	0.70	100	98.5	90	110	
Ca	44	2	He	9916.801	0.183	310740	0.56	10000	99.2	90	110	
Na	23	2	He	10891.095	0.813	10312948	1.21	10000	108.9	90	110	
Mg	24	2	He	10713.496	1.292	5733294	1.47	10000	107.1	90	110	
K	39	2	He	10188.406	1.044	6122962	1.45	10000	101.9	90	110	
Mn	55	2	He	99.909	0.366	440912	0.17	100	99.9	90	110	
Co	59	2	He	105.551	2.883	1050800	3.38	100	105.6	90	110	
Ni	60	2	He	101.545	0.615	269715	1.15	100	101.5	90	110	
Cu	63	2	He	102.765	0.346	737429	0.71	100	102.8	90	110	
Zn	66	2	He	102.074	0.201	133932	0.41	100	102.1	90	110	
Al	27	2	He	101.393	0.272	29298	0.65	100	101.4	90	110	
B	11	1	No Gas	512.218	3.150	944894	2.49	500	102.4	90	110	
Al	27	1	No Gas	99.741	2.076	1499614	0.88	100	99.7	90	110	
Si	28	1	No Gas	465.741	0.398	3751629	0.89	5000	9.3	90	110	CCV Main CR1-2 Failed
Ag	107	1	No Gas	101.021	2.233	1665833	1.95	100	101.0	90	110	
Cd	111	1	No Gas	98.713	0.900	331005	0.52	100	98.7	90	110	
Sr	88	1	No Gas	100.762	2.778	3060977	2.29	100	100.8	90	110	
Mo	95	1	No Gas	95.122	0.999	606551	0.25	100	95.1	90	110	
Sn	118	1	No Gas	97.194	1.305	927112	0.70	100	97.2	90	110	
Sb	121	1	No Gas	105.558	0.601	1332971	0.94	100	105.6	90	110	
Ba	137	1	No Gas	97.926	0.833	470682	0.14	100	97.9	90	110	
Tl	205	1	No Gas	99.508	1.411	2865618	1.67	100	99.5	90	110	
Tl	203	1	No Gas	94.979	1.065	1177391	1.00	100	95.0	90	110	
Pb	208	1	No Gas	99.805	0.754	3952196	0.72	100	99.8	90	110	
U	238	1	No Gas	101.565	0.478	3989558	0.68	100	101.6	90	110	
Ca	43	2	He	10090.410	2.501	18620	2.49	10000	100.9	90	110	
Sb	121	2	He	99.396	0.268	655535	0.52	100	99.4	90	110	
Ti	47	2	He	98.008	1.913	19304	1.86	100	98.0	90	110	
Cu	63	1	No Gas	99.985	0.970	1300532	0.67	100	100.0	90	110	
Se	82	1	No Gas	101.706	2.415	19042	2.60	100	101.7	90	110	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	918284	1.93	997076	92.10	70	120	
Ge	72	2	He	553980	0.54	589371	94.00	70	120	
Ge	72	1	No Gas	2007020	1.21	2084401	96.29	70	120	
In	115	1	No Gas	2328384	0.76	2348124	99.16	70	120	
Bi	209	1	No Gas	1982910	0.27	1876650	105.66	70	120	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	089_CCB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T13:58:57-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	-0.016	-496.3	49861	0.6	0.5	
Be	9	1	No Gas	0.004	93.5	32	39.7	0.5	
V	51	2	He	-0.129	-10.6	1716	5.1	2.5	
Cr	52	2	He	-0.012	-163.2	867	14.7	2.5	
Fe	56	2	He	0.673	17.3	16463	2.7	100	
Se	78	2	He	0.324	137.2	213	16.0	2	
As	75	2	He	-0.003	-853.4	136	18.8	2.5	
Ca	44	2	He	-4.247	-87.7	580	19.0	100	
Na	23	2	He	60.704	2.5	151064	0.5	100	
Mg	24	2	He	0.512	11.2	917	4.5	100	
K	39	2	He	6.408	7.3	75637	1.1	100	
Mn	55	2	He	0.042	41.5	487	15.4	2.5	
Co	59	2	He	0.002	81.0	73	20.8	2.5	
Ni	60	2	He	-0.009	-73.8	180	9.6	2.5	
Cu	63	2	He	-0.090	-29.7	1430	13.5	2	
Zn	66	2	He	-0.181	-12.6	360	7.3	2.5	
Al	27	2	He	-1.308	-11.1	700	4.9	5	
B	11	1	No Gas	17.278	10.0	38717	9.0	0.5	CCB Main CR1 Failed
Al	27	1	No Gas	-1.659	-1.5	33554	0.8	5	
Si	28	1	No Gas	-12.601	-1.9	274443	0.5	10	
Ag	107	1	No Gas	0.006	109.5	533	20.2	2.5	
Cd	111	1	No Gas	0.000	15022.7	10	100.0	1	
Sr	88	1	No Gas	-0.014	-22.5	1103	8.4	2.5	
Mo	95	1	No Gas	0.011	110.9	210	37.2	2.5	
Sn	118	1	No Gas	0.049	54.4	2380	10.7	5	
Sb	121	1	No Gas	0.342	12.0	5935	8.9	2.5	
Ba	137	1	No Gas	0.001	971.5	287	19.2	2.5	
Tl	205	1	No Gas	0.021	3.8	663	2.3	1	
Tl	203	1	No Gas	0.022	29.4	293	26.0	1	
Pb	208	1	No Gas	0.004	25.4	1340	2.7	2.5	
U	238	1	No Gas	0.004	15.9	220	13.6	2.5	
Ca	43	2	He	-6.368	-98.5	13	86.6	100	
Sb	121	2	He	0.269	2.0	2527	1.1	2.5	
Ti	47	2	He	0.005	1276.6	17	69.3	2.5	
Cu	63	1	No Gas	-0.105	-17.7	2540	9.3	2.5	
Se	82	1	No Gas	-1.149	-218.8	-345	-137.7	2	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	938308	2.42	997076	94.11	70	120	
Ge	72	2	He	556167	1.20	589371	94.37	70	120	
Ge	72	1	No Gas	2011661	0.22	2084401	96.51	70	120	
In	115	1	No Gas	2329710	0.42	2348124	99.22	70	120	
Bi	209	1	No Gas	1975299	1.09	1876650	105.26	70	120	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	100_CCV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T14:21:50-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Li	7	1	No Gas	104.518	6.450	1305105	3.29	100	104.5	90	110	
Be	9	1	No Gas	102.156	3.050	313722	0.18	100	102.2	90	110	
V	51	2	He	98.485	0.335	559471	0.61	100	98.5	90	110	
Cr	52	2	He	101.011	0.829	653595	1.11	100	101.0	90	110	
Fe	56	2	He	10293.147	0.680	55974698	0.96	10000	102.9	90	110	
Se	78	2	He	95.777	0.224	7705	0.34	100	95.8	90	110	
As	75	2	He	98.794	1.388	96077	1.66	100	98.8	90	110	
Ca	44	2	He	10035.131	1.282	307990	1.58	10000	100.4	90	110	
Na	23	2	He	10610.527	0.125	9843154	0.43	10000	106.1	90	110	
Mg	24	2	He	10434.381	1.791	5469263	1.86	10000	104.3	90	110	
K	39	2	He	10186.013	0.915	5995756	1.14	10000	101.9	90	110	
Mn	55	2	He	101.365	1.088	438163	1.38	100	101.4	90	110	
Co	59	2	He	102.976	2.658	1004064	2.97	100	103.0	90	110	
Ni	60	2	He	101.208	0.683	263292	0.38	100	101.2	90	110	
Cu	63	2	He	103.520	0.721	727590	1.03	100	103.5	90	110	
Zn	66	2	He	103.656	0.650	133209	0.94	100	103.7	90	110	
Al	27	2	He	100.673	2.345	28499	2.21	100	100.7	90	110	
B	11	1	No Gas	521.903	4.549	879334	1.64	500	104.4	90	110	
Al	27	1	No Gas	98.207	2.084	1446077	0.69	100	98.2	90	110	
Si	28	1	No Gas	457.010	3.423	3608762	0.76	5000	9.1	90	110	CCV Main CR1-2 Failed
Ag	107	1	No Gas	100.462	2.352	1617319	0.34	100	100.5	90	110	
Cd	111	1	No Gas	100.008	0.817	327458	1.28	100	100.0	90	110	
Sr	88	1	No Gas	99.266	2.539	2944142	0.95	100	99.3	90	110	
Mo	95	1	No Gas	94.954	0.938	591234	1.18	100	95.0	90	110	
Sn	118	1	No Gas	98.195	1.087	914585	1.04	100	98.2	90	110	
Sb	121	1	No Gas	105.538	1.285	1304463	1.55	100	105.5	90	110	
Ba	137	1	No Gas	99.325	2.044	466088	0.16	100	99.3	90	110	
Tl	205	1	No Gas	100.198	1.016	2828233	2.20	100	100.2	90	110	
Tl	203	1	No Gas	95.972	0.716	1165961	0.61	100	96.0	90	110	
Pb	208	1	No Gas	100.105	0.885	3884982	0.80	100	100.1	90	110	
U	238	1	No Gas	100.383	1.440	3864649	1.93	100	100.4	90	110	
Ca	43	2	He	9954.291	1.246	17992	1.45	10000	99.5	90	110	
Sb	121	2	He	99.597	0.523	643379	0.69	100	99.6	90	110	
Ti	47	2	He	97.964	2.286	18900	2.54	100	98.0	90	110	
Cu	63	1	No Gas	99.741	2.762	1269673	1.63	100	99.7	90	110	
Se	82	1	No Gas	102.720	2.516	18821	0.43	100	102.7	90	110	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	839351	2.96	997076	84.18	70	120	
Ge	72	2	He	542604	0.31	589371	92.06	70	120	
Ge	72	1	No Gas	1964716	2.36	2084401	94.26	70	120	
In	115	1	No Gas	2273768	2.11	2348124	96.83	70	120	
Bi	209	1	No Gas	1943462	1.29	1876650	103.56	70	120	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	101_CCB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T14:23:55-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	0.013	347.8	44296	1.0	0.5	
Be	9	1	No Gas	0.002	113.9	23	32.7	0.5	
V	51	2	He	-0.171	-6.2	1382	4.3	2.5	
Cr	52	2	He	-0.009	-204.6	833	14.0	2.5	
Fe	56	2	He	0.754	10.3	15923	2.3	100	
Se	78	2	He	0.592	66.4	221	13.7	2	
As	75	2	He	-0.019	-44.7	112	6.9	2.5	
Ca	44	2	He	-5.602	-13.5	507	4.1	100	
Na	23	2	He	49.541	1.8	132285	0.4	100	
Mg	24	2	He	0.289	40.3	750	8.1	100	
K	39	2	He	7.606	15.1	71860	1.2	100	
Mn	55	2	He	0.035	12.7	430	4.0	2.5	
Co	59	2	He	0.003	62.9	83	25.0	2.5	
Ni	60	2	He	-0.006	-321.4	177	29.0	2.5	
Cu	63	2	He	-0.101	-21.5	1270	11.4	2	
Zn	66	2	He	-0.094	-40.9	447	10.3	2.5	
Al	27	2	He	-0.404	-116.0	897	13.4	5	
B	11	1	No Gas	19.213	10.4	37301	8.5	0.5	CCB Main CR1 Failed
Al	27	1	No Gas	-0.779	-150.6	43752	35.3	5	
Si	28	1	No Gas	-10.267	-24.5	276074	4.8	10	
Ag	107	1	No Gas	-0.002	-176.5	387	10.8	2.5	
Cd	111	1	No Gas	0.001	144.2	13	43.3	1	
Sr	88	1	No Gas	-0.016	-29.9	1000	14.4	2.5	
Mo	95	1	No Gas	0.014	80.5	213	31.2	2.5	
Sn	118	1	No Gas	0.042	37.0	2190	5.5	5	
Sb	121	1	No Gas	0.340	10.3	5601	6.0	2.5	
Ba	137	1	No Gas	0.004	307.4	283	19.4	2.5	
Tl	205	1	No Gas	0.022	17.1	670	14.2	1	
Tl	203	1	No Gas	0.020	5.6	260	3.8	1	
Pb	208	1	No Gas	0.006	30.7	1357	5.6	2.5	
U	238	1	No Gas	0.003	19.0	163	12.7	2.5	
Ca	43	2	He	-4.027	-165.5	17	69.3	100	
Sb	121	2	He	0.282	5.8	2457	4.5	2.5	
Ti	47	2	He	-0.026	-207.4	10	100.0	2.5	
Cu	63	1	No Gas	-0.109	-16.8	2357	8.2	2.5	
Se	82	1	No Gas	-0.292	-419.9	-173	-125.3	2	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	826896	0.40	997076	82.93	70	120	
Ge	72	2	He	523438	0.32	589371	88.81	70	120	
Ge	72	1	No Gas	1906857	2.43	2084401	91.48	70	120	
In	115	1	No Gas	2204922	0.93	2348124	93.90	70	120	
Bi	209	1	No Gas	1888862	1.29	1876650	100.65	70	120	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	109_CCV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T14:53:30-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Li	7	1	No Gas	102.235	0.848	1332358	0.67	100	102.2	90	110	
Be	9	1	No Gas	102.331	0.400	327533	0.30	100	102.3	90	110	
V	51	2	He	99.618	0.687	579227	0.26	100	99.6	90	110	
Cr	52	2	He	102.199	1.196	676846	0.75	100	102.2	90	110	
Fe	56	2	He	10421.469	1.514	58006617	0.97	10000	104.2	90	110	
Se	78	2	He	98.445	2.756	8101	2.64	100	98.4	90	110	
As	75	2	He	99.247	1.285	98788	0.74	100	99.2	90	110	
Ca	44	2	He	10096.644	1.109	317172	0.74	10000	101.0	90	110	
Na	23	2	He	10971.112	1.474	10414486	1.27	10000	109.7	90	110	
Mg	24	2	He	10910.892	0.781	5853920	0.67	10000	109.1	90	110	
K	39	2	He	10464.962	1.465	6303002	0.84	10000	104.6	90	110	
Mn	55	2	He	102.727	0.731	454511	0.54	100	102.7	90	110	
Co	59	2	He	104.515	2.281	1043039	2.09	100	104.5	90	110	
Ni	60	2	He	102.827	1.405	273808	0.99	100	102.8	90	110	
Cu	63	2	He	103.889	1.288	747378	0.95	100	103.9	90	110	
Zn	66	2	He	104.037	0.319	136851	0.63	100	104.0	90	110	
Al	27	2	He	101.542	3.238	29412	2.50	100	101.5	90	110	
B	11	1	No Gas	513.828	2.991	902680	3.12	500	102.8	90	110	
Al	27	1	No Gas	99.207	0.857	1490494	0.64	100	99.2	90	110	
Si	28	1	No Gas	473.813	0.447	3806381	1.01	5000	9.5	90	110	CCV Main CR1-2 Failed
Ag	107	1	No Gas	101.726	1.764	1638025	0.92	100	101.7	90	110	
Cd	111	1	No Gas	99.932	1.128	327253	1.62	100	99.9	90	110	
Sr	88	1	No Gas	100.836	2.586	2991024	0.92	100	100.8	90	110	
Mo	95	1	No Gas	96.312	1.254	599724	0.66	100	96.3	90	110	
Sn	118	1	No Gas	98.657	1.494	918927	0.41	100	98.7	90	110	
Sb	121	1	No Gas	105.815	0.339	1334837	0.96	100	105.8	90	110	
Ba	137	1	No Gas	99.162	1.669	465409	0.64	100	99.2	90	110	
Tl	205	1	No Gas	99.570	0.927	2847457	0.83	100	99.6	90	110	
Tl	203	1	No Gas	94.637	1.415	1164973	0.89	100	94.6	90	110	
Pb	208	1	No Gas	99.185	1.188	3900290	0.65	100	99.2	90	110	
U	238	1	No Gas	99.423	2.045	3878071	1.47	100	99.4	90	110	
Ca	43	2	He	10369.237	3.978	19180	3.42	10000	103.7	90	110	
Sb	121	2	He	98.763	0.486	653048	0.51	100	98.8	90	110	
Ti	47	2	He	99.004	4.038	19548	3.43	100	99.0	90	110	
Cu	63	1	No Gas	98.741	0.858	1283066	0.50	100	98.7	90	110	
Se	82	1	No Gas	101.002	1.858	18891	2.38	100	101.0	90	110	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	874287	0.16	997076	87.69	70	120	
Ge	72	2	He	555418	0.65	589371	94.24	70	120	
Ge	72	1	No Gas	2004860	0.63	2084401	96.18	70	120	
In	115	1	No Gas	2273969	1.86	2348124	96.84	70	120	
Bi	209	1	No Gas	1969193	0.70	1876650	104.93	70	120	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	110_CCB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T14:55:18-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	0.063	65.8	47007	0.8	0.5	
Be	9	1	No Gas	0.006	30.2	37	15.7	0.5	
V	51	2	He	-0.194	-5.9	1340	5.2	2.5	
Cr	52	2	He	0.017	41.0	1060	4.3	2.5	
Fe	56	2	He	0.792	16.5	17141	4.0	100	
Se	78	2	He	0.006	6382.9	188	15.5	2	
As	75	2	He	-0.025	-48.9	113	10.6	2.5	
Ca	44	2	He	-6.832	-37.5	500	16.0	100	
Na	23	2	He	53.776	3.9	144617	1.0	100	
Mg	24	2	He	0.717	37.7	1027	13.9	100	
K	39	2	He	7.344	41.8	76230	2.1	100	
Mn	55	2	He	0.057	6.7	557	2.7	2.5	
Co	59	2	He	0.003	102.6	83	36.7	2.5	
Ni	60	2	He	-0.007	-140.6	187	13.5	2.5	
Cu	63	2	He	-0.101	-20.1	1353	11.1	2	
Zn	66	2	He	-0.024	-15.2	567	1.0	2.5	
Al	27	2	He	-1.084	-13.4	763	5.0	5	
B	11	1	No Gas	15.918	12.2	33375	10.4	0.5	CCB Main CR1 Failed
Al	27	1	No Gas	-1.487	-8.7	36058	5.2	5	
Si	28	1	No Gas	-13.169	-1.5	270403	0.6	10	
Ag	107	1	No Gas	0.005	41.7	517	6.8	2.5	
Cd	111	1	No Gas	0.005	123.9	27	78.1	1	
Sr	88	1	No Gas	-0.016	-10.4	1037	4.9	2.5	
Mo	95	1	No Gas	0.019	12.8	257	6.0	2.5	
Sn	118	1	No Gas	0.070	14.5	2567	3.7	5	
Sb	121	1	No Gas	0.383	9.7	6465	7.4	2.5	
Ba	137	1	No Gas	0.000	2514.4	280	6.2	2.5	
Tl	205	1	No Gas	0.027	27.5	837	23.7	1	
Tl	203	1	No Gas	0.022	20.5	300	17.6	1	
Pb	208	1	No Gas	0.005	40.2	1370	4.6	2.5	
U	238	1	No Gas	0.006	25.4	270	19.6	2.5	
Ca	43	2	He	-8.220	-65.5	10	100.0	100	
Sb	121	2	He	0.320	6.8	2864	5.4	2.5	
Ti	47	2	He	-0.029	-172.5	10	100.0	2.5	
Cu	63	1	No Gas	-0.099	-8.8	2624	4.5	2.5	
Se	82	1	No Gas	-0.301	-260.1	-185	-79.9	2	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	865801	0.60	997076	86.83	70	120	
Ge	72	2	He	556448	0.35	589371	94.41	70	120	
Ge	72	1	No Gas	2012381	0.25	2084401	96.54	70	120	
In	115	1	No Gas	2315629	0.09	2348124	98.62	70	120	
Bi	209	1	No Gas	1963932	1.46	1876650	104.65	70	120	

Calibration Blank Report

Sample Table

Sample Name	CAL BLK
Data File Name	319CALB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T22:58:07-05:00
Sample Type	CalBlk
Level	1
Dilution	1
Comment	

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Li	7	1	No Gas	47565	0.00
Be	9	1	No Gas	20	330.72
V	51	2	He	1282	0.24
Cr	52	2	He	997	0.50
Fe	56	2	He	14945	0.03
Se	78	2	He	229	1.17
As	75	2	He	90	0.00
Ca	44	2	He	623	1.93
Na	23	2	He	224991	0.00
Mg	24	2	He	693	1.97
K	39	2	He	80105	0.00
Mn	55	2	He	553	2.22
Co	59	2	He	73	87.88
Ni	60	2	He	187	14.45
Cu	63	2	He	1590	0.28
Zn	66	2	He	717	1.77
Al	27	2	He	1080	1.86
B	11	1	No Gas	52389	0.00
Al	27	1	No Gas	56130	0.00
Si	28	1	No Gas	300477	0.00
Ag	107	1	No Gas	427	3.86
Cd	111	1	No Gas	3	5196.15
Sr	88	1	No Gas	1553	0.60
Mo	95	1	No Gas	150	15.40
Sn	118	1	No Gas	2184	0.41
Sb	121	1	No Gas	1513	0.45
Ba	137	1	No Gas	527	3.61
Tl	205	1	No Gas	77	70.83
Tl	203	1	No Gas	30	111.11
Pb	208	1	No Gas	2630	0.26
U	238	1	No Gas	47	26.51
Ca	43	2	He	30	111.11
Sb	121	2	He	770	2.88
Ti	47	2	He	3	5196.15
Cu	63	1	No Gas	2674	0.25

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD

Calibration Blank Report

Li	6	1	No Gas	926740	2.02
Ge	72	2	He	584023	0.19
Ge	72	1	No Gas	2130598	2.49
In	115	1	No Gas	2422741	0.50

Calibration Blank Report

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Bi	209	1	No Gas	1994134	2.44

Calibration Standard Report

Sample Table

Sample Name	2/10/200
Data File Name	320CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T23:00:01-05:00
Sample Type	CalStd
Level	2
Dilution	1
Comment	
ISTD Ref File Name	319CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	No Gas	6457	0.03
V	51	2	He	12948	0.02
Cr	52	2	He	14398	0.03
Fe	56	2	He	1286310	0.00
Se	78	2	He	405	1.48
As	75	2	He	2159	0.17
Ca	44	2	He	6868	0.02
Na	23	2	He	416303	0.00
Mg	24	2	He	114333	0.00
K	39	2	He	204287	0.00
Mn	55	2	He	9550	0.03
Co	59	2	He	21544	0.01
Ni	60	2	He	5871	0.03
Cu	63	2	He	16347	0.01
Zn	66	2	He	3384	0.06
Al	27	2	He	1650	0.77
B	11	1	No Gas	64569	0.00
Al	27	1	No Gas	85572	0.00
Si	28	1	No Gas	372754	0.00
Ag	107	1	No Gas	33820	0.01
Cd	111	1	No Gas	6662	0.01
Sr	88	1	No Gas	63668	0.00
Mo	95	1	No Gas	12066	0.01
Sn	118	1	No Gas	19929	0.01
Sb	121	1	No Gas	28735	0.01
Ba	137	1	No Gas	10244	0.03
Tl	205	1	No Gas	56776	0.00
Tl	203	1	No Gas	23639	0.01
Pb	208	1	No Gas	79450	0.00
U	238	1	No Gas	73926	0.00
Ca	43	2	He	473	3.23
Sb	121	2	He	14395	0.02
Cu	63	1	No Gas	29572	0.00

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	910365	2.98	926740	98.23	70	120	
Ge	72	2	He	588509	1.66	584023	100.77	70	120	
Ge	72	1	No Gas	2125919	1.98	2130598	99.78	70	120	

Calibration Standard Report

In	115	1	No Gas	2414940	1.52	2422741	99.68	70	120	
Bi	209	1	No Gas	2049351	1.21	1994134	102.77	70	120	

Calibration Standard Report

Sample Table

Sample Name	5/25/500
Data File Name	321CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T23:01:54-05:00
Sample Type	CalStd
Level	3
Dilution	1
Comment	
ISTD Ref File Name	319CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	No Gas	16018	0.01
V	51	2	He	30262	0.00
Cr	52	2	He	35156	0.00
Fe	56	2	He	3041929	0.00
Se	78	2	He	613	1.37
As	75	2	He	5082	0.04
Ca	44	2	He	16624	0.00
Na	23	2	He	704928	0.00
Mg	24	2	He	280590	0.00
K	39	2	He	390656	0.00
Mn	55	2	He	23484	0.01
Co	59	2	He	53110	0.00
Ni	60	2	He	13811	0.03
Cu	63	2	He	39277	0.01
Zn	66	2	He	7355	0.08
Al	27	2	He	2590	0.40
B	11	1	No Gas	85780	0.00
Al	27	1	No Gas	124393	0.00
Si	28	1	No Gas	473101	0.00
Ag	107	1	No Gas	83328	0.00
Cd	111	1	No Gas	17388	0.01
Sr	88	1	No Gas	153806	0.00
Mo	95	1	No Gas	30281	0.01
Sn	118	1	No Gas	48195	0.00
Sb	121	1	No Gas	68891	0.00
Ba	137	1	No Gas	24774	0.00
Tl	205	1	No Gas	140252	0.00
Tl	203	1	No Gas	58413	0.00
Pb	208	1	No Gas	194843	0.00
U	238	1	No Gas	187327	0.00
Ca	43	2	He	867	1.82
Sb	121	2	He	34987	0.01
Cu	63	1	No Gas	69263	0.00

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	908397	1.31	926740	98.02	70	120	
Ge	72	2	He	587432	0.66	584023	100.58	70	120	
Ge	72	1	No Gas	2153939	0.67	2130598	101.10	70	120	

Calibration Standard Report

In	115	1	No Gas	2421332	1.00	2422741	99.94	70	120	
Bi	209	1	No Gas	2020908	1.33	1994134	101.34	70	120	

Calibration Standard Report

Sample Table

Sample Name	10/50/100
Data File Name	322CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T23:03:47-05:00
Sample Type	CalStd
Level	4
Dilution	1
Comment	
ISTD Ref File Name	319CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	No Gas	32908	0.00
V	51	2	He	60031	0.00
Cr	52	2	He	69523	0.00
Fe	56	2	He	5964566	0.00
Se	78	2	He	1039	0.40
As	75	2	He	10055	0.01
Ca	44	2	He	32679	0.01
Na	23	2	He	1284101	0.00
Mg	24	2	He	563721	0.00
K	39	2	He	703657	0.00
Mn	55	2	He	46559	0.00
Co	59	2	He	108200	0.00
Ni	60	2	He	28169	0.00
Cu	63	2	He	78828	0.00
Zn	66	2	He	14578	0.02
Al	27	2	He	4001	0.14
B	11	1	No Gas	124475	0.00
Al	27	1	No Gas	198365	0.00
Si	28	1	No Gas	652391	0.00
Ag	107	1	No Gas	166843	0.00
Cd	111	1	No Gas	33707	0.00
Sr	88	1	No Gas	312932	0.00
Mo	95	1	No Gas	61726	0.00
Sn	118	1	No Gas	96150	0.00
Sb	121	1	No Gas	137272	0.00
Ba	137	1	No Gas	49812	0.01
Tl	205	1	No Gas	285966	0.00
Tl	203	1	No Gas	119565	0.00
Pb	208	1	No Gas	390841	0.00
U	238	1	No Gas	382017	0.00
Ca	43	2	He	1947	0.18
Sb	121	2	He	70117	0.00
Cu	63	1	No Gas	137571	0.00

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	907140	2.65	926740	97.89	70	120	
Ge	72	2	He	583050	0.61	584023	99.83	70	120	
Ge	72	1	No Gas	2107239	1.48	2130598	98.90	70	120	

Calibration Standard Report

In	115	1	No Gas	2418717	0.80	2422741	99.83	70	120	
Bi	209	1	No Gas	2017921	0.94	1994134	101.19	70	120	

Calibration Standard Report

Sample Table

Sample Name	100/500/10K
Data File Name	323CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T23:05:39-05:00
Sample Type	CalStd
Level	5
Dilution	1
Comment	
ISTD Ref File Name	319CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	No Gas	325313	0.00
V	51	2	He	589360	0.00
Cr	52	2	He	684518	0.00
Fe	56	2	He	58840102	0.00
Se	78	2	He	8334	0.03
As	75	2	He	100241	0.00
Ca	44	2	He	319819	0.00
Na	23	2	He	10312168	0.00
Mg	24	2	He	5728803	0.00
K	39	2	He	6257593	0.00
Mn	55	2	He	457546	0.00
Co	59	2	He	1085230	0.00
Ni	60	2	He	277128	0.00
Cu	63	2	He	762116	0.00
Zn	66	2	He	138548	0.00
Al	27	2	He	29929	0.00
B	11	1	No Gas	936813	0.00
Al	27	1	No Gas	1526878	0.00
Si	28	1	No Gas	3885452	0.00
Ag	107	1	No Gas	1705066	0.00
Cd	111	1	No Gas	336463	0.00
Sr	88	1	No Gas	3127789	0.00
Mo	95	1	No Gas	623311	0.00
Sn	118	1	No Gas	955909	0.00
Sb	121	1	No Gas	1370983	0.00
Ba	137	1	No Gas	485757	0.00
Tl	205	1	No Gas	2878250	0.00
Tl	203	1	No Gas	1170007	0.00
Pb	208	1	No Gas	3934365	0.00
U	238	1	No Gas	3891230	0.00
Ca	43	2	He	19074	0.02
Sb	121	2	He	678865	0.00
Cu	63	1	No Gas	1349831	0.00

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	873638	2.70	926740	94.27	70	120	
Ge	72	2	He	580620	0.52	584023	99.42	70	120	
Ge	72	1	No Gas	2089469	1.73	2130598	98.07	70	120	

Calibration Standard Report

In	115	1	No Gas	2384969	1.29	2422741	98.44	70	120	
Bi	209	1	No Gas	1974805	1.63	1994134	99.03	70	120	

Calibration Standard Report

Sample Table

Sample Name	200/1000/20K
Data File Name	324CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T23:07:27-05:00
Sample Type	CalStd
Level	6
Dilution	1
Comment	
ISTD Ref File Name	319CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	No Gas	638814	0.00
V	51	2	He	1190021	0.00
Cr	52	2	He	1368203	0.00
Fe	56	2	He	113728828	0.00
Se	78	2	He	16110	0.01
As	75	2	He	196377	0.00
Ca	44	2	He	627413	0.00
Na	23	2	He	19764671	0.00
Mg	24	2	He	11118176	0.00
K	39	2	He	12193698	0.00
Mn	55	2	He	891094	0.00
Co	59	2	He	2086815	0.00
Ni	60	2	He	537348	0.00
Cu	63	2	He	1474813	0.00
Zn	66	2	He	265159	0.00
Al	27	2	He	55725	0.00
B	11	1	No Gas	1820922	0.00
Al	27	1	No Gas	2835866	0.00
Si	28	1	No Gas	7100494	0.00
Ag	107	1	No Gas	3271770	0.00
Cd	111	1	No Gas	665204	0.00
Sr	88	1	No Gas	6027427	0.00
Mo	95	1	No Gas	1258303	0.00
Sn	118	1	No Gas	1944739	0.00
Sb	121	1	No Gas	2668577	0.00
Ba	137	1	No Gas	961799	0.00
Tl	205	1	No Gas	5585324	0.00
Tl	203	1	No Gas	2411187	0.00
Pb	208	1	No Gas	7673365	0.00
U	238	1	No Gas	7613307	0.00
Ca	43	2	He	36863	0.01
Sb	121	2	He	1365988	0.00
Cu	63	1	No Gas	2556925	0.00

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	838630	0.93	926740	90.49	70	120	
Ge	72	2	He	566670	1.60	584023	97.03	70	120	
Ge	72	1	No Gas	2030692	1.35	2130598	95.31	70	120	

Calibration Standard Report

In	115	1	No Gas	2322446	0.44	2422741	95.86	70	120	
Bi	209	1	No Gas	1891599	1.25	1994134	94.86	70	120	

Initial Calibration Verification (ICV) Report

Sample Table

Sample Name	ICCV
Data File Name	326_ICV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T23:11:04-05:00
Sample Type	ICV
Dilution	1
Comment	
ISTD Ref File Name	319CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High	QC Flag
Li	7	1	No Gas	100.032	4.464	1398350	3.24	100	100.0	90	110	
Be	9	1	No Gas	97.749	4.187	328953	1.29	100	97.7	90	110	
V	51	2	He	96.036	1.442	590900	0.21	100	96.0	90	110	
Cr	52	2	He	96.980	2.330	687197	0.95	100	97.0	90	110	
Fe	56	2	He	9964.175	1.595	59064697	0.40	10000	99.6	90	110	
Se	78	2	He	97.475	2.699	8280	3.28	100	97.5	90	110	
As	75	2	He	104.335	1.306	106522	0.32	100	104.3	90	110	
Ca	44	2	He	9851.389	1.556	321391	0.27	10000	98.5	90	110	
Na	23	2	He	9879.121	0.818	10287742	1.42	10000	98.8	90	110	
Mg	24	2	He	10006.724	1.504	5793115	1.03	10000	100.1	90	110	
K	39	2	He	9919.168	1.623	6325264	0.24	10000	99.2	90	110	
Mn	55	2	He	99.741	2.213	462693	1.22	100	99.7	90	110	
Co	59	2	He	99.523	1.613	1083535	0.88	100	99.5	90	110	
Ni	60	2	He	99.926	1.094	279736	0.62	100	99.9	90	110	
Cu	63	2	He	99.175	1.069	762764	0.35	100	99.2	90	110	
Zn	66	2	He	100.264	1.113	139145	0.83	100	100.3	90	110	
Al	27	2	He	96.984	1.021	28840	0.51	100	97.0	90	110	
B	11	1	No Gas	491.388	8.382	963687	3.31	500	98.3	90	110	
Al	27	1	No Gas	100.029	2.690	1523299	2.01	100	100.0	90	110	
Si	28	1	No Gas	507.246	1.468	3942521	1.18	500	101.4	90	110	
Ag	107	1	No Gas	102.434	1.478	1724329	1.22	100	102.4	90	110	
Cd	111	1	No Gas	99.950	1.223	340028	0.44	100	99.9	90	110	
Sr	88	1	No Gas	102.201	1.918	3166878	0.70	100	102.2	90	110	
Mo	95	1	No Gas	95.619	1.645	612771	0.33	100	95.6	90	110	
Sn	118	1	No Gas	100.616	2.266	995715	0.75	100	100.6	90	110	
Sb	121	1	No Gas	102.542	0.830	1434885	0.86	100	102.5	90	110	
Ba	137	1	No Gas	100.179	1.769	492799	0.52	100	100.2	90	110	
Tl	205	1	No Gas	103.201	0.412	3012637	0.41	100	103.2	90	110	
Tl	203	1	No Gas	99.899	0.323	1244195	0.32	100	99.9	90	110	
Pb	208	1	No Gas	99.188	0.725	3975116	0.73	100	99.2	90	110	
U	238	1	No Gas	96.251	1.381	3823733	1.38	100	96.3	90	110	
Ca	43	2	He	9902.911	2.510	19033	1.35	10000	99.0	90	110	
Sb	121	2	He	100.238	1.917	708088	0.65	100	100.2	90	110	
Ti	47	2	He	100.764	1.981	20162	1.70	100	100.8	90	110	
Cu	63	1	No Gas	98.736	0.848	1331693	0.32	100	98.7	90	110	
Se	82	1	No Gas	99.582	3.466	20076	2.73	100	99.6	90	110	

QC ISTD Table

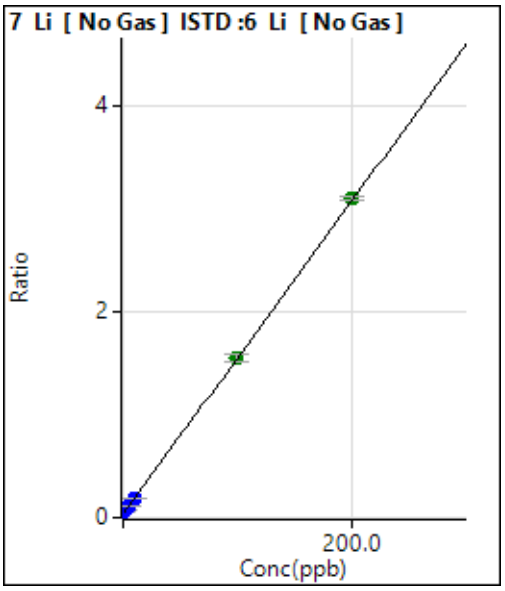
Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	888731	5.11	926740	95.90	70	120	
Ge	72	2	He	589491	1.38	584023	100.94	70	120	
Ge	72	1	No Gas	2129253	0.99	2130598	99.94	70	120	
In	115	1	No Gas	2382861	1.52	2422741	98.35	70	120	
Bi	209	1	No Gas	1982394	0.01	1994134	99.41	70	120	

Calibration for 326_ICV.d

Batch Folder: D:\Agilent\ICPMH\1\DATA\091222A.b\
Analysis File: 091222A.batch.bin
DA Date-Time: 09/12/2022 23:11:45
Calibration Title:
Calibration Method: External Calibration
VIS Interpolation Fit:

Level	Standard Data File	Sample Name	Acq. Date-Time
1	319CALB.d	CAL BLK	09/12/2022 22:58:07
2	320CALS.d	2/10/200	09/12/2022 23:00:01
3	321CALS.d	5/25/500	09/12/2022 23:01:54
4	322CALS.d	10/50/100	09/12/2022 23:03:47
5	323CALS.d	100/500/10K	09/12/2022 23:05:39
6	324CALS.d	200/1000/20K	09/12/2022 23:07:27

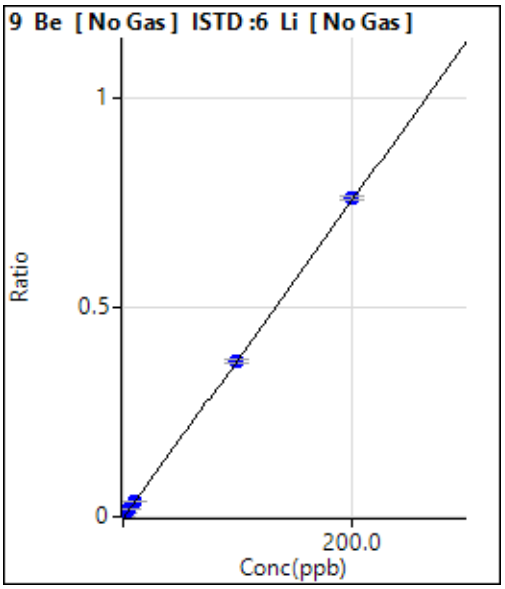
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	47565.14	0.0513	P	2.0	
2	☐	2.000	1.871	72634.67	0.0798	P	3.8	-6.4
3	☐	5.000	4.456	108288.12	0.1192	P	1.4	-10.9
4	☐	10.000	9.065	171772.27	0.1894	P	2.2	-9.4
5	☐	100.000	98.563	1355445.35	1.5528	A	5.1	-1.4
6	☐	200.000	200.780	2607897.31	3.1100	A	1.6	0.4

y = 0.0152 * x + 0.0513
R = 1.0000
DL = 0.1994 ppb
BEC = 3.37 ppb

Weight: <None>
Min Conc: <None>

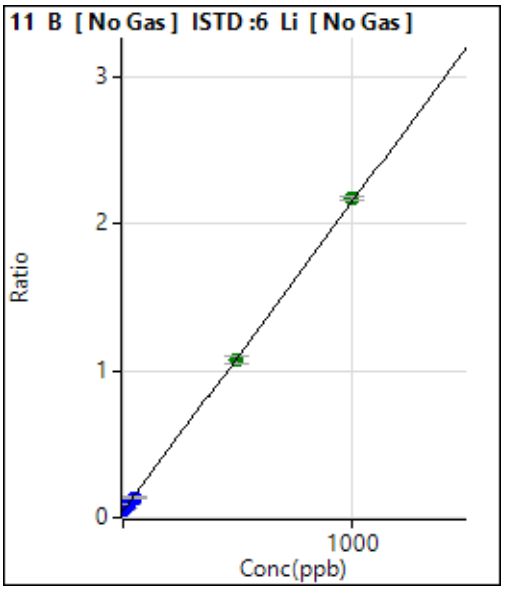


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	20.00	0.0000	P	65.3	
2	☐	2.000	1.865	6456.53	0.0071	P	2.4	-6.7
3	☐	5.000	4.645	16017.52	0.0176	P	1.8	-7.1
4	☐	10.000	9.568	32908.50	0.0363	P	3.5	-4.3
5	☐	100.000	98.253	325313.29	0.3726	P	3.1	-1.7
6	☐	200.000	200.905	638814.21	0.7618	P	1.1	0.5

y = 0.0038 * x + 2.1395E-005
R = 0.9999
DL = 0.01105 ppb
BEC = 0.005643 ppb

Weight: <None>
Min Conc: <None>

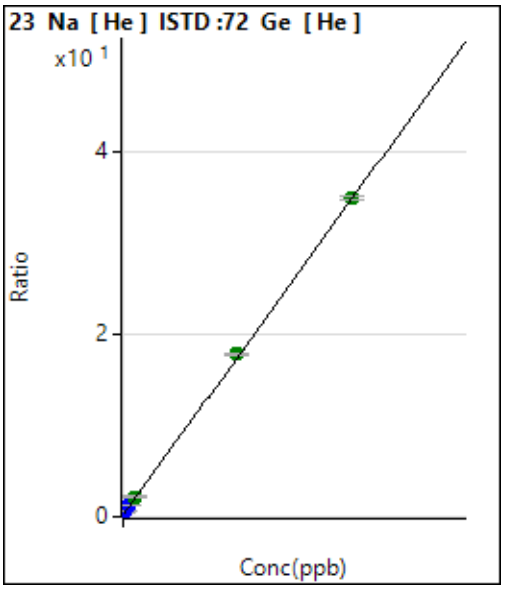
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	52389.04	0.0565	P	0.6	
2	☐	10.000	6.881	64569.35	0.0710	P	2.7	-31.2
3	☐	25.000	18.072	85779.99	0.0944	P	0.7	-27.7
4	☐	50.000	38.505	124474.89	0.1373	P	2.9	-23.0
5	☐	500.000	484.829	936813.48	1.0734	A	5.7	-3.0
6	☐	1000.000	1008.365	1820921.64	2.1714	A	1.0	0.8

y = 0.0021 * x + 0.0565
R = 0.9998
DL = 0.448 ppb
BEC = 26.95 ppb

Weight: <None>
Min Conc: <None>

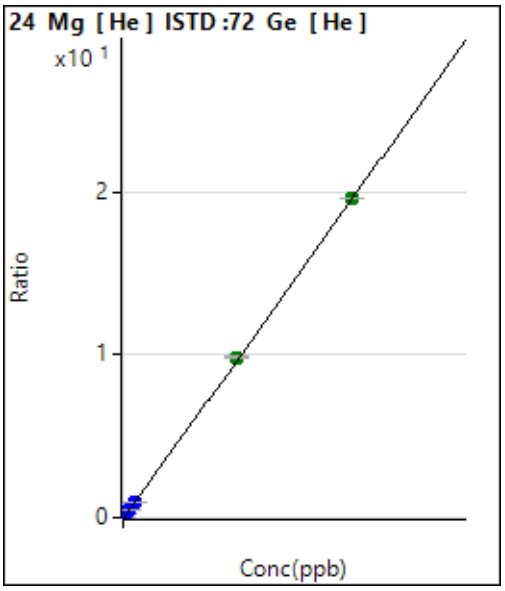


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	224991.16	0.3852	P	1.0	
2	☐	200.000	186.543	416302.60	0.7075	P	1.7	-6.7
3	☐	500.000	471.634	704928.06	1.2000	P	0.4	-5.7
4	☐	1000.000	1051.811	1284100.84	2.2023	A	0.6	5.2
5	☐	10000.00	10058.06	10312167.55	17.7614	A	1.4	0.6
6	☐	20000.00	19969.22	19764670.96	34.8837	A	1.6	-0.2

y = 0.0017 * x + 0.3852
R = 1.0000
DL = 6.778 ppb
BEC = 223 ppb

Weight: <None>
Min Conc: <None>

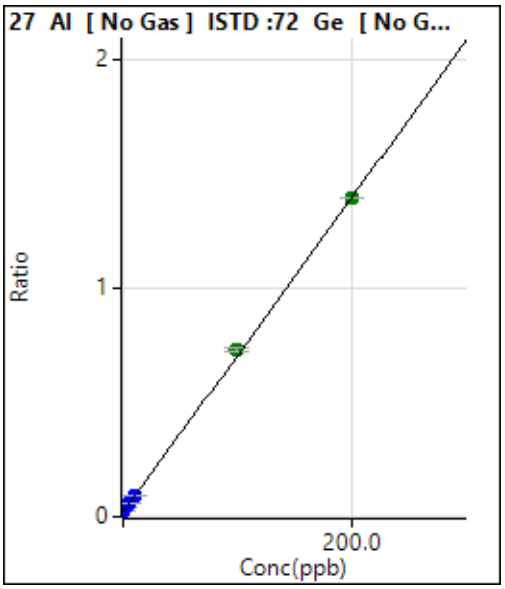
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	693.36	0.0012	P	13.5	
2	☐	200.000	196.665	114332.73	0.1943	P	2.2	-1.7
3	☐	500.000	485.196	280589.93	0.4777	P	1.2	-3.0
4	☐	1000.000	983.347	563721.42	0.9669	P	1.0	-1.7
5	☐	10000.00	10045.89	5728803.25	9.8668	A	1.6	0.5
6	☐	20000.00	19978.29	11118175.67	19.6210	A	0.5	-0.1

y = 9.8205E-004 * x + 0.0012
R = 1.0000
DL = 0.4907 ppb
BEC = 1.209 ppb

Weight: <None>
Min Conc: <None>

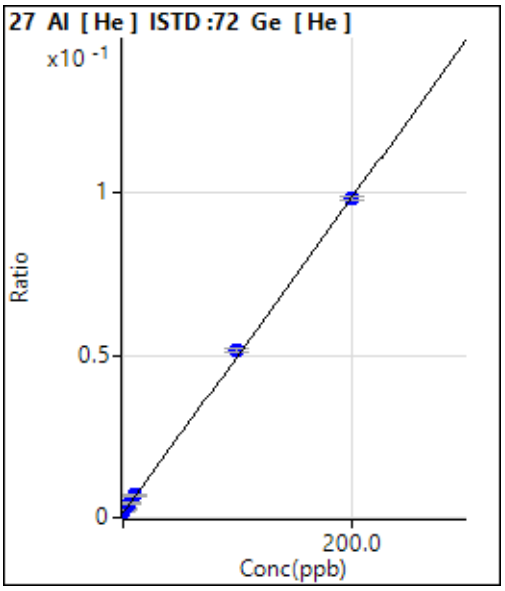


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	56129.93	0.0264	P	3.6	
2	☐	2.000	2.017	85572.31	0.0403	P	1.5	0.9
3	☐	5.000	4.557	124392.58	0.0578	P	1.7	-8.9
4	☐	10.000	9.841	198364.91	0.0942	P	2.3	-1.6
5	☐	100.000	102.277	1526878.42	0.7310	A	3.2	2.3
6	☐	200.000	198.880	2835865.79	1.3965	A	0.4	-0.6

y = 0.0069 * x + 0.0264
R = 0.9999
DL = 0.4091 ppb
BEC = 3.826 ppb

Weight: <None>
Min Conc: <None>

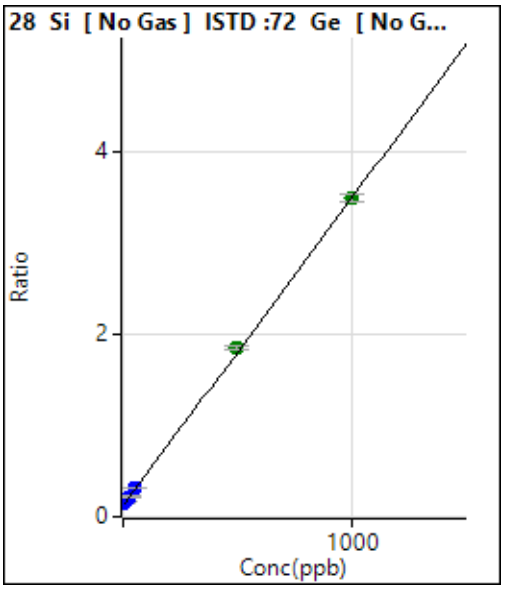
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1080.06	0.0018	P	20.3	
2	☐	2.000	1.964	1650.13	0.0028	P	12.3	-1.8
3	☐	5.000	5.274	2590.30	0.0044	P	10.6	5.5
4	☐	10.000	10.328	4000.64	0.0069	P	6.3	3.3
5	☐	100.000	102.383	29929.15	0.0515	P	1.7	2.4
6	☐	200.000	198.785	55725.03	0.0983	P	0.9	-0.6

y = 4.8542E-004 * x + 0.0018
R = 0.9999
DL = 2.321 ppb
BEC = 3.811 ppb

Weight: <None>
Min Conc: <None>

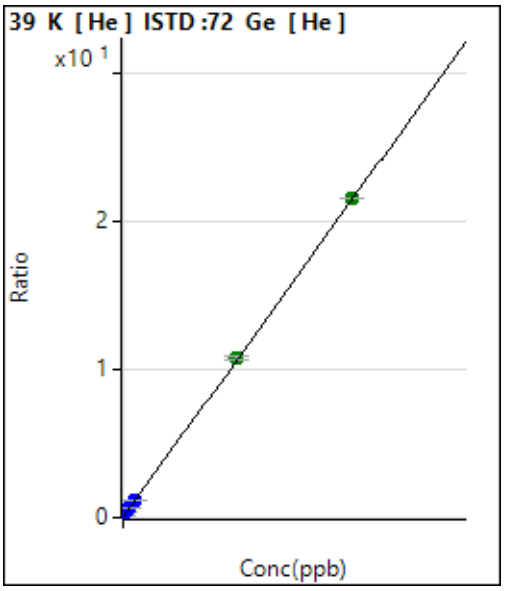


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	300477.34	0.1411	P	2.0	
2	☐	10.000	10.171	372753.50	0.1754	P	1.6	1.7
3	☐	25.000	23.302	473100.61	0.2197	P	1.7	-6.8
4	☐	50.000	49.986	652391.42	0.3096	P	1.6	0.0
5	☐	500.000	509.729	3885451.50	1.8601	A	2.4	1.9
6	☐	1000.000	995.177	7100494.48	3.4972	A	1.8	-0.5

y = 0.0034 * x + 0.1411
R = 0.9999
DL = 2.476 ppb
BEC = 41.83 ppb

Weight: <None>
Min Conc: <None>

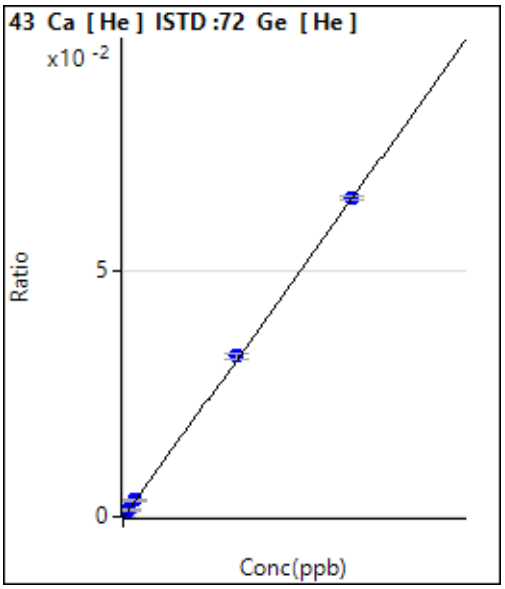
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	80104.91	0.1372	P	1.1	
2	☐	200.000	196.644	204287.25	0.3472	P	1.7	-1.7
3	☐	500.000	494.246	390655.61	0.6651	P	1.1	-1.2
4	☐	1000.000	1001.547	703656.87	1.2069	P	0.9	0.2
5	☐	10000.00	9962.325	6257593.03	10.7777	A	1.7	-0.4
6	☐	20000.00	20018.93	12193697.74	21.5190	A	0.6	0.1

y = 0.0011 * x + 0.1372
R = 1.0000
DL = 4.077 ppb
BEC = 128.4 ppb

Weight: <None>
Min Conc: <None>

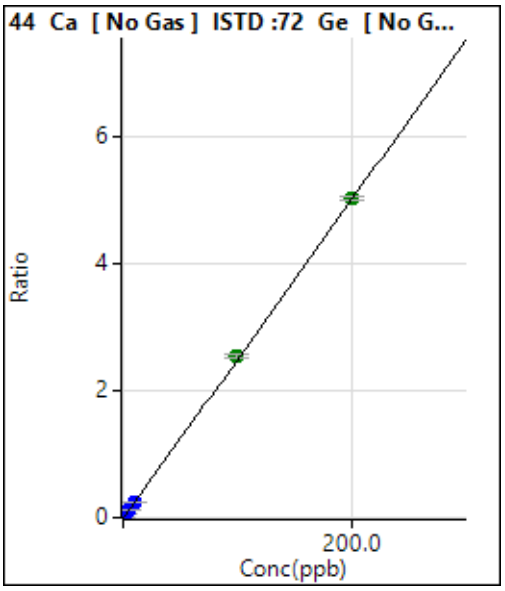


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	30.00	0.0001	P	33.3	
2	☐	200.000	231.304	473.35	0.0008	P	15.4	15.7
3	☐	500.000	437.220	866.71	0.0015	P	15.5	-12.6
4	☐	1000.000	1009.744	1946.84	0.0033	P	3.4	1.0
5	☐	10000.00	10074.11	19073.51	0.0329	P	3.6	0.7
6	☐	20000.00	19963.71	36862.89	0.0651	P	1.5	-0.2

y = 3.2560E-006 * x + 5.1364E-005
R = 1.0000
DL = 15.74 ppb
BEC = 15.78 ppb

Weight: <None>
Min Conc: <None>

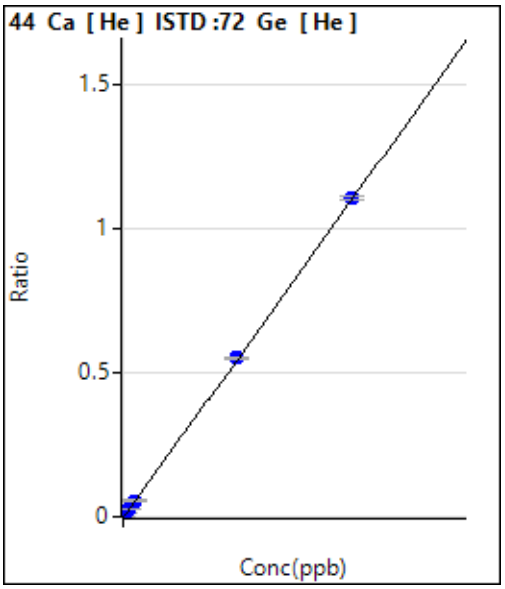
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	20345.27	0.0096	P	3.0	
2	☐	2.000	1.891	121297.54	0.0571	P	2.6	-5.4
3	☐	5.000	4.680	273855.74	0.1271	P	0.7	-6.4
4	☐	10.000	9.710	534201.80	0.2535	P	1.7	-2.9
5	☐	100.000	100.458	5293220.55	2.5340	A	2.4	0.5
6	☐	200.000	199.795	10213764.22	5.0302	A	1.6	-0.1

y = 0.0251 * x + 0.0096
R = 1.0000
DL = 0.03466 ppb
BEC = 0.3802 ppb

Weight: <None>
Min Conc: <None>

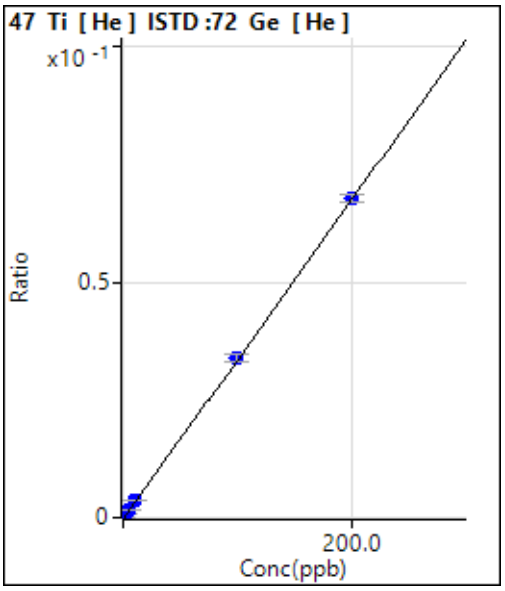


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	623.36	0.0011	P	12.1	
2	☐	200.000	192.001	6868.50	0.0117	P	2.5	-4.0
3	☐	500.000	492.950	16623.67	0.0283	P	0.2	-1.4
4	☐	1000.000	995.209	32679.05	0.0560	P	3.5	-0.5
5	☐	10000.00	9951.905	319819.03	0.5508	P	1.1	-0.5
6	☐	20000.00	20024.54	627413.48	1.1073	P	0.8	0.1

y = 5.5242E-005 * x + 0.0011
R = 1.0000
DL = 6.987 ppb
BEC = 19.32 ppb

Weight: <None>
Min Conc: <None>

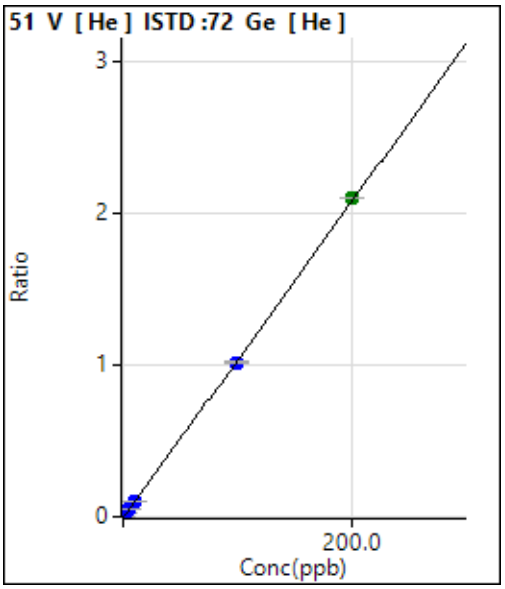
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	3.33	0.0000	P	173.2	
2	☐	2.000	1.905	383.34	0.0007	P	11.4	-4.8
3	☐	5.000	4.818	963.38	0.0016	P	13.6	-3.6
4	☐	10.000	10.932	2166.88	0.0037	P	5.4	9.3
5	☐	100.000	99.968	19701.06	0.0339	P	5.7	0.0
6	☐	200.000	199.975	38454.25	0.0679	P	2.5	0.0

y = 3.3940E-004 * x + 5.7200E-006
R = 1.0000
DL = 0.08757 ppb
BEC = 0.01685 ppb

Weight: <None>
Min Conc: <None>

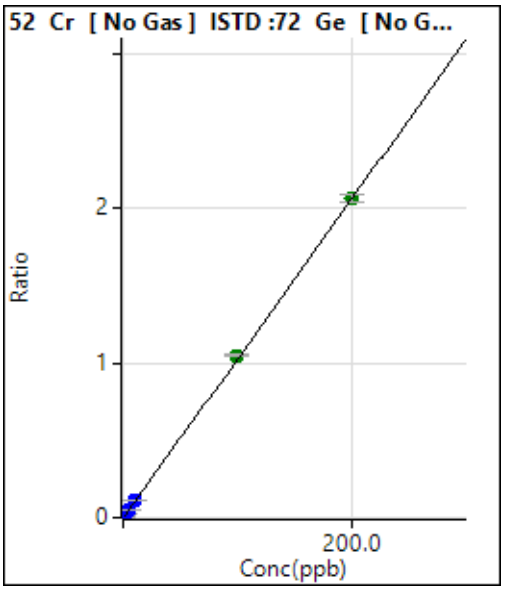


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1282.29	0.0022	P	3.1	
2	☐	2.000	1.902	12948.38	0.0220	P	3.7	-4.9
3	☐	5.000	4.735	30262.26	0.0515	P	0.5	-5.3
4	☐	10.000	9.674	60030.60	0.1030	P	1.3	-3.3
5	☐	100.000	97.243	589359.89	1.0151	P	1.4	-2.8
6	☐	200.000	201.402	1190021.38	2.1000	A	0.3	0.7

y = 0.0104 * x + 0.0022
R = 0.9999
DL = 0.01961 ppb
BEC = 0.2108 ppb

Weight: <None>
Min Conc: <None>

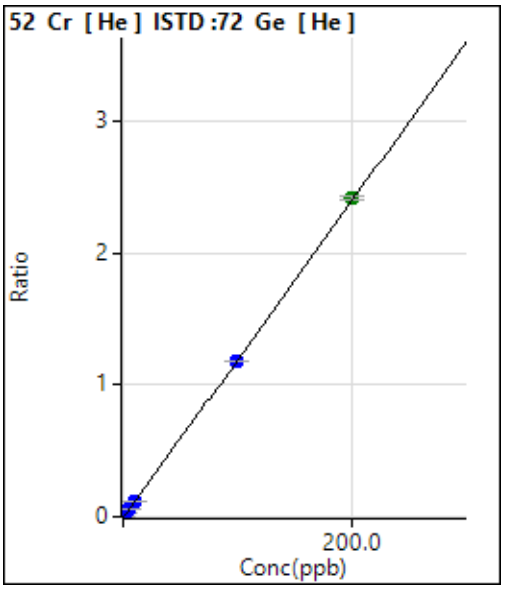
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	13460.17	0.0063	P	6.5	
2	☐	2.000	1.944	56105.15	0.0264	P	1.2	-2.8
3	☐	5.000	4.749	119252.40	0.0554	P	0.7	-5.0
4	☐	10.000	9.845	227530.69	0.1080	P	1.8	-1.5
5	☐	100.000	101.096	2194437.05	1.0503	A	1.5	1.1
6	☐	200.000	199.467	4194859.94	2.0662	A	2.6	-0.3

y = 0.0103 * x + 0.0063
R = 1.0000
DL = 0.1194 ppb
BEC = 0.6122 ppb

Weight: <None>
Min Conc: <None>

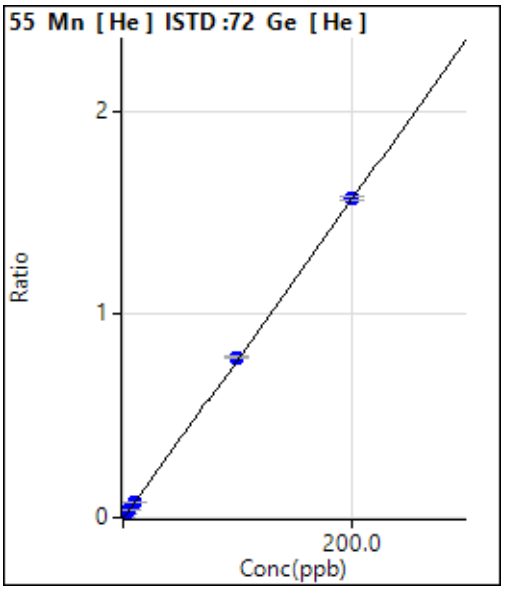


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	996.72	0.0017	P	5.1	
2	☐	2.000	1.897	14397.82	0.0245	P	5.2	-5.2
3	☐	5.000	4.843	35155.52	0.0599	P	1.6	-3.1
4	☐	10.000	9.790	69523.16	0.1192	P	1.2	-2.1
5	☐	100.000	98.061	684518.14	1.1790	P	1.0	-1.9
6	☐	200.000	200.985	1368203.00	2.4146	A	0.8	0.5

y = 0.0120 * x + 0.0017
R = 0.9999
DL = 0.02155 ppb
BEC = 0.1422 ppb

Weight: <None>
Min Conc: <None>

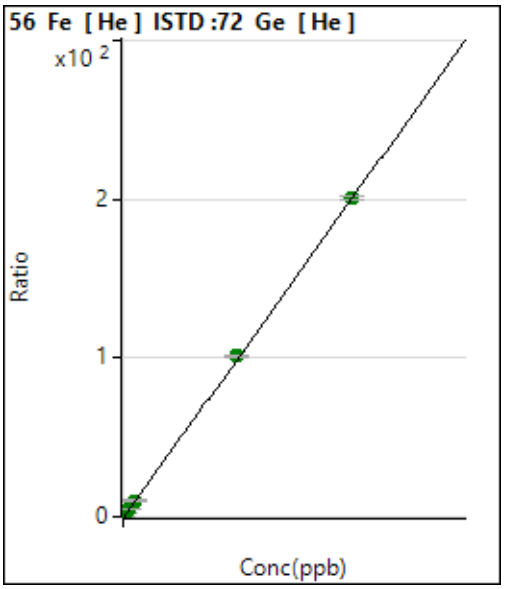
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	553.36	0.0009	P	12.1	
2	☐	2.000	1.945	9550.17	0.0162	P	4.5	-2.8
3	☐	5.000	4.965	23483.76	0.0400	P	2.3	-0.7
4	☐	10.000	10.038	46559.38	0.0799	P	0.9	0.4
5	☐	100.000	100.124	457546.11	0.7881	P	1.3	0.1
6	☐	200.000	199.937	891094.10	1.5727	P	1.2	0.0

y = 0.0079 * x + 9.4738E-004
R = 1.0000
DL = 0.04392 ppb
BEC = 0.1205 ppb

Weight: <None>
Min Conc: <None>

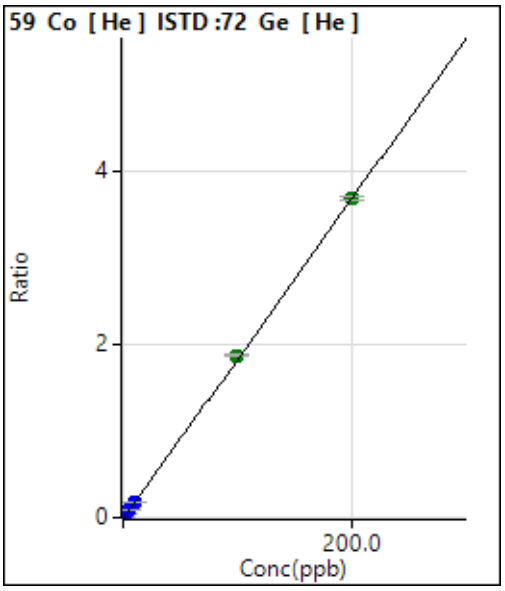


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	14945.06	0.0256	P	4.1	
2	☐	200.000	214.863	1286309.77	2.1859	A	1.1	7.4
3	☐	500.000	512.506	3041929.33	5.1786	A	1.1	2.5
4	☐	1000.000	1014.940	5964565.95	10.2303	A	1.0	1.5
5	☐	10000.00	10076.65	58840102.46	101.341	A	1.1	0.8
6	☐	20000.00	19960.46	113728828.3	200.718	A	1.0	-0.2

y = 0.0101 * x + 0.0256
R = 1.0000
DL = 0.3151 ppb
BEC = 2.545 ppb

Weight: <None>
Min Conc: <None>

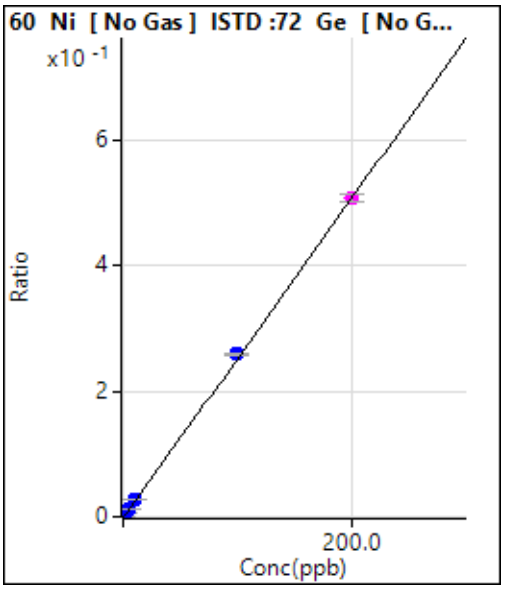
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	73.33	0.0001	P	64.5	
2	☐	2.000	1.976	21544.03	0.0366	P	2.4	-1.2
3	☐	5.000	4.889	53110.35	0.0904	P	1.9	-2.2
4	☐	10.000	10.041	108200.19	0.1856	P	1.2	0.4
5	☐	100.000	101.192	1085230.27	1.8691	A	0.8	1.2
6	☐	200.000	199.405	2086815.13	3.6831	A	1.6	-0.3

y = 0.0185 * x + 1.2565E-004
R = 1.0000
DL = 0.01317 ppb
BEC = 0.006803 ppb

Weight: <None>
Min Conc: <None>

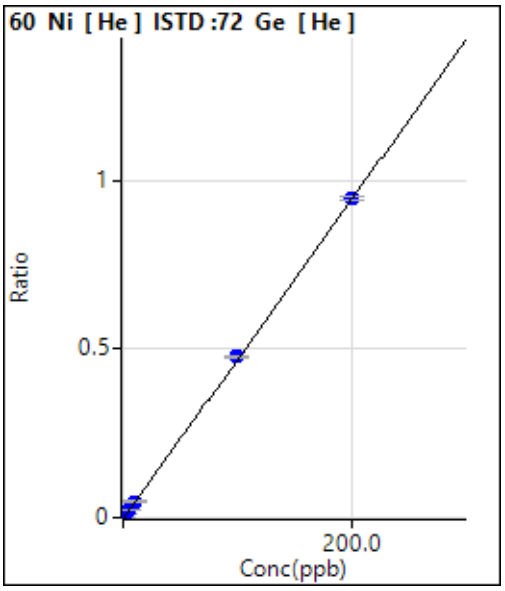


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	586.69	0.0003	P	2.5	
2	☐	2.000	2.126	12112.24	0.0057	P	2.5	6.3
3	☐	5.000	5.007	28102.68	0.0130	P	1.0	0.1
4	☐	10.000	10.278	55817.58	0.0265	P	1.4	2.8
5	☐	100.000	101.595	541942.27	0.2594	P	1.5	1.6
6	☐	200.000	199.187	1032066.75	0.5083	M	2.3	-0.4

y = 0.0026 * x + 2.7541E-004
R = 1.0000
DL = 0.007987 ppb
BEC = 0.108 ppb

Weight: <None>
Min Conc: <None>

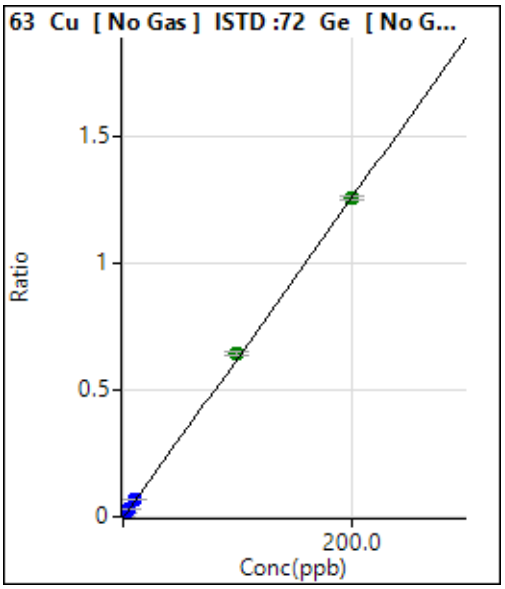
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	186.67	0.0003	P	26.9	
2	☐	2.000	2.035	5871.36	0.0100	P	2.6	1.8
3	☐	5.000	4.887	13810.53	0.0235	P	4.4	-2.3
4	☐	10.000	10.113	28169.45	0.0483	P	1.6	1.1
5	☐	100.000	100.500	277127.50	0.4773	P	1.3	0.5
6	☐	200.000	199.747	537348.50	0.9483	P	0.9	-0.1

y = 0.0047 * x + 3.1955E-004
R = 1.0000
DL = 0.05424 ppb
BEC = 0.06733 ppb

Weight: <None>
Min Conc: <None>

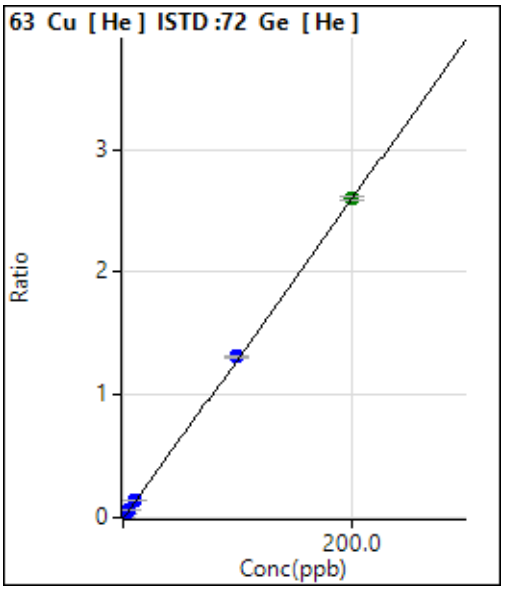


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	2673.64	0.0013	P	4.8	
2	☐	2.000	2.002	29572.48	0.0139	P	1.2	0.1
3	☐	5.000	4.888	69262.67	0.0322	P	1.2	-2.2
4	☐	10.000	10.131	137571.22	0.0653	P	2.5	1.3
5	☐	100.000	102.009	1349830.97	0.6462	A	1.9	2.0
6	☐	200.000	198.992	2556924.65	1.2593	A	1.8	-0.5

y = 0.0063 * x + 0.0013
R = 0.9999
DL = 0.02886 ppb
BEC = 0.1984 ppb

Weight: <None>
Min Conc: <None>

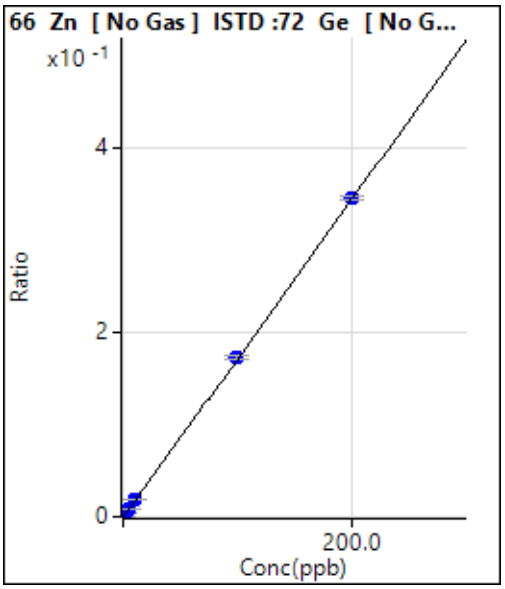
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1590.13	0.0027	P	4.4	
2	☐	2.000	1.924	16346.76	0.0278	P	1.5	-3.8
3	☐	5.000	4.926	39277.11	0.0669	P	3.2	-1.5
4	☐	10.000	10.174	78827.92	0.1352	P	0.7	1.7
5	☐	100.000	100.602	762115.53	1.3126	P	1.6	0.6
6	☐	200.000	199.693	1474813.10	2.6029	A	1.6	-0.2

y = 0.0130 * x + 0.0027
R = 1.0000
DL = 0.02788 ppb
BEC = 0.2091 ppb

Weight: <None>
Min Conc: <None>

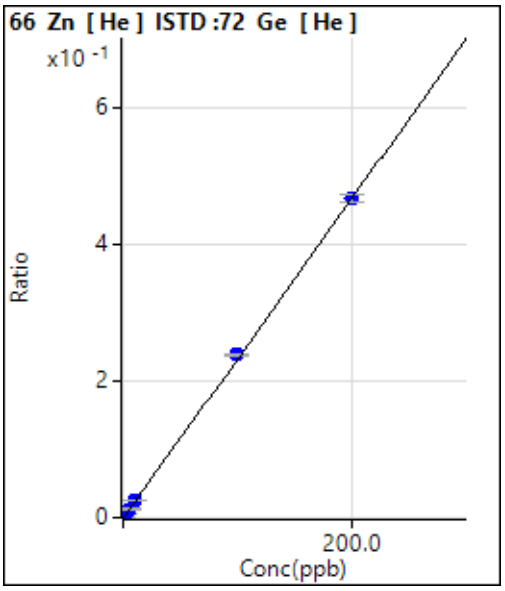


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1710.14	0.0008	P	8.4	
2	☐	2.000	1.909	8709.58	0.0041	P	3.1	-4.6
3	☐	5.000	4.791	19540.97	0.0091	P	1.2	-4.2
4	☐	10.000	10.162	38645.26	0.0183	P	1.9	1.6
5	☐	100.000	100.007	362249.30	0.1734	P	2.1	0.0
6	☐	200.000	199.994	702477.59	0.3460	P	1.5	0.0

y = 0.0017 * x + 8.0372E-004
R = 1.0000
DL = 0.1168 ppb
BEC = 0.4657 ppb

Weight: <None>
Min Conc: <None>

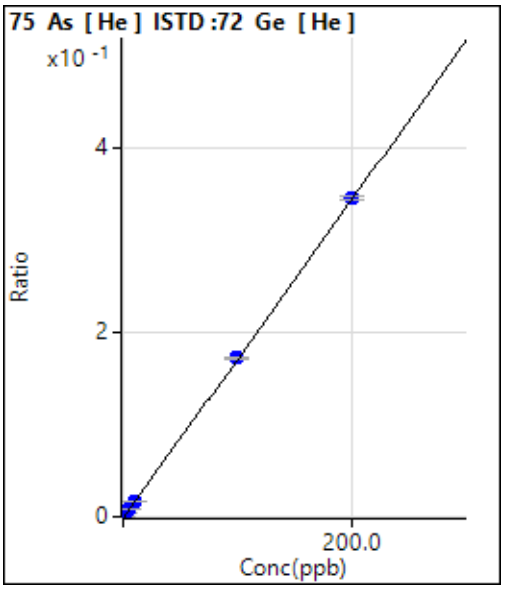
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	716.70	0.0012	P	12.9	
2	☐	2.000	1.932	3383.82	0.0058	P	3.5	-3.4
3	☐	5.000	4.824	7355.45	0.0125	P	6.5	-3.5
4	☐	10.000	10.152	14578.03	0.0250	P	2.8	1.5
5	☐	100.000	101.359	138547.84	0.2386	P	0.7	1.4
6	☐	200.000	199.318	265159.39	0.4681	P	2.8	-0.3

y = 0.0023 * x + 0.0012
R = 1.0000
DL = 0.2021 ppb
BEC = 0.524 ppb

Weight: <None>
Min Conc: <None>

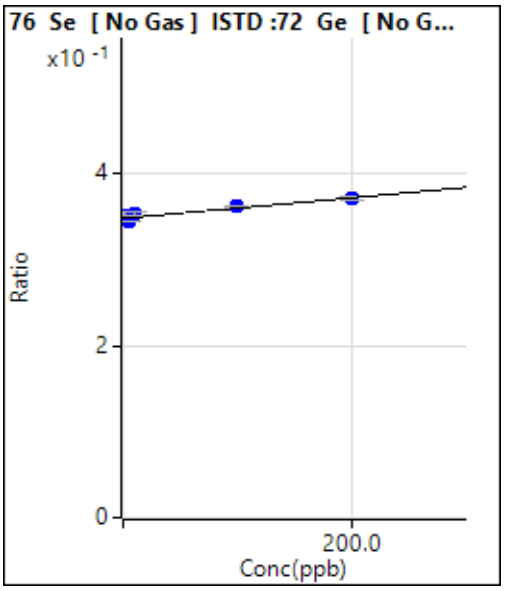


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	90.00	0.0002	P	0.2	
2	☐	2.000	2.030	2159.07	0.0037	P	2.0	1.5
3	☐	5.000	4.910	5082.10	0.0087	P	2.2	-1.8
4	☐	10.000	9.876	10054.88	0.0172	P	1.2	-1.2
5	☐	100.000	99.669	100241.22	0.1726	P	1.0	-0.3
6	☐	200.000	200.174	196376.60	0.3466	P	1.2	0.1

y = 0.0017 * x + 1.5410E-004
R = 1.0000
DL = 0.0005122 ppb
BEC = 0.08904 ppb

Weight: <None>
Min Conc: <None>

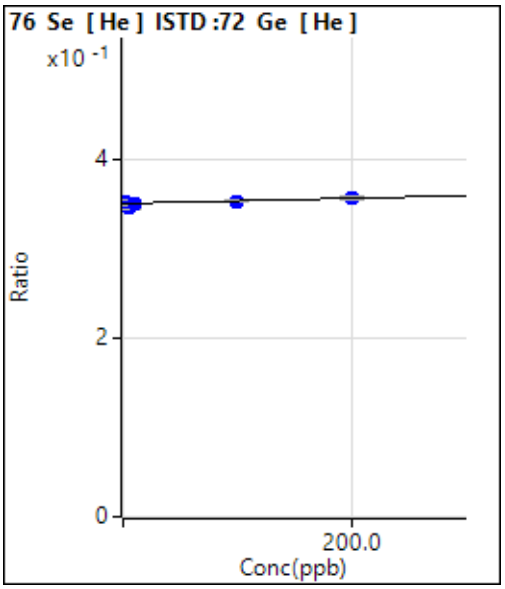
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	742361.91	0.3485	P	2.0	
2	☐	2.000	25.482	747324.47	0.3516	P	1.8	1174.1
3	☐	5.000	-27.600	743552.51	0.3452	P	0.3	-652.0
4	☐	10.000	40.336	744626.89	0.3534	P	1.2	303.4
5	☐	100.000	110.618	756061.89	0.3619	P	1.1	10.6
6	☐	200.000	193.754	755173.69	0.3719	P	1.3	-3.1

y = 1.2068E-004 * x + 0.3485
R = 0.9613
DL = 175.3 ppb
BEC = 2888 ppb

Weight: <None>
Min Conc: <None>

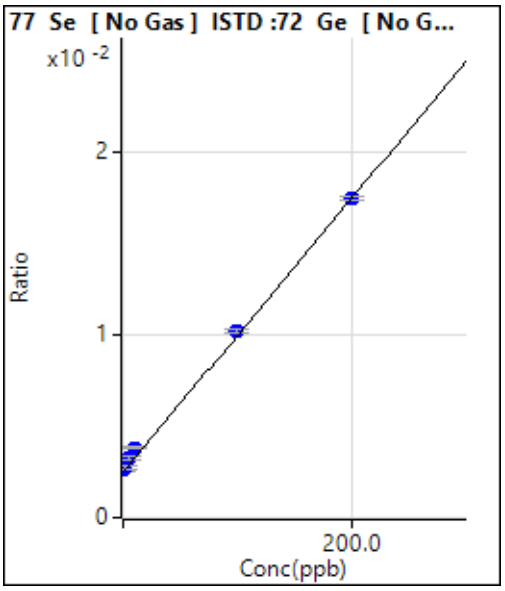


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	204884.58	0.3508	P	0.5	
2	☐	2.000	62.761	207544.58	0.3527	P	1.2	3038.0
3	☐	5.000	-164.441	203233.82	0.3460	P	1.1	-3388.
4	☐	10.000	-3.487	204480.18	0.3507	P	0.2	-134.9
5	☐	100.000	92.439	205273.44	0.3535	P	0.2	-7.6
6	☐	200.000	208.083	202286.93	0.3570	P	0.8	4.0

y = 2.9535E-005 * x + 0.3508
R = 0.7879
DL = 184.8 ppb
BEC = 1.188E+04 ppb

Weight: <None>
Min Conc: <None>

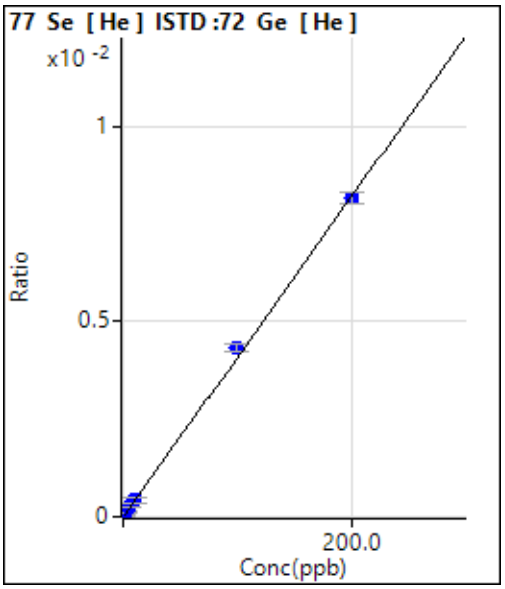
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	5524.57	0.0026	P	1.3	
2	☐	2.000	1.940	5818.04	0.0027	P	7.7	-3.0
3	☐	5.000	8.900	7021.97	0.0033	P	8.8	78.0
4	☐	10.000	16.381	8045.86	0.0038	P	2.1	63.8
5	☐	100.000	101.359	21267.15	0.0102	P	1.8	1.4
6	☐	200.000	198.905	35480.33	0.0175	P	1.8	-0.5

y = 7.4817E-005 * x + 0.0026
R = 0.9995
DL = 1.363 ppb
BEC = 34.66 ppb

Weight: <None>
Min Conc: <None>

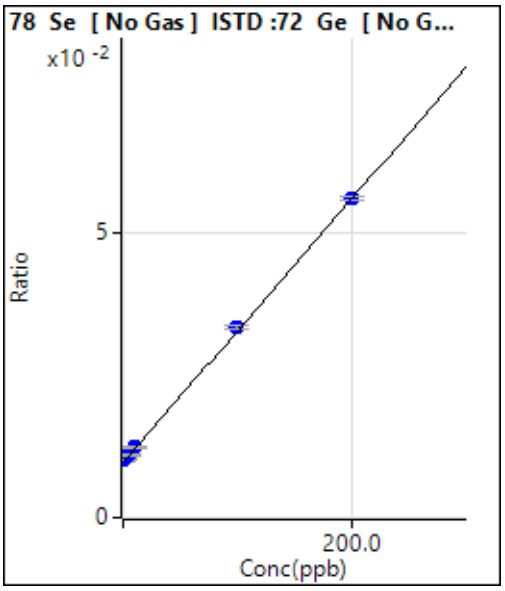


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	16.67	0.0000	P	34.7	
2	☐	2.000	2.055	66.67	0.0001	P	36.9	2.7
3	☐	5.000	4.960	136.67	0.0002	P	4.0	-0.8
4	☐	10.000	9.584	246.67	0.0004	P	26.9	-4.2
5	☐	100.000	104.086	2503.61	0.0043	P	4.5	4.1
6	☐	200.000	197.978	4634.22	0.0082	P	3.7	-1.0

y = 4.1149E-005 * x + 2.8546E-005
R = 0.9997
DL = 0.7228 ppb
BEC = 0.6937 ppb

Weight: <None>
Min Conc: <None>

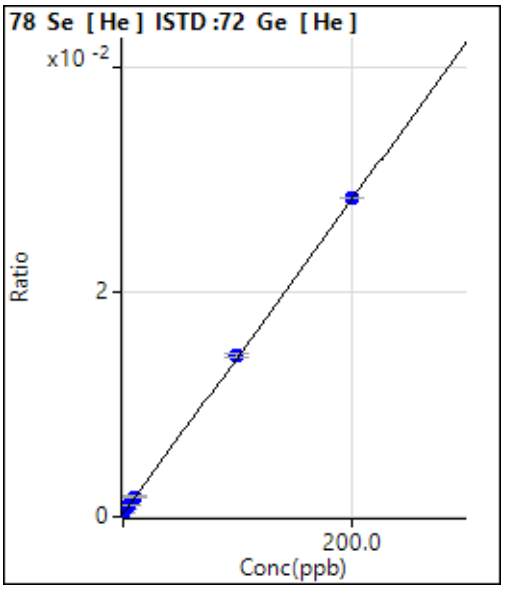
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	21357.24	0.0100	P	4.0	
2	☐	2.000	2.015	22308.85	0.0105	P	3.4	0.8
3	☐	5.000	4.372	23791.42	0.0110	P	1.7	-12.6
4	☐	10.000	10.786	26402.82	0.0125	P	2.7	7.9
5	☐	100.000	101.455	70128.92	0.0336	P	1.6	1.5
6	☐	200.000	199.249	114231.03	0.0563	P	1.4	-0.4

y = 2.3200E-004 * x + 0.0100
R = 0.9999
DL = 5.178 ppb
BEC = 43.24 ppb

Weight: <None>
Min Conc: <None>

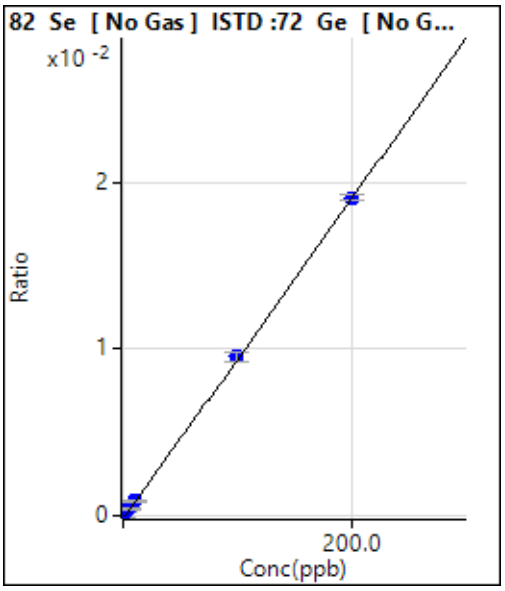


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	228.67	0.0004	P	2.7	
2	☐	2.000	2.118	404.68	0.0007	P	7.6	5.9
3	☐	5.000	4.652	612.68	0.0010	P	8.7	-7.0
4	☐	10.000	9.922	1038.71	0.0018	P	3.7	-0.8
5	☐	100.000	99.687	8333.93	0.0144	P	2.7	-0.3
6	☐	200.000	200.168	16110.29	0.0284	P	0.2	0.1

y = 1.4007E-004 * x + 3.9154E-004
R = 1.0000
DL = 0.2249 ppb
BEC = 2.795 ppb

Weight: <None>
Min Conc: <None>

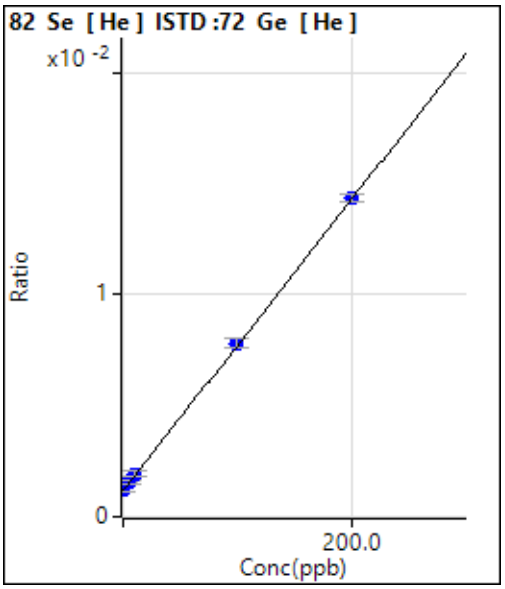
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	-361.80	-0.0002	P	-14.3	
2	☐	2.000	3.512	358.65	0.0002	P	48.7	75.6
3	☐	5.000	5.417	759.49	0.0004	P	38.8	8.3
4	☐	10.000	10.326	1740.95	0.0008	P	10.5	3.3
5	☐	100.000	100.302	19838.47	0.0095	P	6.0	0.3
6	☐	200.000	199.807	38775.17	0.0191	P	2.0	-0.1

y = 9.6412E-005 * x - 1.7021E-004
R = 1.0000
DL = 0.7589 ppb
BEC = -1.765 ppb

Weight: <None>
Min Conc: <None>

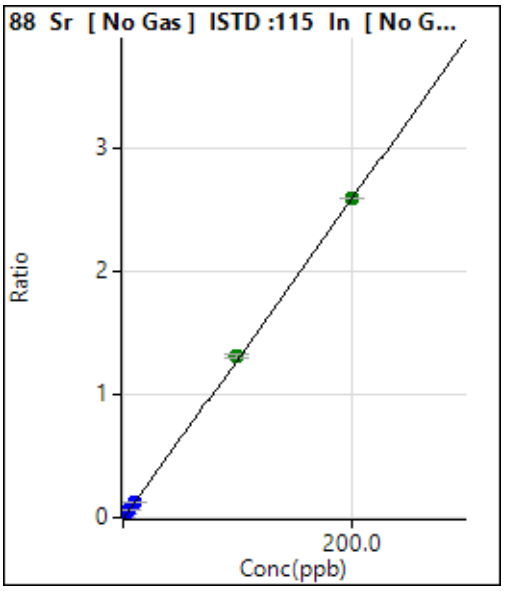


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	726.70	0.0012	P	17.8	
2	☐	2.000	3.890	883.38	0.0015	P	8.9	94.5
3	☐	5.000	4.391	900.05	0.0015	P	10.0	-12.2
4	☐	10.000	10.212	1116.74	0.0019	P	12.4	2.1
5	☐	100.000	100.239	4540.83	0.0078	P	5.9	0.2
6	☐	200.000	199.866	8135.90	0.0144	P	2.3	-0.1

y = 6.5615E-005 * x + 0.0012
R = 0.9999
DL = 10.12 ppb
BEC = 18.97 ppb

Weight: <None>
Min Conc: <None>

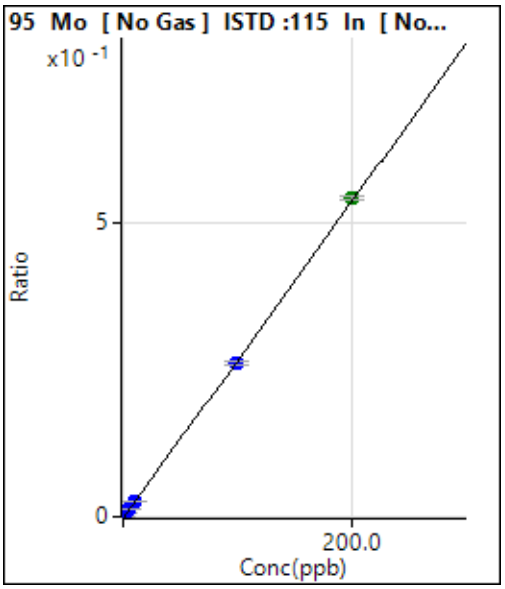
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1553.45	0.0006	P	9.7	
2	☐	2.000	1.979	63668.13	0.0264	P	1.6	-1.1
3	☐	5.000	4.837	153805.97	0.0635	P	1.0	-3.3
4	☐	10.000	9.903	312931.89	0.1294	P	0.6	-1.0
5	☐	100.000	100.841	3127788.81	1.3116	A	1.5	0.8
6	☐	200.000	199.588	6027426.58	2.5953	A	0.6	-0.2

y = 0.0130 * x + 6.4131E-004
R = 1.0000
DL = 0.01429 ppb
BEC = 0.04933 ppb

Weight: <None>
Min Conc: <None>

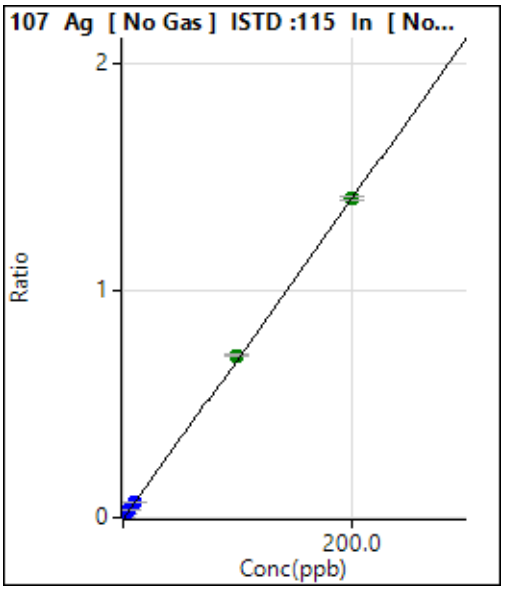


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	150.00	0.0001	P	23.4	
2	☐	2.000	1.835	12065.65	0.0050	P	3.0	-8.2
3	☐	5.000	4.628	30281.46	0.0125	P	2.7	-7.4
4	☐	10.000	9.468	61726.26	0.0255	P	1.5	-5.3
5	☐	100.000	97.174	623311.39	0.2614	P	1.6	-2.8
6	☐	200.000	201.450	1258302.92	0.5418	A	1.3	0.7

y = 0.0027 * x + 6.1944E-005
R = 0.9999
DL = 0.01619 ppb
BEC = 0.02303 ppb

Weight: <None>
Min Conc: <None>

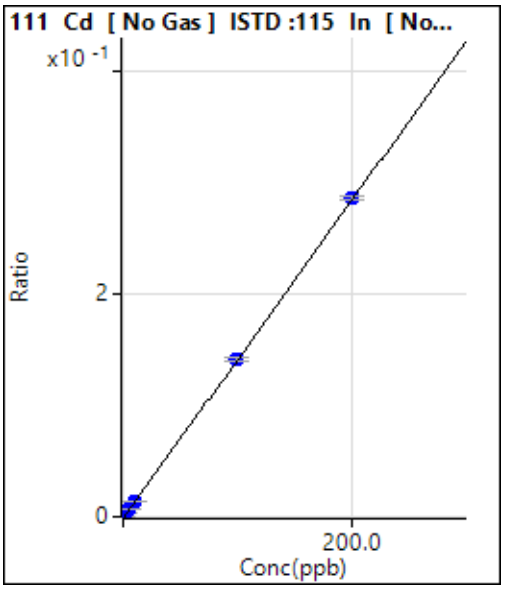
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	426.68	0.0002	P	16.9	
2	☐	2.000	1.958	33820.19	0.0140	P	2.0	-2.1
3	☐	5.000	4.848	83328.03	0.0344	P	1.9	-3.0
4	☐	10.000	9.742	166842.96	0.0690	P	1.5	-2.6
5	☐	100.000	101.184	1705066.12	0.7149	A	1.3	1.2
6	☐	200.000	199.425	3271769.85	1.4088	A	0.9	-0.3

y = 0.0071 * x + 1.7620E-004
R = 1.0000
DL = 0.01264 ppb
BEC = 0.02495 ppb

Weight: <None>
Min Conc: <None>

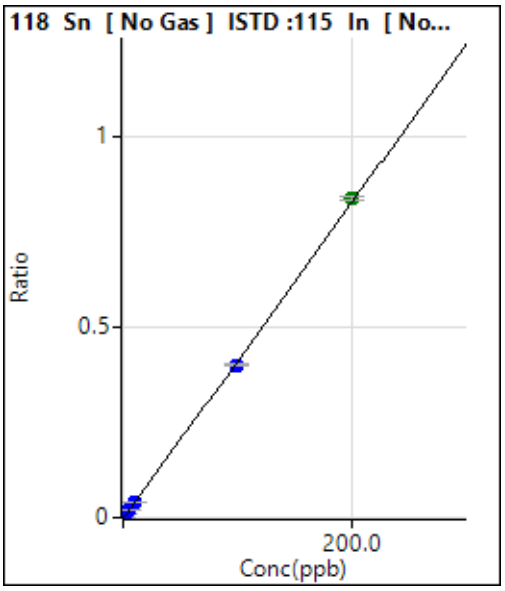


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	3.33	0.0000	P	173.2	
2	☐	2.000	1.931	6661.77	0.0028	P	1.9	-3.4
3	☐	5.000	5.028	17388.44	0.0072	P	1.3	0.6
4	☐	10.000	9.760	33706.74	0.0139	P	1.7	-2.4
5	☐	100.000	98.823	336462.72	0.1411	P	2.5	-1.2
6	☐	200.000	200.600	665203.72	0.2864	P	0.8	0.3

y = 0.0014 * x + 1.3806E-006
R = 1.0000
DL = 0.005024 ppb
BEC = 0.0009669 ppb

Weight: <None>
Min Conc: <None>

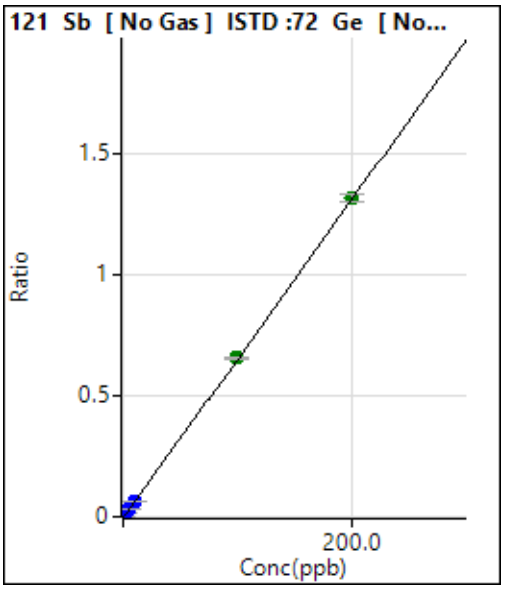
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	2183.56	0.0009	P	9.0	
2	☐	2.000	1.774	19928.76	0.0083	P	3.0	-11.3
3	☐	5.000	4.585	48195.40	0.0199	P	1.3	-8.3
4	☐	10.000	9.373	96149.97	0.0398	P	0.3	-6.3
5	☐	100.000	96.492	955909.10	0.4009	P	1.9	-3.5
6	☐	200.000	201.798	1944739.30	0.8374	A	1.5	0.9

y = 0.0041 * x + 9.0129E-004
R = 0.9998
DL = 0.05883 ppb
BEC = 0.2174 ppb

Weight: <None>
Min Conc: <None>

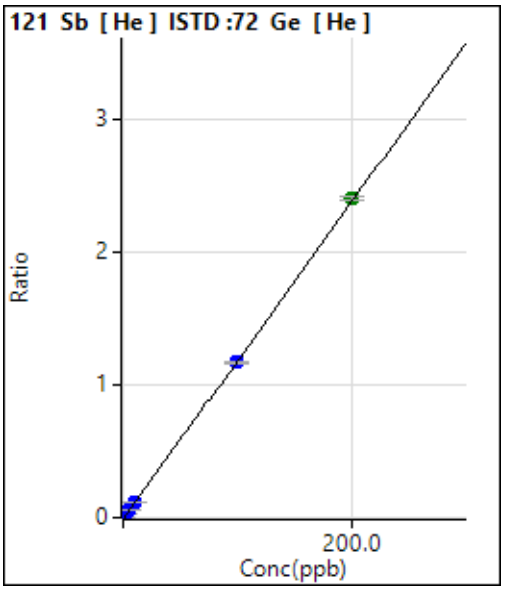


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1513.45	0.0007	P	7.5	
2	☐	2.000	1.951	28735.26	0.0135	P	1.2	-2.5
3	☐	5.000	4.763	68890.69	0.0320	P	1.0	-4.7
4	☐	10.000	9.816	137272.39	0.0652	P	1.9	-1.8
5	☐	100.000	99.847	1370982.58	0.6562	A	1.5	-0.2
6	☐	200.000	200.092	2668577.36	1.3143	A	1.8	0.0

y = 0.0066 * x + 7.1068E-004
R = 1.0000
DL = 0.0242 ppb
BEC = 0.1083 ppb

Weight: <None>
Min Conc: <None>

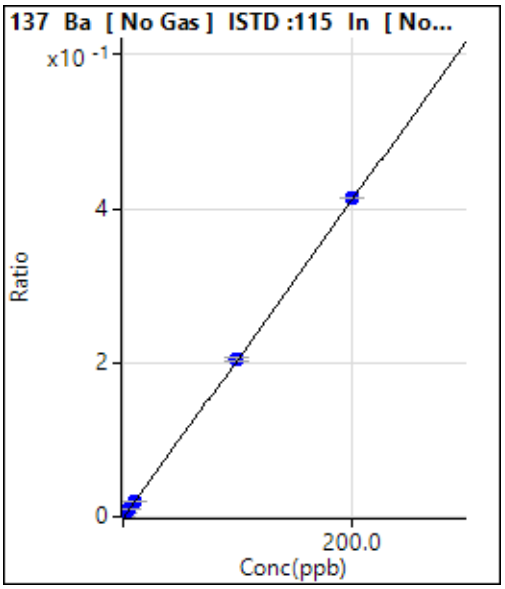
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	770.04	0.0013	P	22.2	
2	☐	2.000	1.934	14394.75	0.0245	P	4.1	-3.3
3	☐	5.000	4.865	34987.06	0.0596	P	2.5	-2.7
4	☐	10.000	9.935	70116.88	0.1203	P	0.2	-0.7
5	☐	100.000	97.552	678865.46	1.1692	P	0.7	-2.4
6	☐	200.000	201.231	1365988.11	2.4105	A	1.0	0.6

y = 0.0120 * x + 0.0013
R = 0.9999
DL = 0.07341 ppb
BEC = 0.1101 ppb

Weight: <None>
Min Conc: <None>

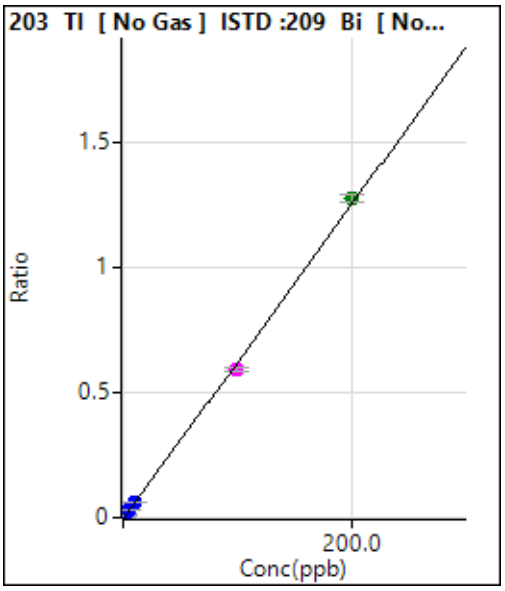


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	526.69	0.0002	P	18.5	
2	☐	2.000	1.952	10244.22	0.0042	P	4.2	-2.4
3	☐	5.000	4.855	24773.87	0.0102	P	0.2	-2.9
4	☐	10.000	9.880	49812.40	0.0206	P	3.0	-1.2
5	☐	100.000	98.663	485757.18	0.2037	P	2.5	-1.3
6	☐	200.000	200.678	961799.39	0.4141	P	0.4	0.3

y = 0.0021 * x + 2.1726E-004
R = 1.0000
DL = 0.05841 ppb
BEC = 0.1053 ppb

Weight: <None>
Min Conc: <None>

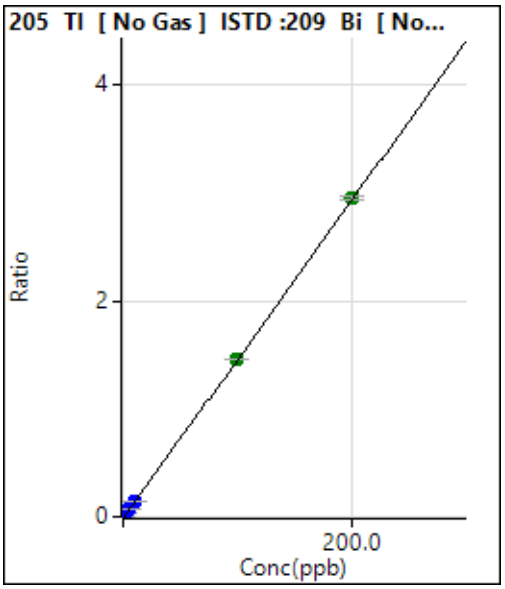
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	30.00	0.0000	P	31.9	
2	☐	2.000	1.834	23639.44	0.0115	P	1.1	-8.3
3	☐	5.000	4.599	58413.18	0.0289	P	1.2	-8.0
4	☐	10.000	9.429	119564.93	0.0593	P	0.6	-5.7
5	☐	100.000	94.324	1170006.94	0.5926	M	2.2	-5.7
6	☐	200.000	202.878	2411187.36	1.2746	A	2.2	1.4

y = 0.0063 * x + 1.5011E-005
R = 0.9995
DL = 0.002288 ppb
BEC = 0.002389 ppb

Weight: <None>
Min Conc: <None>

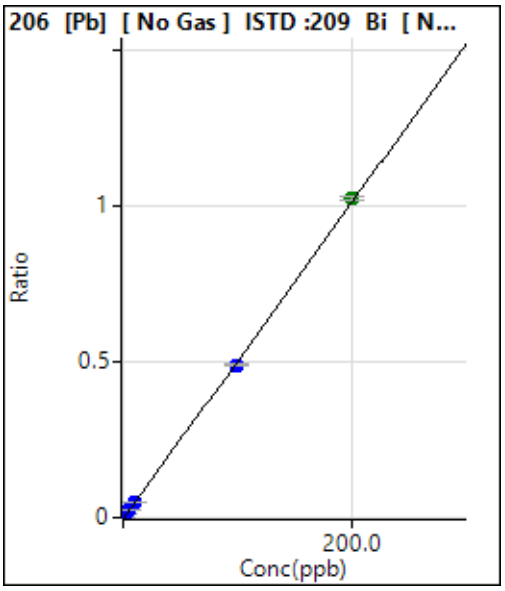


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	76.67	0.0000	P	53.6	
2	☐	2.000	1.879	56775.79	0.0277	P	0.8	-6.1
3	☐	5.000	4.711	140251.65	0.0694	P	1.9	-5.8
4	☐	10.000	9.621	285965.90	0.1417	P	1.2	-3.8
5	☐	100.000	98.984	2878249.75	1.4576	A	0.9	-1.0
6	☐	200.000	200.536	5585324.08	2.9530	A	1.2	0.3

y = 0.0147 * x + 3.8210E-005
R = 1.0000
DL = 0.004176 ppb
BEC = 0.002595 ppb

Weight: <None>
Min Conc: <None>

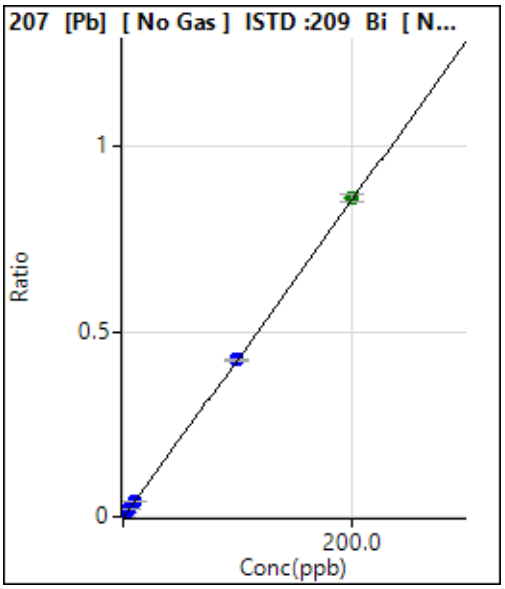
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	706.70	0.0004	P	14.5	
2	☐	2.000	1.835	19849.41	0.0097	P	1.4	-8.3
3	☐	5.000	4.649	48511.47	0.0240	P	0.3	-7.0
4	☐	10.000	9.421	97415.32	0.0483	P	1.8	-5.8
5	☐	100.000	96.526	970310.74	0.4914	P	0.6	-3.5
6	☐	200.000	201.776	1942034.87	1.0268	A	1.4	0.9

y = 0.0051 * x + 3.5451E-004
R = 0.9998
DL = 0.03026 ppb
BEC = 0.06969 ppb

Weight: <None>
Min Conc: <None>

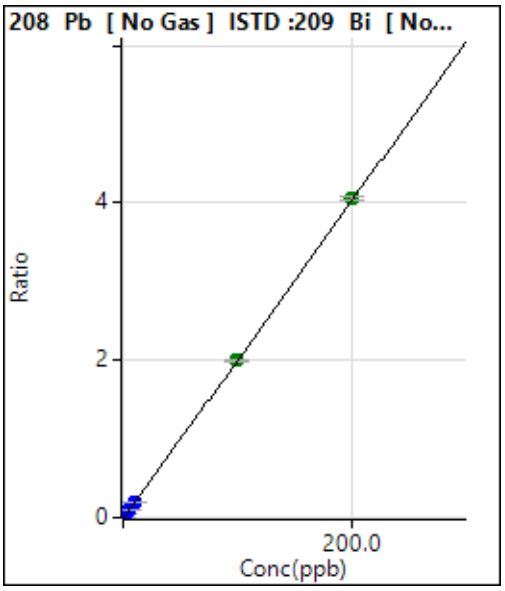


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	573.36	0.0003	P	10.8	
2	☐	2.000	1.936	17602.71	0.0086	P	2.5	-3.2
3	☐	5.000	4.822	42375.81	0.0210	P	1.2	-3.6
4	☐	10.000	9.861	85935.65	0.0426	P	1.3	-1.4
5	☐	100.000	98.875	838008.40	0.4244	P	1.0	-1.1
6	☐	200.000	200.575	1627673.98	0.8606	A	2.2	0.3

y = 0.0043 * x + 2.8783E-004
R = 1.0000
DL = 0.02165 ppb
BEC = 0.06711 ppb

Weight: <None>
Min Conc: <None>

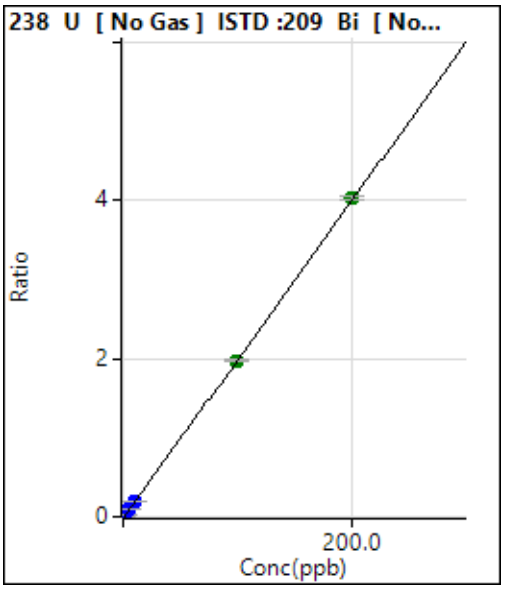
Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	2630.16	0.0013	P	7.4	
2	☐	2.000	1.854	79449.93	0.0388	P	0.7	-7.3
3	☐	5.000	4.707	194842.54	0.0964	P	0.8	-5.9
4	☐	10.000	9.522	390840.74	0.1937	P	0.8	-4.8
5	☐	100.000	98.563	3934365.15	1.9926	A	1.5	-1.4
6	☐	200.000	200.751	7673365.25	4.0571	A	1.7	0.4

y = 0.0202 * x + 0.0013
R = 1.0000
DL = 0.01441 ppb
BEC = 0.06531 ppb

Weight: <None>
Min Conc: <None>

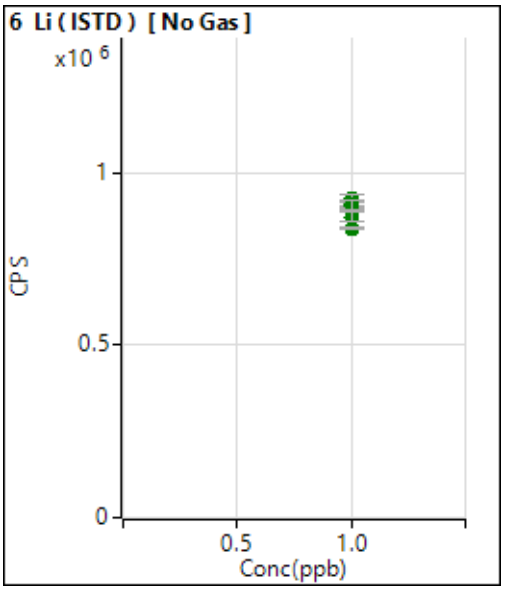


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	46.67	0.0000	P	14.3	
2	☐	2.000	1.799	73926.25	0.0361	P	1.4	-10.0
3	☐	5.000	4.625	187327.42	0.0927	P	1.0	-7.5
4	☐	10.000	9.446	382017.10	0.1893	P	1.6	-5.5
5	☐	100.000	98.339	3891230.05	1.9707	A	1.2	-1.7
6	☐	200.000	200.869	7613307.18	4.0254	A	1.8	0.4

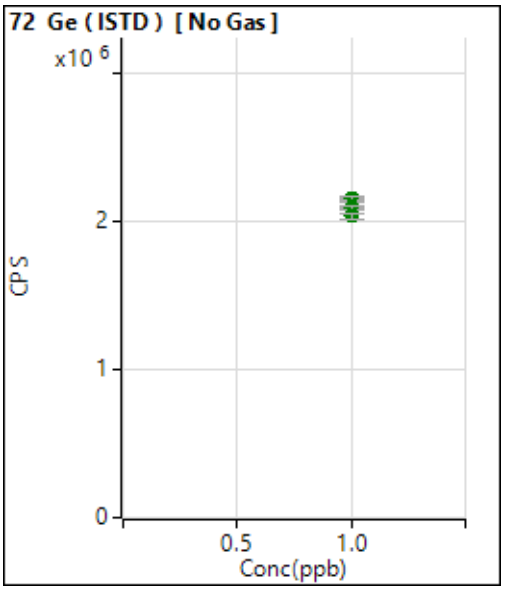
y = 0.0200 * x + 2.3452E-005
R = 1.0000
DL = 0.0005038 ppb
BEC = 0.00117 ppb

Weight: <None>
Min Conc: <None>

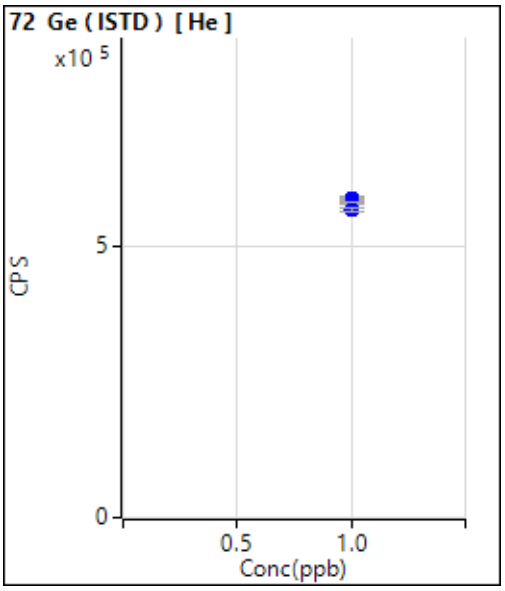
Calibration for 326_ICV.d



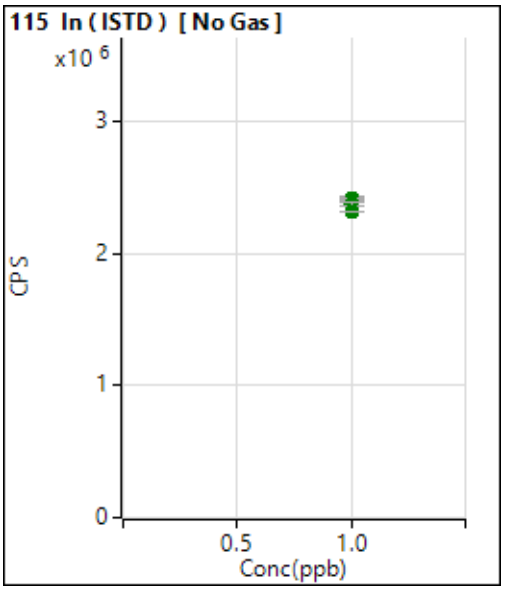
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		926739.71		A	2.0	
2	☐	1.000		910364.63		A	3.0	
3	☐	1.000		908397.15		A	1.3	
4	☐	1.000		907140.21		A	2.7	
5	☐	1.000		873637.64		A	2.7	
6	☐	1.000		838629.73		A	0.9	



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		2130598.46		A	2.5	
2	☐	1.000		2125919.03		A	2.0	
3	☐	1.000		2153938.72		A	0.7	
4	☐	1.000		2107239.19		A	1.5	
5	☐	1.000		2089468.77		A	1.7	
6	☐	1.000		2030691.74		A	1.4	

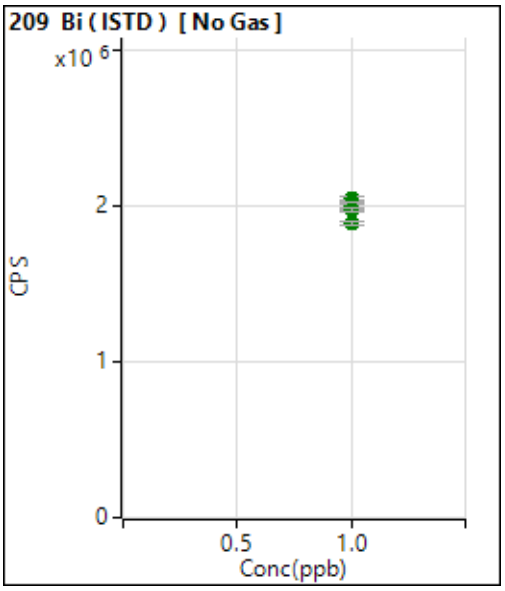


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		584023.34		P	0.2	
2	☐	1.000		588509.41		P	1.7	
3	☐	1.000		587431.84		P	0.7	
4	☐	1.000		583049.67		P	0.6	
5	☐	1.000		580619.85		P	0.5	
6	☐	1.000		566670.30		P	1.6	



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		2422741.32		A	0.5	
2	☐	1.000		2414940.23		A	1.5	
3	☐	1.000		2421331.79		A	1.0	
4	☐	1.000		2418716.94		A	0.8	
5	☐	1.000		2384968.85		A	1.3	
6	☐	1.000		2322445.65		A	0.4	

Calibration for 326_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		1994133.62		A	2.4	
2	☐	1.000		2049351.38		A	1.2	
3	☐	1.000		2020907.89		A	1.3	
4	☐	1.000		2017920.75		A	0.9	
5	☐	1.000		1974805.18		A	1.6	
6	☐	1.000		1891599.03		A	1.2	

Sample Report

Sample Table

Sample Name	LLCCV2
Data File Name	327LCV2.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T23:12:52-05:00
Sample Type	LLCCV2
Dilution	1
Comment	
ISTD Ref FileName	319CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	1.826	1.826	1.79	71859	0.00	2	
Be	9	1	No Gas	1.890	1.890	3.37	6527	0.03	2	
V	51	2	He	1.864	1.864	1.88	12565	0.01	2	
Cr	52	2	He	1.914	1.914	2.15	14354	0.01	2	
Fe	56	2	He	213.485	213.485	0.99	1263061	0.02	200	
Se	78	2	He	2.108	2.108	7.57	399	0.53	2	
As	75	2	He	1.959	1.959	1.31	2061	0.10	2	
Ca	44	2	He	197.934	197.934	3.31	6979	2.84	200	
Na	23	2	He	144.553	144.553	0.33	369231	0.04	200	
Mg	24	2	He	195.261	195.261	1.91	112192	0.17	200	
K	39	2	He	199.365	199.365	0.56	203581	0.10	200	
Mn	55	2	He	1.964	1.964	1.42	9530	0.02	2	
Co	59	2	He	2.017	2.017	1.12	21734	0.01	2	
Ni	60	2	He	2.061	2.061	6.56	5875	0.04	2	
Cu	63	2	He	2.019	2.019	2.56	16874	0.01	2	
Zn	66	2	He	2.009	2.009	7.17	3451	0.06	2	
Al	27	2	He	2.083	2.083	21.85	1663	0.13	2	
B	11	1	No Gas	13.208	13.208	15.26	76467	0.02	10	NewName Main CR1 Failed
Al	27	1	No Gas	1.970	1.970	4.83	83792	0.00	2	
Si	28	1	No Gas	14.538	14.538	10.57	398859	0.00	10	NewName Main CR1 Failed
Ag	107	1	No Gas	1.943	1.943	3.42	33476	0.01	2	
Cd	111	1	No Gas	1.942	1.942	0.68	6682	0.03	2	
Sr	88	1	No Gas	1.978	1.978	1.22	63467	0.00	2	
Mo	95	1	No Gas	1.891	1.891	1.79	12393	0.02	2	
Sn	118	1	No Gas	1.906	1.906	4.38	21197	0.01	2	
Sb	121	1	No Gas	2.090	2.090	1.42	30285	0.01	2	
Ba	137	1	No Gas	1.934	1.934	4.15	10131	0.02	2	
Tl	205	1	No Gas	1.935	1.935	1.41	57402	0.00	2	
Tl	203	1	No Gas	1.901	1.901	2.57	24050	0.01	2	
Pb	208	1	No Gas	1.910	1.910	1.35	80280	0.00	2	
U	238	1	No Gas	1.879	1.879	2.04	75774	0.00	2	
Ca	43	2	He	184.930	184.930	25.39	380	48.66	200	
Sb	121	2	He	2.134	2.134	1.09	15623	0.01	2	
Ti	47	2	He	2.280	2.280	7.19	453	0.50	200	
Cu	63	1	No Gas	2.024	2.024	4.15	29476	0.01	2	
Se	82	1	No Gas	3.191	3.191	27.20	290	1.10	2	NewName Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	907865	0.52	926740	97.96	70	120	
Ge	72	2	He	581492	0.23	584023	99.57	70	120	
Ge	72	1	No Gas	2098790	1.66	2130598	98.51	70	120	
In	115	1	No Gas	2408498	1.12	2422741	99.41	70	120	
Bi	209	1	No Gas	2011859	1.48	1994134	100.89	70	120	

Sample Report

Sample Table

Sample Name	LLCCV5
Data File Name	328LCV5.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T23:14:46-05:00
Sample Type	LLCCV5
Dilution	1
Comment	
ISTD Ref FileName	319CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	4.324	4.324	1.15	106743	0.00	5	
Be	9	1	No Gas	4.664	4.664	3.45	16123	0.03	5	
V	51	2	He	4.713	4.713	2.13	29807	0.02	5	
Cr	52	2	He	4.774	4.774	2.00	34303	0.01	5	
Fe	56	2	He	508.534	508.534	0.73	2987162	0.02	500	
Se	78	2	He	4.883	4.883	11.84	625	0.78	5	
As	75	2	He	4.860	4.860	3.49	4978	0.10	5	
Ca	44	2	He	486.460	486.460	0.14	16243	2.99	500	
Na	23	2	He	430.390	430.390	2.01	656115	0.07	500	
Mg	24	2	He	484.547	484.547	0.67	277306	0.17	500	
K	39	2	He	490.844	490.844	2.12	384443	0.13	500	
Mn	55	2	He	4.858	4.858	1.44	22749	0.02	5	
Co	59	2	He	4.975	4.975	1.35	53502	0.01	5	
Ni	60	2	He	5.058	5.058	2.47	14138	0.04	5	
Cu	63	2	He	5.048	5.048	1.72	39788	0.01	5	
Zn	66	2	He	4.831	4.831	2.24	7292	0.07	5	
Al	27	2	He	4.582	4.582	9.76	2367	0.19	5	
B	11	1	No Gas	16.215	16.215	1.65	82457	0.02	25	NewName2 Main CR1 Failed
Al	27	1	No Gas	4.739	4.739	2.67	123952	0.00	5	
Si	28	1	No Gas	25.490	25.490	2.70	476938	0.01	25	
Ag	107	1	No Gas	4.888	4.888	1.05	83074	0.01	5	
Cd	111	1	No Gas	4.921	4.921	2.34	16824	0.03	5	
Sr	88	1	No Gas	4.914	4.914	1.04	154443	0.00	5	
Mo	95	1	No Gas	4.717	4.717	0.89	30515	0.02	5	
Sn	118	1	No Gas	4.653	4.653	3.09	48322	0.01	5	
Sb	121	1	No Gas	4.967	4.967	2.58	69983	0.01	5	
Ba	137	1	No Gas	4.761	4.761	2.00	24029	0.02	5	
Tl	205	1	No Gas	4.732	4.732	2.27	140252	0.00	5	
Tl	203	1	No Gas	4.635	4.635	4.06	58601	0.01	5	
Pb	208	1	No Gas	4.707	4.707	1.12	193934	0.00	5	
U	238	1	No Gas	4.636	4.636	0.68	186917	0.00	5	
Ca	43	2	He	464.709	464.709	5.66	910	51.06	500	
Sb	121	2	He	4.897	4.897	2.48	34840	0.01	5	
Ti	47	2	He	4.650	4.650	6.74	920	0.51	5	
Cu	63	1	No Gas	5.000	5.000	2.44	69032	0.01	5	
Se	82	1	No Gas	5.777	5.777	30.56	814	0.71	5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	910789	1.50	926740	98.28	70	120	
Ge	72	2	He	581355	1.85	584023	99.54	70	120	
Ge	72	1	No Gas	2100845	0.87	2130598	98.60	70	120	
In	115	1	No Gas	2393909	0.84	2422741	98.81	70	120	
Bi	209	1	No Gas	2011738	1.43	1994134	100.88	70	120	

Initial Calibration Blank (ICB) Report

Sample Table

Sample Name	ICCB
Data File Name	329_ICB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T23:16:39-05:00
Sample Type	ICB
Dilution	1
Comment	
ISTD Ref File Name	319CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	0.019	366.0	46796	1.2	0.5	
Be	9	1	No Gas	0.004	60.9	32	24.1	0.5	
V	51	2	He	-0.030	-23.5	1083	2.3	2.5	
Cr	52	2	He	-0.020	-76.9	843	11.0	2.5	
Fe	56	2	He	0.797	5.7	19364	2.7	100	
Se	78	2	He	0.031	1141.8	228	12.2	1	
As	75	2	He	-0.028	-76.5	61	36.3	2.5	
Ca	44	2	He	-2.576	-105.3	533	17.0	100	
Na	23	2	He	-55.221	-5.3	166972	1.0	100	
Mg	24	2	He	0.907	23.7	1197	10.1	100	
K	39	2	He	-4.056	-30.8	76528	1.6	100	
Mn	55	2	He	0.016	40.0	620	3.2	2.5	
Co	59	2	He	0.000	795.2	77	45.8	2.5	
Ni	60	2	He	0.009	201.7	210	25.2	2.5	
Cu	63	2	He	-0.025	-39.5	1380	4.0	1	
Zn	66	2	He	0.229	65.8	1013	18.3	2.5	
Al	27	2	He	-1.167	-23.4	740	11.8	5	
B	11	1	No Gas	-7.516	-2.0	36964	1.3	0.5	
Al	27	1	No Gas	-1.202	-3.0	37992	1.0	5	
Si	28	1	No Gas	-2.358	-41.7	279660	0.6	10	
Ag	107	1	No Gas	-0.009	-17.3	280	10.7	2.5	
Cd	111	1	No Gas	0.002	151.6	10	100.0	1	
Sr	88	1	No Gas	-0.010	-28.3	1220	6.4	2.5	
Mo	95	1	No Gas	0.000	2857.6	150	17.6	2.5	
Sn	118	1	No Gas	0.004	263.6	2214	3.5	5	
Sb	121	1	No Gas	0.049	36.5	2164	10.3	2.5	
Ba	137	1	No Gas	0.081	17.9	927	9.8	2.5	
Tl	205	1	No Gas	0.005	39.5	230	27.2	1	
Tl	203	1	No Gas	0.006	20.4	107	14.3	1	
Pb	208	1	No Gas	-0.001	-314.6	2607	6.8	2.5	
U	238	1	No Gas	0.001	132.5	80	54.5	2.5	
Ca	43	2	He	1.938	881.0	33	96.4	100	
Sb	121	2	He	0.044	35.5	1060	10.0	2.5	
Ti	47	2	He	0.034	2.4	10	0.0	2.5	
Se	82	1	No Gas	0.406	280.7	-278	-84.7	1	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	906686	1.22	926740	97.84	70	120	

Initial Calibration Blank (ICB) Report

Ge	72	2	He	576159	1.59	584023	98.65	70	120	
Ge	72	1	No Gas	2101546	2.15	2130598	98.64	70	120	
In	115	1	No Gas	2411070	1.95	2422741	99.52	70	120	
Bi	209	1	No Gas	2014538	1.17	1994134	101.02	70	120	

Interference Check Solution A (ICS-A) Report

Sample Table

Sample Name	ICSA
Data File Name	330ICSA.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T23:18:33-05:00
Sample Type	ICSA
Dilution	1
Comment	
ISTD Ref File Name	319CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	0.499	9.4	49527	1.9	0	ICSA Main CR1 Failed
Be	9	1	No Gas	0.026	10.4	100	8.7	0	ICSA Main CR1 Failed
V	51	2	He	0.115	8.9	1850	3.3	0	ICSA Main CR1 Failed
Cr	52	2	He	1.532	3.1	10971	3.0	0	ICSA Main CR1 Failed
Fe	56	2	He	104982.246	1.2	576234605	1.1	0	
Se	78	2	He	0.004	12661.2	214	16.2	0	ICSA Main CR1 Failed
As	75	2	He	0.176	29.2	250	19.4	0	ICSA Main CR1 Failed
Ca	44	2	He	107325.331	1.2	3237211	1.3	0	
Na	23	2	He	105969.820	0.8	100148935	0.6	0	
Mg	24	2	He	105565.186	1.4	56594226	1.2	0	
K	39	2	He	105689.810	0.9	61698866	0.7	0	
Mn	55	2	He	0.336	9.7	1960	7.4	0	ICSA Main CR1 Failed
Co	59	2	He	0.119	16.4	1270	15.3	0	ICSA Main CR1 Failed
Ni	60	2	He	0.482	12.4	1423	11.0	0	ICSA Main CR1 Failed
Cu	63	2	He	0.045	17.0	1807	3.1	0	ICSA Main CR1 Failed
Zn	66	2	He	1.134	9.7	2120	6.5	0	ICSA Main CR1 Failed
Al	27	2	He	99511.002	0.6	26370795	0.4	0	
B	11	1	No Gas	-7.747	-11.2	33838	3.8	0	ICSA Main CR1 Failed
Al	27	1	No Gas	99383.755	0.4	1352004193	0.5	0	
Si	28	1	No Gas	24.111	3.1	439082	0.3	0	
Ag	107	1	No Gas	0.085	5.7	1767	4.5	0	ICSA Main CR1 Failed
Cd	111	1	No Gas	0.853	3.7	2767	3.8	0	ICSA Main CR1 Failed
Sr	88	1	No Gas	0.788	5.1	24700	4.9	0	ICSA Main CR1 Failed
Mo	95	1	No Gas	2039.407	0.9	12438271	0.5	0	
Sn	118	1	No Gas	0.196	4.7	3887	2.6	0	ICSA Main CR1 Failed
Sb	121	1	No Gas	0.310	6.0	5425	3.7	0	ICSA Main CR1 Failed
Ba	137	1	No Gas	0.491	13.9	2790	11.2	0	ICSA Main CR1 Failed
Tl	205	1	No Gas	0.031	14.3	920	13.4	0	ICSA Main CR1 Failed
Tl	203	1	No Gas	0.038	23.7	473	23.2	0	ICSA Main CR1 Failed
Pb	208	1	No Gas	0.120	3.9	7044	3.4	0	ICSA Main CR1 Failed
U	238	1	No Gas	0.064	8.2	2480	7.3	0	ICSA Main CR1 Failed
Ca	43	2	He	101971.430	0.9	181274	0.7	0	
Sb	121	2	He	0.290	5.4	2614	3.7	0	ICSA Main CR1 Failed
Ti	47	2	He	2134.492	1.4	395481	1.3	0	
Se	82	1	No Gas	0.033	2757.0	-329	-52.4	0	ICSA Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	840193	0.73	926740	90.66	70	120	
Ge	72	2	He	545905	0.21	584023	93.47	70	120	
Ge	72	1	No Gas	1974576	0.90	2130598	92.68	70	120	
In	115	1	No Gas	2267978	0.42	2422741	93.61	70	120	
Bi	209	1	No Gas	1886004	1.65	1994134	94.58	70	120	

Interference Check Solution AB (ICS-AB) Report

Sample Table

Sample Name	ICSAB
Data File Name	331ICSB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T23:20:28-05:00
Sample Type	ICSB
Dilution	1
Comment	
ISTD Ref File Name	319CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High	QC Flag
Li	7	1	No Gas	100.112	5.099	1257636	1.84	100	100.1	180	120	ICSB Main CR1 Failed
Be	9	1	No Gas	98.071	2.500	296831	1.05	100	98.1	80	120	
V	51	2	He	99.791	1.178	560273	0.11	100	99.8	80	120	
Cr	52	2	He	100.468	1.832	649663	0.64	100	100.5	80	120	
Fe	56	2	He	114339.580	1.633	618354631	0.42	100	114339.6	80	120	
Se	78	2	He	99.700	1.261	7722	0.72	100	99.7	80	120	
As	75	2	He	103.489	1.531	96418	0.53	100	103.5	80	120	
Ca	44	2	He	116631.879	2.014	3466094	1.53	100	116631.9	80	120	
Na	23	2	He	114976.097	1.540	107046428	0.93	100	114976.1	80	120	
Mg	24	2	He	113829.735	1.600	60126836	0.45	100	113829.7	80	120	
K	39	2	He	113689.994	1.390	65388264	0.59	100	113690.0	80	120	
Mn	55	2	He	101.845	1.810	431132	0.58	100	101.8	80	120	
Co	59	2	He	97.743	1.041	971126	0.49	100	97.7	80	120	
Ni	60	2	He	100.457	1.499	256617	0.29	100	100.5	80	120	
Cu	63	2	He	99.264	0.509	696720	0.83	100	99.3	80	120	
Zn	66	2	He	104.341	1.624	132108	1.03	100	104.3	80	120	
Al	27	2	He	97630.960	2.099	25490682	0.91	100	97631.0	80	120	ICSB Main CR1 Failed
B	11	1	No Gas	524.506	4.540	923206	3.80	100	524.5	80	120	
Al	27	1	No Gas	94557.920	1.208	1280617341	0.54	100	94557.9	80	120	ICSB Main CR1 Failed
Si	28	1	No Gas	520.213	1.542	3725758	0.39	100	520.2	80	120	
Ag	107	1	No Gas	98.819	1.758	1565506	1.30	100	98.8	80	120	
Cd	111	1	No Gas	100.831	1.796	322815	0.77	100	100.8	80	120	
Sr	88	1	No Gas	107.368	2.075	3131060	1.08	100	107.4	80	120	
Mo	95	1	No Gas	2110.879	1.690	12728284	0.72	100	2110.9	80	120	ICSB Main CR1 Failed
Sn	118	1	No Gas	103.267	1.792	961796	0.91	100	103.3	80	120	
Sb	121	1	No Gas	105.139	1.907	1358149	0.77	100	105.1	80	120	
Ba	137	1	No Gas	102.984	1.872	476759	0.92	100	103.0	80	120	
Tl	205	1	No Gas	102.035	1.213	2803834	1.14	100	102.0	80	120	
Tl	203	1	No Gas	97.994	2.589	1148617	0.46	100	98.0	80	120	
Pb	208	1	No Gas	102.378	2.301	3861486	0.10	100	102.4	80	120	
U	238	1	No Gas	104.948	2.286	3924105	1.10	100	104.9	80	120	
Ca	43	2	He	110958.064	1.845	194340	0.64	100	110958.1	80	120	
Sb	121	2	He	102.653	1.433	661744	0.38	100	102.7	80	120	
Ti	47	2	He	2240.023	2.088	408909	0.90	100	2240.0	80	120	
Cu	63	1	No Gas	97.466	0.855	1213800	1.39	100	97.5	80	120	
Se	82	1	No Gas	101.609	4.489	18923	4.53	100	101.6	80	120	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	798643	3.40	926740	86.18	70	120	
Ge	72	2	He	537933	1.21	584023	92.11	70	120	
Ge	72	1	No Gas	1965900	1.29	2130598	92.27	70	120	
In	115	1	No Gas	2242473	1.03	2422741	92.56	70	120	
Bi	209	1	No Gas	1866434	2.34	1994134	93.60	70	120	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	334_CCV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T23:26:06-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	319CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Li	7	1	No Gas	101.599	1.013	1343610	0.76	100	101.6	90	110	
Be	9	1	No Gas	98.609	1.128	314175	0.90	100	98.6	90	110	
V	51	2	He	97.519	1.272	580664	0.58	100	97.5	90	110	
Cr	52	2	He	98.601	1.355	676218	0.96	100	98.6	90	110	
Fe	56	2	He	10112.904	1.287	58015281	0.82	10000	101.1	90	110	
Se	78	2	He	102.227	1.017	8391	0.33	100	102.2	90	110	
As	75	2	He	103.034	0.649	101807	0.65	100	103.0	90	110	
Ca	44	2	He	9912.736	0.987	312986	1.14	10000	99.1	90	110	
Na	23	2	He	10010.311	1.806	10084443	1.50	10000	100.1	90	110	
Mg	24	2	He	10107.197	0.534	5662819	0.75	10000	101.1	90	110	
K	39	2	He	9941.731	1.029	6135801	1.58	10000	99.4	90	110	
Mn	55	2	He	100.378	1.376	450648	0.24	100	100.4	90	110	
Co	59	2	He	102.564	3.056	1080518	2.10	100	102.6	90	110	
Ni	60	2	He	102.129	1.163	276675	0.60	100	102.1	90	110	
Cu	63	2	He	102.054	1.149	759545	0.46	100	102.1	90	110	
Zn	66	2	He	102.134	0.073	137164	1.15	100	102.1	90	110	
Al	27	2	He	100.795	2.053	28971	2.94	100	100.8	90	110	
B	11	1	No Gas	482.393	2.562	897793	3.54	500	96.5	90	110	
Al	27	1	No Gas	102.119	0.407	1516727	1.47	100	102.1	90	110	
Si	28	1	No Gas	502.198	0.436	3812242	0.87	5000	10.0	90	110	CCV Main CR1-2 Failed
Ag	107	1	No Gas	103.362	1.501	1733184	0.43	100	103.4	90	110	
Cd	111	1	No Gas	101.290	1.460	343258	0.44	100	101.3	90	110	
Sr	88	1	No Gas	102.732	2.893	3170911	1.76	100	102.7	90	110	
Mo	95	1	No Gas	97.063	1.313	619661	0.31	100	97.1	90	110	
Sn	118	1	No Gas	100.700	0.575	992887	0.91	100	100.7	90	110	
Sb	121	1	No Gas	104.953	2.823	1432942	1.68	100	105.0	90	110	
Ba	137	1	No Gas	100.968	0.560	494830	1.05	100	101.0	90	110	
Tl	205	1	No Gas	101.577	0.918	3017217	0.68	100	101.6	90	110	
Tl	203	1	No Gas	95.752	4.521	1213044	3.18	100	95.8	90	110	
Pb	208	1	No Gas	100.393	1.633	4093627	0.47	100	100.4	90	110	
U	238	1	No Gas	98.566	1.502	3984110	0.17	100	98.6	90	110	
Ca	43	2	He	10287.517	0.980	19137	1.17	10000	102.9	90	110	
Sb	121	2	He	102.146	1.326	698316	0.30	100	102.1	90	110	
Ti	47	2	He	103.316	1.450	20008	2.24	100	103.3	90	110	
Cu	63	1	No Gas	99.052	2.890	1303543	1.71	100	99.1	90	110	
Se	82	1	No Gas	101.256	1.820	19934	2.71	100	101.3	90	110	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	840318	1.62	926740	90.67	70	120	
Ge	72	2	He	570465	1.13	584023	97.68	70	120	
Ge	72	1	No Gas	2077950	1.17	2130598	97.53	70	120	
In	115	1	No Gas	2373646	1.15	2422741	97.97	70	120	
Bi	209	1	No Gas	2017350	1.58	1994134	101.16	70	120	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	335_CCB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T23:27:53-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	319CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	0.080	83.7	45120	1.8	0.5	
Be	9	1	No Gas	0.006	78.7	38	39.8	0.5	
V	51	2	He	0.012	69.0	1309	3.6	2.5	
Cr	52	2	He	0.045	27.1	1267	7.2	2.5	
Fe	56	2	He	0.556	29.2	17585	4.6	100	
Se	78	2	He	-0.045	-508.8	217	8.8	2	
As	75	2	He	-0.012	-98.7	76	14.2	2.5	
Ca	44	2	He	-9.383	-24.0	310	23.3	100	
Na	23	2	He	-76.158	-1.1	143091	0.2	100	
Mg	24	2	He	0.620	32.6	1013	11.7	100	
K	39	2	He	-2.432	-61.4	75901	0.5	100	
Mn	55	2	He	0.013	108.1	593	11.0	2.5	
Co	59	2	He	0.004	68.3	117	26.2	2.5	
Ni	60	2	He	0.000	-10204.4	180	11.1	2.5	
Cu	63	2	He	-0.057	-37.6	1113	14.1	2	
Zn	66	2	He	-0.168	-36.3	470	16.6	2.5	
Al	27	2	He	-0.974	-12.9	777	3.9	5	
B	11	1	No Gas	-2.516	-81.6	43987	7.4	0.5	
Al	27	1	No Gas	-1.402	-2.5	33962	0.4	5	
Si	28	1	No Gas	-2.058	-25.1	272708	0.7	10	
Ag	107	1	No Gas	0.001	1056.7	430	24.6	2.5	
Cd	111	1	No Gas	0.007	48.0	27	43.3	1	
Sr	88	1	No Gas	-0.015	-19.4	1057	8.7	2.5	
Mo	95	1	No Gas	0.019	29.3	270	13.4	2.5	
Sn	118	1	No Gas	-0.016	-188.4	1994	13.8	5	
Sb	121	1	No Gas	0.073	35.4	2417	12.9	2.5	
Ba	137	1	No Gas	-0.060	-8.4	223	11.3	2.5	
Tl	205	1	No Gas	0.040	27.1	1263	24.2	1	
Tl	203	1	No Gas	0.036	4.4	487	5.2	1	
Pb	208	1	No Gas	0.010	70.1	3057	7.8	2.5	
U	238	1	No Gas	0.007	32.6	323	28.1	2.5	
Ca	43	2	He	0.583	1884.9	30	66.7	100	
Sb	121	2	He	0.056	28.1	1123	9.6	2.5	
Ti	47	2	He	0.018	333.6	7	173.2	2.5	
Cu	63	1	No Gas	-0.031	-16.5	2147	1.9	2.5	
Se	82	1	No Gas	1.111	143.4	-126	-245.0	2	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag

Continuing Calibration Blank (CCB) Report

Li	6	1	No Gas	858730	1.56	926740	92.66	70	120	
Ge	72	2	He	564086	0.69	584023	96.59	70	120	
Ge	72	1	No Gas	2033372	1.48	2130598	95.44	70	120	
In	115	1	No Gas	2385978	1.24	2422741	98.48	70	120	
Bi	209	1	No Gas	2009711	1.60	1994134	100.78	70	120	

Sample Report

Sample Table

Sample Name	MBLK-183371
Data File Name	336SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T23:29:46-05:00
Sample Type	Sample
Dilution	1
Comment	TW 183371
ISTD Ref FileName	319CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	0.081	0.081	41.11	46488	0.00	2000	
Be	9	1	No Gas	-0.002	-0.002	-107.46	13	-0.01	2000	
V	51	2	He	0.015	0.015	37.13	1382	0.00	2000	
Cr	52	2	He	0.137	0.137	0.05	1974	0.01	2000	
Fe	56	2	He	4.710	4.710	1.57	42894	0.01	200000	
Se	78	2	He	-0.231	-0.231	-150.36	211	-0.11	2000	
As	75	2	He	-0.020	-0.020	-69.59	70	-0.03	2000	
Ca	44	2	He	-1.977	-1.977	-54.90	563	-0.35	200000	
Na	23	2	He	-78.999	-78.999	-1.04	146290	-0.05	200000	
Mg	24	2	He	12.506	12.506	4.01	7919	0.16	200000	
K	39	2	He	-6.197	-6.197	-40.69	76776	-0.01	200000	
Mn	55	2	He	0.289	0.289	6.85	1894	0.02	2000	
Co	59	2	He	0.001	0.001	123.80	87	0.00	2000	
Ni	60	2	He	0.040	0.040	103.55	300	0.01	2000	
Cu	63	2	He	0.071	0.071	27.48	2147	0.00	2000	
Zn	66	2	He	0.531	0.531	7.12	1453	0.04	2000	
Al	27	2	He	5.146	5.146	12.55	2557	0.20	2000	
B	11	1	No Gas	-12.274	-12.274	-1.66	27233	-0.05	2000	
Al	27	1	No Gas	4.779	4.779	3.71	129491	0.00	2000	
Si	28	1	No Gas	95.014	95.014	1.88	1008028	0.01	2000	
Ag	107	1	No Gas	-0.011	-0.011	-13.14	250	0.00	2000	
Cd	111	1	No Gas	0.005	0.005	126.93	23	0.02	2000	
Sr	88	1	No Gas	0.008	0.008	35.75	1907	0.00	2000	
Mo	95	1	No Gas	0.011	0.011	30.07	233	0.00	2000	
Sn	118	1	No Gas	-0.020	-0.020	-73.85	2087	0.00	2000	
Sb	121	1	No Gas	0.006	0.006	170.93	1633	0.00	2000	
Ba	137	1	No Gas	0.063	0.063	14.35	883	0.01	2000	
Tl	205	1	No Gas	0.009	0.009	37.15	383	0.00	2000	
Tl	203	1	No Gas	0.010	0.010	18.49	173	0.01	2000	
Pb	208	1	No Gas	0.018	0.018	42.20	3647	0.00	2000	
U	238	1	No Gas	0.001	0.001	104.28	113	0.00	2000	
Ca	43	2	He	8.584	8.584	140.20	47	18.40	200000	
Sb	121	2	He	0.032	0.032	23.11	1003	0.00	2000	
Ti	47	2	He	0.116	0.116	108.37	27	0.44	2000	
Cu	63	1	No Gas	0.087	0.087	25.90	3944	0.00	2000	
Zn	66	1	No Gas	0.448	0.448	3.32	3444	0.01	2000	
Se	82	1	No Gas	0.803	0.803	268.16	-204	-0.39	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	884396	1.41	926740	95.43	70	120	
Ge	72	2	He	588076	0.79	584023	100.69	70	120	
Ge	72	1	No Gas	2184488	1.20	2130598	102.53	70	120	
In	115	1	No Gas	2545489	0.16	2422741	105.07	70	120	

Sample Report

Bi	209	1	No Gas	2175129	0.63	1994134	109.08	70	120	

Sample Report

Sample Table

Sample Name	LCS-183371
Data File Name	337SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T23:31:39-05:00
Sample Type	Sample
Dilution	1
Comment	TW 183371
ISTD Ref FileName	319CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	0.072	0.072	48.01	47023	0.00	2000	
Be	9	1	No Gas	50.623	50.623	2.90	172107	0.03	2000	
V	51	2	He	50.633	50.633	0.33	313403	0.02	2000	
Cr	52	2	He	50.840	50.840	0.48	362203	0.01	2000	
Fe	56	2	He	5326.079	5326.079	0.54	31705097	0.02	200000	
Se	78	2	He	53.602	53.602	0.64	4675	1.15	2000	
As	75	2	He	54.034	54.034	0.70	55431	0.10	2000	
Ca	44	2	He	5117.756	5117.756	1.39	167938	3.05	200000	
Na	23	2	He	5225.503	5225.503	0.53	5570278	0.09	200000	
Mg	24	2	He	5347.523	5347.523	1.15	3108456	0.17	200000	
K	39	2	He	5310.478	5310.478	0.28	3437725	0.15	200000	
Mn	55	2	He	52.350	52.350	0.25	244101	0.02	2000	
Co	59	2	He	52.609	52.609	0.96	575085	0.01	2000	
Ni	60	2	He	53.288	53.288	0.32	149857	0.04	2000	
Cu	63	2	He	53.327	53.327	0.49	412513	0.01	2000	
Zn	66	2	He	54.959	54.959	0.54	76901	0.07	2000	
Al	27	2	He	128.454	128.454	1.05	37995	0.34	2000	
B	11	1	No Gas	-14.854	-14.854	-3.47	22747	-0.07	2000	
Al	27	1	No Gas	129.291	129.291	4.87	1977938	0.01	2000	
Si	28	1	No Gas	122.137	122.137	1.99	1193262	0.01	2000	
Ag	107	1	No Gas	39.491	39.491	2.12	713535	0.01	2000	
Cd	111	1	No Gas	51.783	51.783	4.11	188965	0.03	2000	
Sr	88	1	No Gas	0.071	0.071	6.34	4007	0.00	2000	
Mo	95	1	No Gas	48.933	48.933	2.09	336564	0.01	2000	
Sn	118	1	No Gas	-0.029	-0.029	-26.79	1997	0.00	2000	
Sb	121	1	No Gas	52.951	52.951	2.22	751589	0.01	2000	
Ba	137	1	No Gas	50.438	50.438	1.07	266545	0.02	2000	
Tl	205	1	No Gas	50.275	50.275	1.03	1610923	0.00	2000	
Tl	203	1	No Gas	48.012	48.012	0.84	656345	0.01	2000	
Pb	208	1	No Gas	49.276	49.276	0.44	2169067	0.00	2000	
U	238	1	No Gas	0.002	0.002	21.86	147	0.00	2000	
Ca	43	2	He	5036.241	5036.241	4.69	9734	51.74	200000	
Sb	121	2	He	53.325	53.325	0.61	378575	0.01	2000	
Ti	47	2	He	52.882	52.882	3.06	10624	0.50	2000	
Cu	63	1	No Gas	52.218	52.218	2.89	714912	0.01	2000	
Zn	66	1	No Gas	54.258	54.258	2.79	203769	0.03	2000	
Se	82	1	No Gas	52.861	52.861	7.42	10619	0.50	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	896941	2.38	926740	96.78	70	120	
Ge	72	2	He	591777	0.30	584023	101.33	70	120	
Ge	72	1	No Gas	2158467	2.58	2130598	101.31	70	120	
In	115	1	No Gas	2557202	2.17	2422741	105.55	70	120	

Sample Report

Bi	209	1	No Gas	2175986	0.85	1994134	109.12	70	120	

Sample Report

Sample Table

Sample Name	HS22081514-22
Data File Name	338SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T23:33:30-05:00
Sample Type	Sample
Dilution	1
Comment	TW 183371
ISTD Ref FileName	319CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	46.817	46.817	0.32	660102	0.01	2000	
Be	9	1	No Gas	1.452	1.452	2.08	4773	0.03	2000	
V	51	2	He	7.086	7.086	0.53	43539	0.02	2000	
Cr	52	2	He	286.055	286.055	0.87	1968359	0.01	2000	
Fe	56	2	He	37218.603	37218.603	0.58	214391823	0.02	200000	
Se	78	2	He	0.927	0.927	34.42	299	0.31	2000	
As	75	2	He	44.617	44.617	1.09	44324	0.10	2000	
Ca	44	2	He	102442.935	102442.935	1.16	3242571	3.16	200000	
Na	23	2	He	324360.204	324360.204	0.33	321234375	0.10	200000	>LDR
Mg	24	2	He	65903.863	65903.863	0.68	37077624	0.18	200000	
K	39	2	He	1122.043	1122.043	0.44	765126	0.15	200000	
Mn	55	2	He	2440.840	2440.840	0.99	10992838	0.02	2000	>LDR
Co	59	2	He	36.066	36.066	0.25	381681	0.01	2000	
Ni	60	2	He	166.753	166.753	0.51	453573	0.04	2000	
Cu	63	2	He	47.652	47.652	0.60	357008	0.01	2000	
Zn	66	2	He	123.842	123.842	0.12	166869	0.07	2000	
Al	27	2	He	403.682	403.682	1.00	113318	0.36	2000	
B	11	1	No Gas	-5.921	-5.921	-0.85	38087	-0.02	2000	
Al	27	1	No Gas	489.335	489.335	19.79	7103758	0.01	2000	
Si	28	1	No Gas	29763.937	29763.937	0.89	210174030	0.01	2000	>LDR
Ag	107	1	No Gas	0.540	0.540	5.36	9357	0.01	2000	
Cd	111	1	No Gas	21.477	21.477	1.94	71906	0.03	2000	
Sr	88	1	No Gas	1653.701	1653.701	1.00	50408183	0.00	2000	
Mo	95	1	No Gas	4.463	4.463	2.32	28287	0.02	2000	
Sn	118	1	No Gas	2.828	2.828	1.61	29601	0.01	2000	
Sb	121	1	No Gas	0.421	0.421	0.80	7265	0.01	2000	
Ba	137	1	No Gas	4744.191	4744.191	0.41	22944687	0.02	2000	>LDR
Tl	205	1	No Gas	0.102	0.102	10.25	3010	0.00	2000	
Tl	203	1	No Gas	0.096	0.096	18.74	1207	0.01	2000	
Pb	208	1	No Gas	2.453	2.453	4.43	99377	0.00	2000	
U	238	1	No Gas	1.344	1.344	2.00	52637	0.00	2000	
Ca	43	2	He	99551.995	99551.995	1.33	185719	53.60	200000	
Sb	121	2	He	0.461	0.461	8.00	3914	0.01	2000	
Ti	47	2	He	3.583	3.583	21.17	700	0.51	2000	
Cu	63	1	No Gas	49.620	49.620	0.41	658558	0.01	2000	
Zn	66	1	No Gas	119.767	119.767	0.24	433901	0.03	2000	
Se	82	1	No Gas	2.892	2.892	10.63	227	1.27	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	863407	1.18	926740	93.17	70	120	
Ge	72	2	He	572872	0.07	584023	98.09	70	120	
Ge	72	1	No Gas	2090975	0.34	2130598	98.14	70	120	
In	115	1	No Gas	2344746	0.48	2422741	96.78	70	120	
Bi	209	1	No Gas	1953123	0.49	1994134	97.94	70	120	

Sample Report

Sample Table

Sample Name	HS22081514-22SD
Data File Name	339SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T23:35:26-05:00
Sample Type	Sample
Dilution	5
Comment	TW 183371
ISTD Ref FileName	319CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	9.783	48.917	1.27	173848	0.01	2000	
Be	9	1	No Gas	0.299	1.493	14.14	1000	0.03	2000	
V	51	2	He	1.338	6.688	4.27	9151	0.01	2000	
Cr	52	2	He	55.728	278.638	0.55	380612	0.01	2000	
Fe	56	2	He	7699.596	38497.979	0.92	43943259	0.02	200000	
Se	78	2	He	-0.018	-0.092	-712.08	221	-0.01	2000	
As	75	2	He	8.968	44.839	1.55	8894	0.10	2000	
Ca	44	2	He	19761.529	98807.644	0.86	620060	3.19	200000	
Na	23	2	He	66180.280	330901.400	1.11	65093914	0.10	200000	
Mg	24	2	He	13374.944	66874.718	1.44	7453877	0.18	200000	
K	39	2	He	224.471	1122.353	1.25	213876	0.10	200000	
Mn	55	2	He	520.917	2604.583	1.02	2324230	0.02	2000	
Co	59	2	He	7.486	37.432	1.29	78536	0.01	2000	
Ni	60	2	He	35.003	175.013	1.36	94446	0.04	2000	
Cu	63	2	He	9.906	49.530	0.97	74738	0.01	2000	
Zn	66	2	He	26.009	130.046	1.35	35263	0.07	2000	
Al	27	2	He	59.977	299.884	3.30	17568	0.34	2000	
B	11	1	No Gas	-13.381	-66.907	-1.34	24697	-0.05	2000	
Al	27	1	No Gas	74.360	371.798	30.56	1117717	0.01	2000	
Si	28	1	No Gas	6011.992	30059.958	1.83	42364323	0.01	2000	>LDR
Ag	107	1	No Gas	0.109	0.547	8.39	2257	0.00	2000	
Cd	111	1	No Gas	4.411	22.053	2.20	14985	0.03	2000	
Sr	88	1	No Gas	331.965	1659.826	0.51	10268538	0.00	2000	
Mo	95	1	No Gas	0.897	4.486	2.03	5888	0.02	2000	
Sn	118	1	No Gas	0.944	4.719	78.83	11501	0.01	2000	
Sb	121	1	No Gas	0.140	0.701	14.70	3384	0.00	2000	
Ba	137	1	No Gas	970.676	4853.378	0.86	4763545	0.02	2000	
Tl	205	1	No Gas	0.023	0.113	21.55	730	0.00	2000	
Tl	203	1	No Gas	0.026	0.132	20.87	357	0.01	2000	
Pb	208	1	No Gas	0.483	2.417	4.06	21851	0.00	2000	
U	238	1	No Gas	0.277	1.387	4.97	11002	0.00	2000	
Ca	43	2	He	19812.384	99061.922	2.71	36632	54.08	200000	
Sb	121	2	He	0.136	0.682	19.51	1673	0.01	2000	
Ti	47	2	He	0.347	1.733	15.15	70	0.50	2000	
Cu	63	1	No Gas	10.260	51.301	1.66	137207	0.01	2000	
Zn	66	1	No Gas	25.818	129.091	3.29	94118	0.03	2000	
Se	82	1	No Gas	0.809	4.046	189.84	-193	-0.42	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	867600	0.89	926740	93.62	70	120	
Ge	72	2	He	567464	0.82	584023	97.16	70	120	
Ge	72	1	No Gas	2075345	1.40	2130598	97.41	70	120	
In	115	1	No Gas	2379138	1.13	2422741	98.20	70	120	

Sample Report

Bi	209	1	No Gas	1970819	0.70	1994134	98.83	70	120	

Sample Report

Sample Table

Sample Name	HS22081514-22MS
Data File Name	340SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T23:37:17-05:00
Sample Type	Sample
Dilution	1
Comment	TW 183371
ISTD Ref FileName	319CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	57.465	57.465	1.20	787031	0.01	2000	
Be	9	1	No Gas	57.574	57.574	0.26	185410	0.03	2000	
V	51	2	He	62.456	62.456	0.99	371604	0.02	2000	
Cr	52	2	He	367.835	367.835	1.15	2514972	0.01	2000	
Fe	56	2	He	46540.279	46540.279	1.26	266400949	0.02	200000	
Se	78	2	He	56.508	56.508	1.32	4729	1.19	2000	
As	75	2	He	110.056	110.056	6.81	108528	0.10	2000	
Ca	44	2	He	116724.240	116724.240	1.88	3671263	3.18	200000	
Na	23	2	He	362409.716	362409.716	0.87	356643341	0.10	200000	>LDR
Mg	24	2	He	78143.717	78143.717	1.19	43687654	0.18	200000	
K	39	2	He	6936.042	6936.042	1.35	4295392	0.16	200000	
Mn	55	2	He	2752.552	2752.552	1.51	12318700	0.02	2000	>LDR
Co	59	2	He	90.744	90.744	2.60	954252	0.01	2000	
Ni	60	2	He	232.973	232.973	1.14	629654	0.04	2000	
Cu	63	2	He	105.540	105.540	0.59	783878	0.01	2000	
Zn	66	2	He	190.546	190.546	0.86	254771	0.07	2000	
Al	27	2	He	1078.899	1078.899	2.85	299179	0.36	2000	
B	11	1	No Gas	-5.056	-5.056	-6.59	39004	-0.01	2000	
Al	27	1	No Gas	1105.795	1105.795	10.83	15648576	0.01	2000	
Si	28	1	No Gas	34890.689	34890.689	2.56	241211383	0.01	2000	>LDR
Ag	107	1	No Gas	41.440	41.440	1.93	678218	0.01	2000	
Cd	111	1	No Gas	78.225	78.225	1.53	258663	0.03	2000	
Sr	88	1	No Gas	1830.143	1830.143	1.60	55098704	0.00	2000	>LDR
Mo	95	1	No Gas	59.670	59.670	1.47	371749	0.02	2000	
Sn	118	1	No Gas	3.915	3.915	2.60	39667	0.01	2000	
Sb	121	1	No Gas	55.548	55.548	1.64	748216	0.01	2000	
Ba	137	1	No Gas	4881.633	4881.633	1.82	23316955	0.02	2000	>LDR
Tl	205	1	No Gas	54.327	54.327	1.81	1531661	0.00	2000	
Tl	203	1	No Gas	52.100	52.100	1.51	626672	0.01	2000	
Pb	208	1	No Gas	55.701	55.701	2.09	2156945	0.00	2000	
U	238	1	No Gas	1.524	1.524	1.73	58505	0.00	2000	
Ca	43	2	He	115743.852	115743.852	0.90	214568	53.94	200000	
Sb	121	2	He	54.976	54.976	1.15	375443	0.01	2000	
Ti	47	2	He	74.299	74.299	5.60	14362	0.52	2000	
Cu	63	1	No Gas	109.857	109.857	2.19	1424679	0.01	2000	
Zn	66	1	No Gas	187.183	187.183	1.50	663199	0.03	2000	
Se	82	1	No Gas	55.813	55.813	3.22	10669	0.52	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	849243	0.23	926740	91.64	70	120	
Ge	72	2	He	569303	0.61	584023	97.48	70	120	
Ge	72	1	No Gas	2048017	1.40	2130598	96.12	70	120	
In	115	1	No Gas	2316177	1.68	2422741	95.60	70	120	
Bi	209	1	No Gas	1914623	0.83	1994134	96.01	70	120	

Sample Report

Sample Table

Sample Name	HS22081514-22MSD
Data File Name	341SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T23:39:11-05:00
Sample Type	Sample
Dilution	1
Comment	TW 183371
ISTD Ref FileName	319CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	56.670	56.670	3.37	781120	0.01	2000	
Be	9	1	No Gas	55.968	55.968	1.74	181256	0.03	2000	
V	51	2	He	60.934	60.934	0.56	362711	0.02	2000	
Cr	52	2	He	366.126	366.126	0.88	2504115	0.01	2000	
Fe	56	2	He	45217.496	45217.496	0.54	258925989	0.02	200000	
Se	78	2	He	55.738	55.738	1.73	4669	1.19	2000	
As	75	2	He	102.629	102.629	0.93	101238	0.10	2000	
Ca	44	2	He	115058.594	115058.594	1.37	3620324	3.18	200000	
Na	23	2	He	353597.398	353597.398	0.74	348100608	0.10	200000	>LDR
Mg	24	2	He	76069.452	76069.452	0.95	42543621	0.18	200000	
K	39	2	He	6705.428	6705.428	0.60	4156818	0.16	200000	
Mn	55	2	He	2655.803	2655.803	0.75	11890551	0.02	2000	>LDR
Co	59	2	He	89.781	89.781	1.01	944409	0.01	2000	
Ni	60	2	He	223.315	223.315	0.83	603774	0.04	2000	
Cu	63	2	He	101.972	101.972	0.51	757695	0.01	2000	
Zn	66	2	He	184.222	184.222	0.94	246417	0.07	2000	
Al	27	2	He	919.507	919.507	5.23	255315	0.36	2000	
B	11	1	No Gas	-5.929	-5.929	-11.24	37652	-0.02	2000	
Al	27	1	No Gas	868.790	868.790	9.33	12489776	0.01	2000	
Si	28	1	No Gas	33258.147	33258.147	3.14	232834423	0.01	2000	>LDR
Ag	107	1	No Gas	40.984	40.984	1.21	660979	0.01	2000	
Cd	111	1	No Gas	76.104	76.104	1.46	247957	0.03	2000	
Sr	88	1	No Gas	1795.862	1795.862	0.87	53276733	0.00	2000	
Mo	95	1	No Gas	58.722	58.722	1.24	360485	0.02	2000	
Sn	118	1	No Gas	3.481	3.481	1.35	34977	0.01	2000	
Sb	121	1	No Gas	53.523	53.523	2.91	729976	0.01	2000	
Ba	137	1	No Gas	4666.191	4666.191	1.57	21961466	0.02	2000	>LDR
Tl	205	1	No Gas	53.462	53.462	0.94	1489003	0.00	2000	
Tl	203	1	No Gas	51.070	51.070	0.62	606849	0.01	2000	
Pb	208	1	No Gas	55.132	55.132	1.31	2108933	0.00	2000	
U	238	1	No Gas	1.484	1.484	1.07	56289	0.00	2000	
Ca	43	2	He	111697.386	111697.386	1.46	207130	53.93	200000	
Sb	121	2	He	53.651	53.651	2.29	366508	0.01	2000	
Ti	47	2	He	70.637	70.637	5.85	13661	0.52	2000	
Cu	63	1	No Gas	106.321	106.321	2.05	1396341	0.01	2000	
Zn	66	1	No Gas	181.027	181.027	2.54	649459	0.03	2000	
Se	82	1	No Gas	52.543	52.543	2.18	10152	0.52	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	854263	2.25	926740	92.18	70	120	
Ge	72	2	He	569503	0.85	584023	97.51	70	120	
Ge	72	1	No Gas	2074246	2.56	2130598	97.36	70	120	
In	115	1	No Gas	2282104	1.31	2422741	94.20	70	120	
Bi	209	1	No Gas	1891396	1.33	1994134	94.85	70	120	

Sample Report

Sample Table

Sample Name	HS22081514-22PDS
Data File Name	342SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T23:41:05-05:00
Sample Type	Sample
Dilution	1
Comment	TW 183371
ISTD Ref FileName	319CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	54.655	54.655	1.65	781272	0.01	2000	
Be	9	1	No Gas	108.208	108.208	1.03	362656	0.03	2000	
V	51	2	He	114.666	114.666	0.29	678120	0.02	2000	
Cr	52	2	He	413.365	413.365	1.35	2813337	0.01	2000	
Fe	56	2	He	50998.593	50998.593	0.70	290607989	0.02	200000	
Se	78	2	He	109.833	109.833	1.45	8940	1.23	2000	
As	75	2	He	160.426	160.426	0.69	157432	0.10	2000	
Ca	44	2	He	120826.698	120826.698	0.82	3783329	3.19	200000	
Na	23	2	He	364240.800	364240.800	1.07	356824688	0.10	200000	>LDR
Mg	24	2	He	82987.011	82987.011	0.90	46186439	0.18	200000	
K	39	2	He	12265.224	12265.224	0.68	7501888	0.16	200000	
Mn	55	2	He	2759.255	2759.255	0.91	12293237	0.02	2000	>LDR
Co	59	2	He	138.792	138.792	1.42	1452890	0.01	2000	
Ni	60	2	He	281.665	281.665	1.05	757769	0.04	2000	
Cu	63	2	He	155.509	155.509	3.13	1148995	0.01	2000	
Zn	66	2	He	239.945	239.945	0.46	319186	0.08	2000	
Al	27	2	He	855.086	855.086	4.20	236272	0.36	2000	
B	11	1	No Gas	-6.493	-6.493	-4.77	37931	-0.02	2000	
Al	27	1	No Gas	891.161	891.161	8.56	12706808	0.01	2000	
Si	28	1	No Gas	33796.390	33796.390	0.86	235195010	0.01	2000	>LDR
Ag	107	1	No Gas	106.369	106.369	0.30	1713989	0.01	2000	
Cd	111	1	No Gas	129.868	129.868	0.37	422922	0.03	2000	
Sr	88	1	No Gas	1791.023	1791.023	1.13	53100888	0.00	2000	
Mo	95	1	No Gas	113.432	113.432	1.06	695812	0.02	2000	
Sn	118	1	No Gas	2.062	2.062	1.67	21548	0.01	2000	
Sb	121	1	No Gas	110.896	110.896	1.38	1501979	0.01	2000	
Ba	137	1	No Gas	4307.255	4307.255	1.50	20260619	0.02	2000	>LDR
Tl	205	1	No Gas	107.172	107.172	2.66	2941749	0.00	2000	
Tl	203	1	No Gas	99.886	99.886	5.03	1169435	0.01	2000	
Pb	208	1	No Gas	111.028	111.028	2.33	4183754	0.00	2000	
U	238	1	No Gas	1.465	1.465	1.77	54763	0.00	2000	
Ca	43	2	He	118067.449	118067.449	0.23	217890	54.19	200000	
Sb	121	2	He	108.501	108.501	0.39	736926	0.01	2000	
Ti	47	2	He	133.007	133.007	6.15	25583	0.52	2000	
Cu	63	1	No Gas	158.220	158.220	1.85	2064142	0.01	2000	
Zn	66	1	No Gas	235.241	235.241	0.27	838472	0.03	2000	
Se	82	1	No Gas	109.628	109.628	2.88	21432	0.51	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	883914	1.01	926740	95.38	70	120	
Ge	72	2	He	566723	0.34	584023	97.04	70	120	
Ge	72	1	No Gas	2061070	0.31	2130598	96.74	70	120	
In	115	1	No Gas	2280742	1.09	2422741	94.14	70	120	
Bi	209	1	No Gas	1864534	1.62	1994134	93.50	70	120	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	343_CCV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T23:42:57-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	319CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Li	7	1	No Gas	104.650	5.772	1478818	2.32	100	104.6	90	110	
Be	9	1	No Gas	98.257	4.369	334905	0.63	100	98.3	90	110	
V	51	2	He	98.009	0.564	586611	0.56	100	98.0	90	110	
Cr	52	2	He	99.508	1.251	685934	0.58	100	99.5	90	110	
Fe	56	2	He	10223.890	1.246	58954264	0.78	10000	102.2	90	110	
Se	78	2	He	100.237	2.560	8274	1.51	100	100.2	90	110	
As	75	2	He	102.954	1.098	102249	0.17	100	103.0	90	110	
Ca	44	2	He	10111.545	1.181	320882	0.59	10000	101.1	90	110	
Na	23	2	He	10298.923	1.251	10422117	0.17	10000	103.0	90	110	
Mg	24	2	He	10258.592	0.414	5777273	0.71	10000	102.6	90	110	
K	39	2	He	10247.560	0.787	6354392	0.66	10000	102.5	90	110	
Mn	55	2	He	101.603	0.946	458506	0.18	100	101.6	90	110	
Co	59	2	He	103.041	2.134	1091227	1.50	100	103.0	90	110	
Ni	60	2	He	102.086	0.999	277987	0.36	100	102.1	90	110	
Cu	63	2	He	100.798	0.050	754137	1.01	100	100.8	90	110	
Zn	66	2	He	103.918	1.074	140262	1.21	100	103.9	90	110	
Al	27	2	He	101.222	2.213	29231	1.14	100	101.2	90	110	
B	11	1	No Gas	479.550	2.246	955406	1.67	500	95.9	90	110	
Al	27	1	No Gas	107.314	1.230	1587698	0.41	100	107.3	90	110	
Si	28	1	No Gas	531.253	1.133	4007489	0.65	5000	10.6	90	110	CCV Main CR1-2 Failed
Ag	107	1	No Gas	102.958	2.325	1704020	1.43	100	103.0	90	110	
Cd	111	1	No Gas	101.209	2.122	338524	0.48	100	101.2	90	110	
Sr	88	1	No Gas	101.857	1.628	3103553	0.53	100	101.9	90	110	
Mo	95	1	No Gas	97.634	1.738	615220	0.46	100	97.6	90	110	
Sn	118	1	No Gas	101.065	2.154	983430	0.05	100	101.1	90	110	
Sb	121	1	No Gas	103.227	0.968	1406764	0.97	100	103.2	90	110	
Ba	137	1	No Gas	102.700	1.828	496744	0.80	100	102.7	90	110	
Tl	205	1	No Gas	102.877	1.397	2980307	0.42	100	102.9	90	110	
Tl	203	1	No Gas	98.614	1.198	1219040	2.15	100	98.6	90	110	
Pb	208	1	No Gas	100.395	2.219	3992436	0.69	100	100.4	90	110	
U	238	1	No Gas	98.630	2.557	3888089	1.50	100	98.6	90	110	
Ca	43	2	He	10331.268	0.760	19317	0.94	10000	103.3	90	110	
Sb	121	2	He	101.702	0.344	698939	1.30	100	101.7	90	110	
Ti	47	2	He	104.281	0.880	20299	1.76	100	104.3	90	110	
Cu	63	1	No Gas	102.059	0.389	1340593	1.20	100	102.1	90	110	
Se	82	1	No Gas	97.289	2.610	19095	1.99	100	97.3	90	110	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	899842	3.68	926740	97.10	70	120	
Ge	72	2	He	573403	1.05	584023	98.18	70	120	
Ge	72	1	No Gas	2073669	0.81	2130598	97.33	70	120	
In	115	1	No Gas	2343215	2.17	2422741	96.72	70	120	
Bi	209	1	No Gas	1967623	1.80	1994134	98.67	70	120	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	344_CCB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T23:44:45-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	319CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	0.099	54.5	48655	0.9	0.5	
Be	9	1	No Gas	0.017	29.1	80	22.5	0.5	
V	51	2	He	-0.079	-12.3	780	5.8	2.5	
Cr	52	2	He	0.035	21.2	1207	2.7	2.5	
Fe	56	2	He	1.650	8.1	23938	1.6	100	
Se	78	2	He	-0.104	-197.3	214	7.3	2	
As	75	2	He	-0.004	-465.8	83	20.8	2.5	
Ca	44	2	He	-4.031	-33.5	480	10.4	100	
Na	23	2	He	7.777	69.1	226291	0.8	100	
Mg	24	2	He	2.775	10.2	2220	6.5	100	
K	39	2	He	-0.654	-140.1	77470	1.0	100	
Mn	55	2	He	0.048	9.8	750	2.3	2.5	
Co	59	2	He	0.005	22.6	120	8.3	2.5	
Ni	60	2	He	0.021	75.4	237	17.1	2.5	
Cu	63	2	He	-0.053	-64.4	1150	20.4	2	
Zn	66	2	He	-0.113	-84.6	547	22.6	2.5	
Al	27	2	He	-1.175	-13.9	727	7.1	5	
B	11	1	No Gas	-6.269	-30.3	39962	9.9	0.5	
Al	27	1	No Gas	-1.566	-6.7	33000	3.4	5	
Si	28	1	No Gas	2.209	72.4	314763	1.9	10	
Ag	107	1	No Gas	0.002	286.3	467	25.6	2.5	
Cd	111	1	No Gas	0.013	13.7	47	12.4	1	
Sr	88	1	No Gas	0.020	19.8	2164	6.2	2.5	
Mo	95	1	No Gas	0.018	58.2	263	25.3	2.5	
Sn	118	1	No Gas	0.024	74.3	2414	7.4	5	
Sb	121	1	No Gas	0.144	11.9	3514	5.2	2.5	
Ba	137	1	No Gas	0.015	119.0	597	14.1	2.5	
Tl	205	1	No Gas	0.048	15.5	1490	14.1	1	
Tl	203	1	No Gas	0.052	12.9	677	13.3	1	
Pb	208	1	No Gas	0.011	30.8	3047	3.4	2.5	
U	238	1	No Gas	0.006	35.9	283	29.6	2.5	
Ca	43	2	He	-10.308	-53.3	10	100.0	100	
Sb	121	2	He	0.104	3.6	1453	0.8	2.5	
Ti	47	2	He	0.105	116.2	23	99.0	2.5	
Cu	63	1	No Gas	0.003	558.5	2697	8.6	2.5	
Se	82	1	No Gas	0.907	175.4	-176	-186.4	2	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag

Continuing Calibration Blank (CCB) Report

Li	6	1	No Gas	920768	0.71	926740	99.36	70	120	
Ge	72	2	He	567739	1.59	584023	97.21	70	120	
Ge	72	1	No Gas	2120207	1.73	2130598	99.51	70	120	
In	115	1	No Gas	2414027	0.56	2422741	99.64	70	120	
Bi	209	1	No Gas	1984162	1.06	1994134	99.50	70	120	

Sample Report

Sample Table

Sample Name	HS22081514-01
Data File Name	345SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T23:46:38-05:00
Sample Type	Sample
Dilution	1
Comment	TW 183371
ISTD Ref FileName	319CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	7.370	7.370	2.18	154800	0.00	2000	
Be	9	1	No Gas	0.088	0.088	2.62	337	0.03	2000	
V	51	2	He	4.580	4.580	2.08	29722	0.02	2000	
Cr	52	2	He	93.165	93.165	12.89	667173	0.01	2000	
Fe	56	2	He	9537.733	9537.733	1.25	57135937	0.02	200000	
Se	78	2	He	0.154	0.154	227.64	246	0.06	2000	
As	75	2	He	5.327	5.327	1.37	5583	0.10	2000	
Ca	44	2	He	12833.150	12833.150	0.81	422913	3.03	200000	
Na	23	2	He	130893.183	130893.183	1.35	134922121	0.10	200000	
Mg	24	2	He	12445.364	12445.364	1.85	7280530	0.17	200000	
K	39	2	He	1249.354	1249.354	1.25	876529	0.14	200000	
Mn	55	2	He	297.656	297.656	1.07	1394378	0.02	2000	
Co	59	2	He	11.798	11.798	1.65	129870	0.01	2000	
Ni	60	2	He	44.386	44.386	2.41	125660	0.04	2000	
Cu	63	2	He	50.919	50.919	1.27	396534	0.01	2000	
Zn	66	2	He	148.336	148.336	1.81	207663	0.07	2000	
Al	27	2	He	1308.530	1308.530	0.89	379468	0.34	2000	
B	11	1	No Gas	39.441	39.441	3.37	131747	0.03	2000	
Al	27	1	No Gas	1218.792	1218.792	1.15	18165892	0.01	2000	
Si	28	1	No Gas	17708.164	17708.164	0.68	129096271	0.01	2000	>LDR
Ag	107	1	No Gas	0.001	0.001	420.02	453	0.00	2000	
Cd	111	1	No Gas	0.051	0.051	16.79	183	0.03	2000	
Sr	88	1	No Gas	228.289	228.289	0.56	7331165	0.00	2000	
Mo	95	1	No Gas	3.089	3.089	1.82	20667	0.01	2000	
Sn	118	1	No Gas	0.208	0.208	12.94	4357	0.00	2000	
Sb	121	1	No Gas	0.281	0.281	9.72	5505	0.01	2000	
Ba	137	1	No Gas	163.519	163.519	0.73	833480	0.02	2000	
Tl	205	1	No Gas	0.033	0.033	6.53	1073	0.00	2000	
Tl	203	1	No Gas	0.031	0.031	4.58	430	0.01	2000	
Pb	208	1	No Gas	0.679	0.679	5.29	30810	0.00	2000	
U	238	1	No Gas	0.195	0.195	3.88	8063	0.00	2000	
Ca	43	2	He	13157.108	13157.108	2.63	25547	51.50	200000	
Sb	121	2	He	0.317	0.317	6.83	3047	0.01	2000	
Ti	47	2	He	33.441	33.441	12.63	6769	0.49	2000	
Cu	63	1	No Gas	51.363	51.363	0.19	702997	0.01	2000	
Zn	66	1	No Gas	147.365	147.365	0.55	550256	0.03	2000	
Se	82	1	No Gas	1.089	1.089	165.51	-141	-0.78	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	946306	1.59	926740	102.11	70	120	
Ge	72	2	He	595684	0.96	584023	102.00	70	120	
Ge	72	1	No Gas	2156648	0.12	2130598	101.22	70	120	
In	115	1	No Gas	2469789	1.11	2422741	101.94	70	120	
Bi	209	1	No Gas	2050977	1.87	1994134	102.85	70	120	

Sample Report

Sample Table

Sample Name	HS22081514-02
Data File Name	346SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T23:48:35-05:00
Sample Type	Sample
Dilution	1
Comment	TW 183371
ISTD Ref FileName	319CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	18.430	18.430	2.08	308986	0.01	2000	
Be	9	1	No Gas	0.094	0.094	4.53	352	0.03	2000	
V	51	2	He	0.958	0.958	4.21	7215	0.01	2000	
Cr	52	2	He	13.053	13.053	0.54	93887	0.01	2000	
Fe	56	2	He	454.415	454.415	1.00	2722952	0.02	200000	
Se	78	2	He	0.401	0.401	14.36	265	0.15	2000	
As	75	2	He	0.517	0.517	5.52	621	0.08	2000	
Ca	44	2	He	16732.512	16732.512	0.78	548449	3.05	200000	
Na	23	2	He	144425.844	144425.844	0.26	148105514	0.10	200000	
Mg	24	2	He	15133.484	15133.484	0.81	8808742	0.17	200000	
K	39	2	He	982.600	982.600	1.58	703265	0.14	200000	
Mn	55	2	He	89.067	89.067	1.52	415522	0.02	2000	
Co	59	2	He	2.271	2.271	2.30	24940	0.01	2000	
Ni	60	2	He	15.523	15.523	0.88	43854	0.04	2000	
Cu	63	2	He	3.096	3.096	1.67	25504	0.01	2000	
Zn	66	2	He	14.024	14.024	3.11	20195	0.07	2000	
Al	27	2	He	28.782	28.782	1.96	9377	0.31	2000	
B	11	1	No Gas	102.246	102.246	2.40	252115	0.04	2000	
Al	27	1	No Gas	28.541	28.541	6.32	481277	0.01	2000	
Si	28	1	No Gas	26115.353	26115.353	0.77	190391684	0.01	2000	>LDR
Ag	107	1	No Gas	0.001	0.001	550.69	447	0.00	2000	
Cd	111	1	No Gas	0.098	0.098	19.41	343	0.03	2000	
Sr	88	1	No Gas	332.587	332.587	1.32	10516544	0.00	2000	
Mo	95	1	No Gas	0.280	0.280	6.72	1980	0.01	2000	
Sn	118	1	No Gas	0.010	0.010	136.83	2294	0.00	2000	
Sb	121	1	No Gas	0.088	0.088	12.52	2784	0.00	2000	
Ba	137	1	No Gas	96.739	96.739	0.59	485781	0.02	2000	
Tl	205	1	No Gas	0.017	0.017	3.48	573	0.00	2000	
Tl	203	1	No Gas	0.016	0.016	12.09	237	0.01	2000	
Pb	208	1	No Gas	0.089	0.089	5.47	6324	0.00	2000	
U	238	1	No Gas	0.112	0.112	4.22	4604	0.00	2000	
Ca	43	2	He	17091.570	17091.570	1.48	33013	51.77	200000	
Sb	121	2	He	0.094	0.094	2.37	1447	0.01	2000	
Ti	47	2	He	0.282	0.282	30.95	60	0.47	2000	
Cu	63	1	No Gas	4.016	4.016	1.46	57512	0.01	2000	
Zn	66	1	No Gas	14.194	14.194	1.52	54607	0.03	2000	
Se	82	1	No Gas	1.880	1.880	40.05	24	7.83	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	930637	2.08	926740	100.42	70	120	
Ge	72	2	He	592674	0.54	584023	101.48	70	120	
Ge	72	1	No Gas	2158457	0.92	2130598	101.31	70	120	
In	115	1	No Gas	2431964	0.19	2422741	100.38	70	120	
Bi	209	1	No Gas	2024021	1.74	1994134	101.50	70	120	

Sample Report

Sample Table

Sample Name	HS22081514-03
Data File Name	347SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T23:50:30-05:00
Sample Type	Sample
Dilution	1
Comment	TW 183371
ISTD Ref FileName	319CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	7.777	7.777	3.87	156600	0.00	2000	
Be	9	1	No Gas	0.431	0.431	4.46	1527	0.03	2000	
V	51	2	He	8.252	8.252	3.24	53034	0.02	2000	
Cr	52	2	He	8.605	8.605	2.14	63173	0.01	2000	
Fe	56	2	He	3215.200	3215.200	2.79	19464030	0.02	200000	
Se	78	2	He	0.338	0.338	89.61	264	0.13	2000	
As	75	2	He	0.823	0.823	6.24	950	0.09	2000	
Ca	44	2	He	1784.503	1784.503	0.23	59947	2.98	200000	
Na	23	2	He	22658.991	22658.991	0.83	23780851	0.10	200000	
Mg	24	2	He	2098.789	2098.789	0.78	1240644	0.17	200000	
K	39	2	He	1465.322	1465.322	0.34	1024075	0.14	200000	
Mn	55	2	He	49.897	49.897	0.63	236548	0.02	2000	
Co	59	2	He	2.701	2.701	2.69	30080	0.01	2000	
Ni	60	2	He	8.762	8.762	0.89	25210	0.03	2000	
Cu	63	2	He	7.546	7.546	1.22	60742	0.01	2000	
Zn	66	2	He	31.141	31.141	1.60	44614	0.07	2000	
Al	27	2	He	6138.519	6138.519	2.39	1793844	0.34	2000	>LDR
B	11	1	No Gas	-3.137	-3.137	-12.93	46074	-0.01	2000	
Al	27	1	No Gas	5086.022	5086.022	2.97	76273747	0.01	2000	>LDR
Si	28	1	No Gas	25672.906	25672.906	1.50	188639684	0.01	2000	>LDR
Ag	107	1	No Gas	0.008	0.008	74.20	570	0.00	2000	
Cd	111	1	No Gas	0.055	0.055	9.29	197	0.03	2000	
Sr	88	1	No Gas	42.462	42.462	2.86	1358925	0.00	2000	
Mo	95	1	No Gas	0.136	0.136	5.29	1050	0.01	2000	
Sn	118	1	No Gas	0.125	0.125	5.23	3487	0.00	2000	
Sb	121	1	No Gas	0.120	0.120	19.02	3257	0.00	2000	
Ba	137	1	No Gas	107.420	107.420	1.26	545404	0.02	2000	
Tl	205	1	No Gas	0.043	0.043	9.56	1400	0.00	2000	
Tl	203	1	No Gas	0.040	0.040	12.83	550	0.01	2000	
Pb	208	1	No Gas	1.129	1.129	2.71	50370	0.00	2000	
U	238	1	No Gas	0.115	0.115	12.97	4858	0.00	2000	
Ca	43	2	He	1652.050	1652.050	3.67	3267	50.57	200000	
Sb	121	2	He	0.151	0.151	11.89	1884	0.01	2000	
Ti	47	2	He	138.758	138.758	1.55	28335	0.49	2000	
Cu	63	1	No Gas	7.555	7.555	1.43	106619	0.01	2000	
Zn	66	1	No Gas	30.357	30.357	1.89	115710	0.03	2000	
Se	82	1	No Gas	1.119	1.119	101.85	-137	-0.82	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	922648	2.71	926740	99.56	70	120	
Ge	72	2	He	601604	0.82	584023	103.01	70	120	
Ge	72	1	No Gas	2175356	1.38	2130598	102.10	70	120	
In	115	1	No Gas	2459610	2.31	2422741	101.52	70	120	

Sample Report

Bi	209	1	No Gas	2087240	1.21	1994134	104.67	70	120	

Sample Report

Sample Table

Sample Name	HS22081514-04
Data File Name	348SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T23:52:24-05:00
Sample Type	Sample
Dilution	1
Comment	TW 183371
ISTD Ref FileName	319CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	14.140	14.140	3.19	241282	0.01	2000	
Be	9	1	No Gas	0.203	0.203	7.90	715	0.03	2000	
V	51	2	He	6.598	6.598	1.46	41956	0.02	2000	
Cr	52	2	He	45.198	45.198	1.19	322038	0.01	2000	
Fe	56	2	He	6029.518	6029.518	0.81	35882239	0.02	200000	
Se	78	2	He	0.190	0.190	282.53	247	0.08	2000	
As	75	2	He	2.200	2.200	4.43	2344	0.09	2000	
Ca	44	2	He	14805.214	14805.214	1.00	484509	3.06	200000	
Na	23	2	He	75299.140	75299.140	1.35	77188659	0.10	200000	
Mg	24	2	He	11913.810	11913.810	0.92	6922834	0.17	200000	
K	39	2	He	1584.403	1584.403	0.17	1082390	0.15	200000	
Mn	55	2	He	377.913	377.913	1.05	1758241	0.02	2000	
Co	59	2	He	2.936	2.936	1.72	32155	0.01	2000	
Ni	60	2	He	7.323	7.323	2.86	20753	0.04	2000	
Cu	63	2	He	18.262	18.262	0.71	142295	0.01	2000	
Zn	66	2	He	71.475	71.475	1.29	99768	0.07	2000	
Al	27	2	He	1847.668	1847.668	1.31	531719	0.35	2000	>LDR
B	11	1	No Gas	-4.439	-4.439	-9.67	42718	-0.01	2000	
Al	27	1	No Gas	1825.408	1825.408	0.42	27326474	0.01	2000	>LDR
Si	28	1	No Gas	22522.789	22522.789	0.69	164995264	0.01	2000	>LDR
Ag	107	1	No Gas	0.016	0.016	28.97	707	0.00	2000	
Cd	111	1	No Gas	0.218	0.218	8.74	760	0.03	2000	
Sr	88	1	No Gas	284.921	284.921	1.03	9011993	0.00	2000	
Mo	95	1	No Gas	0.436	0.436	10.23	3000	0.01	2000	
Sn	118	1	No Gas	0.127	0.127	16.08	3474	0.00	2000	
Sb	121	1	No Gas	0.150	0.150	9.91	3677	0.00	2000	
Ba	137	1	No Gas	460.294	460.294	1.09	2310027	0.02	2000	
Tl	205	1	No Gas	0.026	0.026	10.22	843	0.00	2000	
Tl	203	1	No Gas	0.025	0.025	21.17	350	0.01	2000	
Pb	208	1	No Gas	1.708	1.708	0.52	72632	0.00	2000	
U	238	1	No Gas	0.224	0.224	1.61	9137	0.00	2000	
Ca	43	2	He	15168.824	15168.824	2.75	29248	51.86	200000	
Sb	121	2	He	0.191	0.191	7.99	2134	0.01	2000	
Ti	47	2	He	30.554	30.554	4.11	6138	0.50	2000	
Cu	63	1	No Gas	18.488	18.488	0.51	256160	0.01	2000	
Zn	66	1	No Gas	69.931	69.931	0.26	263444	0.03	2000	
Se	82	1	No Gas	1.242	1.242	17.10	-109	-1.14	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	904882	2.22	926740	97.64	70	120	
Ge	72	2	He	591650	0.63	584023	101.31	70	120	
Ge	72	1	No Gas	2168328	0.76	2130598	101.77	70	120	
In	115	1	No Gas	2432622	0.12	2422741	100.41	70	120	

Sample Report

Bi	209	1	No Gas	2027607	0.51	1994134	101.68	70	120	

Sample Report

Sample Table

Sample Name	HS22081514-05
Data File Name	349SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T23:54:16-05:00
Sample Type	Sample
Dilution	1
Comment	TW 183371
ISTD Ref FileName	319CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	11.077	11.077	0.22	199641	0.01	2000	
Be	9	1	No Gas	0.088	0.088	19.01	323	0.03	2000	
V	51	2	He	1.513	1.513	1.40	10527	0.01	2000	
Cr	52	2	He	93.128	93.128	0.92	656498	0.01	2000	
Fe	56	2	He	465.127	465.127	1.43	2756759	0.02	200000	
Se	78	2	He	0.030	0.030	263.38	232	0.01	2000	
As	75	2	He	0.444	0.444	8.21	541	0.08	2000	
Ca	44	2	He	17832.270	17832.270	1.37	578146	3.08	200000	
Na	23	2	He	92762.708	92762.708	1.99	94173519	0.10	200000	
Mg	24	2	He	12837.508	12837.508	0.69	7392073	0.17	200000	
K	39	2	He	1193.289	1193.289	1.58	827617	0.14	200000	
Mn	55	2	He	63.208	63.208	0.47	291889	0.02	2000	
Co	59	2	He	0.468	0.468	3.11	5141	0.01	2000	
Ni	60	2	He	18.334	18.334	0.29	51206	0.04	2000	
Cu	63	2	He	6.128	6.128	0.80	48383	0.01	2000	
Zn	66	2	He	14.856	14.856	3.98	21117	0.07	2000	
Al	27	2	He	8.382	8.382	3.04	3470	0.24	2000	
B	11	1	No Gas	1.381	1.381	14.06	53906	0.00	2000	
Al	27	1	No Gas	8.392	8.392	1.71	182027	0.00	2000	
Si	28	1	No Gas	21668.112	21668.112	0.88	158315841	0.01	2000	>LDR
Ag	107	1	No Gas	-0.002	-0.002	-81.62	383	0.00	2000	
Cd	111	1	No Gas	0.135	0.135	13.52	470	0.03	2000	
Sr	88	1	No Gas	361.147	361.147	1.55	11334311	0.00	2000	
Mo	95	1	No Gas	1.058	1.058	4.14	7015	0.02	2000	
Sn	118	1	No Gas	0.282	0.282	4.13	4998	0.01	2000	
Sb	121	1	No Gas	0.138	0.138	9.68	3497	0.00	2000	
Ba	137	1	No Gas	510.005	510.005	2.04	2539585	0.02	2000	
Tl	205	1	No Gas	0.011	0.011	30.30	420	0.00	2000	
Tl	203	1	No Gas	0.010	0.010	57.99	163	0.01	2000	
Pb	208	1	No Gas	0.130	0.130	3.67	8061	0.00	2000	
U	238	1	No Gas	0.088	0.088	3.83	3641	0.00	2000	
Ca	43	2	He	18090.717	18090.717	2.68	34560	52.35	200000	
Sb	121	2	He	0.147	0.147	18.27	1807	0.01	2000	
Ti	47	2	He	0.167	0.167	75.15	37	0.45	2000	
Cu	63	1	No Gas	6.619	6.619	0.87	93198	0.01	2000	
Zn	66	1	No Gas	14.628	14.628	0.97	56334	0.03	2000	
Se	82	1	No Gas	-0.154	-0.154	-672.41	-401	0.04	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	907125	0.95	926740	97.88	70	120	
Ge	72	2	He	586309	0.93	584023	100.39	70	120	
Ge	72	1	No Gas	2162502	1.03	2130598	101.50	70	120	
In	115	1	No Gas	2414031	0.95	2422741	99.64	70	120	

Sample Report

Bi	209	1	No Gas	2045541	1.07	1994134	102.58	70	120	

Sample Report

Sample Table

Sample Name	HS22081514-06
Data File Name	350SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T23:56:10-05:00
Sample Type	Sample
Dilution	1
Comment	TW 183371
ISTD Ref FileName	319CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	11.235	11.235	3.56	200920	0.01	2000	
Be	9	1	No Gas	0.076	0.076	15.80	278	0.03	2000	
V	51	2	He	0.943	0.943	2.14	7089	0.01	2000	
Cr	52	2	He	10.654	10.654	1.67	76446	0.01	2000	
Fe	56	2	He	70.583	70.583	1.05	433674	0.02	200000	
Se	78	2	He	-0.312	-0.312	-99.08	205	-0.15	2000	
As	75	2	He	0.288	0.288	13.70	384	0.07	2000	
Ca	44	2	He	17842.002	17842.002	1.08	581961	3.07	200000	
Na	23	2	He	93005.160	93005.160	0.95	94996289	0.10	200000	
Mg	24	2	He	12946.035	12946.035	1.64	7499017	0.17	200000	
K	39	2	He	1203.225	1203.225	0.38	838941	0.14	200000	
Mn	55	2	He	63.017	63.017	0.90	292754	0.02	2000	
Co	59	2	He	0.448	0.448	6.33	4954	0.01	2000	
Ni	60	2	He	16.492	16.492	1.78	46352	0.04	2000	
Cu	63	2	He	1.537	1.537	4.89	13413	0.01	2000	
Zn	66	2	He	8.745	8.745	1.97	12806	0.07	2000	
Al	27	2	He	7.312	7.312	7.95	3184	0.23	2000	
B	11	1	No Gas	1.823	1.823	40.42	54510	0.00	2000	
Al	27	1	No Gas	6.972	6.972	2.85	161693	0.00	2000	
Si	28	1	No Gas	21662.017	21662.017	1.31	159066774	0.01	2000	>LDR
Ag	107	1	No Gas	-0.008	-0.008	-59.83	290	0.00	2000	
Cd	111	1	No Gas	0.133	0.133	7.85	467	0.03	2000	
Sr	88	1	No Gas	358.930	358.930	1.35	11336529	0.00	2000	
Mo	95	1	No Gas	0.258	0.258	3.49	1833	0.01	2000	
Sn	118	1	No Gas	0.024	0.024	73.78	2430	0.00	2000	
Sb	121	1	No Gas	0.019	0.019	43.26	1820	0.00	2000	
Ba	137	1	No Gas	496.957	496.957	0.35	2490816	0.02	2000	
Tl	205	1	No Gas	0.011	0.011	26.04	407	0.00	2000	
Tl	203	1	No Gas	0.018	0.018	25.21	253	0.01	2000	
Pb	208	1	No Gas	0.001	0.001	304.00	2690	0.00	2000	
U	238	1	No Gas	0.070	0.070	5.07	2840	0.00	2000	
Ca	43	2	He	18627.041	18627.041	1.44	35800	52.03	200000	
Sb	121	2	He	0.027	0.027	11.75	970	0.00	2000	
Ti	47	2	He	0.167	0.167	46.99	37	0.46	2000	
Cu	63	1	No Gas	2.041	2.041	1.42	30768	0.01	2000	
Zn	66	1	No Gas	8.307	8.307	1.43	32907	0.03	2000	
Se	82	1	No Gas	2.537	2.537	42.99	161	1.58	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	903621	3.26	926740	97.51	70	120	
Ge	72	2	He	589861	1.30	584023	101.00	70	120	
Ge	72	1	No Gas	2173395	0.79	2130598	102.01	70	120	
In	115	1	No Gas	2429445	1.27	2422741	100.28	70	120	

Sample Report

Bi	209	1	No Gas	1998483	0.51	1994134	100.22	70	120	

Sample Report

Sample Table

Sample Name	HS22081514-07
Data File Name	351SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T23:58:04-05:00
Sample Type	Sample
Dilution	1
Comment	TW 183371
ISTD Ref FileName	319CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	5.987	5.987	2.92	129707	0.00	2000	
Be	9	1	No Gas	0.332	0.332	5.12	1165	0.03	2000	
V	51	2	He	1.254	1.254	1.94	9035	0.01	2000	
Cr	52	2	He	168.455	168.455	1.96	1198119	0.01	2000	
Fe	56	2	He	2437.270	2437.270	0.85	14521252	0.02	200000	
Se	78	2	He	-0.344	-0.344	-70.15	203	-0.17	2000	
As	75	2	He	0.992	0.992	2.07	1108	0.09	2000	
Ca	44	2	He	4716.709	4716.709	0.99	154870	3.05	200000	
Na	23	2	He	80361.502	80361.502	1.28	82407855	0.10	200000	
Mg	24	2	He	3921.862	3921.862	1.11	2280568	0.17	200000	
K	39	2	He	824.817	824.817	0.79	602688	0.14	200000	
Mn	55	2	He	46.333	46.333	0.99	216170	0.02	2000	
Co	59	2	He	1.164	1.164	3.04	12796	0.01	2000	
Ni	60	2	He	78.224	78.224	1.06	219960	0.04	2000	
Cu	63	2	He	131.691	131.691	0.53	1016654	0.01	2000	
Zn	66	2	He	54.411	54.411	0.74	76167	0.07	2000	
Al	27	2	He	18.606	18.606	0.72	6442	0.29	2000	
B	11	1	No Gas	-7.256	-7.256	-5.96	37592	-0.02	2000	
Al	27	1	No Gas	17.902	17.902	3.88	320104	0.01	2000	
Si	28	1	No Gas	13069.990	13069.990	2.02	94562692	0.01	2000	>LDR
Ag	107	1	No Gas	0.065	0.065	10.07	1540	0.00	2000	
Cd	111	1	No Gas	0.144	0.144	16.04	500	0.03	2000	
Sr	88	1	No Gas	88.564	88.564	0.91	2786592	0.00	2000	
Mo	95	1	No Gas	2.083	2.083	1.76	13701	0.02	2000	
Sn	118	1	No Gas	0.087	0.087	26.31	3054	0.00	2000	
Sb	121	1	No Gas	0.548	0.548	2.14	9220	0.01	2000	
Ba	137	1	No Gas	181.029	181.029	0.94	903735	0.02	2000	
Tl	205	1	No Gas	0.019	0.019	1.77	653	0.00	2000	
Tl	203	1	No Gas	0.022	0.022	16.96	313	0.01	2000	
Pb	208	1	No Gas	4.384	4.384	0.87	181733	0.00	2000	
U	238	1	No Gas	0.034	0.034	7.03	1410	0.00	2000	
Ca	43	2	He	4861.273	4861.273	2.39	9400	51.72	200000	
Sb	121	2	He	0.568	0.568	7.21	4804	0.01	2000	
Ti	47	2	He	0.199	0.199	88.08	43	0.46	2000	
Cu	63	1	No Gas	137.460	137.460	1.81	1861188	0.01	2000	
Zn	66	1	No Gas	53.297	53.297	1.12	198462	0.03	2000	
Se	82	1	No Gas	0.607	0.607	146.78	-237	-0.26	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	910199	1.98	926740	98.22	70	120	
Ge	72	2	He	591970	0.57	584023	101.36	70	120	
Ge	72	1	No Gas	2139029	1.61	2130598	100.40	70	120	
In	115	1	No Gas	2419104	0.99	2422741	99.85	70	120	

Sample Report

Bi	209	1	No Gas	2021666	0.79	1994134	101.38	70	120	

Sample Report

Sample Table

Sample Name	HS22081514-08
Data File Name	352SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-12T23:59:56-05:00
Sample Type	Sample
Dilution	1
Comment	TW 183371
ISTD Ref FileName	319CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	20.133	20.133	1.37	321271	0.01	2000	
Be	9	1	No Gas	0.117	0.117	8.75	417	0.03	2000	
V	51	2	He	3.938	3.938	5.17	25181	0.02	2000	
Cr	52	2	He	130.458	130.458	1.01	913825	0.01	2000	
Fe	56	2	He	2011.909	2011.909	2.27	11805548	0.02	200000	
Se	78	2	He	0.284	0.284	127.29	251	0.11	2000	
As	75	2	He	1.016	1.016	3.23	1114	0.09	2000	
Ca	44	2	He	23157.914	23157.914	0.80	746244	3.10	200000	
Na	23	2	He	179594.386	179594.386	0.91	181055104	0.10	200000	
Mg	24	2	He	16737.841	16737.841	0.78	9581028	0.17	200000	
K	39	2	He	1206.882	1206.882	1.08	831240	0.15	200000	
Mn	55	2	He	196.675	196.675	0.73	901696	0.02	2000	
Co	59	2	He	3.980	3.980	0.58	42921	0.01	2000	
Ni	60	2	He	124.994	124.994	1.14	345943	0.04	2000	
Cu	63	2	He	74.637	74.637	1.62	567964	0.01	2000	
Zn	66	2	He	26.167	26.167	1.97	36433	0.07	2000	
Al	27	2	He	1571.049	1571.049	2.66	445496	0.35	2000	
B	11	1	No Gas	17.636	17.636	5.57	83904	0.02	2000	
Al	27	1	No Gas	1724.046	1724.046	1.37	25209923	0.01	2000	
Si	28	1	No Gas	27587.605	27587.605	1.20	197322437	0.01	2000	>LDR
Ag	107	1	No Gas	0.010	0.010	22.29	597	0.00	2000	
Cd	111	1	No Gas	0.276	0.276	8.01	947	0.03	2000	
Sr	88	1	No Gas	458.855	458.855	1.18	14298542	0.00	2000	
Mo	95	1	No Gas	1.886	1.886	1.51	12306	0.02	2000	
Sn	118	1	No Gas	0.096	0.096	15.07	3117	0.00	2000	
Sb	121	1	No Gas	0.067	0.067	22.79	2440	0.00	2000	
Ba	137	1	No Gas	439.363	439.363	0.82	2172386	0.02	2000	
Tl	205	1	No Gas	0.032	0.032	11.29	993	0.00	2000	
Tl	203	1	No Gas	0.030	0.030	17.92	403	0.01	2000	
Pb	208	1	No Gas	0.508	0.508	13.02	22814	0.00	2000	
U	238	1	No Gas	0.135	0.135	2.98	5375	0.00	2000	
Ca	43	2	He	24121.158	24121.158	1.87	45800	52.67	200000	
Sb	121	2	He	0.078	0.078	12.85	1310	0.01	2000	
Ti	47	2	He	45.933	45.933	3.72	9087	0.51	2000	
Cu	63	1	No Gas	75.328	75.328	0.62	1011188	0.01	2000	
Zn	66	1	No Gas	26.145	26.145	0.77	97264	0.03	2000	
Se	82	1	No Gas	1.573	1.573	76.03	-40	-3.94	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	897411	1.67	926740	96.84	70	120	
Ge	72	2	He	582877	1.40	584023	99.80	70	120	
Ge	72	1	No Gas	2117792	0.38	2130598	99.40	70	120	
In	115	1	No Gas	2396767	1.22	2422741	98.93	70	120	
Bi	209	1	No Gas	1969336	0.16	1994134	98.76	70	120	

Sample Report

Sample Table

Sample Name	HS22081514-09
Data File Name	353SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-13T00:01:51-05:00
Sample Type	Sample
Dilution	1
Comment	TW 183371
ISTD Ref FileName	319CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	9.552	9.552	1.73	179850	0.01	2000	
Be	9	1	No Gas	0.261	0.261	5.53	923	0.03	2000	
V	51	2	He	8.327	8.327	1.53	52018	0.02	2000	
Cr	52	2	He	66.913	66.913	0.27	470887	0.01	2000	
Fe	56	2	He	4067.691	4067.691	0.49	23938140	0.02	200000	
Se	78	2	He	0.273	0.273	87.32	251	0.11	2000	
As	75	2	He	1.395	1.395	4.75	1502	0.09	2000	
Ca	44	2	He	3417.212	3417.212	0.47	111045	3.08	200000	
Na	23	2	He	45811.325	45811.325	0.55	46518104	0.10	200000	
Mg	24	2	He	2743.453	2743.453	1.00	1576605	0.17	200000	
K	39	2	He	501.945	501.945	0.19	393822	0.13	200000	
Mn	55	2	He	47.581	47.581	0.86	219349	0.02	2000	
Co	59	2	He	2.866	2.866	2.47	31036	0.01	2000	
Ni	60	2	He	118.010	118.010	0.34	327800	0.04	2000	
Cu	63	2	He	6.158	6.158	1.59	48493	0.01	2000	
Zn	66	2	He	31.733	31.733	1.32	44192	0.07	2000	
Al	27	2	He	2363.483	2363.483	0.42	672177	0.35	2000	>LDR
B	11	1	No Gas	11.077	11.077	8.13	72870	0.02	2000	
Al	27	1	No Gas	2318.092	2318.092	0.46	34131883	0.01	2000	>LDR
Si	28	1	No Gas	26390.315	26390.315	0.68	190190291	0.01	2000	>LDR
Ag	107	1	No Gas	0.013	0.013	36.32	653	0.00	2000	
Cd	111	1	No Gas	0.051	0.051	9.52	180	0.03	2000	
Sr	88	1	No Gas	69.612	69.612	2.39	2215449	0.00	2000	
Mo	95	1	No Gas	0.665	0.665	7.17	4528	0.01	2000	
Sn	118	1	No Gas	0.054	0.054	31.34	2757	0.00	2000	
Sb	121	1	No Gas	0.109	0.109	12.05	3044	0.00	2000	
Ba	137	1	No Gas	83.734	83.734	1.63	423098	0.02	2000	
Tl	205	1	No Gas	0.032	0.032	4.67	1060	0.00	2000	
Tl	203	1	No Gas	0.040	0.040	16.73	550	0.01	2000	
Pb	208	1	No Gas	2.177	2.177	3.26	92967	0.00	2000	
U	238	1	No Gas	0.172	0.172	7.16	7122	0.00	2000	
Ca	43	2	He	3373.353	3373.353	1.84	6455	52.26	200000	
Sb	121	2	He	0.121	0.121	5.82	1620	0.01	2000	
Ti	47	2	He	35.930	35.930	4.51	7136	0.50	2000	
Cu	63	1	No Gas	6.486	6.486	1.89	90158	0.01	2000	
Zn	66	1	No Gas	31.943	31.943	2.25	119331	0.03	2000	
Se	82	1	No Gas	1.957	1.957	65.24	38	5.14	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	913769	1.36	926740	98.60	70	120	
Ge	72	2	He	584934	0.39	584023	100.16	70	120	
Ge	72	1	No Gas	2133743	1.10	2130598	100.15	70	120	
In	115	1	No Gas	2446771	1.07	2422741	100.99	70	120	

Sample Report

Bi	209	1	No Gas	2052811	1.11	1994134	102.94	70	120	

Sample Report

Sample Table

Sample Name	HS22081514-10
Data File Name	354SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-13T00:03:43-05:00
Sample Type	Sample
Dilution	1
Comment	TW 183371
ISTD Ref FileName	319CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	22.234	22.234	2.79	359429	0.01	2000	
Be	9	1	No Gas	0.086	0.086	18.80	320	0.03	2000	
V	51	2	He	1.013	1.013	1.33	7369	0.01	2000	
Cr	52	2	He	1.726	1.726	6.02	12956	0.01	2000	
Fe	56	2	He	8070.508	8070.508	2.22	46908769	0.02	200000	
Se	78	2	He	0.608	0.608	38.73	275	0.22	2000	
As	75	2	He	5.370	5.370	0.78	5460	0.10	2000	
Ca	44	2	He	14749.236	14749.236	2.00	471481	3.13	200000	
Na	23	2	He	57928.562	57928.562	1.79	58055246	0.10	200000	
Mg	24	2	He	13460.865	13460.865	1.65	7640023	0.18	200000	
K	39	2	He	425.209	425.209	1.02	341748	0.12	200000	
Mn	55	2	He	703.106	703.106	1.58	3194722	0.02	2000	
Co	59	2	He	16.215	16.215	1.15	173160	0.01	2000	
Ni	60	2	He	14.384	14.384	1.91	39638	0.04	2000	
Cu	63	2	He	10.175	10.175	1.05	78141	0.01	2000	
Zn	66	2	He	9.333	9.333	4.13	13343	0.07	2000	
Al	27	2	He	20.477	20.477	5.31	6812	0.30	2000	
B	11	1	No Gas	-5.645	-5.645	-7.68	41185	-0.01	2000	
Al	27	1	No Gas	20.660	20.660	5.44	361916	0.01	2000	
Si	28	1	No Gas	28101.024	28101.024	0.73	203632350	0.01	2000	>LDR
Ag	107	1	No Gas	-0.005	-0.005	-47.55	343	0.00	2000	
Cd	111	1	No Gas	0.064	0.064	27.72	223	0.03	2000	
Sr	88	1	No Gas	307.071	307.071	0.69	9633027	0.00	2000	
Mo	95	1	No Gas	0.156	0.156	11.02	1160	0.01	2000	
Sn	118	1	No Gas	-0.003	-0.003	-793.37	2147	0.00	2000	
Sb	121	1	No Gas	0.080	0.080	22.97	2650	0.00	2000	
Ba	137	1	No Gas	192.672	192.672	0.78	959321	0.02	2000	
Tl	205	1	No Gas	0.007	0.007	33.40	297	0.00	2000	
Tl	203	1	No Gas	0.011	0.011	14.90	170	0.01	2000	
Pb	208	1	No Gas	0.044	0.044	4.84	4480	0.00	2000	
U	238	1	No Gas	0.018	0.018	14.17	763	0.00	2000	
Ca	43	2	He	15111.250	15111.250	1.62	28470	53.08	200000	
Sb	121	2	He	0.083	0.083	18.97	1333	0.01	2000	
Ti	47	2	He	0.221	0.221	12.87	47	0.47	2000	
Cu	63	1	No Gas	10.378	10.378	2.41	143454	0.01	2000	
Zn	66	1	No Gas	8.962	8.962	2.29	34912	0.03	2000	
Se	82	1	No Gas	2.213	2.213	86.99	94	2.36	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	921784	2.05	926740	99.47	70	120	
Ge	72	2	He	577975	1.42	584023	98.96	70	120	
Ge	72	1	No Gas	2145603	0.53	2130598	100.70	70	120	
In	115	1	No Gas	2412692	0.35	2422741	99.59	70	120	

Sample Report

Bi	209	1	No Gas	2030978	1.20	1994134	101.85	70	120	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	355_CCV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-13T00:05:37-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	319CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Li	7	1	No Gas	100.792	2.879	1351585	2.73	100	100.8	90	110	
Be	9	1	No Gas	98.301	0.485	317497	0.39	100	98.3	90	110	
V	51	2	He	96.370	0.498	563583	0.41	100	96.4	90	110	
Cr	52	2	He	96.936	1.143	652905	0.72	100	96.9	90	110	
Fe	56	2	He	10017.998	1.346	56441887	1.02	10000	100.2	90	110	
Se	78	2	He	102.318	1.725	8248	1.09	100	102.3	90	110	
As	75	2	He	103.105	0.942	100050	0.19	100	103.1	90	110	
Ca	44	2	He	9948.868	0.678	308505	1.24	10000	99.5	90	110	
Na	23	2	He	10006.403	0.926	9900170	0.61	10000	100.1	90	110	
Mg	24	2	He	9928.166	1.436	5462628	0.97	10000	99.3	90	110	
K	39	2	He	9898.005	0.516	5999624	1.09	10000	99.0	90	110	
Mn	55	2	He	100.210	0.787	441862	0.83	100	100.2	90	110	
Co	59	2	He	99.943	3.566	1034312	3.95	100	99.9	90	110	
Ni	60	2	He	100.361	0.659	267031	0.82	100	100.4	90	110	
Cu	63	2	He	100.111	0.885	731771	0.20	100	100.1	90	110	
Zn	66	2	He	101.583	1.321	133973	0.85	100	101.6	90	110	
Al	27	2	He	100.601	2.041	28393	1.45	100	100.6	90	110	
B	11	1	No Gas	481.866	4.032	908994	3.87	500	96.4	90	110	
Al	27	1	No Gas	101.504	1.752	1476108	1.30	100	101.5	90	110	
Si	28	1	No Gas	520.990	0.479	3861277	1.49	5000	10.4	90	110	CCV Main CR1-2 Failed
Ag	107	1	No Gas	100.643	2.039	1660768	2.46	100	100.6	90	110	
Cd	111	1	No Gas	99.434	0.871	331589	0.90	100	99.4	90	110	
Sr	88	1	No Gas	100.953	0.142	3066664	0.73	100	101.0	90	110	
Mo	95	1	No Gas	94.327	1.240	592568	1.07	100	94.3	90	110	
Sn	118	1	No Gas	98.677	0.704	957362	0.44	100	98.7	90	110	
Sb	121	1	No Gas	104.680	1.439	1399392	1.06	100	104.7	90	110	
Ba	137	1	No Gas	99.129	0.737	478032	1.01	100	99.1	90	110	
Tl	205	1	No Gas	102.141	1.180	2937535	0.27	100	102.1	90	110	
Tl	203	1	No Gas	97.792	1.078	1199933	0.56	100	97.8	90	110	
Pb	208	1	No Gas	100.259	1.220	3958540	0.70	100	100.3	90	110	
U	238	1	No Gas	97.669	1.130	3822613	0.27	100	97.7	90	110	
Ca	43	2	He	9734.985	1.466	17785	0.74	10000	97.3	90	110	
Sb	121	2	He	102.604	0.133	688923	0.62	100	102.6	90	110	
Ti	47	2	He	100.884	2.171	19184	1.45	100	100.9	90	110	
Cu	63	1	No Gas	99.796	1.063	1285915	0.17	100	99.8	90	110	
Se	82	1	No Gas	99.534	1.677	19176	2.13	100	99.5	90	110	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	851783	0.09	926740	91.91	70	120	
Ge	72	2	He	560233	0.75	584023	95.93	70	120	
Ge	72	1	No Gas	2034310	1.20	2130598	95.48	70	120	
In	115	1	No Gas	2335514	0.60	2422741	96.40	70	120	
Bi	209	1	No Gas	1953247	1.39	1994134	97.95	70	120	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	356_CCB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-13T00:07:24-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	319CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	0.079	59.1	46485	1.5	0.5	
Be	9	1	No Gas	0.010	58.9	53	37.9	0.5	
V	51	2	He	0.284	5.5	2855	2.2	2.5	
Cr	52	2	He	0.067	29.3	1390	10.4	2.5	
Fe	56	2	He	0.861	14.6	18970	4.8	100	
Se	78	2	He	0.033	276.8	219	1.9	2	
As	75	2	He	0.025	24.9	109	6.4	2.5	
Ca	44	2	He	-6.269	-58.5	400	28.8	100	
Na	23	2	He	-33.359	-6.9	181396	0.8	100	
Mg	24	2	He	0.605	44.3	987	15.0	100	
K	39	2	He	-4.547	-64.9	73250	1.7	100	
Mn	55	2	He	0.003	169.2	537	3.9	2.5	
Co	59	2	He	0.001	294.2	77	27.2	2.5	
Ni	60	2	He	0.052	65.2	313	27.1	2.5	
Cu	63	2	He	-0.068	-17.8	1013	7.5	2	
Zn	66	2	He	-0.072	-39.3	587	7.1	2.5	
Al	27	2	He	-1.041	-52.5	743	18.6	5	
B	11	1	No Gas	-7.233	-25.7	36578	8.5	0.5	
Al	27	1	No Gas	-1.309	-4.9	35705	2.1	5	
Si	28	1	No Gas	6.724	14.6	337148	1.8	10	
Ag	107	1	No Gas	-0.003	-37.1	357	5.8	2.5	
Cd	111	1	No Gas	0.010	62.2	37	56.8	1	
Sr	88	1	No Gas	-0.009	-14.9	1233	4.1	2.5	
Mo	95	1	No Gas	0.011	31.3	217	9.6	2.5	
Sn	118	1	No Gas	-0.002	-191.6	2100	1.0	5	
Sb	121	1	No Gas	0.035	35.5	1940	9.4	2.5	
Ba	137	1	No Gas	-0.049	-36.9	273	32.0	2.5	
Tl	205	1	No Gas	0.028	20.9	883	18.4	1	
Tl	203	1	No Gas	0.031	13.2	410	10.6	1	
Pb	208	1	No Gas	-0.004	-191.0	2453	12.1	2.5	
U	238	1	No Gas	0.006	20.4	303	16.3	2.5	
Ca	43	2	He	-10.228	-0.8	10	0.0	100	
Sb	121	2	He	0.033	58.6	947	13.6	2.5	
Ti	47	2	He	0.072	43.8	17	34.6	2.5	
Cu	63	1	No Gas	-0.036	-44.3	2120	10.1	2.5	
Se	82	1	No Gas	0.320	300.2	-287	-66.8	2	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag

Continuing Calibration Blank (CCB) Report

Li	6	1	No Gas	884838	0.89	926740	95.48	70	120	
Ge	72	2	He	553739	1.40	584023	94.81	70	120	
Ge	72	1	No Gas	2059024	0.63	2130598	96.64	70	120	
In	115	1	No Gas	2351455	0.78	2422741	97.06	70	120	
Bi	209	1	No Gas	1977671	1.76	1994134	99.17	70	120	

Sample Report

Sample Table

Sample Name	HS22081514-11
Data File Name	357SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-13T00:09:17-05:00
Sample Type	Sample
Dilution	1
Comment	TW 183371
ISTD Ref FileName	319CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	21.844	21.844	1.81	347287	0.01	2000	
Be	9	1	No Gas	0.101	0.101	3.18	365	0.03	2000	
V	51	2	He	0.920	0.920	3.50	6865	0.01	2000	
Cr	52	2	He	1.346	1.346	3.10	10407	0.01	2000	
Fe	56	2	He	7102.530	7102.530	0.74	41619456	0.02	200000	
Se	78	2	He	0.399	0.399	31.12	261	0.15	2000	
As	75	2	He	4.897	4.897	3.21	5028	0.10	2000	
Ca	44	2	He	13707.522	13707.522	0.77	441781	3.10	200000	
Na	23	2	He	53631.083	53631.083	0.43	54203089	0.10	200000	
Mg	24	2	He	12531.956	12531.956	1.02	7170713	0.17	200000	
K	39	2	He	397.010	397.010	0.57	326952	0.12	200000	
Mn	55	2	He	647.034	647.034	1.44	2963917	0.02	2000	
Co	59	2	He	15.363	15.363	0.87	165390	0.01	2000	
Ni	60	2	He	12.574	12.574	0.82	34955	0.04	2000	
Cu	63	2	He	7.923	7.923	1.14	61693	0.01	2000	
Zn	66	2	He	8.115	8.115	2.93	11789	0.07	2000	
Al	27	2	He	19.108	19.108	3.53	6482	0.29	2000	
B	11	1	No Gas	-3.505	-3.505	-5.82	44467	-0.01	2000	
Al	27	1	No Gas	17.423	17.423	0.82	314315	0.01	2000	
Si	28	1	No Gas	26562.114	26562.114	0.40	192636190	0.01	2000	>LDR
Ag	107	1	No Gas	-0.007	-0.007	-84.36	310	0.00	2000	
Cd	111	1	No Gas	0.060	0.060	14.66	213	0.03	2000	
Sr	88	1	No Gas	284.791	284.791	1.15	9116249	0.00	2000	
Mo	95	1	No Gas	0.128	0.128	14.89	1003	0.01	2000	
Sn	118	1	No Gas	-0.017	-0.017	-125.28	2044	0.00	2000	
Sb	121	1	No Gas	0.088	0.088	35.11	2767	0.00	2000	
Ba	137	1	No Gas	182.001	182.001	1.10	924712	0.02	2000	
Tl	205	1	No Gas	0.012	0.012	20.18	453	0.00	2000	
Tl	203	1	No Gas	0.010	0.010	22.42	163	0.01	2000	
Pb	208	1	No Gas	0.026	0.026	21.93	3794	0.00	2000	
U	238	1	No Gas	0.022	0.022	7.40	947	0.00	2000	
Ca	43	2	He	14136.851	14136.851	2.32	26846	52.66	200000	
Sb	121	2	He	0.080	0.080	2.90	1327	0.01	2000	
Ti	47	2	He	0.219	0.219	35.20	47	0.47	2000	
Cu	63	1	No Gas	8.177	8.177	0.89	113685	0.01	2000	
Zn	66	1	No Gas	8.228	8.228	2.24	32215	0.03	2000	
Se	82	1	No Gas	0.804	0.804	182.04	-198	-0.41	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	904219	1.10	926740	97.57	70	120	
Ge	72	2	He	582596	0.08	584023	99.76	70	120	
Ge	72	1	No Gas	2147119	0.57	2130598	100.78	70	120	
In	115	1	No Gas	2462068	0.99	2422741	101.62	70	120	

Sample Report

Bi	209	1	No Gas	2048198	0.77	1994134	102.71	70	120	

Sample Report

Sample Table

Sample Name	HS22081514-12
Data File Name	358SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-13T00:11:10-05:00
Sample Type	Sample
Dilution	1
Comment	TW 183371
ISTD Ref FileName	319CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	47.888	47.888	0.55	671275	0.01	2000	
Be	9	1	No Gas	0.852	0.852	3.80	2795	0.03	2000	
V	51	2	He	0.907	0.907	0.77	6606	0.01	2000	
Cr	52	2	He	29.321	29.321	1.68	200695	0.01	2000	
Fe	56	2	He	838.239	838.239	1.61	4796498	0.02	200000	
Se	78	2	He	2.277	2.277	31.62	403	0.56	2000	
As	75	2	He	1.101	1.101	3.30	1169	0.09	2000	
Ca	44	2	He	42932.217	42932.217	2.81	1346228	3.19	200000	
Na	23	2	He	370088.894	370088.894	0.83	363000208	0.10	200000	>LDR
Mg	24	2	He	31461.613	31461.613	0.66	17532112	0.18	200000	
K	39	2	He	1758.061	1758.061	2.07	1143218	0.15	200000	
Mn	55	2	He	1454.151	1454.151	1.04	6486811	0.02	2000	
Co	59	2	He	35.278	35.278	1.26	369782	0.01	2000	
Ni	60	2	He	39.472	39.472	1.08	106480	0.04	2000	
Cu	63	2	He	4.599	4.599	1.46	35523	0.01	2000	
Zn	66	2	He	28.238	28.238	2.12	38221	0.07	2000	
Al	27	2	He	117.256	117.256	0.77	33347	0.35	2000	
B	11	1	No Gas	0.133	0.133	319.92	48833	0.00	2000	
Al	27	1	No Gas	121.689	121.689	2.26	1768268	0.01	2000	
Si	28	1	No Gas	24996.294	24996.294	0.84	172671631	0.01	2000	>LDR
Ag	107	1	No Gas	0.173	0.173	7.03	3220	0.01	2000	
Cd	111	1	No Gas	0.943	0.943	8.64	3107	0.03	2000	
Sr	88	1	No Gas	772.712	772.712	0.68	23146376	0.00	2000	
Mo	95	1	No Gas	0.706	0.706	2.57	4514	0.02	2000	
Sn	118	1	No Gas	0.016	0.016	137.95	2230	0.00	2000	
Sb	121	1	No Gas	0.214	0.214	7.15	4331	0.00	2000	
Ba	137	1	No Gas	325.617	325.617	1.49	1547935	0.02	2000	
Tl	205	1	No Gas	0.218	0.218	2.33	6192	0.00	2000	
Tl	203	1	No Gas	0.216	0.216	8.05	2620	0.01	2000	
Pb	208	1	No Gas	0.254	0.254	2.82	12316	0.00	2000	
U	238	1	No Gas	0.086	0.086	2.44	3347	0.00	2000	
Ca	43	2	He	40813.126	40813.126	1.40	75429	54.11	200000	
Sb	121	2	He	0.218	0.218	5.10	2230	0.01	2000	
Ti	47	2	He	0.503	0.503	18.30	100	0.50	2000	
Cu	63	1	No Gas	6.659	6.659	2.02	88651	0.01	2000	
Zn	66	1	No Gas	28.279	28.279	1.73	101461	0.03	2000	
Se	82	1	No Gas	4.283	4.283	21.29	495	0.86	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	859674	0.91	926740	92.76	70	120	
Ge	72	2	He	567435	0.79	584023	97.16	70	120	
Ge	72	1	No Gas	2045024	0.82	2130598	95.98	70	120	
In	115	1	No Gas	2304093	0.56	2422741	95.10	70	120	
Bi	209	1	No Gas	1906574	0.58	1994134	95.61	70	120	

Sample Report

Sample Table

Sample Name	HS22081514-13
Data File Name	359SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-13T00:13:04-05:00
Sample Type	Sample
Dilution	1
Comment	TW 183371
ISTD Ref FileName	319CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	33.168	33.168	1.39	487932	0.01	2000	
Be	9	1	No Gas	0.189	0.189	6.84	647	0.03	2000	
V	51	2	He	1.900	1.900	2.22	12578	0.02	2000	
Cr	52	2	He	9.226	9.226	2.85	64344	0.01	2000	
Fe	56	2	He	1326.010	1326.010	0.42	7643372	0.02	200000	
Se	78	2	He	0.224	0.224	79.13	242	0.09	2000	
As	75	2	He	0.745	0.745	9.86	826	0.09	2000	
Ca	44	2	He	16831.995	16831.995	0.98	532641	3.16	200000	
Na	23	2	He	246123.073	246123.073	0.08	243517630	0.10	200000	>LDR
Mg	24	2	He	16258.715	16258.715	0.59	9136891	0.18	200000	
K	39	2	He	1345.699	1345.699	1.28	900916	0.15	200000	
Mn	55	2	He	395.070	395.070	0.54	1777680	0.02	2000	
Co	59	2	He	20.209	20.209	1.14	213650	0.01	2000	
Ni	60	2	He	47.756	47.756	0.91	129871	0.04	2000	
Cu	63	2	He	117.517	117.517	0.43	877106	0.01	2000	
Zn	66	2	He	973.124	973.124	0.28	1304880	0.07	2000	
Al	27	2	He	18.217	18.217	8.38	6118	0.30	2000	
B	11	1	No Gas	-2.255	-2.255	-37.37	45402	0.00	2000	
Al	27	1	No Gas	17.819	17.819	0.02	305746	0.01	2000	
Si	28	1	No Gas	19811.042	19811.042	0.73	137268468	0.01	2000	>LDR
Ag	107	1	No Gas	0.002	0.002	130.54	447	0.00	2000	
Cd	111	1	No Gas	0.295	0.295	16.82	980	0.03	2000	
Sr	88	1	No Gas	331.814	331.814	0.76	10013566	0.00	2000	
Mo	95	1	No Gas	0.263	0.263	5.80	1787	0.01	2000	
Sn	118	1	No Gas	16.956	16.956	0.92	165228	0.01	2000	
Sb	121	1	No Gas	0.432	0.432	4.10	7272	0.01	2000	
Ba	137	1	No Gas	160.066	160.066	0.55	766797	0.02	2000	
Tl	205	1	No Gas	0.021	0.021	14.50	763	0.00	2000	
Tl	203	1	No Gas	0.020	0.020	3.43	310	0.01	2000	
Pb	208	1	No Gas	5.992	5.992	0.64	266960	0.00	2000	
U	238	1	No Gas	0.054	0.054	3.77	2420	0.00	2000	
Ca	43	2	He	17456.763	17456.763	0.18	32552	53.63	200000	
Sb	121	2	He	0.440	0.440	11.22	3771	0.01	2000	
Ti	47	2	He	0.344	0.344	30.27	70	0.49	2000	
Cu	63	1	No Gas	122.402	122.402	0.61	1589167	0.01	2000	
Zn	66	1	No Gas	966.222	966.222	0.69	3420813	0.03	2000	
Se	82	1	No Gas	2.594	2.594	28.32	164	1.59	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	876684	1.09	926740	94.60	70	120	
Ge	72	2	He	572199	0.61	584023	97.98	70	120	
Ge	72	1	No Gas	2050309	0.28	2130598	96.23	70	120	
In	115	1	No Gas	2321096	0.60	2422741	95.80	70	120	
Bi	209	1	No Gas	2181542	0.15	1994134	109.40	70	120	

Sample Report

Sample Table

Sample Name	HS22081514-14
Data File Name	360SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-13T00:14:59-05:00
Sample Type	Sample
Dilution	1
Comment	TW 183371
ISTD Ref FileName	319CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	2.474	2.474	2.56	78844	0.00	2000	
Be	9	1	No Gas	0.056	0.056	22.50	208	0.03	2000	
V	51	2	He	0.677	0.677	5.25	5377	0.01	2000	
Cr	52	2	He	1.018	1.018	2.44	8096	0.01	2000	
Fe	56	2	He	246.218	246.218	2.10	1453550	0.02	200000	
Se	78	2	He	-0.216	-0.216	-158.13	210	-0.10	2000	
As	75	2	He	0.383	0.383	4.62	474	0.08	2000	
Ca	44	2	He	8142.841	8142.841	0.39	262060	3.11	200000	
Na	23	2	He	49944.697	49944.697	0.87	50370566	0.10	200000	
Mg	24	2	He	10462.784	10462.784	1.16	5972803	0.18	200000	
K	39	2	He	1758.713	1758.713	2.31	1171473	0.15	200000	
Mn	55	2	He	288.650	288.650	0.71	1319346	0.02	2000	
Co	59	2	He	4.194	4.194	1.44	45091	0.01	2000	
Ni	60	2	He	4.589	4.589	2.11	12843	0.04	2000	
Cu	63	2	He	0.780	0.780	8.68	7482	0.01	2000	
Zn	66	2	He	10.870	10.870	2.77	15509	0.07	2000	
Al	27	2	He	7.391	7.391	12.64	3160	0.23	2000	
B	11	1	No Gas	95.104	95.104	2.26	226719	0.04	2000	
Al	27	1	No Gas	7.175	7.175	2.98	160951	0.00	2000	
Si	28	1	No Gas	9503.310	9503.310	1.48	68358874	0.01	2000	>LDR
Ag	107	1	No Gas	-0.007	-0.007	-9.13	307	0.00	2000	
Cd	111	1	No Gas	0.021	0.021	34.45	77	0.03	2000	
Sr	88	1	No Gas	198.930	198.930	1.19	6193710	0.00	2000	
Mo	95	1	No Gas	0.060	0.060	5.24	537	0.01	2000	
Sn	118	1	No Gas	-0.049	-0.049	-15.50	1673	0.00	2000	
Sb	121	1	No Gas	0.024	0.024	74.78	1840	0.00	2000	
Ba	137	1	No Gas	114.295	114.295	1.01	564976	0.02	2000	
Tl	205	1	No Gas	0.016	0.016	37.26	550	0.00	2000	
Tl	203	1	No Gas	0.015	0.015	14.30	223	0.01	2000	
Pb	208	1	No Gas	-0.010	-0.010	-31.53	2273	0.00	2000	
U	238	1	No Gas	0.124	0.124	5.39	5061	0.00	2000	
Ca	43	2	He	8450.303	8450.303	2.35	16020	52.75	200000	
Sb	121	2	He	0.020	0.020	101.50	907	0.00	2000	
Ti	47	2	He	0.068	0.068	43.77	17	0.41	2000	
Cu	63	1	No Gas	1.081	1.081	1.81	17184	0.01	2000	
Zn	66	1	No Gas	10.803	10.803	1.92	41300	0.03	2000	
Se	82	1	No Gas	1.325	1.325	77.32	-91	-1.45	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	885689	0.94	926740	95.57	70	120	
Ge	72	2	He	581204	0.79	584023	99.52	70	120	
Ge	72	1	No Gas	2123788	0.98	2130598	99.68	70	120	
In	115	1	No Gas	2394431	0.39	2422741	98.83	70	120	

Sample Report

Bi	209	1	No Gas	2025400	1.88	1994134	101.57	70	120	

Sample Report

Sample Table

Sample Name	HS22081514-15
Data File Name	361SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-13T00:16:50-05:00
Sample Type	Sample
Dilution	1
Comment	TW 183371
ISTD Ref FileName	319CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	14.004	14.004	1.64	228588	0.01	2000	
Be	9	1	No Gas	0.198	0.198	11.16	665	0.03	2000	
V	51	2	He	4.779	4.779	1.60	29809	0.02	2000	
Cr	52	2	He	85.025	85.025	0.89	586431	0.01	2000	
Fe	56	2	He	7106.258	7106.258	0.58	40994928	0.02	200000	
Se	78	2	He	0.036	0.036	977.70	227	0.02	2000	
As	75	2	He	2.692	2.692	2.12	2760	0.10	2000	
Ca	44	2	He	12985.838	12985.838	1.34	412040	3.15	200000	
Na	23	2	He	114070.569	114070.569	1.25	113243355	0.10	200000	
Mg	24	2	He	13512.300	13512.300	0.62	7611645	0.18	200000	
K	39	2	He	1692.925	1692.925	0.40	1115818	0.15	200000	
Mn	55	2	He	45.382	45.382	1.28	205156	0.02	2000	
Co	59	2	He	1.343	1.343	5.83	14291	0.01	2000	
Ni	60	2	He	20.104	20.104	1.98	54904	0.04	2000	
Cu	63	2	He	100.547	100.547	1.53	752407	0.01	2000	
Zn	66	2	He	335.413	335.413	1.03	451267	0.07	2000	
Al	27	2	He	1419.679	1419.679	1.56	396296	0.36	2000	
B	11	1	No Gas	52.978	52.978	3.21	144778	0.04	2000	
Al	27	1	No Gas	1406.355	1406.355	2.49	20104679	0.01	2000	
Si	28	1	No Gas	17978.888	17978.888	0.63	125776318	0.01	2000	>LDR
Ag	107	1	No Gas	0.019	0.019	36.02	740	0.00	2000	
Cd	111	1	No Gas	0.079	0.079	21.74	270	0.03	2000	
Sr	88	1	No Gas	279.017	279.017	1.20	8572424	0.00	2000	
Mo	95	1	No Gas	0.987	0.987	1.60	6422	0.02	2000	
Sn	118	1	No Gas	0.117	0.117	3.43	3274	0.00	2000	
Sb	121	1	No Gas	0.129	0.129	3.34	3227	0.00	2000	
Ba	137	1	No Gas	181.137	181.137	1.05	883331	0.02	2000	
Tl	205	1	No Gas	0.035	0.035	2.34	1097	0.00	2000	
Tl	203	1	No Gas	0.037	0.037	5.36	500	0.01	2000	
Pb	208	1	No Gas	1.938	1.938	1.64	81228	0.00	2000	
U	238	1	No Gas	0.164	0.164	5.83	6635	0.00	2000	
Ca	43	2	He	13253.888	13253.888	1.75	24779	53.49	200000	
Sb	121	2	He	0.106	0.106	11.78	1487	0.01	2000	
Ti	47	2	He	20.931	20.931	6.61	4077	0.51	2000	
Cu	63	1	No Gas	102.546	102.546	1.01	1344261	0.01	2000	
Zn	66	1	No Gas	340.534	340.534	0.46	1218086	0.03	2000	
Se	82	1	No Gas	0.761	0.761	168.31	-201	-0.38	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	863789	1.46	926740	93.21	70	120	
Ge	72	2	He	573575	1.06	584023	98.21	70	120	
Ge	72	1	No Gas	2069652	0.85	2130598	97.14	70	120	
In	115	1	No Gas	2363070	0.84	2422741	97.54	70	120	
Bi	209	1	No Gas	2007027	1.06	1994134	100.65	70	120	

Sample Report

Sample Table

Sample Name	HS22081514-17
Data File Name	362SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-13T00:18:44-05:00
Sample Type	Sample
Dilution	1
Comment	TW 183371
ISTD Ref FileName	319CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	11.498	11.498	1.37	202848	0.01	2000	
Be	9	1	No Gas	0.517	0.517	4.76	1773	0.03	2000	
V	51	2	He	19.137	19.137	1.04	115244	0.02	2000	
Cr	52	2	He	40.335	40.335	0.56	277891	0.01	2000	
Fe	56	2	He	8553.221	8553.221	0.83	49193166	0.02	200000	
Se	78	2	He	0.683	0.683	25.28	279	0.25	2000	
As	75	2	He	2.611	2.611	3.05	2673	0.10	2000	
Ca	44	2	He	1867.014	1867.014	2.10	59589	3.13	200000	
Na	23	2	He	29551.579	29551.579	0.95	29413991	0.10	200000	
Mg	24	2	He	2128.632	2128.632	2.23	1195962	0.18	200000	
K	39	2	He	1551.533	1551.533	2.55	1025987	0.15	200000	
Mn	55	2	He	30.680	30.680	1.71	138453	0.02	2000	
Co	59	2	He	3.522	3.522	2.41	37261	0.01	2000	
Ni	60	2	He	24.149	24.149	1.39	65725	0.04	2000	
Cu	63	2	He	14.562	14.562	1.89	109976	0.01	2000	
Zn	66	2	He	29.815	29.815	1.40	40641	0.07	2000	
Al	27	2	He	11298.249	11298.249	1.20	3137278	0.36	2000	>LDR
B	11	1	No Gas	-2.092	-2.092	-13.77	46701	0.00	2000	
Al	27	1	No Gas	10908.588	10908.588	1.03	155976048	0.01	2000	>LDR
Si	28	1	No Gas	33303.442	33303.442	1.14	233309190	0.01	2000	>LDR
Ag	107	1	No Gas	0.029	0.029	16.67	923	0.00	2000	
Cd	111	1	No Gas	0.094	0.094	6.30	327	0.03	2000	
Sr	88	1	No Gas	43.346	43.346	0.20	1362433	0.00	2000	
Mo	95	1	No Gas	0.471	0.471	3.69	3210	0.01	2000	
Sn	118	1	No Gas	0.435	0.435	4.54	6532	0.01	2000	
Sb	121	1	No Gas	0.220	0.220	7.17	4474	0.00	2000	
Ba	137	1	No Gas	110.717	110.717	0.27	552019	0.02	2000	
Tl	205	1	No Gas	0.081	0.081	7.76	2547	0.00	2000	
Tl	203	1	No Gas	0.085	0.085	15.46	1130	0.01	2000	
Pb	208	1	No Gas	4.366	4.366	2.83	184862	0.00	2000	
U	238	1	No Gas	0.349	0.349	10.02	14485	0.00	2000	
Ca	43	2	He	1839.405	1839.405	1.91	3454	53.26	200000	
Sb	121	2	He	0.230	0.230	13.76	2327	0.01	2000	
Ti	47	2	He	287.299	287.299	5.02	55749	0.52	2000	
Cu	63	1	No Gas	14.562	14.562	0.76	193598	0.01	2000	
Zn	66	1	No Gas	29.608	29.608	2.35	107678	0.03	2000	
Se	82	1	No Gas	0.672	0.672	262.57	-220	-0.31	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	895609	0.05	926740	96.64	70	120	
Ge	72	2	He	571876	1.18	584023	97.92	70	120	
Ge	72	1	No Gas	2074767	0.76	2130598	97.38	70	120	
In	115	1	No Gas	2415017	0.80	2422741	99.68	70	120	

Sample Report

Bi	209	1	No Gas	2065857	2.43	1994134	103.60	70	120	

Sample Report

Sample Table

Sample Name	HS22081514-18
Data File Name	363SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-13T00:20:39-05:00
Sample Type	Sample
Dilution	1
Comment	TW 183371
ISTD Ref FileName	319CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	4.817	4.817	3.79	112459	0.00	2000	
Be	9	1	No Gas	0.549	0.549	4.26	1897	0.03	2000	
V	51	2	He	9.556	9.556	1.80	58549	0.02	2000	
Cr	52	2	He	11.206	11.206	1.43	78414	0.01	2000	
Fe	56	2	He	5086.340	5086.340	1.23	29448302	0.02	200000	
Se	78	2	He	0.216	0.216	116.37	243	0.09	2000	
As	75	2	He	1.552	1.552	5.15	1635	0.09	2000	
Ca	44	2	He	806.439	806.439	3.33	26252	3.07	200000	
Na	23	2	He	9215.766	9215.766	1.54	9384655	0.10	200000	
Mg	24	2	He	808.829	808.829	1.17	457839	0.18	200000	
K	39	2	He	1035.618	1035.618	1.20	715567	0.14	200000	
Mn	55	2	He	29.001	29.001	1.67	131760	0.02	2000	
Co	59	2	He	3.845	3.845	2.76	40938	0.01	2000	
Ni	60	2	He	8.978	8.978	3.83	24713	0.04	2000	
Cu	63	2	He	24.909	24.909	0.36	188239	0.01	2000	
Zn	66	2	He	38.786	38.786	1.89	52987	0.07	2000	
Al	27	2	He	3566.920	3566.920	2.25	997595	0.36	2000	>LDR
B	11	1	No Gas	-6.333	-6.333	-5.28	39002	-0.02	2000	
Al	27	1	No Gas	3498.568	3498.568	1.92	50212633	0.01	2000	>LDR
Si	28	1	No Gas	22209.670	22209.670	8.71	156049624	0.01	2000	>LDR
Ag	107	1	No Gas	0.033	0.033	13.63	970	0.00	2000	
Cd	111	1	No Gas	0.069	0.069	18.72	237	0.03	2000	
Sr	88	1	No Gas	21.650	21.650	2.17	674004	0.00	2000	
Mo	95	1	No Gas	0.131	0.131	5.90	990	0.01	2000	
Sn	118	1	No Gas	0.022	0.022	44.10	2374	0.00	2000	
Sb	121	1	No Gas	0.255	0.255	8.70	4958	0.01	2000	
Ba	137	1	No Gas	86.570	86.570	2.02	427166	0.02	2000	
Tl	205	1	No Gas	0.051	0.051	6.36	1647	0.00	2000	
Tl	203	1	No Gas	0.048	0.048	9.21	667	0.01	2000	
Pb	208	1	No Gas	3.938	3.938	1.07	169941	0.00	2000	
U	238	1	No Gas	0.224	0.224	4.25	9467	0.00	2000	
Ca	43	2	He	918.069	918.069	13.52	1750	52.46	200000	
Sb	121	2	He	0.254	0.254	8.67	2507	0.01	2000	
Ti	47	2	He	36.646	36.646	6.06	7163	0.51	2000	
Cu	63	1	No Gas	24.931	24.931	1.85	330607	0.01	2000	
Zn	66	1	No Gas	38.894	38.894	2.60	141353	0.03	2000	
Se	82	1	No Gas	-0.099	-0.099	-2303.07	-377	0.03	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	902028	2.36	926740	97.33	70	120	
Ge	72	2	He	575560	0.72	584023	98.55	70	120	
Ge	72	1	No Gas	2081417	1.71	2130598	97.69	70	120	
In	115	1	No Gas	2389930	1.72	2422741	98.65	70	120	

Sample Report

Bi	209	1	No Gas	2100956	1.00	1994134	105.36	70	120	

Sample Report

Sample Table

Sample Name	HS22081514-19
Data File Name	364SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-13T00:22:33-05:00
Sample Type	Sample
Dilution	1
Comment	TW 183371
ISTD Ref FileName	319CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	8.614	8.614	0.52	160224	0.01	2000	
Be	9	1	No Gas	0.377	0.377	4.09	1273	0.03	2000	
V	51	2	He	0.783	0.783	2.83	5899	0.01	2000	
Cr	52	2	He	8.996	8.996	0.57	62539	0.01	2000	
Fe	56	2	He	5168.364	5168.364	1.68	29633964	0.02	200000	
Se	78	2	He	0.252	0.252	15.81	243	0.10	2000	
As	75	2	He	0.355	0.355	20.36	438	0.08	2000	
Ca	44	2	He	4089.528	4089.528	1.99	129374	3.16	200000	
Na	23	2	He	41904.243	41904.243	0.97	41485521	0.10	200000	
Mg	24	2	He	3581.010	3581.010	1.70	2005171	0.18	200000	
K	39	2	He	724.315	724.315	1.33	519166	0.14	200000	
Mn	55	2	He	303.521	303.521	1.54	1360575	0.02	2000	
Co	59	2	He	11.488	11.488	0.98	121027	0.01	2000	
Ni	60	2	He	17.659	17.659	3.09	47951	0.04	2000	
Cu	63	2	He	1.093	1.093	4.70	9664	0.01	2000	
Zn	66	2	He	86.453	86.453	1.11	116124	0.07	2000	
Al	27	2	He	32.973	32.973	5.92	10174	0.32	2000	
B	11	1	No Gas	-11.434	-11.434	-4.28	28564	-0.04	2000	
Al	27	1	No Gas	31.244	31.244	1.71	502437	0.01	2000	
Si	28	1	No Gas	13501.656	13501.656	0.25	94974072	0.01	2000	>LDR
Ag	107	1	No Gas	-0.003	-0.003	-186.06	373	0.00	2000	
Cd	111	1	No Gas	0.239	0.239	12.87	820	0.03	2000	
Sr	88	1	No Gas	89.174	89.174	1.19	2777210	0.00	2000	
Mo	95	1	No Gas	0.208	0.208	6.94	1487	0.01	2000	
Sn	118	1	No Gas	-0.051	-0.051	-31.62	1650	0.00	2000	
Sb	121	1	No Gas	0.023	0.023	22.14	1790	0.00	2000	
Ba	137	1	No Gas	173.922	173.922	0.29	859454	0.02	2000	
Tl	205	1	No Gas	0.020	0.020	11.74	700	0.00	2000	
Tl	203	1	No Gas	0.020	0.020	13.73	290	0.01	2000	
Pb	208	1	No Gas	-0.003	-0.003	-131.77	2603	0.00	2000	
U	238	1	No Gas	0.015	0.015	9.54	677	0.00	2000	
Ca	43	2	He	4177.496	4177.496	3.70	7786	53.66	200000	
Sb	121	2	He	0.033	0.033	24.02	973	0.00	2000	
Ti	47	2	He	0.343	0.343	51.04	70	0.49	2000	
Cu	63	1	No Gas	1.354	1.354	3.96	20409	0.01	2000	
Zn	66	1	No Gas	86.337	86.337	1.36	311511	0.03	2000	
Se	82	1	No Gas	1.116	1.116	105.82	-129	-0.86	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	877674	0.62	926740	94.71	70	120	
Ge	72	2	He	570077	1.49	584023	97.61	70	120	
Ge	72	1	No Gas	2079399	0.57	2130598	97.60	70	120	
In	115	1	No Gas	2394411	1.23	2422741	98.83	70	120	

Sample Report

Bi	209	1	No Gas	2068669	1.88	1994134	103.74	70	120	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	366_CCV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-13T00:26:18-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	319CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Li	7	1	No Gas	99.936	3.361	1337850	2.36	100	99.9	90	110	
Be	9	1	No Gas	95.421	2.674	307570	0.14	100	95.4	90	110	
V	51	2	He	96.913	0.627	554326	0.44	100	96.9	90	110	
Cr	52	2	He	97.823	1.568	644408	0.70	100	97.8	90	110	
Fe	56	2	He	10108.543	1.386	55704629	1.27	10000	101.1	90	110	
Se	78	2	He	100.977	1.766	7964	1.40	100	101.0	90	110	
As	75	2	He	103.723	0.793	98445	0.34	100	103.7	90	110	
Ca	44	2	He	9833.174	1.396	298224	1.09	10000	98.3	90	110	
Na	23	2	He	10119.553	1.144	9790987	1.69	10000	101.2	90	110	
Mg	24	2	He	10108.695	1.252	5440258	1.26	10000	101.1	90	110	
K	39	2	He	9840.581	1.936	5833818	0.99	10000	98.4	90	110	
Mn	55	2	He	100.432	1.146	433124	0.76	100	100.4	90	110	
Co	59	2	He	98.882	1.846	1000796	1.76	100	98.9	90	110	
Ni	60	2	He	100.220	1.315	260811	1.36	100	100.2	90	110	
Cu	63	2	He	100.405	0.858	717832	0.30	100	100.4	90	110	
Zn	66	2	He	101.759	0.584	131267	0.48	100	101.8	90	110	
Al	27	2	He	101.516	0.730	28015	0.49	100	101.5	90	110	
B	11	1	No Gas	454.656	3.739	858495	1.05	500	90.9	90	110	
Al	27	1	No Gas	99.906	0.387	1448038	1.38	100	99.9	90	110	
Si	28	1	No Gas	499.114	2.334	3695611	0.67	5000	10.0	90	110	CCV Main CR1-2 Failed
Ag	107	1	No Gas	100.648	1.558	1647701	0.32	100	100.6	90	110	
Cd	111	1	No Gas	99.552	1.436	329379	0.36	100	99.6	90	110	
Sr	88	1	No Gas	100.423	0.994	3026767	0.87	100	100.4	90	110	
Mo	95	1	No Gas	94.284	1.677	587646	0.46	100	94.3	90	110	
Sn	118	1	No Gas	99.602	1.498	958742	0.44	100	99.6	90	110	
Sb	121	1	No Gas	104.464	1.835	1390862	1.02	100	104.5	90	110	
Ba	137	1	No Gas	100.207	2.310	479392	1.00	100	100.2	90	110	
Tl	205	1	No Gas	102.371	3.157	2961526	1.73	100	102.4	90	110	
Tl	203	1	No Gas	97.443	3.025	1202668	1.30	100	97.4	90	110	
Pb	208	1	No Gas	100.732	3.094	4000453	1.13	100	100.7	90	110	
U	238	1	No Gas	98.300	2.408	3870273	0.96	100	98.3	90	110	
Ca	43	2	He	9929.298	3.340	17742	3.01	10000	99.3	90	110	
Sb	121	2	He	102.813	1.054	675172	0.73	100	102.8	90	110	
Ti	47	2	He	100.984	2.709	18783	2.56	100	101.0	90	110	
Cu	63	1	No Gas	98.076	2.248	1258634	1.15	100	98.1	90	110	
Se	82	1	No Gas	98.090	1.309	18815	0.46	100	98.1	90	110	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	850460	2.74	926740	91.77	70	120	
Ge	72	2	He	547964	1.03	584023	93.83	70	120	
Ge	72	1	No Gas	2026296	1.74	2130598	95.10	70	120	
In	115	1	No Gas	2317519	1.61	2422741	95.66	70	120	
Bi	209	1	No Gas	1965437	2.54	1994134	98.56	70	120	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	367_CCB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-13T00:28:06-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	319CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	0.097	44.4	44218	1.3	0.5	
Be	9	1	No Gas	0.006	102.0	38	54.3	0.5	
V	51	2	He	0.368	5.9	3273	4.4	2.5	
Cr	52	2	He	0.082	20.0	1460	8.1	2.5	
Fe	56	2	He	0.668	18.7	17528	3.2	100	
Se	78	2	He	-0.217	-60.1	196	5.1	2	
As	75	2	He	0.033	78.1	114	21.5	2.5	
Ca	44	2	He	-8.087	-30.3	337	21.5	100	
Na	23	2	He	-46.825	-9.2	165155	1.6	100	
Mg	24	2	He	0.293	56.6	800	10.2	100	
K	39	2	He	-8.854	-6.0	69307	0.5	100	
Mn	55	2	He	-0.014	-82.0	457	10.8	2.5	
Co	59	2	He	0.004	24.2	113	10.2	2.5	
Ni	60	2	He	0.056	24.2	317	12.0	2.5	
Cu	63	2	He	-0.035	-48.6	1230	10.4	2	
Zn	66	2	He	-0.130	-34.0	500	10.4	2.5	
Al	27	2	He	-0.673	-64.8	827	14.1	5	
B	11	1	No Gas	-7.807	-31.5	33564	10.6	0.5	
Al	27	1	No Gas	-0.705	-85.0	43432	20.6	5	
Si	28	1	No Gas	5.687	25.2	323151	3.8	10	
Ag	107	1	No Gas	-0.001	-375.7	390	15.6	2.5	
Cd	111	1	No Gas	0.007	48.0	27	43.3	1	
Sr	88	1	No Gas	-0.016	-37.1	1007	17.4	2.5	
Mo	95	1	No Gas	0.014	64.1	230	24.2	2.5	
Sn	118	1	No Gas	-0.016	-65.8	1927	4.7	5	
Sb	121	1	No Gas	0.034	28.7	1887	5.4	2.5	
Ba	137	1	No Gas	-0.068	-6.9	177	11.8	2.5	
Tl	205	1	No Gas	0.028	6.3	887	5.6	1	
Tl	203	1	No Gas	0.028	12.1	383	11.8	1	
Pb	208	1	No Gas	-0.005	-165.8	2447	13.2	2.5	
U	238	1	No Gas	0.004	41.2	217	32.7	2.5	
Ca	43	2	He	-6.384	-100.4	17	69.3	100	
Sb	121	2	He	0.003	485.1	737	13.6	2.5	
Ti	47	2	He	-0.017	0.0	0	#DIV/0!	2.5	
Cu	63	1	No Gas	-0.013	-92.8	2364	5.3	2.5	
Se	82	1	No Gas	0.738	197.2	-198	-143.4	2	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag

Continuing Calibration Blank (CCB) Report

Li	6	1	No Gas	837450	2.55	926740	90.37	70	120	
Ge	72	2	He	542725	0.96	584023	92.93	70	120	
Ge	72	1	No Gas	2016445	1.90	2130598	94.64	70	120	
In	115	1	No Gas	2307420	0.99	2422741	95.24	70	120	
Bi	209	1	No Gas	1999372	1.32	1994134	100.26	70	120	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	398_CCV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-13T01:27:08-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	319CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Li	7	1	No Gas	98.740	4.597	1343569	1.97	100	98.7	90	110	
Be	9	1	No Gas	94.872	2.162	310843	0.35	100	94.9	90	110	
V	51	2	He	95.672	0.879	563028	0.31	100	95.7	90	110	
Cr	52	2	He	96.827	1.559	656260	0.42	100	96.8	90	110	
Fe	56	2	He	10029.215	1.202	56860579	0.20	10000	100.3	90	110	
Se	78	2	He	97.348	2.745	7908	2.94	100	97.3	90	110	
As	75	2	He	103.610	1.611	101169	0.47	100	103.6	90	110	
Ca	44	2	He	9607.134	1.149	299788	0.47	10000	96.1	90	110	
Na	23	2	He	9819.288	1.461	9779952	0.35	10000	98.2	90	110	
Mg	24	2	He	9912.320	1.295	5488248	0.22	10000	99.1	90	110	
K	39	2	He	9623.152	0.991	5871658	0.43	10000	96.2	90	110	
Mn	55	2	He	98.321	1.575	436248	0.46	100	98.3	90	110	
Co	59	2	He	102.452	0.592	1066868	0.69	100	102.5	90	110	
Ni	60	2	He	101.410	1.123	271510	0.15	100	101.4	90	110	
Cu	63	2	He	101.071	0.910	743444	0.46	100	101.1	90	110	
Zn	66	2	He	102.437	0.872	135948	0.32	100	102.4	90	110	
Al	27	2	He	95.698	1.484	27230	0.59	100	95.7	90	110	
B	11	1	No Gas	453.217	4.263	869951	2.08	500	90.6	90	110	
Al	27	1	No Gas	99.743	1.247	1482414	1.22	100	99.7	90	110	
Si	28	1	No Gas	501.459	1.777	3806485	1.67	5000	10.0	90	110	CCV Main CR1-2 Failed
Ag	107	1	No Gas	100.736	1.674	1724953	1.01	100	100.7	90	110	
Cd	111	1	No Gas	98.413	1.092	340584	0.13	100	98.4	90	110	
Sr	88	1	No Gas	99.467	0.644	3135836	1.16	100	99.5	90	110	
Mo	95	1	No Gas	92.905	2.122	605641	0.95	100	92.9	90	110	
Sn	118	1	No Gas	99.404	1.541	1000811	0.58	100	99.4	90	110	
Sb	121	1	No Gas	106.610	0.200	1455596	0.36	100	106.6	90	110	
Ba	137	1	No Gas	99.860	1.786	499717	0.84	100	99.9	90	110	
Tl	205	1	No Gas	101.878	1.289	3061139	0.96	100	101.9	90	110	
Tl	203	1	No Gas	99.789	0.285	1279464	2.15	100	99.8	90	110	
Pb	208	1	No Gas	109.506	2.763	4515937	0.59	100	109.5	90	110	
U	238	1	No Gas	97.275	1.711	3977729	1.70	100	97.3	90	110	
Ca	43	2	He	9642.298	2.074	17728	2.13	10000	96.4	90	110	
Sb	121	2	He	103.157	1.409	696952	0.47	100	103.2	90	110	
Ti	47	2	He	98.250	2.695	18806	3.67	100	98.3	90	110	
Cu	63	1	No Gas	98.884	0.683	1301409	0.96	100	98.9	90	110	
Se	82	1	No Gas	99.249	1.185	19526	1.35	100	99.2	90	110	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	864378	2.53	926740	93.27	70	120	
Ge	72	2	He	563784	1.16	584023	96.53	70	120	
Ge	72	1	No Gas	2077581	0.29	2130598	97.51	70	120	
In	115	1	No Gas	2423926	1.18	2422741	100.05	70	120	
Bi	209	1	No Gas	2040862	2.24	1994134	102.34	70	120	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	399_CCB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-13T01:28:56-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	319CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	0.045	99.3	45799	0.6	0.5	
Be	9	1	No Gas	0.010	35.7	53	23.6	0.5	
V	51	2	He	-0.067	-14.8	830	8.4	2.5	
Cr	52	2	He	0.074	17.9	1440	6.8	2.5	
Fe	56	2	He	0.783	11.2	18570	2.3	100	
Se	78	2	He	-0.292	-70.8	195	8.9	2	
As	75	2	He	0.130	7.4	210	4.2	2.5	
Ca	44	2	He	-5.964	-31.4	410	15.2	100	
Na	23	2	He	-131.347	-1.2	87858	0.7	100	
Mg	24	2	He	0.798	32.8	1093	12.7	100	
K	39	2	He	-9.839	-4.1	70288	1.1	100	
Mn	55	2	He	-0.018	-65.7	447	10.3	2.5	
Co	59	2	He	0.002	262.9	90	58.8	2.5	
Ni	60	2	He	0.053	9.3	317	3.6	2.5	
Cu	63	2	He	-0.005	-335.9	1473	9.7	2	
Zn	66	2	He	0.310	17.3	1083	5.1	2.5	
Al	27	2	He	-0.964	-30.0	767	9.6	5	
B	11	1	No Gas	-6.281	-34.9	38155	10.0	0.5	
Al	27	1	No Gas	-1.363	-6.0	35088	3.3	5	
Si	28	1	No Gas	4.339	21.4	321938	0.9	10	
Ag	107	1	No Gas	-0.009	-44.8	280	25.0	2.5	
Cd	111	1	No Gas	0.010	28.5	40	25.0	1	
Sr	88	1	No Gas	-0.011	-50.1	1223	13.5	2.5	
Mo	95	1	No Gas	0.015	47.6	253	17.8	2.5	
Sn	118	1	No Gas	0.291	11.4	5188	5.0	5	
Sb	121	1	No Gas	0.193	13.2	4084	7.5	2.5	
Ba	137	1	No Gas	-0.052	-1.9	270	3.7	2.5	
Tl	205	1	No Gas	0.039	13.0	1260	12.0	1	
Tl	203	1	No Gas	0.037	27.6	513	25.4	1	
Pb	208	1	No Gas	9.208	4.7	389634	3.9	2.5	CCB Main CR1 Failed
U	238	1	No Gas	0.007	21.3	330	18.2	2.5	
Ca	43	2	He	-6.510	-177.2	17	124.9	100	
Sb	121	2	He	0.144	19.5	1690	10.1	2.5	
Ti	47	2	He	0.036	2.1	10	0.0	2.5	
Cu	63	1	No Gas	0.113	9.0	4074	2.0	2.5	
Se	82	1	No Gas	1.134	57.3	-125	-102.3	2	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	880400	0.84	926740	95.00	70	120	
Ge	72	2	He	554987	1.44	584023	95.03	70	120	
Ge	72	1	No Gas	2067947	1.32	2130598	97.06	70	120	
In	115	1	No Gas	2464793	1.82	2422741	101.74	70	120	
Bi	209	1	No Gas	2080321	0.96	1994134	104.32	70	120	

Sample Report

Sample Table

Sample Name	LLCCV2
Data File Name	401LCV2.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-13T01:32:42-05:00
Sample Type	LLCCV2
Dilution	1
Comment	
ISTD Ref FileName	319CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	1.788	1.788	5.65	69058	0.00	2	
Be	9	1	No Gas	1.823	1.823	0.73	6095	0.03	2	
V	51	2	He	1.804	1.804	1.33	11714	0.02	2	
Cr	52	2	He	1.865	1.865	1.13	13453	0.01	2	
Fe	56	2	He	208.180	208.180	2.86	1182656	0.02	200	
Se	78	2	He	1.791	1.791	13.49	359	0.50	2	
As	75	2	He	2.017	2.017	9.58	2035	0.10	2	
Ca	44	2	He	188.570	188.570	4.71	6412	2.94	200	
Na	23	2	He	55.237	55.237	0.36	268329	0.02	200	NewName Main CR1 Failed
Mg	24	2	He	188.847	188.847	1.07	104194	0.18	200	
K	39	2	He	176.020	176.020	0.57	181518	0.10	200	
Mn	55	2	He	1.892	1.892	0.83	8830	0.02	2	
Co	59	2	He	1.975	1.975	3.70	20436	0.01	2	
Ni	60	2	He	1.962	1.962	2.97	5378	0.04	2	
Cu	63	2	He	1.984	1.984	0.56	15940	0.01	2	
Zn	66	2	He	2.390	2.390	5.27	3811	0.06	2	
Al	27	2	He	1.910	1.910	14.50	1550	0.12	2	
B	11	1	No Gas	-9.992	-9.992	-3.78	31266	-0.03	10	NewName Main CR1 Failed
Al	27	1	No Gas	1.856	1.856	4.63	81029	0.00	2	
Si	28	1	No Gas	11.725	11.725	8.66	373797	0.00	10	
Ag	107	1	No Gas	1.898	1.898	0.76	33413	0.01	2	
Cd	111	1	No Gas	1.908	1.908	3.49	6705	0.03	2	
Sr	88	1	No Gas	1.931	1.931	1.37	63296	0.00	2	
Mo	95	1	No Gas	1.812	1.812	5.65	12136	0.01	2	
Sn	118	1	No Gas	2.153	2.153	2.75	24166	0.01	2	
Sb	121	1	No Gas	2.075	2.075	1.73	29667	0.01	2	
Ba	137	1	No Gas	1.956	1.956	5.33	10458	0.02	2	
Tl	205	1	No Gas	1.906	1.906	1.09	57901	0.00	2	
Tl	203	1	No Gas	1.860	1.860	4.44	24104	0.01	2	
Pb	208	1	No Gas	10.243	10.243	2.87	429072	0.00	2	NewName Main CR1 Failed
U	238	1	No Gas	1.849	1.849	1.71	76398	0.00	2	
Ca	43	2	He	173.237	173.237	19.66	343	50.46	200	
Sb	121	2	He	2.013	2.013	3.65	14188	0.01	2	
Ti	47	2	He	1.830	1.830	2.72	350	0.52	200	
Cu	63	1	No Gas	1.996	1.996	0.78	28711	0.01	2	
Se	82	1	No Gas	2.083	2.083	35.79	64	3.27	2	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	879194	2.10	926740	94.87	70	120	
Ge	72	2	He	558237	0.49	584023	95.58	70	120	
Ge	72	1	No Gas	2069965	1.37	2130598	97.15	70	120	
In	115	1	No Gas	2459391	0.83	2422741	101.51	70	120	
Bi	209	1	No Gas	2060762	1.37	1994134	103.34	70	120	

Sample Report

Sample Table

Sample Name	LLCCV5
Data File Name	402LCV5.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-13T01:34:35-05:00
Sample Type	LLCCV5
Dilution	1
Comment	
ISTD Ref FileName	319CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	4.348	4.348	4.03	103490	0.00	5	
Be	9	1	No Gas	4.611	4.611	2.50	15407	0.03	5	
V	51	2	He	4.664	4.664	0.61	28212	0.02	5	
Cr	52	2	He	4.764	4.764	0.66	32729	0.01	5	
Fe	56	2	He	516.018	516.018	0.43	2896905	0.02	500	
Se	78	2	He	4.537	4.537	7.54	571	0.80	5	
As	75	2	He	4.977	4.977	1.89	4871	0.10	5	
Ca	44	2	He	475.803	475.803	3.90	15199	3.13	500	
Na	23	2	He	341.510	341.510	1.00	541830	0.06	500	NewName2 Main CR1 Failed
Mg	24	2	He	469.579	469.579	1.40	256865	0.18	500	
K	39	2	He	460.651	460.651	1.25	349560	0.13	500	
Mn	55	2	He	4.787	4.787	2.01	21437	0.02	5	
Co	59	2	He	4.880	4.880	2.32	50142	0.01	5	
Ni	60	2	He	5.118	5.118	2.36	13674	0.04	5	
Cu	63	2	He	4.969	4.969	0.96	37462	0.01	5	
Zn	66	2	He	5.075	5.075	5.31	7285	0.07	5	
Al	27	2	He	4.769	4.769	9.15	2314	0.21	5	
B	11	1	No Gas	1.769	1.769	21.21	53030	0.00	25	NewName2 Main CR1 Failed
Al	27	1	No Gas	4.405	4.405	3.37	117903	0.00	5	
Si	28	1	No Gas	25.458	25.458	3.77	471796	0.01	25	
Ag	107	1	No Gas	4.821	4.821	0.54	82440	0.01	5	
Cd	111	1	No Gas	4.669	4.669	2.08	16060	0.03	5	
Sr	88	1	No Gas	4.807	4.807	1.69	152046	0.00	5	
Mo	95	1	No Gas	4.536	4.536	1.59	29533	0.02	5	
Sn	118	1	No Gas	4.917	4.917	3.48	51254	0.01	5	
Sb	121	1	No Gas	4.952	4.952	1.39	69071	0.01	5	
Ba	137	1	No Gas	4.861	4.861	2.53	24674	0.02	5	
Tl	205	1	No Gas	4.730	4.730	2.95	144150	0.00	5	
Tl	203	1	No Gas	4.600	4.600	2.10	59790	0.01	5	
Pb	208	1	No Gas	12.543	12.543	3.40	526696	0.00	5	NewName2 Main CR1 Failed
U	238	1	No Gas	4.629	4.629	2.32	191898	0.00	5	
Ca	43	2	He	516.881	516.881	5.95	963	53.65	500	
Sb	121	2	He	4.989	4.989	1.70	33921	0.01	5	
Ti	47	2	He	4.793	4.793	14.63	907	0.53	5	
Cu	63	1	No Gas	4.820	4.820	2.80	65950	0.01	5	
Se	82	1	No Gas	6.476	6.476	30.40	941	0.69	5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	880385	1.65	926740	95.00	70	120	
Ge	72	2	He	555604	0.56	584023	95.13	70	120	
Ge	72	1	No Gas	2079399	1.63	2130598	97.60	70	120	
In	115	1	No Gas	2408681	1.24	2422741	99.42	70	120	
Bi	209	1	No Gas	2068438	1.76	1994134	103.73	70	120	

Interference Check Solution A (ICS-A) Report

Sample Table

Sample Name	ICSA
Data File Name	403ICSA.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-13T01:36:29-05:00
Sample Type	ICSA
Dilution	1
Comment	
ISTD Ref File Name	319CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	0.637	11.9	48995	0.9	0	ICSA Main CR1 Failed
Be	9	1	No Gas	0.022	41.3	83	33.0	0	ICSA Main CR1 Failed
V	51	2	He	0.117	7.4	1797	2.2	0	ICSA Main CR1 Failed
Cr	52	2	He	1.488	3.7	10311	1.9	0	ICSA Main CR1 Failed
Fe	56	2	He	103693.773	1.8	549401538	0.5	0	
Se	78	2	He	0.123	100.1	215	2.8	0	ICSA Main CR1 Failed
As	75	2	He	0.255	18.1	313	12.3	0	ICSA Main CR1 Failed
Ca	44	2	He	105097.326	1.9	3059841	0.6	0	
Na	23	2	He	104188.768	1.2	95054779	0.3	0	
Mg	24	2	He	102804.550	0.8	53205303	0.6	0	
K	39	2	He	102248.879	0.8	57624822	0.7	0	
Mn	55	2	He	0.332	4.0	1877	4.1	0	ICSA Main CR1 Failed
Co	59	2	He	0.116	9.8	1197	7.8	0	ICSA Main CR1 Failed
Ni	60	2	He	0.458	2.1	1313	1.8	0	ICSA Main CR1 Failed
Cu	63	2	He	0.103	6.6	2140	1.7	0	ICSA Main CR1 Failed
Zn	66	2	He	1.436	7.7	2420	7.0	0	ICSA Main CR1 Failed
Al	27	2	He	96280.029	0.6	24631754	1.2	0	
B	11	1	No Gas	-17.411	-1.6	16074	5.1	0	ICSA Main CR1 Failed
Al	27	1	No Gas	96736.787	1.2	1321929367	0.3	0	
Si	28	1	No Gas	25.296	4.1	448992	0.4	0	
Ag	107	1	No Gas	0.078	16.7	1630	12.5	0	ICSA Main CR1 Failed
Cd	111	1	No Gas	0.892	4.2	2867	4.9	0	ICSA Main CR1 Failed
Sr	88	1	No Gas	0.806	1.7	25004	0.8	0	ICSA Main CR1 Failed
Mo	95	1	No Gas	2038.178	1.5	12326473	0.8	0	
Sn	118	1	No Gas	0.602	4.5	7636	2.6	0	ICSA Main CR1 Failed
Sb	121	1	No Gas	0.292	6.0	5214	3.5	0	ICSA Main CR1 Failed
Ba	137	1	No Gas	0.445	8.5	2554	6.3	0	ICSA Main CR1 Failed
Tl	205	1	No Gas	0.036	6.8	1093	5.5	0	ICSA Main CR1 Failed
Tl	203	1	No Gas	0.030	10.1	393	10.3	0	ICSA Main CR1 Failed
Pb	208	1	No Gas	7.218	1.2	280029	1.2	0	
U	238	1	No Gas	0.065	9.8	2507	9.6	0	ICSA Main CR1 Failed
Ca	43	2	He	97861.592	1.1	167938	0.3	0	
Sb	121	2	He	0.280	11.3	2464	7.5	0	ICSA Main CR1 Failed
Ti	47	2	He	2078.538	1.3	371761	0.6	0	
Se	82	1	No Gas	0.911	218.3	-161	-235.5	0	ICSA Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	802825	2.37	926740	86.63	70	120	
Ge	72	2	He	527032	1.47	584023	90.24	70	120	
Ge	72	1	No Gas	1983642	1.38	2130598	93.10	70	120	
In	115	1	No Gas	2249044	0.80	2422741	92.83	70	120	
Bi	209	1	No Gas	1903257	0.89	1994134	95.44	70	120	

Interference Check Solution AB (ICS-AB) Report

Sample Table

Sample Name	ICSAB
Data File Name	404ICSB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq Date Time	2022-09-13T01:38:24-05:00
Sample Type	ICSB
Dilution	1
Comment	
ISTD Ref File Name	319CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High	QC Flag
Li	7	1	No Gas	102.053	5.719	1264856	3.69	100	102.1	180	120	ICSB Main CR1 Failed
Be	9	1	No Gas	97.217	1.815	290468	0.39	100	97.2	80	120	
V	51	2	He	97.800	0.299	535011	0.44	100	97.8	80	120	
Cr	52	2	He	98.699	0.956	621853	0.21	100	98.7	80	120	
Fe	56	2	He	112442.460	0.098	592504111	0.72	100	112442.5	80	120	
Se	78	2	He	98.219	1.577	7415	1.02	100	98.2	80	120	
As	75	2	He	102.365	0.559	92924	0.57	100	102.4	80	120	
Ca	44	2	He	112397.065	0.789	3254445	0.47	100	112397.1	80	120	ICSB Main CR1 Failed
Na	23	2	He	112121.848	0.647	101711268	0.19	100	112121.8	80	120	ICSB Main CR1 Failed
Mg	24	2	He	110931.494	0.596	57091942	0.36	100	110931.5	80	120	
K	39	2	He	109813.792	0.467	61538816	0.27	100	109813.8	80	120	ICSB Main CR1 Failed
Mn	55	2	He	99.213	0.653	409238	0.80	100	99.2	80	120	
Co	59	2	He	99.958	0.767	967587	0.27	100	100.0	80	120	
Ni	60	2	He	99.615	0.830	247932	0.53	100	99.6	80	120	
Cu	63	2	He	97.876	1.137	669280	0.39	100	97.9	80	120	
Zn	66	2	He	103.136	1.533	127229	0.84	100	103.1	80	120	
Al	27	2	He	94797.191	0.894	24116600	0.83	100	94797.2	80	120	ICSB Main CR1 Failed
B	11	1	No Gas	526.210	4.332	913930	2.63	100	526.2	80	120	
Al	27	1	No Gas	94962.643	1.722	1267825101	0.50	100	94962.6	80	120	ICSB Main CR1 Failed
Si	28	1	No Gas	519.948	1.234	3671691	1.68	100	519.9	80	120	
Ag	107	1	No Gas	97.749	0.995	1525210	0.85	100	97.7	80	120	
Cd	111	1	No Gas	101.319	1.569	319480	0.38	100	101.3	80	120	
Sr	88	1	No Gas	106.638	0.808	3063157	1.07	100	106.6	80	120	
Mo	95	1	No Gas	2087.878	0.967	12400552	1.24	100	2087.9	80	120	ICSB Main CR1 Failed
Sn	118	1	No Gas	104.751	1.226	960890	0.62	100	104.8	80	120	
Sb	121	1	No Gas	106.156	0.802	1352023	1.07	100	106.2	80	120	
Ba	137	1	No Gas	105.624	1.894	481564	0.27	100	105.6	80	120	
Tl	205	1	No Gas	101.879	2.435	2822316	1.23	100	101.9	80	120	
Tl	203	1	No Gas	97.093	2.045	1147573	0.64	100	97.1	80	120	
Pb	208	1	No Gas	109.510	1.411	4165186	1.33	100	109.5	80	120	
U	238	1	No Gas	104.446	1.297	3938230	1.48	100	104.4	80	120	
Ca	43	2	He	106748.644	0.776	182179	1.12	100	106748.6	80	120	
Sb	121	2	He	103.540	0.662	650313	0.12	100	103.5	80	120	
Ti	47	2	He	2160.676	0.341	384327	0.89	100	2160.7	80	120	
Cu	63	1	No Gas	97.180	0.550	1193179	1.78	100	97.2	80	120	
Se	82	1	No Gas	99.797	2.222	18315	1.73	100	99.8	80	120	

QC ISTD Table

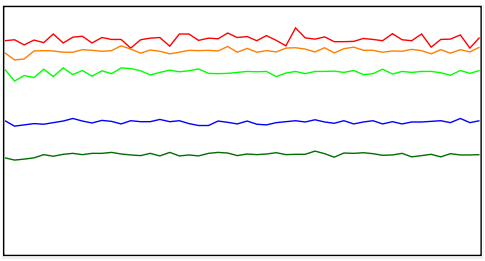
Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	788142	2.01	926740	85.04	70	120	
Ge	72	2	He	524072	0.74	584023	89.73	70	120	
Ge	72	1	No Gas	1938060	1.24	2130598	90.96	70	120	
In	115	1	No Gas	2208720	1.69	2422741	91.17	70	120	
Bi	209	1	No Gas	1881970	2.68	1994134	94.38	70	120	

Tune Check Report

Operator Name	ALSHS NoUser
Acq/Data Batch	D:\Agilent\ICPMH\1\DATA\091222A.b
Acq. Date-Time	09/12/2022 10:27:43
Report Comment	---
Instrument Name	G8422A SG22121190

[No Gas]

Sensitivity



Sampling Period [sec]	0.514
Integration Time [sec]	0.1

Mass	Range	Count	Resp [cps/(ug/l)]	Resp (Required) [cps/(ug/l)]	Resp (Flag)
9	5000	4361	43611.39		
24	20000	14752	147523.67		
59	50000	26773	267729.96		
115	50000	41242	412420.04		
208	50000	20185	201850.35		

Mass	Resp Ratio	Resp Ratio (Required)	Resp Ratio (Flag)
9		-	
24		-	
59		-	
115		-	
208		-	

Mass	RSD%	RSD% (Required)	RSD% (Flag)
9	1.852	5.000	
24	1.433	5.000	
59	1.344	5.000	
115	1.261	5.000	
208	1.749	5.000	

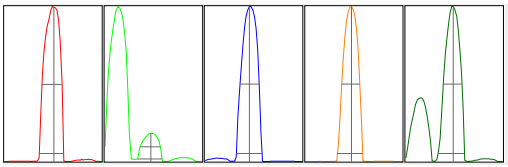
Mass	Background	Background (Required)	Background (Flag)
9	0.800		
24	0.500		
59	0.700		
115	1.200		
208	3.800		

Oxide/Doubly Charged Ratio

Oxide	156 / 140 0.535 %
Doubly Charged	70 / 140 0.920 %

Tune Check Report

Resolution/Axis



Integration Time [sec]	0.1
Acquisition Time [sec]	37.4
Y Axis	Linear

Mass	Peak Height	Axis	Axis (Required)	Axis (Flag)
9	4288.12	9.05	8.90 - 9.10	
24	14787.17	23.95	23.90 - 24.10	
59	27492.19	58.90	58.90 - 59.10	
115	41605.41	114.95	114.90 - 115.10	
208	19836.41	208.00	207.90 - 208.10	

Mass	W-50%	W-5%	W-5% (Required)	W-5% (Flag)
9	0.61	0.741		
24	0.61	0.741		
59	0.59	0.783		
115	0.55	0.767		
208	0.57	0.809		

Tune Parameters

Plasma Parameters

Plasma Mode	---	Nebulizer Gas	0.80 L/min	Dilution Gas	0.25 L/min
RF Power	1550 W	Option Gas	---	Auxiliary Gas	0.90 L/min
RF Matching	1.80 V	Nebulizer Pump	0.10 rps	Plasma Gas	15.0 L/min
Sample Depth	8.0 mm	S/C Temp	2 °C		

Lens Parameters

Extract 1	0.0 V	Omega Lens	10.8 V	Deflect	13.2 V
Extract 2	-200.0 V	Cell Entrance	-30 V	Plate Bias	-35 V
Omega Bias	-75 V	Cell Exit	-50 V		

Cell Parameters

Use Gas	No	3rd Gas Flow	---	Energy Discrimination	5.0 V
He Flow	0.0 mL/min	OctP Bias	-8.0 V		
H2 Flow	0.0 mL/min	OctP RF	200 V		

QP Parameters

Mass Gain	122	Axis Gain	0.9994	QP Bias	-3.0 V
Mass Offset	125	Axis Offset	0.02		

Hardware Settings

Torch

Torch H	0.1 mm	Torch V	-0.1 mm

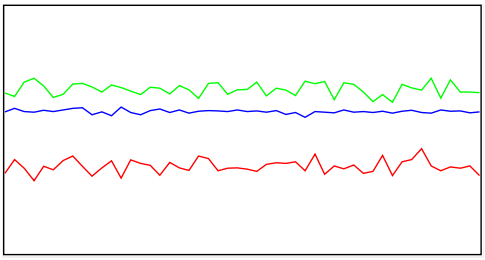
EM

Discriminator	4.5 mV	Analog HV	2121 V	Pulse HV	1094 V

[He]

Tune Check Report

Sensitivity



Sampling Period [sec]	0.306
Integration Time [sec]	0.1

Mass	Range	Count	Resp [cps/(ug/l)]	Resp (Required) [cps/(ug/l)]	Resp (Flag)
9	500	176	1758.91		
24	1000	665	6645.97		
59	20000	11487	114865.57		

Mass	Resp Ratio	Resp Ratio (Required)	Resp Ratio (Flag)
9		-	
24		-	
59		-	

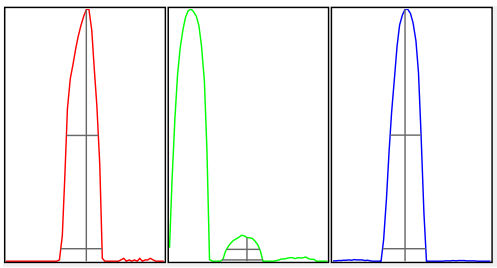
Mass	RSD%	RSD% (Required)	RSD% (Flag)
9	7.685	5.000	Fail
24	3.774	5.000	
59	1.350	5.000	

Mass	Background	Background (Required)	Background (Flag)
9	0.200		
24	0.300		
59	0.100		

Oxide/Doubly Charged Ratio

Oxide	156 / 140 0.320 %
Doubly Charged	70 / 140 0.903 %

Resolution/Axis



Integration Time [sec]	0.1
Acquisition Time [sec]	22.24
Y Axis	Linear

Mass	Peak Height	Axis	Axis (Required)	Axis (Flag)
9	175.52	9.05	8.90 - 9.10	
24	625.41	24.00	23.90 - 24.10	
59	11517.12	58.90	58.90 - 59.10	

Mass	W-50%	W-5%	W-5% (Required)	W-5% (Flag)
9	0.60	0.772		
24	0.62	0.763		

Tune Check Report

Mass	W-50%	W-5%	W-5% (Required)	W-5% (Flag)
59	0.58	0.807		

Tune Parameters

Plasma Parameters

Plasma Mode	---	Nebulizer Gas	0.80 L/min	Dilution Gas	0.25 L/min
RF Power	1550 W	Option Gas	---	Auxiliary Gas	0.90 L/min
RF Matching	1.80 V	Nebulizer Pump	0.10 rps	Plasma Gas	15.0 L/min
Sample Depth	8.0 mm	S/C Temp	2 °C		

Lens Parameters

Extract 1	0.0 V	Omega Lens	9.9 V	Deflect	0.6 V
Extract 2	-200.0 V	Cell Entrance	-40 V	Plate Bias	-60 V
Omega Bias	-80 V	Cell Exit	-60 V		

Cell Parameters

Use Gas	Yes	3rd Gas Flow	---	Energy Discrimination	3.0 V
He Flow	4.0 mL/min	OctP Bias	-18.0 V		
H2 Flow	0.0 mL/min	OctP RF	190 V		

QP Parameters

Mass Gain	122	Axis Gain	0.9994	QP Bias	-15.0 V
Mass Offset	125	Axis Offset	0.02		

Hardware Settings

Torch

Torch H	0.1 mm	Torch V	-0.1 mm

EM

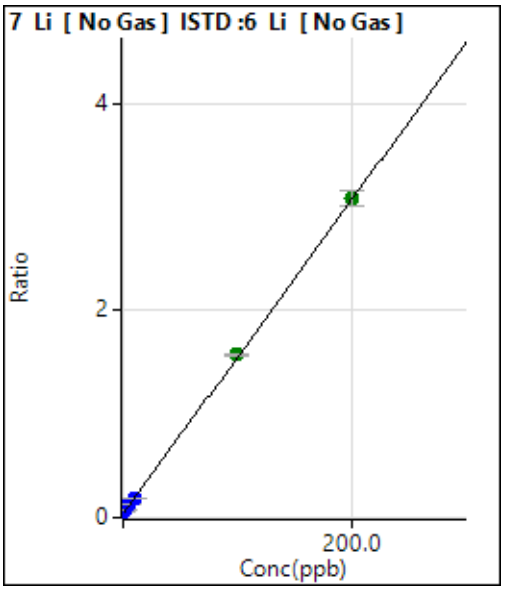
Discriminator	4.5 mV	Analog HV	2121 V	Pulse HV	1094 V

Calibration for 022_ICV.d

Batch Folder: D:\Agilent\ICPMH\1\DATA\091322A.b\
Analysis File: 091322A.batch.bin
DA Date-Time: 09/13/2022 23:25:58
Calibration Title:
Calibration Method: External Calibration
VIS Interpolation Fit:

Level	Standard Data File	Sample Name	Acq. Date-Time
1	015CALB.d	CAL BLK	09/13/2022 11:04:07
2	016CALS.d	2/10/200	09/13/2022 11:06:01
3	017CALS.d	5/25/500	09/13/2022 11:07:55
4	018CALS.d	10/50/100	09/13/2022 11:09:48
5	019CALS.d	100/500/10K	09/13/2022 11:11:41
6	020CALS.d	200/1000/20K	09/13/2022 11:13:29

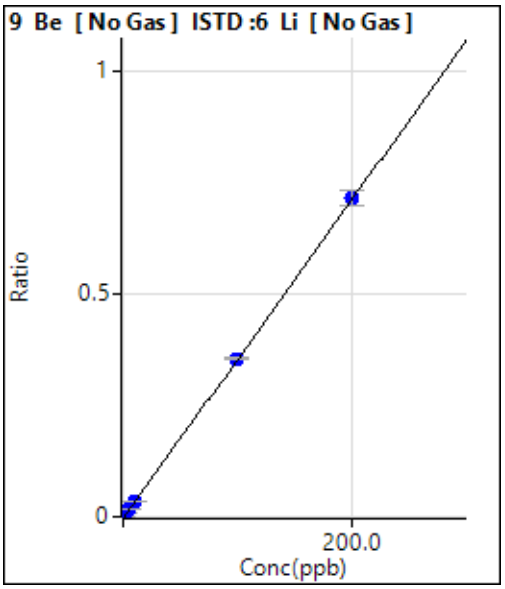
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	57018.07	0.0531	P	2.1	
2	☐	2.000	1.790	85043.55	0.0803	P	0.7	-10.5
3	☐	5.000	4.570	129180.32	0.1224	P	1.4	-8.6
4	☐	10.000	9.111	202228.13	0.1912	P	2.2	-8.9
5	☐	100.000	100.132	1626764.51	1.5700	A	1.0	0.1
6	☐	200.000	199.991	3181829.22	3.0827	A	4.6	0.0

y = 0.0151 * x + 0.0531
R = 1.0000
DL = 0.222 ppb
BEC = 3.508 ppb

Weight: <None>
Min Conc: <None>

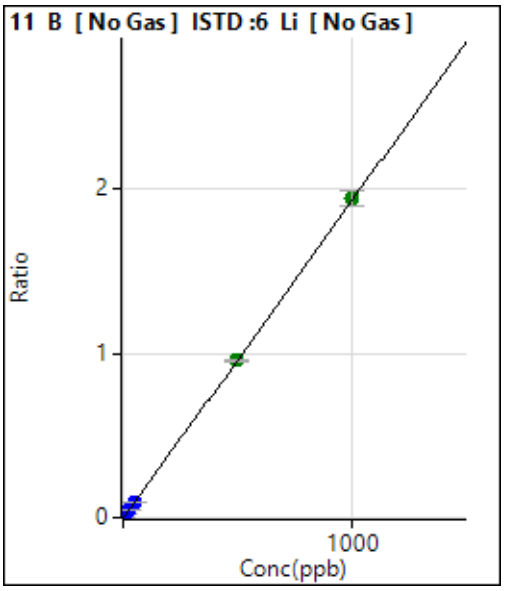


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	26.67	0.0000	P	62.2	
2	☐	2.000	1.922	7311.95	0.0069	P	2.3	-3.9
3	☐	5.000	4.758	17991.61	0.0170	P	2.8	-4.8
4	☐	10.000	9.705	36754.70	0.0347	P	1.8	-3.0
5	☐	100.000	99.401	368460.35	0.3556	P	1.3	-0.6
6	☐	200.000	200.321	739729.44	0.7166	P	4.4	0.2

y = 0.0036 * x + 2.5048E-005
R = 1.0000
DL = 0.01306 ppb
BEC = 0.007002 ppb

Weight: <None>
Min Conc: <None>

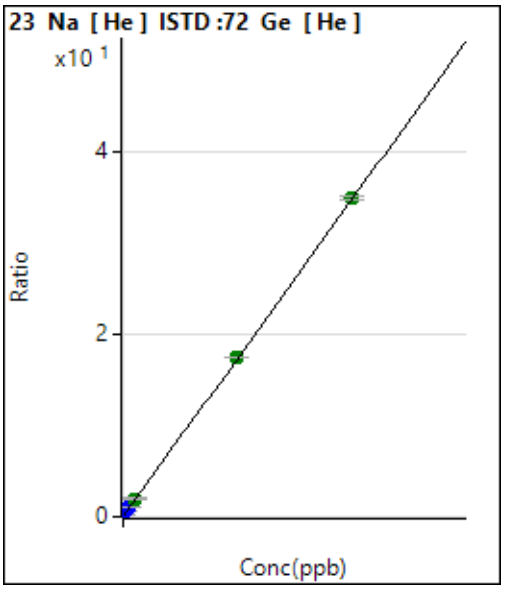
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	4450.74	0.0041	P	4.4	
2	☐	10.000	8.991	22811.91	0.0215	P	1.9	-10.1
3	☐	25.000	22.683	50652.68	0.0480	P	2.8	-9.3
4	☐	50.000	45.130	96675.21	0.0914	P	2.5	-9.7
5	☐	500.000	492.923	991423.60	0.9569	A	1.9	-1.4
6	☐	1000.000	1003.850	2007036.79	1.9444	A	4.4	0.4

y = 0.0019 * x + 0.0041
R = 1.0000
DL = 0.2825 ppb
BEC = 2.145 ppb

Weight: <None>
Min Conc: <None>

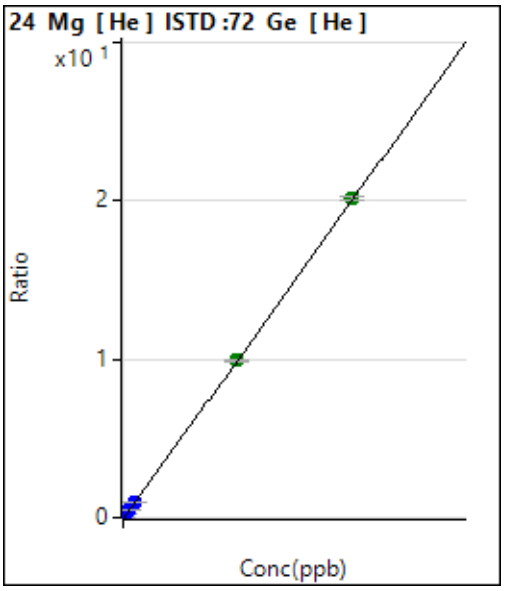


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	109859.78	0.2040	P	2.1	
2	☐	200.000	192.298	291542.87	0.5375	P	0.9	-3.9
3	☐	500.000	490.508	565368.11	1.0547	P	0.6	-1.9
4	☐	1000.000	1032.329	1070939.98	1.9944	A	2.4	3.2
5	☐	10000.00	9972.588	9401335.07	17.4994	A	0.6	-0.3
6	☐	20000.00	20012.40	18045563.48	34.9113	A	1.0	0.1

y = 0.0017 * x + 0.2040
R = 1.0000
DL = 7.361 ppb
BEC = 117.7 ppb

Weight: <None>
Min Conc: <None>

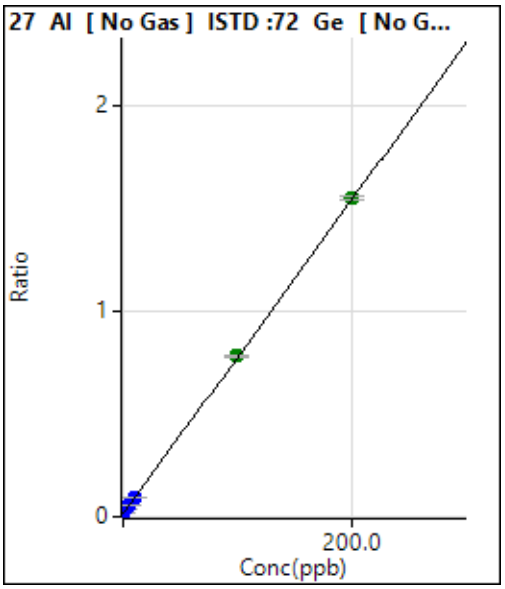
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	740.03	0.0014	P	9.1	
2	☐	200.000	194.488	106827.30	0.1970	P	1.5	-2.8
3	☐	500.000	483.341	261305.33	0.4875	P	0.4	-3.3
4	☐	1000.000	979.386	529664.12	0.9863	P	0.7	-2.1
5	☐	10000.00	9870.325	5333562.63	9.9277	A	0.6	-1.3
6	☐	20000.00	20066.34	10431888.38	20.1816	A	0.9	0.3

y = 0.0010 * x + 0.0014
R = 1.0000
DL = 0.3715 ppb
BEC = 1.367 ppb

Weight: <None>
Min Conc: <None>

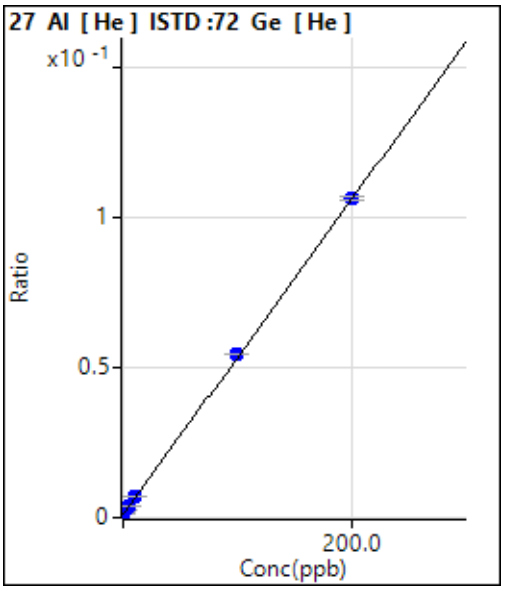


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	42986.62	0.0217	P	1.2	
2	☐	2.000	1.933	73286.12	0.0364	P	1.3	-3.3
3	☐	5.000	4.700	114608.75	0.0575	P	1.2	-6.0
4	☐	10.000	9.726	190949.61	0.0958	P	1.8	-2.7
5	☐	100.000	99.570	1548684.82	0.7808	A	1.4	-0.4
6	☐	200.000	200.237	3014244.96	1.5483	A	1.0	0.1

y = 0.0076 * x + 0.0217
R = 1.0000
DL = 0.1038 ppb
BEC = 2.842 ppb

Weight: <None>
Min Conc: <None>

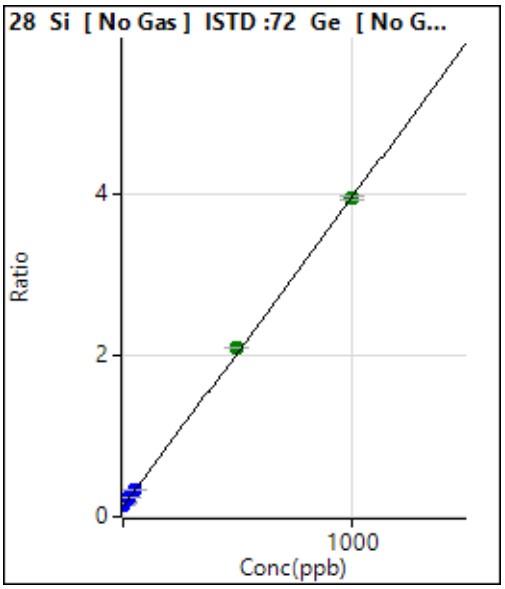
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	853.38	0.0016	P	15.6	
2	☐	2.000	1.995	1426.76	0.0026	P	15.1	-0.2
3	☐	5.000	4.588	2140.21	0.0040	P	4.6	-8.2
4	☐	10.000	10.229	3733.91	0.0070	P	4.4	2.3
5	☐	100.000	100.676	29234.46	0.0544	P	0.4	0.7
6	☐	200.000	199.661	54975.17	0.1064	P	1.1	-0.2

y = 5.2475E-004 * x + 0.0016
R = 1.0000
DL = 1.416 ppb
BEC = 3.019 ppb

Weight: <None>
Min Conc: <None>

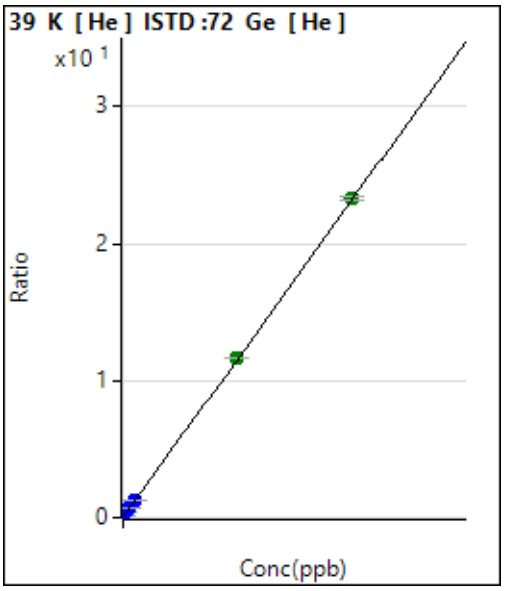


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	284003.05	0.1432	P	2.1	
2	☐	10.000	9.201	359024.81	0.1784	P	0.8	-8.0
3	☐	25.000	24.452	471818.11	0.2367	P	0.5	-2.2
4	☐	50.000	50.843	672938.30	0.3377	P	0.8	1.7
5	☐	500.000	510.925	4161174.52	2.0978	A	0.6	2.2
6	☐	1000.000	994.517	7685743.22	3.9479	A	1.0	-0.5

y = 0.0038 * x + 0.1432
R = 0.9999
DL = 2.354 ppb
BEC = 37.42 ppb

Weight: <None>
Min Conc: <None>

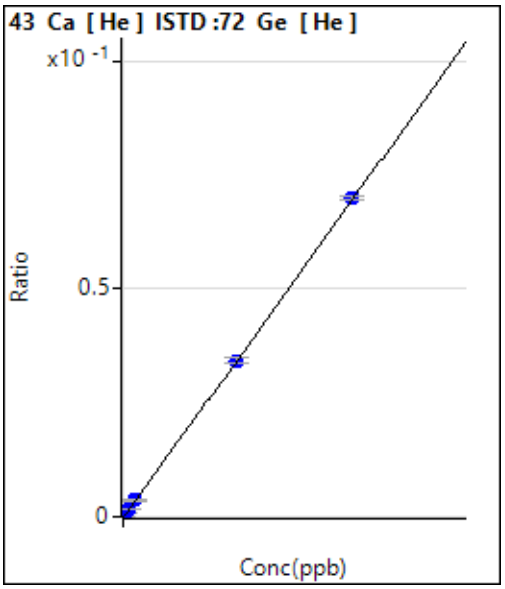
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	75800.84	0.1408	P	2.1	
2	☐	200.000	196.191	199496.59	0.3678	P	0.6	-1.9
3	☐	500.000	487.525	377901.46	0.7050	P	0.6	-2.5
4	☐	1000.000	990.433	691131.26	1.2870	P	0.4	-1.0
5	☐	10000.00	9944.724	6258639.28	11.6496	A	0.5	-0.6
6	☐	20000.00	20028.46	12053866.07	23.3193	A	0.6	0.1

y = 0.0012 * x + 0.1408
R = 1.0000
DL = 7.537 ppb
BEC = 121.6 ppb

Weight: <None>
Min Conc: <None>

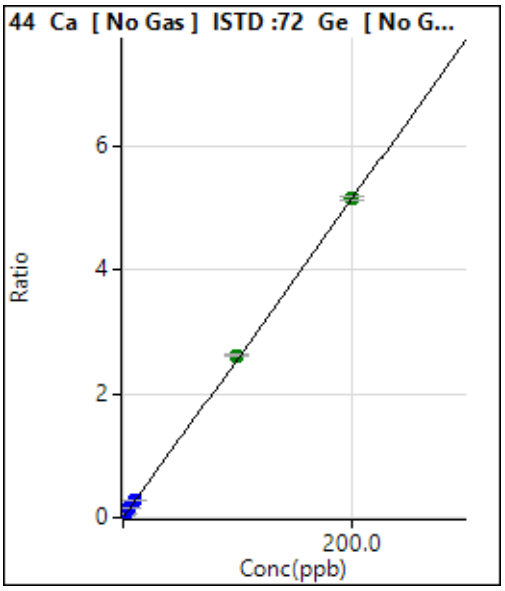


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	30.00	0.0001	P	57.2	
2	☐	200.000	222.439	450.02	0.0008	P	37.1	11.2
3	☐	500.000	442.991	856.71	0.0016	P	10.1	-11.4
4	☐	1000.000	1039.402	1973.52	0.0037	P	7.6	3.9
5	☐	10000.00	9847.036	18442.58	0.0343	P	3.9	-1.5
6	☐	20000.00	20075.71	36151.06	0.0699	P	1.4	0.4

y = 3.4810E-006 * x + 5.5612E-005
R = 1.0000
DL = 27.41 ppb
BEC = 15.98 ppb

Weight: <None>
Min Conc: <None>

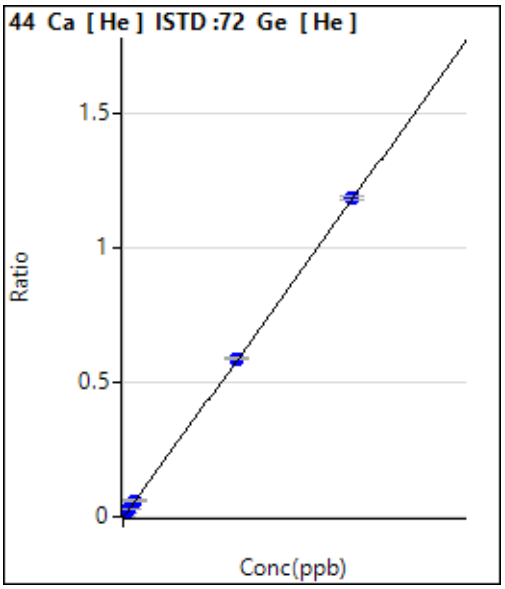
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	42893.66	0.0216	P	1.8	
2	☐	2.000	1.892	141487.37	0.0703	P	0.9	-5.4
3	☐	5.000	4.756	286911.76	0.1440	P	0.6	-4.9
4	☐	10.000	9.722	541360.46	0.2717	P	0.9	-2.8
5	☐	100.000	100.963	5192957.53	2.6182	A	1.8	1.0
6	☐	200.000	199.540	10032940.47	5.1535	A	0.7	-0.2

y = 0.0257 * x + 0.0216
R = 1.0000
DL = 0.04513 ppb
BEC = 0.8407 ppb

Weight: <None>
Min Conc: <None>

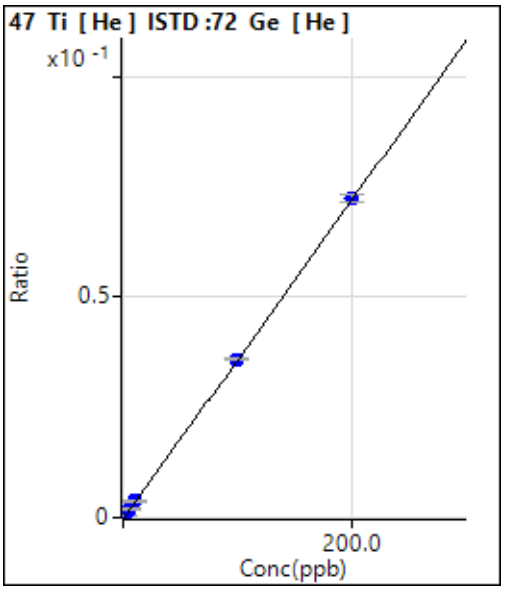


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	610.03	0.0011	P	34.6	
2	☐	200.000	196.318	6905.18	0.0127	P	2.8	-1.8
3	☐	500.000	500.687	16463.40	0.0307	P	3.0	0.1
4	☐	1000.000	997.320	32248.07	0.0601	P	2.0	-0.3
5	☐	10000.00	9933.882	315909.79	0.5880	P	1.1	-0.7
6	☐	20000.00	20033.21	612342.56	1.1847	P	1.1	0.2

y = 5.9078E-005 * x + 0.0011
R = 1.0000
DL = 19.89 ppb
BEC = 19.18 ppb

Weight: <None>
Min Conc: <None>

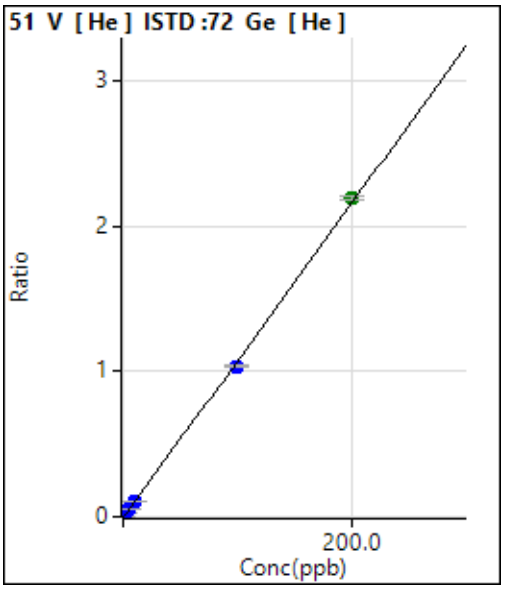
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	0.00	0.0000	P		
2	☐	2.000	1.700	333.34	0.0006	P	12.3	-15.0
3	☐	5.000	5.193	1006.72	0.0019	P	10.2	3.9
4	☐	10.000	10.266	1993.51	0.0037	P	4.8	2.7
5	☐	100.000	99.471	19327.16	0.0360	P	2.3	-0.5
6	☐	200.000	200.250	37431.42	0.0724	P	1.9	0.1

y = 3.6163E-004 * x + 0.0000E+000
R = 1.0000
DL = 0 ppb
BEC = 0 ppb

Weight: <None>
Min Conc: <None>

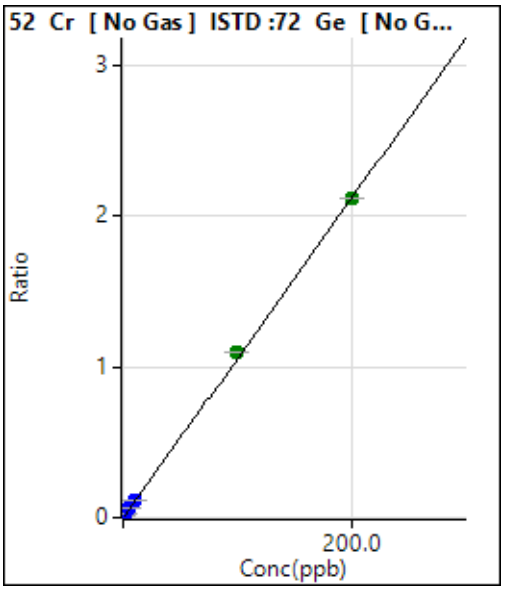


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1611.21	0.0030	P	4.9	
2	☐	2.000	1.854	12505.76	0.0231	P	2.3	-7.3
3	☐	5.000	4.703	28897.13	0.0539	P	0.6	-5.9
4	☐	10.000	9.472	56673.19	0.1055	P	1.1	-5.3
5	☐	100.000	95.421	556563.22	1.0360	P	0.6	-4.6
6	☐	200.000	202.325	1133668.60	2.1933	A	1.5	1.2

y = 0.0108 * x + 0.0030
R = 0.9996
DL = 0.0404 ppb
BEC = 0.2764 ppb

Weight: <None>
Min Conc: <None>

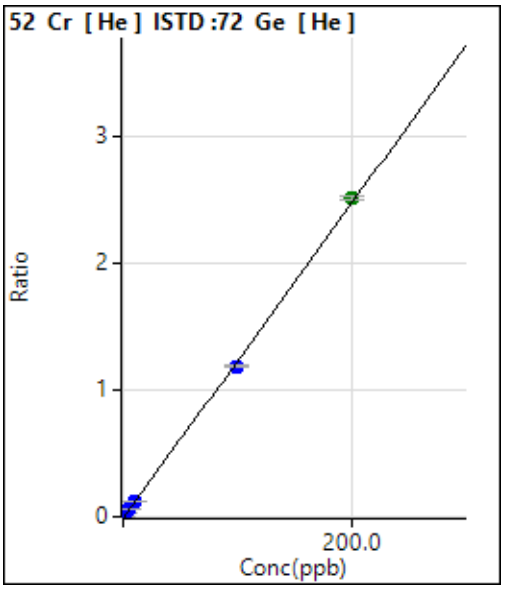
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	15465.63	0.0078	P	1.6	
2	☐	2.000	1.914	56523.56	0.0281	P	1.6	-4.3
3	☐	5.000	4.777	116435.60	0.0584	P	0.3	-4.5
4	☐	10.000	9.640	219118.90	0.1100	P	2.4	-3.6
5	☐	100.000	102.350	2166955.18	1.0925	A	0.4	2.3
6	☐	200.000	198.850	4117962.34	2.1151	A	0.6	-0.6

y = 0.0106 * x + 0.0078
R = 0.9999
DL = 0.03521 ppb
BEC = 0.7357 ppb

Weight: <None>
Min Conc: <None>

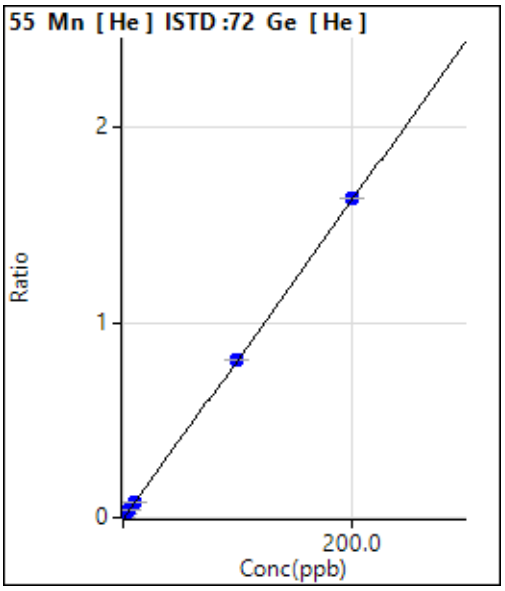


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	770.04	0.0014	P	8.6	
2	☐	2.000	1.857	13276.72	0.0245	P	3.6	-7.2
3	☐	5.000	4.648	31693.61	0.0591	P	2.2	-7.0
4	☐	10.000	9.658	65148.21	0.1213	P	0.8	-3.4
5	☐	100.000	95.453	637266.80	1.1862	P	1.1	-4.5
6	☐	200.000	202.301	1298722.43	2.5124	A	0.8	1.2

y = 0.0124 * x + 0.0014
R = 0.9996
DL = 0.0297 ppb
BEC = 0.1153 ppb

Weight: <None>
Min Conc: <None>

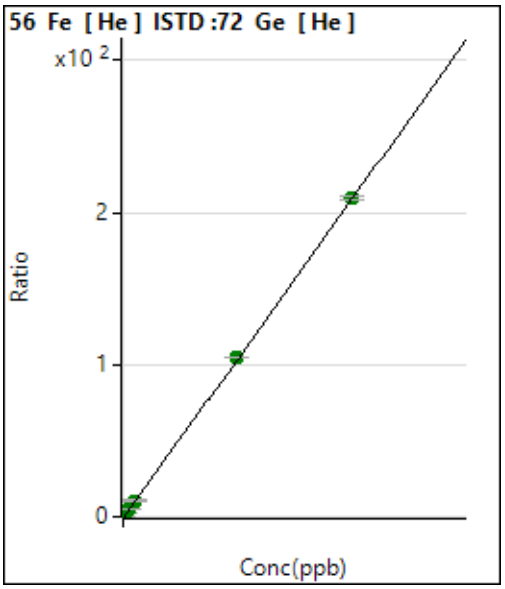
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	266.67	0.0005	P	19.6	
2	☐	2.000	1.924	8796.32	0.0162	P	5.0	-3.8
3	☐	5.000	4.874	21614.04	0.0403	P	0.9	-2.5
4	☐	10.000	9.993	44118.12	0.0822	P	1.0	-0.1
5	☐	100.000	99.166	435611.18	0.8108	P	0.4	-0.8
6	☐	200.000	200.421	846808.50	1.6382	P	0.6	0.2

y = 0.0082 * x + 4.9555E-004
R = 1.0000
DL = 0.0357 ppb
BEC = 0.06064 ppb

Weight: <None>
Min Conc: <None>

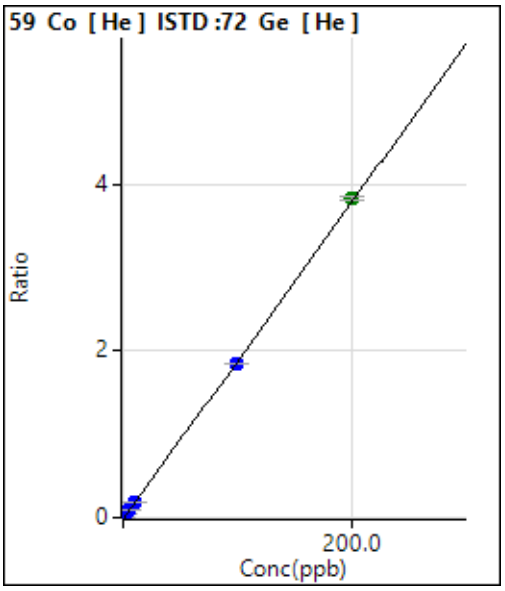


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	11688.52	0.0217	P	0.8	
2	☐	200.000	212.241	1218272.51	2.2462	A	1.7	6.1
3	☐	500.000	514.798	2903923.29	5.4173	A	1.5	3.0
4	☐	1000.000	1019.320	5748679.50	10.7052	A	1.2	1.9
5	☐	10000.00	9998.423	56311544.16	104.815	A	0.8	0.0
6	☐	20000.00	19999.33	108358855.0	209.635	A	1.2	0.0

y = 0.0105 * x + 0.0217
R = 1.0000
DL = 0.05047 ppb
BEC = 2.071 ppb

Weight: <None>
Min Conc: <None>

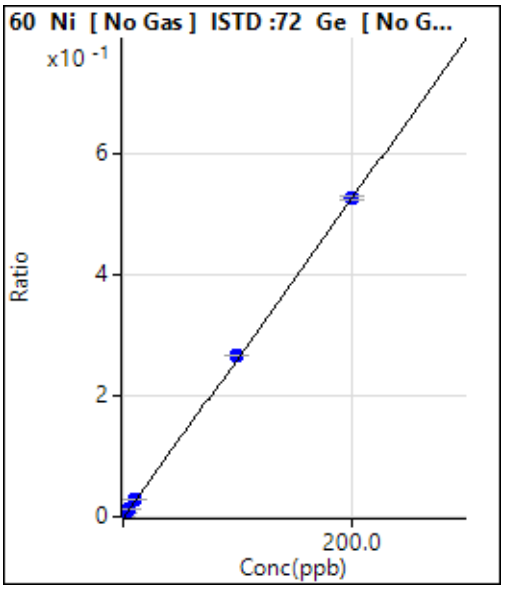
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	80.00	0.0001	P	13.0	
2	☐	2.000	1.916	19824.83	0.0366	P	3.0	-4.2
3	☐	5.000	4.830	49282.79	0.0919	P	1.1	-3.4
4	☐	10.000	9.742	99494.64	0.1853	P	1.3	-2.6
5	☐	100.000	96.957	989978.92	1.8427	P	0.5	-3.0
6	☐	200.000	201.539	1979805.49	3.8302	A	1.4	0.8

y = 0.0190 * x + 1.4864E-004
R = 0.9998
DL = 0.00304 ppb
BEC = 0.007821 ppb

Weight: <None>
Min Conc: <None>

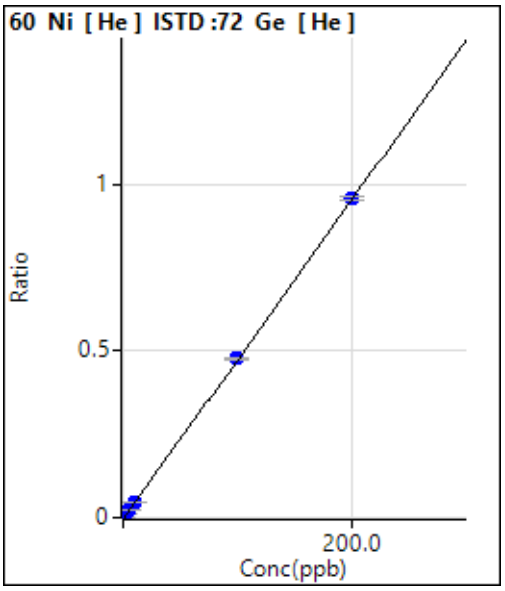


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	453.35	0.0002	P	18.5	
2	☐	2.000	1.967	10894.54	0.0054	P	6.6	-1.7
3	☐	5.000	5.060	27040.58	0.0136	P	2.4	1.2
4	☐	10.000	10.256	54328.39	0.0273	P	2.1	2.6
5	☐	100.000	100.899	528038.42	0.2662	P	0.8	0.9
6	☐	200.000	199.536	1024451.18	0.5262	P	1.3	-0.2

y = 0.0026 * x + 2.2837E-004
R = 1.0000
DL = 0.04795 ppb
BEC = 0.08663 ppb

Weight: <None>
Min Conc: <None>

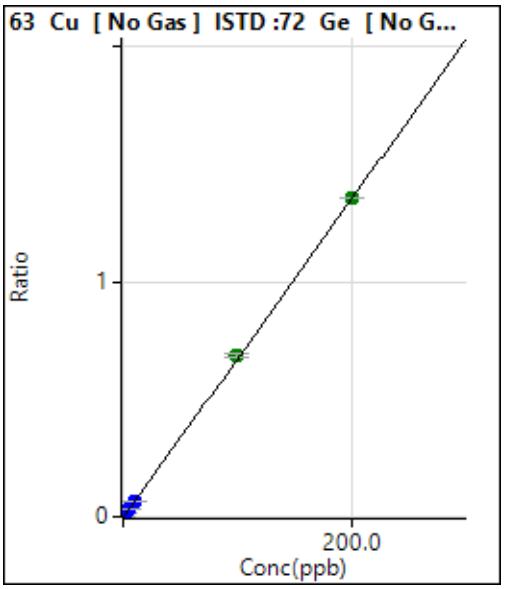
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	180.00	0.0003	P	15.1	
2	☐	2.000	2.016	5414.51	0.0100	P	4.8	0.8
3	☐	5.000	5.134	13350.12	0.0249	P	5.6	2.7
4	☐	10.000	10.117	26182.26	0.0488	P	1.2	1.2
5	☐	100.000	99.776	256731.64	0.4779	P	1.3	-0.2
6	☐	200.000	200.103	495216.37	0.9581	P	1.6	0.1

y = 0.0048 * x + 3.3444E-004
R = 1.0000
DL = 0.03167 ppb
BEC = 0.06987 ppb

Weight: <None>
Min Conc: <None>

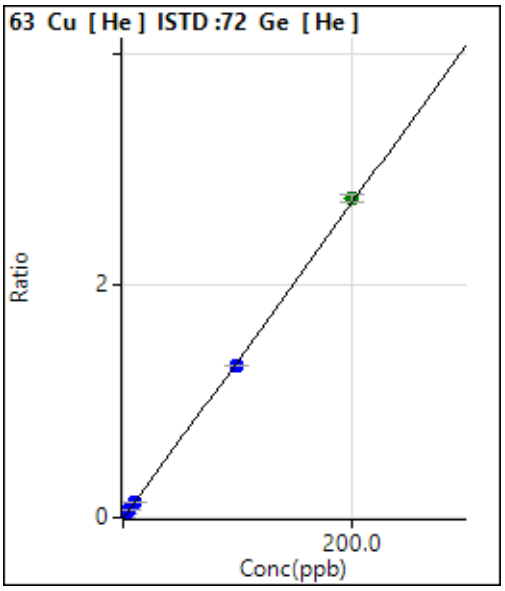


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	4210.74	0.0021	P	6.5	
2	☐	2.000	1.843	29455.76	0.0146	P	1.7	-7.9
3	☐	5.000	4.678	67534.12	0.0339	P	0.4	-6.4
4	☐	10.000	9.553	133487.60	0.0670	P	0.3	-4.5
5	☐	100.000	100.806	1361672.58	0.6865	A	1.5	0.8
6	☐	200.000	199.629	2642903.14	1.3575	A	0.6	-0.2

y = 0.0068 * x + 0.0021
R = 1.0000
DL = 0.06123 ppb
BEC = 0.3126 ppb

Weight: <None>
Min Conc: <None>

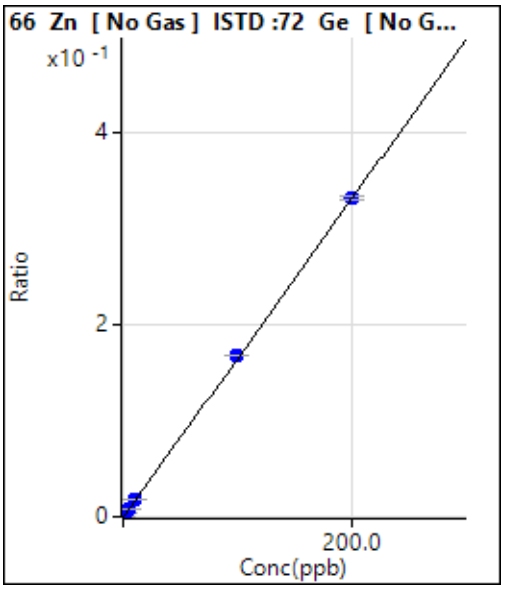
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	2260.23	0.0042	P	8.4	
2	☐	2.000	1.952	16663.84	0.0307	P	2.1	-2.4
3	☐	5.000	4.727	36679.77	0.0684	P	2.4	-5.5
4	☐	10.000	9.483	71460.74	0.1331	P	0.6	-5.2
5	☐	100.000	95.799	701667.49	1.3061	P	0.4	-4.2
6	☐	200.000	202.134	1421960.92	2.7511	A	2.1	1.1

y = 0.0136 * x + 0.0042
R = 0.9997
DL = 0.07741 ppb
BEC = 0.3089 ppb

Weight: <None>
Min Conc: <None>

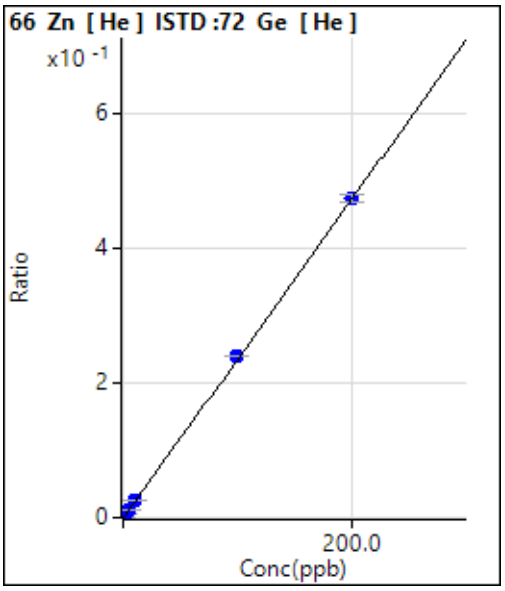


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1640.13	0.0008	P	12.5	
2	☐	2.000	1.924	8105.91	0.0040	P	2.5	-3.8
3	☐	5.000	4.814	17605.02	0.0088	P	2.5	-3.7
4	☐	10.000	10.199	35446.63	0.0178	P	0.7	2.0
5	☐	100.000	100.734	333918.90	0.1683	P	0.7	0.7
6	☐	200.000	199.629	647917.88	0.3328	P	1.0	-0.2

y = 0.0017 * x + 8.2701E-004
R = 1.0000
DL = 0.1865 ppb
BEC = 0.4973 ppb

Weight: <None>
Min Conc: <None>

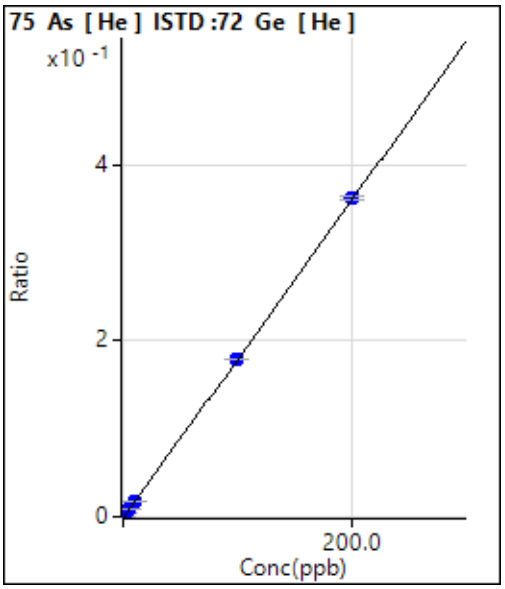
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	670.03	0.0012	P	25.0	
2	☐	2.000	1.940	3167.09	0.0058	P	1.5	-3.0
3	☐	5.000	4.725	6665.08	0.0124	P	2.8	-5.5
4	☐	10.000	9.831	13169.95	0.0245	P	1.5	-1.7
5	☐	100.000	100.585	128644.95	0.2394	P	0.5	0.6
6	☐	200.000	199.724	245121.30	0.4742	P	1.9	-0.1

y = 0.0024 * x + 0.0012
R = 1.0000
DL = 0.3937 ppb
BEC = 0.5254 ppb

Weight: <None>
Min Conc: <None>

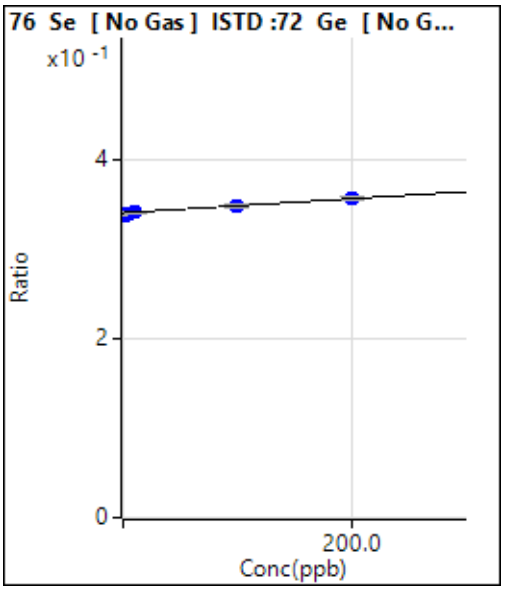


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	85.55	0.0002	P	22.5	
2	☐	2.000	1.969	2014.61	0.0037	P	7.2	-1.5
3	☐	5.000	4.960	4886.46	0.0091	P	2.4	-0.8
4	☐	10.000	9.845	9631.23	0.0179	P	0.4	-1.6
5	☐	100.000	99.065	96184.25	0.1790	P	0.6	-0.9
6	☐	200.000	200.477	187192.62	0.3621	P	1.1	0.2

y = 0.0018 * x + 1.5880E-004
R = 1.0000
DL = 0.05932 ppb
BEC = 0.08795 ppb

Weight: <None>
Min Conc: <None>

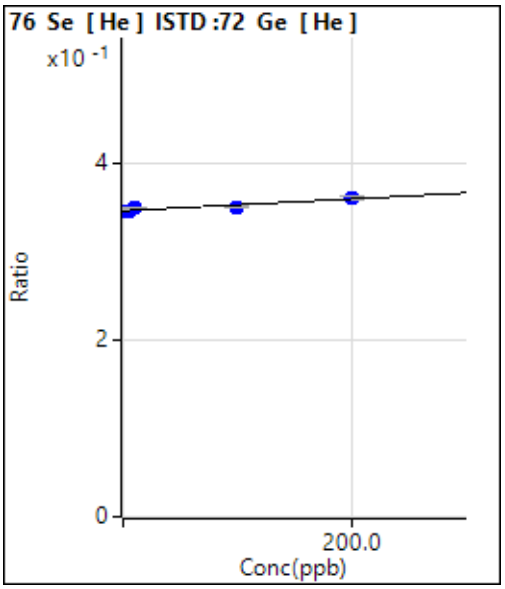
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	676241.66	0.3409	P	0.5	
2	☐	2.000	-45.333	678932.70	0.3373	P	0.2	-2366.
3	☐	5.000	-14.831	677108.40	0.3397	P	1.0	-396.6
4	☐	10.000	3.358	679863.71	0.3412	P	0.7	-66.4
5	☐	100.000	94.369	690937.10	0.3484	P	1.3	-5.6
6	☐	200.000	204.117	695075.80	0.3570	P	1.0	2.1

y = 7.9135E-005 * x + 0.3409
R = 0.9847
DL = 63.23 ppb
BEC = 4308 ppb

Weight: <None>
Min Conc: <None>

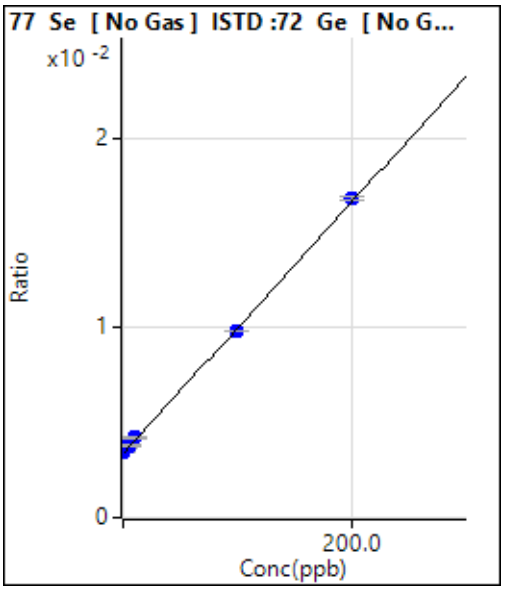


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	186965.39	0.3472	P	0.3	
2	☐	2.000	-2.526	188233.13	0.3471	P	0.7	-226.3
3	☐	5.000	-1.326	186082.37	0.3471	P	0.2	-126.5
4	☐	10.000	42.882	188026.84	0.3501	P	1.0	328.8
5	☐	100.000	68.694	189057.37	0.3519	P	0.5	-31.3
6	☐	200.000	214.212	187002.76	0.3618	P	1.0	7.1

y = 6.7933E-005 * x + 0.3472
R = 0.9665
DL = 52.47 ppb
BEC = 5111 ppb

Weight: <None>
Min Conc: <None>

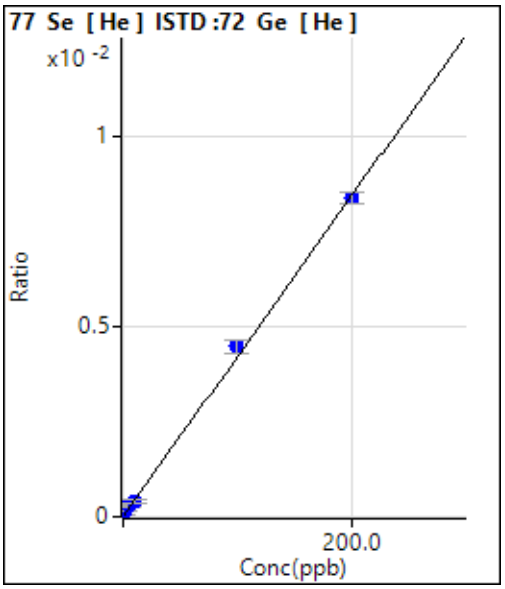
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	6888.57	0.0035	P	2.8	
2	☐	2.000	4.218	7552.24	0.0038	P	4.3	110.9
3	☐	5.000	4.988	7578.93	0.0038	P	2.8	-0.2
4	☐	10.000	11.140	8389.43	0.0042	P	2.7	11.4
5	☐	100.000	96.042	19497.68	0.0098	P	0.4	-4.0
6	☐	200.000	201.900	32776.85	0.0168	P	1.5	1.0

y = 6.6193E-005 * x + 0.0035
R = 0.9996
DL = 4.414 ppb
BEC = 52.46 ppb

Weight: <None>
Min Conc: <None>

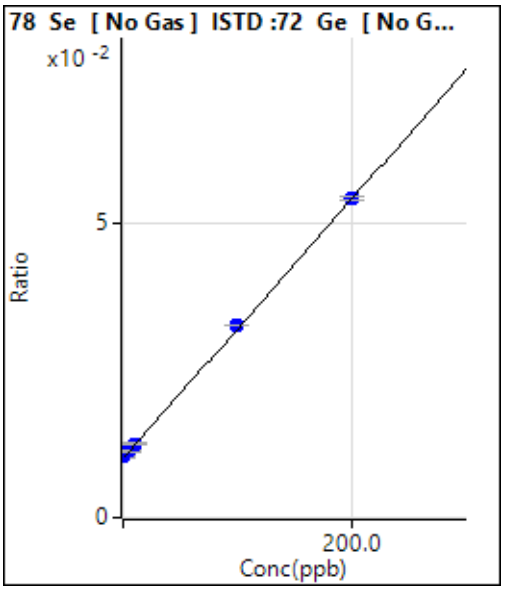


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	26.67	0.0000	P	43.5	
2	☐	2.000	2.617	86.67	0.0002	P	6.5	30.8
3	☐	5.000	5.610	153.33	0.0003	P	24.4	12.2
4	☐	10.000	8.107	210.00	0.0004	P	25.3	-18.9
5	☐	100.000	105.057	2403.59	0.0045	P	7.8	5.1
6	☐	200.000	197.545	4327.44	0.0084	P	4.2	-1.2

y = 4.2128E-005 * x + 4.9549E-005
R = 0.9995
DL = 1.534 ppb
BEC = 1.176 ppb

Weight: <None>
Min Conc: <None>

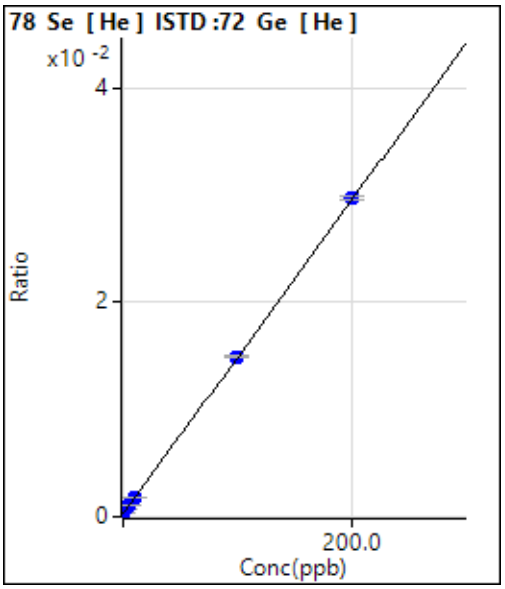
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	20616.07	0.0104	P	3.3	
2	☐	2.000	3.286	22375.54	0.0111	P	1.8	64.3
3	☐	5.000	4.232	22569.23	0.0113	P	2.0	-15.4
4	☐	10.000	9.858	25043.54	0.0126	P	3.4	-1.4
5	☐	100.000	101.063	64775.54	0.0327	P	0.4	1.1
6	☐	200.000	199.482	105783.24	0.0543	P	1.0	-0.3

y = 2.2030E-004 * x + 0.0104
R = 0.9999
DL = 4.723 ppb
BEC = 47.17 ppb

Weight: <None>
Min Conc: <None>

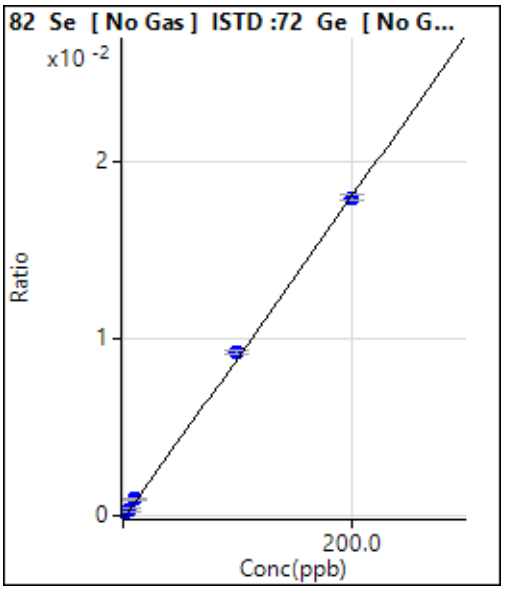


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	226.67	0.0004	P	12.2	
2	☐	2.000	2.342	414.01	0.0008	P	6.2	17.1
3	☐	5.000	4.691	593.35	0.0011	P	5.7	-6.2
4	☐	10.000	9.354	960.70	0.0018	P	8.6	-6.5
5	☐	100.000	99.216	8021.07	0.0149	P	1.5	-0.8
6	☐	200.000	200.429	15368.09	0.0297	P	1.2	0.2

y = 1.4624E-004 * x + 4.2086E-004
R = 1.0000
DL = 1.054 ppb
BEC = 2.878 ppb

Weight: <None>
Min Conc: <None>

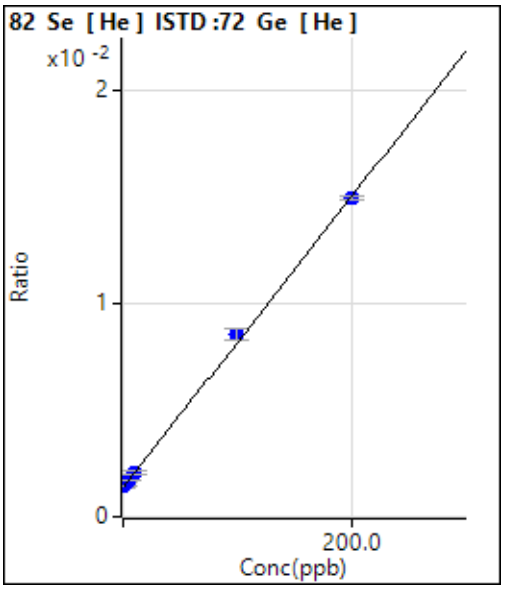
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	-303.73	-0.0002	P	-102.	
2	☐	2.000	4.158	454.09	0.0002	P	27.0	107.9
3	☐	5.000	4.668	543.82	0.0003	P	90.5	-6.6
4	☐	10.000	11.389	1767.05	0.0009	P	19.8	13.9
5	☐	100.000	102.885	18311.48	0.0092	P	2.3	2.9
6	☐	200.000	198.475	34949.79	0.0180	P	1.4	-0.8

y = 9.1225E-005 * x - 1.5354E-004
R = 0.9998
DL = 5.171 ppb
BEC = -1.683 ppb

Weight: <None>
Min Conc: <None>

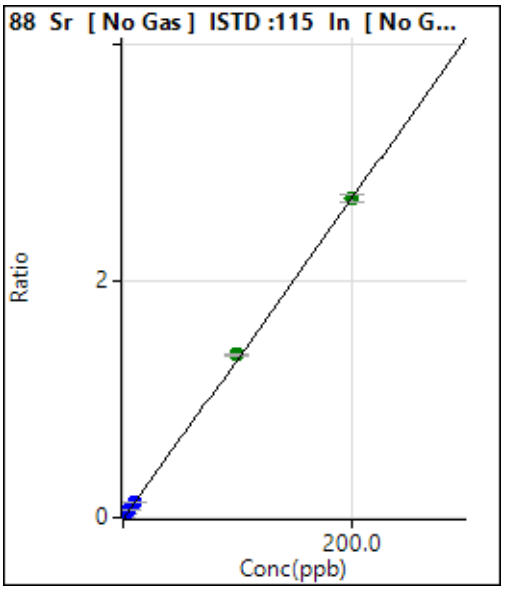


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	780.04	0.0014	P	14.0	
2	☐	2.000	0.668	810.04	0.0015	P	13.1	-66.6
3	☐	5.000	3.658	910.05	0.0017	P	0.6	-26.8
4	☐	10.000	8.805	1100.07	0.0020	P	8.2	-12.0
5	☐	100.000	104.444	4604.23	0.0086	P	6.7	4.4
6	☐	200.000	197.885	7725.70	0.0149	P	1.7	-1.1

y = 6.8203E-005 * x + 0.0014
R = 0.9996
DL = 8.887 ppb
BEC = 21.23 ppb

Weight: <None>
Min Conc: <None>

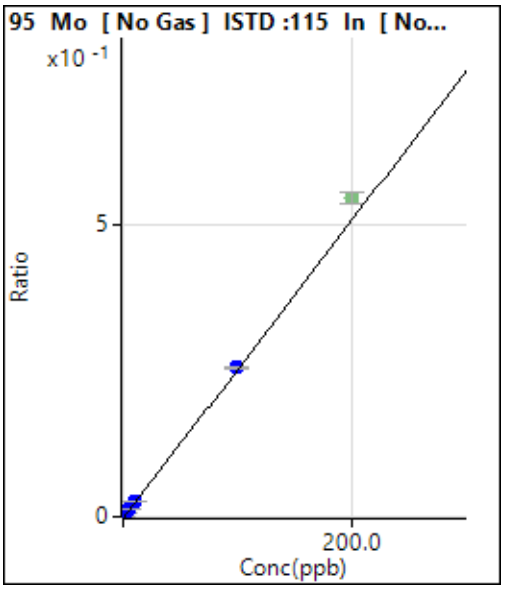
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1620.12	0.0007	P	8.5	
2	☐	2.000	1.846	57517.03	0.0257	P	0.4	-7.7
3	☐	5.000	4.616	140316.04	0.0631	P	1.4	-7.7
4	☐	10.000	9.486	285870.17	0.1290	P	0.5	-5.1
5	☐	100.000	101.625	2990495.06	1.3753	A	1.7	1.6
6	☐	200.000	199.224	5791255.96	2.6955	A	2.5	-0.4

y = 0.0135 * x + 7.1563E-004
R = 0.9999
DL = 0.01342 ppb
BEC = 0.05291 ppb

Weight: <None>
Min Conc: <None>

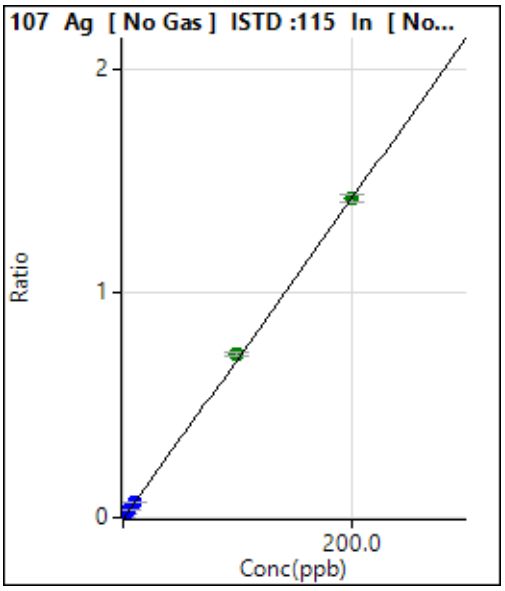


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	86.67	0.0000	P	43.9	
2	☐	2.000	1.964	11331.67	0.0051	P	3.2	-1.8
3	☐	5.000	4.872	27759.28	0.0125	P	3.7	-2.6
4	☐	10.000	9.859	55910.52	0.0252	P	1.5	-1.4
5	☐	100.000	100.021	556025.43	0.2557	P	0.9	0.0
6	☑	200.000		1175295.21	0.5471	A	3.4	

y = 0.0026 * x + 3.8302E-005
R = 1.0000
DL = 0.01974 ppb
BEC = 0.01498 ppb

Weight: <None>
Min Conc: <None>

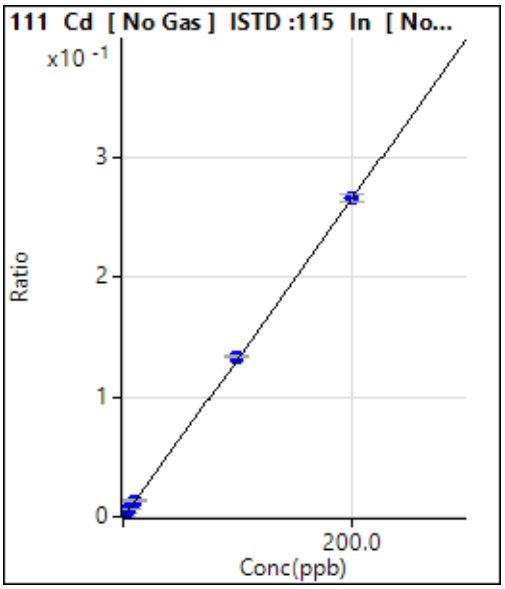
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	380.01	0.0002	P	13.5	
2	☐	2.000	1.826	29566.62	0.0132	P	0.4	-8.7
3	☐	5.000	4.595	73269.22	0.0330	P	1.0	-8.1
4	☐	10.000	9.384	148830.47	0.0672	P	0.7	-6.2
5	☐	100.000	101.781	1580504.30	0.7269	A	1.8	1.8
6	☐	200.000	199.152	3055498.81	1.4221	A	2.0	-0.4

y = 0.0071 * x + 1.6780E-004
R = 0.9999
DL = 0.009528 ppb
BEC = 0.0235 ppb

Weight: <None>
Min Conc: <None>

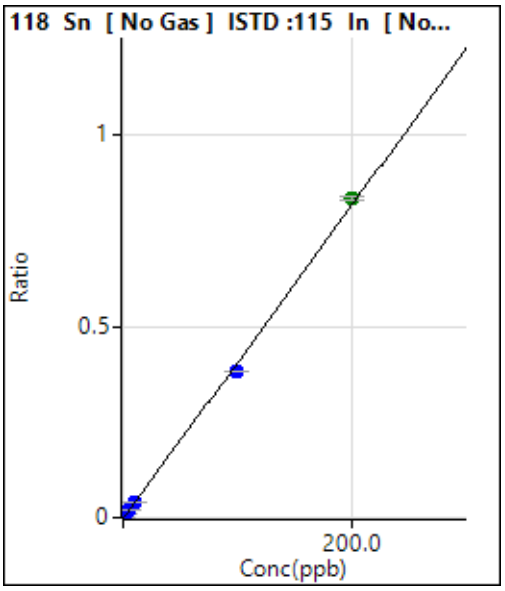


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	3.33	0.0000	P	173.2	
2	☐	2.000	1.996	5971.48	0.0027	P	2.0	-0.2
3	☐	5.000	4.902	14534.90	0.0065	P	5.5	-2.0
4	☐	10.000	10.128	29954.44	0.0135	P	2.2	1.3
5	☐	100.000	100.413	291445.27	0.1340	P	1.5	0.4
6	☐	200.000	199.790	572932.21	0.2667	P	2.4	-0.1

y = 0.0013 * x + 1.4657E-006
R = 1.0000
DL = 0.005706 ppb
BEC = 0.001098 ppb

Weight: <None>
Min Conc: <None>

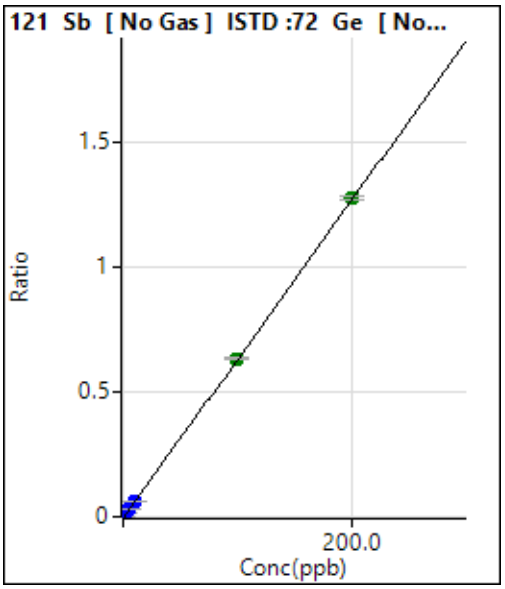
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	2400.27	0.0011	P	8.7	
2	☐	2.000	1.652	17525.21	0.0078	P	1.9	-17.4
3	☐	5.000	4.393	42321.68	0.0190	P	2.6	-12.1
4	☐	10.000	9.054	84480.89	0.0381	P	1.3	-9.5
5	☐	100.000	92.969	830103.58	0.3817	P	1.1	-7.0
6	☐	200.000	203.581	1793681.33	0.8347	A	0.8	1.8

y = 0.0041 * x + 0.0011
R = 0.9992
DL = 0.0679 ppb
BEC = 0.2589 ppb

Weight: <None>
Min Conc: <None>

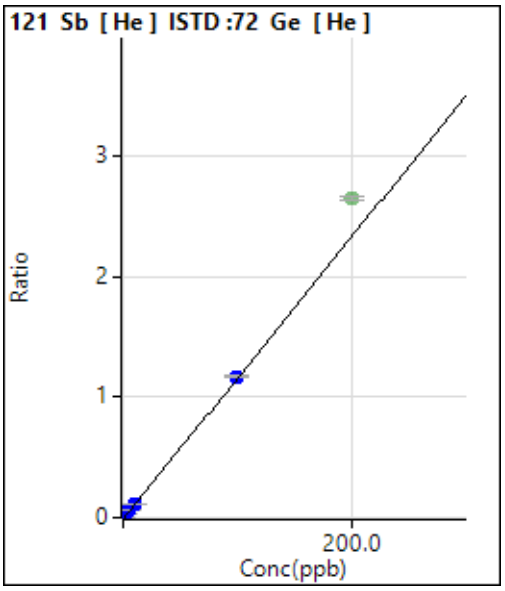


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	906.71	0.0005	P	20.8	
2	☐	2.000	1.811	24129.19	0.0120	P	1.7	-9.5
3	☐	5.000	4.597	59257.39	0.0297	P	4.0	-8.1
4	☐	10.000	9.196	117614.47	0.0590	P	1.8	-8.0
5	☐	100.000	99.327	1255454.59	0.6330	A	1.6	-0.7
6	☐	200.000	200.389	2485132.98	1.2766	A	1.4	0.2

y = 0.0064 * x + 4.5733E-004
R = 1.0000
DL = 0.04488 ppb
BEC = 0.07181 ppb

Weight: <None>
Min Conc: <None>

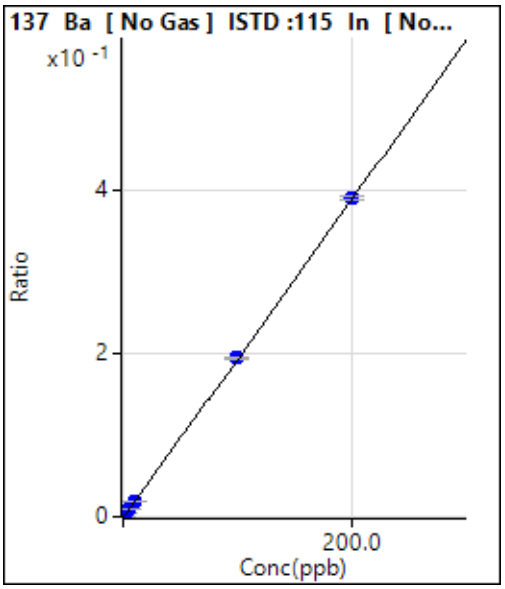
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	530.02	0.0010	P	19.0	
2	☐	2.000	2.000	13256.87	0.0244	P	2.9	0.0
3	☐	5.000	4.972	31788.81	0.0593	P	2.1	-0.6
4	☐	10.000	10.008	63577.53	0.1184	P	0.5	0.1
5	☐	100.000	100.001	630761.70	1.1741	P	1.1	0.0
6	☑	200.000		1371808.37	2.6539	A	0.7	

y = 0.0117 * x + 9.8414E-004
R = 1.0000
DL = 0.04791 ppb
BEC = 0.08389 ppb

Weight: <None>
Min Conc: <None>

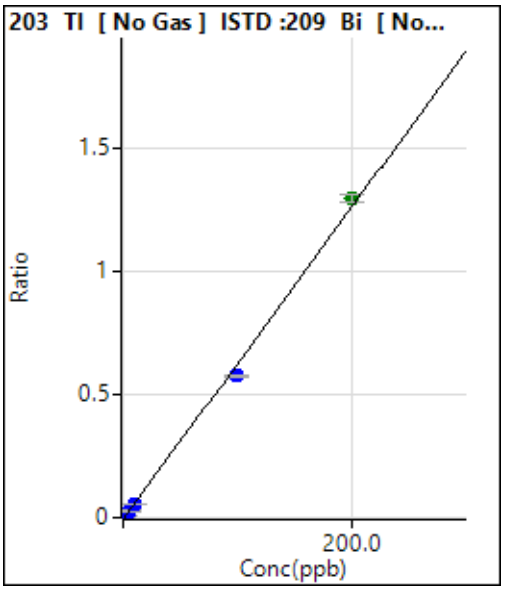


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	550.02	0.0002	P	20.8	
2	☐	2.000	1.926	8966.56	0.0040	P	2.5	-3.7
3	☐	5.000	4.747	21140.86	0.0095	P	0.1	-5.1
4	☐	10.000	9.896	43352.62	0.0196	P	0.5	-1.0
5	☐	100.000	99.859	424547.25	0.1952	P	1.3	-0.1
6	☐	200.000	200.083	840019.34	0.3909	P	1.8	0.0

y = 0.0020 * x + 2.4309E-004
R = 1.0000
DL = 0.07779 ppb
BEC = 0.1245 ppb

Weight: <None>
Min Conc: <None>

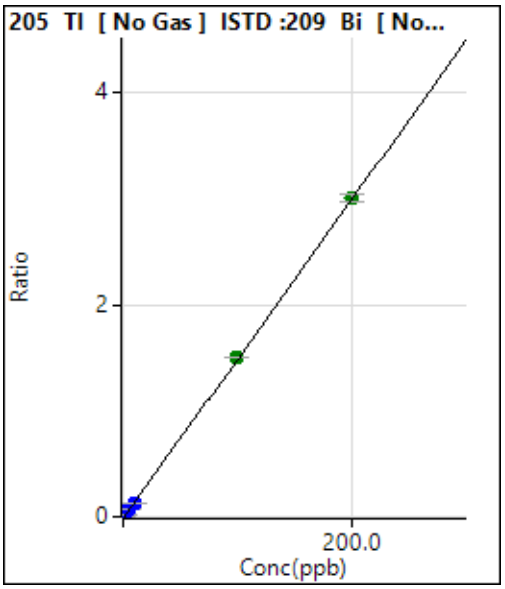
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	60.00	0.0000	P	15.4	
2	☐	2.000	1.716	18744.36	0.0109	P	3.6	-14.2
3	☐	5.000	4.306	46951.86	0.0273	P	2.3	-13.9
4	☐	10.000	8.842	96305.82	0.0561	P	1.8	-11.6
5	☐	100.000	90.751	956964.86	0.5757	P	0.7	-9.2
6	☐	200.000	204.702	2077165.33	1.2984	A	2.1	2.4

y = 0.0063 * x + 3.4926E-005
R = 0.9986
DL = 0.00255 ppb
BEC = 0.005506 ppb

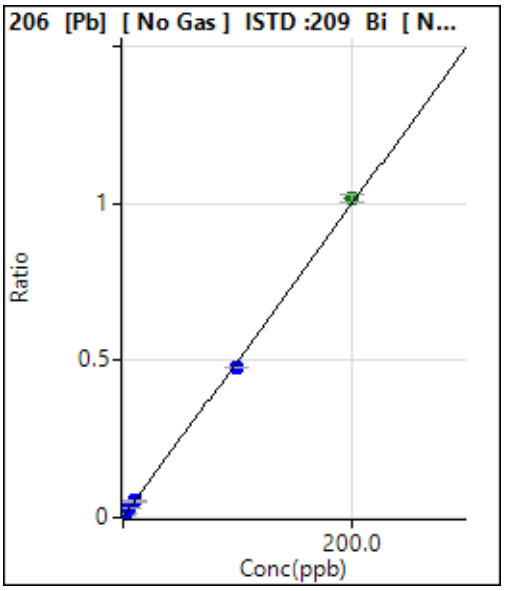
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	103.33	0.0001	P	37.6	
2	☐	2.000	1.766	45673.87	0.0266	P	0.6	-11.7
3	☐	5.000	4.351	112423.37	0.0655	P	1.1	-13.0
4	☐	10.000	8.888	229456.68	0.1337	P	2.2	-11.1
5	☐	100.000	100.077	2501731.73	1.5049	A	0.5	0.1
6	☐	200.000	200.036	4812029.20	3.0079	A	1.9	0.0

y = 0.0150 * x + 6.0016E-005
R = 1.0000
DL = 0.004499 ppb
BEC = 0.003991 ppb

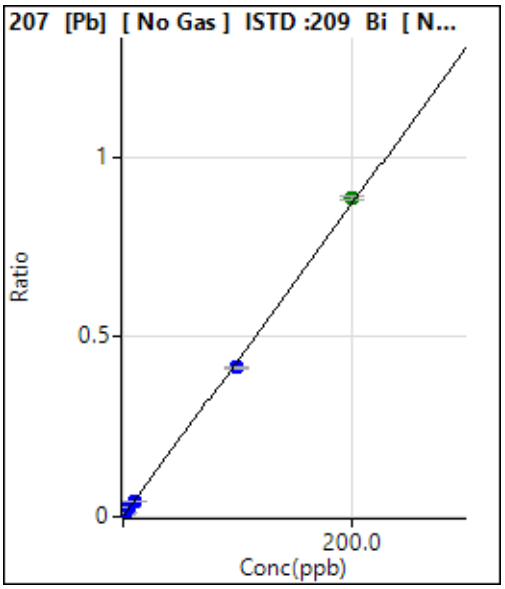
Weight: <None>
Min Conc: <None>



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	10644.68	0.0062	P	2.8	
2	☐	2.000	1.720	25339.40	0.0148	P	1.0	-14.0
3	☐	5.000	4.519	49267.45	0.0287	P	1.4	-9.6
4	☐	10.000	9.222	89422.07	0.0521	P	1.3	-7.8
5	☐	100.000	94.558	792676.63	0.4768	P	0.7	-5.4
6	☐	200.000	202.775	1624336.38	1.0154	A	2.9	1.4

y = 0.0050 * x + 0.0062
R = 0.9995
DL = 0.1052 ppb
BEC = 1.247 ppb

Weight: <None>
Min Conc: <None>

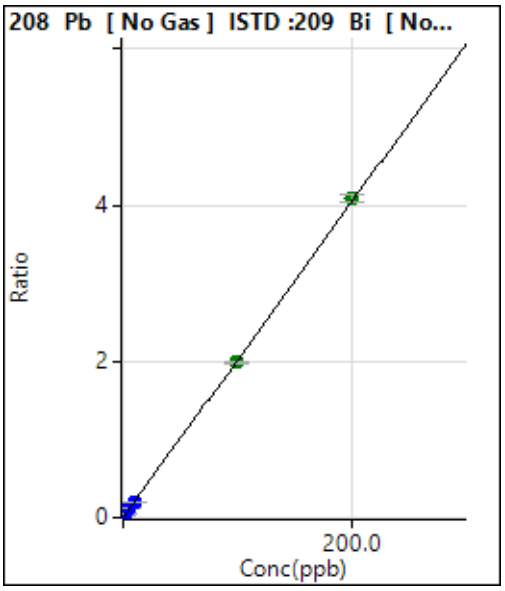


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	9297.01	0.0054	P	5.8	
2	☐	2.000	1.754	22367.08	0.0130	P	4.7	-12.3
3	☐	5.000	4.375	41900.71	0.0244	P	2.3	-12.5
4	☐	10.000	8.921	75739.52	0.0441	P	2.8	-10.8
5	☐	100.000	94.296	689337.18	0.4147	P	1.0	-5.7
6	☐	200.000	202.924	1417635.81	0.8861	A	1.5	1.5

y = 0.0043 * x + 0.0054
R = 0.9995
DL = 0.2167 ppb
BEC = 1.249 ppb

Weight: <None>
Min Conc: <None>

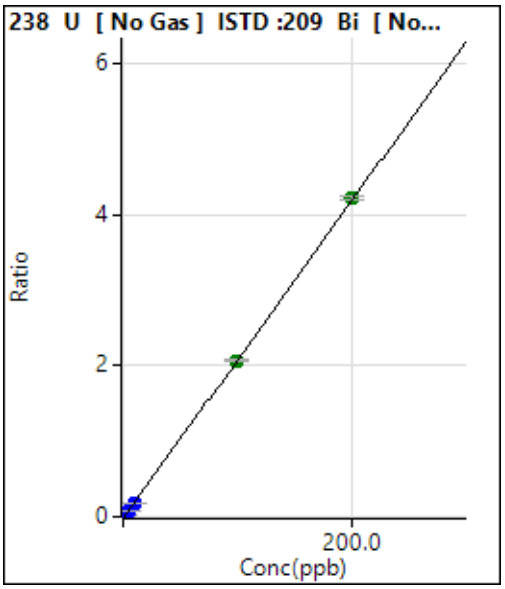
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	42262.03	0.0246	P	4.0	
2	☐	2.000	1.715	101693.42	0.0593	P	1.7	-14.2
3	☐	5.000	4.385	194205.27	0.1131	P	1.8	-12.3
4	☐	10.000	8.968	352886.85	0.2056	P	2.0	-10.3
5	☐	100.000	97.335	3306393.88	1.9889	A	1.0	-2.7
6	☐	200.000	201.402	6541114.75	4.0891	A	2.6	0.7

y = 0.0202 * x + 0.0246
R = 0.9999
DL = 0.1448 ppb
BEC = 1.221 ppb

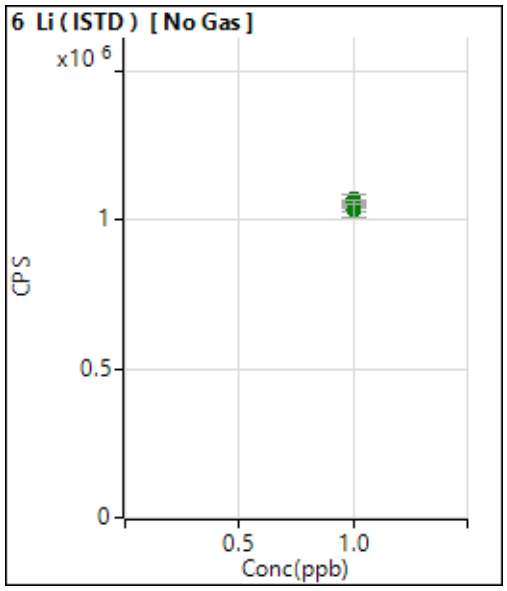
Weight: <None>
Min Conc: <None>



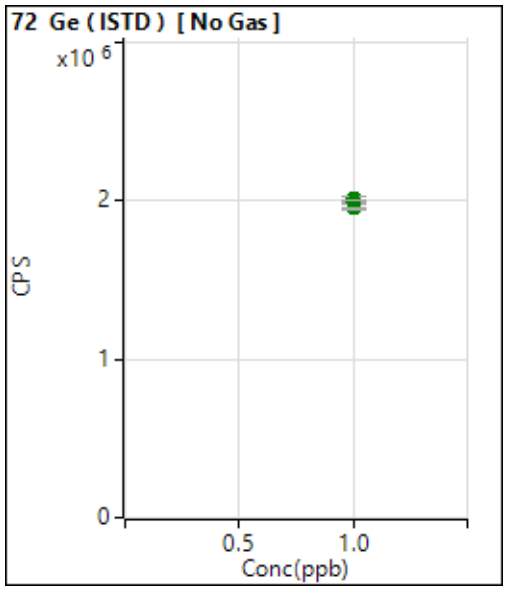
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	40.00	0.0000	P	65.6	
2	☐	2.000	1.683	60717.41	0.0354	P	0.9	-15.8
3	☐	5.000	4.178	150705.39	0.0878	P	0.7	-16.4
4	☐	10.000	8.569	308909.80	0.1800	P	1.5	-14.3
5	☐	100.000	98.573	3442017.45	2.0704	A	0.9	-1.4
6	☐	200.000	200.809	6748574.90	4.2178	A	0.8	0.4

y = 0.0210 * x + 2.3228E-005
R = 1.0000
DL = 0.002177 ppb
BEC = 0.001106 ppb

Weight: <None>
Min Conc: <None>

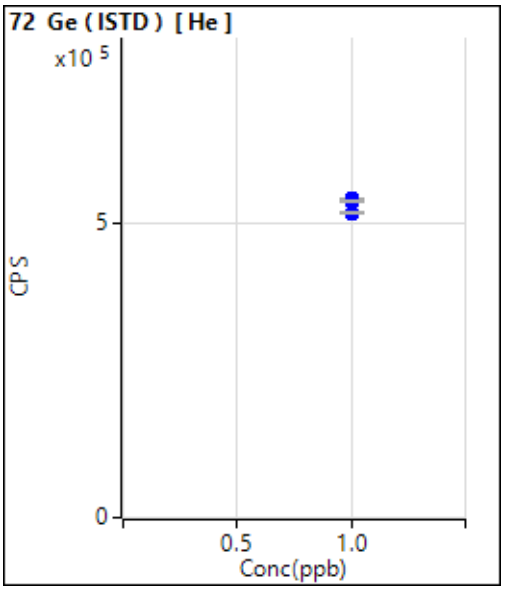


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		1073327.36		A	2.2	
2	☐	1.000		1059792.61		A	1.5	
3	☐	1.000		1055899.68		A	1.9	
4	☐	1.000		1058179.31		A	2.0	
5	☐	1.000		1036214.92		A	1.0	
6	☐	1.000		1033558.31		A	4.5	

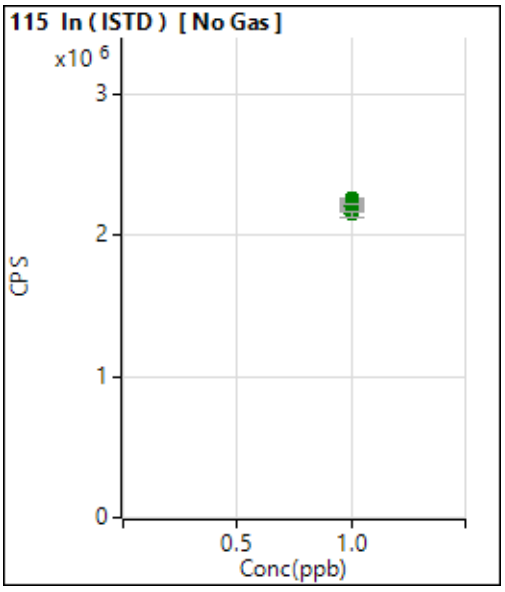


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		1983722.00		A	0.6	
2	☐	1.000		2012847.68		A	0.6	
3	☐	1.000		1993156.69		A	0.4	
4	☐	1.000		1992928.98		A	1.1	
5	☐	1.000		1983603.25		A	1.2	
6	☐	1.000		1946874.40		A	0.9	

Calibration for 022_ICV.d

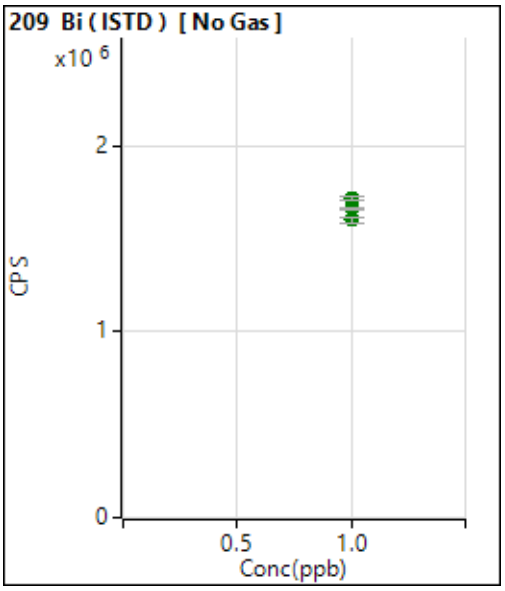


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		538446.80		P	0.5	
2	☐	1.000		542368.64		P	0.3	
3	☐	1.000		536046.70		P	0.6	
4	☐	1.000		537023.41		P	0.6	
5	☐	1.000		537252.49		P	0.7	
6	☐	1.000		516917.61		P	0.6	



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		2263852.93		A	0.4	
2	☐	1.000		2239600.55		A	1.3	
3	☐	1.000		2222342.30		A	1.7	
4	☐	1.000		2215653.33		A	1.2	
5	☐	1.000		2174688.72		A	1.1	
6	☐	1.000		2149258.90		A	2.2	

Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		1715841.17		A	1.4	
2	☐	1.000		1716268.25		A	0.8	
3	☐	1.000		1716994.09		A	0.9	
4	☐	1.000		1716380.24		A	1.0	
5	☐	1.000		1662417.01		A	0.7	
6	☐	1.000		1600205.23		A	2.1	

Calibration Blank Report

Sample Table

Sample Name	CAL BLK
Data File Name	015CALB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T11:04:07-05:00
Sample Type	CalBlk
Level	1
Dilution	1
Comment	

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Li	7	1	No Gas	57018	0.00
Be	9	1	No Gas	27	226.02
V	51	2	He	1611	0.31
Cr	52	2	He	770	1.05
Fe	56	2	He	11689	0.01
Se	78	2	He	227	5.51
As	75	2	He	86	26.69
Ca	44	2	He	610	5.64
Na	23	2	He	109860	0.00
Mg	24	2	He	740	1.20
K	39	2	He	75801	0.00
Mn	55	2	He	267	7.22
Co	59	2	He	80	15.63
Ni	60	2	He	180	8.17
Cu	63	2	He	2260	0.36
Zn	66	2	He	670	3.72
Al	27	2	He	853	1.89
B	11	1	No Gas	4451	0.13
Al	27	1	No Gas	42987	0.00
Si	28	1	No Gas	284003	0.00
Ag	107	1	No Gas	380	3.66
Cd	111	1	No Gas	3	5196.15
Sr	88	1	No Gas	1620	0.52
Mo	95	1	No Gas	87	50.40
Sn	118	1	No Gas	2400	0.38
Sb	121	1	No Gas	907	2.26
Ba	137	1	No Gas	550	3.73
Tl	205	1	No Gas	103	37.85
Tl	203	1	No Gas	60	27.78
Pb	208	1	No Gas	42262	0.01
U	238	1	No Gas	40	165.36
Ca	43	2	He	30	192.45
Sb	121	2	He	530	3.61
Cu	63	1	No Gas	4211	0.16

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Li	6	1	No Gas	1073327	2.23

Calibration Blank Report

Ge	72	2	He	538447	0.50
Ge	72	1	No Gas	1983722	0.62
In	115	1	No Gas	2263853	0.40
Bi	209	1	No Gas	1715841	1.38

Calibration Standard Report

Sample Table

Sample Name	2/10/200
Data File Name	016CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T11:06:01-05:00
Sample Type	CalStd
Level	2
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	No Gas	7312	0.02
V	51	2	He	12506	0.02
Cr	52	2	He	13277	0.03
Fe	56	2	He	1218273	0.00
Se	78	2	He	414	1.53
As	75	2	He	2015	0.34
Ca	44	2	He	6905	0.04
Na	23	2	He	291543	0.00
Mg	24	2	He	106827	0.00
K	39	2	He	199497	0.00
Mn	55	2	He	8796	0.06
Co	59	2	He	19825	0.01
Ni	60	2	He	5415	0.09
Cu	63	2	He	16664	0.01
Zn	66	2	He	3167	0.04
Al	27	2	He	1427	1.04
B	11	1	No Gas	22812	0.01
Al	27	1	No Gas	73286	0.00
Si	28	1	No Gas	359025	0.00
Ag	107	1	No Gas	29567	0.00
Cd	111	1	No Gas	5971	0.04
Sr	88	1	No Gas	57517	0.00
Mo	95	1	No Gas	11332	0.04
Sn	118	1	No Gas	17525	0.01
Sb	121	1	No Gas	24129	0.01
Ba	137	1	No Gas	8967	0.04
Tl	205	1	No Gas	45674	0.00
Tl	203	1	No Gas	18744	0.02
Pb	208	1	No Gas	101693	0.00
U	238	1	No Gas	60717	0.00
Ca	43	2	He	450	8.22
Sb	121	2	He	13257	0.02
Cu	63	1	No Gas	29456	0.01

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1059793	1.48	1073327	98.74	70	120	
Ge	72	2	He	542369	0.28	538447	100.73	70	120	
Ge	72	1	No Gas	2012848	0.64	1983722	101.47	70	120	

Calibration Standard Report

In	115	1	No Gas	2239601	1.27	2263853	98.93	70	120	
Bi	209	1	No Gas	1716268	0.80	1715841	100.02	70	120	

Calibration Standard Report

Sample Table

Sample Name	5/25/500
Data File Name	017CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T11:07:55-05:00
Sample Type	CalStd
Level	3
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	No Gas	17992	0.01
V	51	2	He	28897	0.00
Cr	52	2	He	31694	0.01
Fe	56	2	He	2903923	0.00
Se	78	2	He	593	0.99
As	75	2	He	4886	0.06
Ca	44	2	He	16463	0.02
Na	23	2	He	565368	0.00
Mg	24	2	He	261305	0.00
K	39	2	He	377901	0.00
Mn	55	2	He	21614	0.01
Co	59	2	He	49283	0.00
Ni	60	2	He	13350	0.04
Cu	63	2	He	36680	0.01
Zn	66	2	He	6665	0.05
Al	27	2	He	2140	0.25
B	11	1	No Gas	50653	0.00
Al	27	1	No Gas	114609	0.00
Si	28	1	No Gas	471818	0.00
Ag	107	1	No Gas	73269	0.00
Cd	111	1	No Gas	14535	0.03
Sr	88	1	No Gas	140316	0.00
Mo	95	1	No Gas	27759	0.01
Sn	118	1	No Gas	42322	0.00
Sb	121	1	No Gas	59257	0.01
Ba	137	1	No Gas	21141	0.01
Tl	205	1	No Gas	112423	0.00
Tl	203	1	No Gas	46952	0.00
Pb	208	1	No Gas	194205	0.00
U	238	1	No Gas	150705	0.00
Ca	43	2	He	857	1.24
Sb	121	2	He	31789	0.00
Cu	63	1	No Gas	67534	0.00

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1055900	1.94	1073327	98.38	70	120	
Ge	72	2	He	536047	0.64	538447	99.55	70	120	
Ge	72	1	No Gas	1993157	0.38	1983722	100.48	70	120	

Calibration Standard Report

In	115	1	No Gas	2222342	1.74	2263853	98.17	70	120	
Bi	209	1	No Gas	1716994	0.89	1715841	100.07	70	120	

Calibration Standard Report

Sample Table

Sample Name	10/50/100
Data File Name	018CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T11:09:48-05:00
Sample Type	CalStd
Level	4
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	No Gas	36755	0.00
V	51	2	He	56673	0.00
Cr	52	2	He	65148	0.00
Fe	56	2	He	5748679	0.00
Se	78	2	He	961	0.91
As	75	2	He	9631	0.00
Ca	44	2	He	32248	0.01
Na	23	2	He	1070940	0.00
Mg	24	2	He	529664	0.00
K	39	2	He	691131	0.00
Mn	55	2	He	44118	0.00
Co	59	2	He	99495	0.00
Ni	60	2	He	26182	0.00
Cu	63	2	He	71461	0.00
Zn	66	2	He	13170	0.01
Al	27	2	He	3734	0.13
B	11	1	No Gas	96675	0.00
Al	27	1	No Gas	190950	0.00
Si	28	1	No Gas	672938	0.00
Ag	107	1	No Gas	148830	0.00
Cd	111	1	No Gas	29954	0.01
Sr	88	1	No Gas	285870	0.00
Mo	95	1	No Gas	55911	0.00
Sn	118	1	No Gas	84481	0.00
Sb	121	1	No Gas	117614	0.00
Ba	137	1	No Gas	43353	0.00
Tl	205	1	No Gas	229457	0.00
Tl	203	1	No Gas	96306	0.00
Pb	208	1	No Gas	352887	0.00
U	238	1	No Gas	308910	0.00
Ca	43	2	He	1974	0.42
Sb	121	2	He	63578	0.00
Cu	63	1	No Gas	133488	0.00

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1058179	1.98	1073327	98.59	70	120	
Ge	72	2	He	537023	0.60	538447	99.74	70	120	
Ge	72	1	No Gas	1992929	1.09	1983722	100.46	70	120	

Calibration Standard Report

In	115	1	No Gas	2215653	1.25	2263853	97.87	70	120	
Bi	209	1	No Gas	1716380	0.97	1715841	100.03	70	120	

Calibration Standard Report

Sample Table

Sample Name	100/500/10K
Data File Name	019CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T11:11:41-05:00
Sample Type	CalStd
Level	5
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	No Gas	368460	0.00
V	51	2	He	556563	0.00
Cr	52	2	He	637267	0.00
Fe	56	2	He	56311544	0.00
Se	78	2	He	8021	0.02
As	75	2	He	96184	0.00
Ca	44	2	He	315910	0.00
Na	23	2	He	9401335	0.00
Mg	24	2	He	5333563	0.00
K	39	2	He	6258639	0.00
Mn	55	2	He	435611	0.00
Co	59	2	He	989979	0.00
Ni	60	2	He	256732	0.00
Cu	63	2	He	701667	0.00
Zn	66	2	He	128645	0.00
Al	27	2	He	29234	0.00
B	11	1	No Gas	991424	0.00
Al	27	1	No Gas	1548685	0.00
Si	28	1	No Gas	4161175	0.00
Ag	107	1	No Gas	1580504	0.00
Cd	111	1	No Gas	291445	0.00
Sr	88	1	No Gas	2990495	0.00
Mo	95	1	No Gas	556025	0.00
Sn	118	1	No Gas	830104	0.00
Sb	121	1	No Gas	1255455	0.00
Ba	137	1	No Gas	424547	0.00
Tl	205	1	No Gas	2501732	0.00
Tl	203	1	No Gas	956965	0.00
Pb	208	1	No Gas	3306394	0.00
U	238	1	No Gas	3442017	0.00
Ca	43	2	He	18443	0.02
Sb	121	2	He	630762	0.00
Cu	63	1	No Gas	1361673	0.00

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1036215	1.04	1073327	96.54	70	120	
Ge	72	2	He	537252	0.72	538447	99.78	70	120	
Ge	72	1	No Gas	1983603	1.16	1983722	99.99	70	120	

Calibration Standard Report

In	115	1	No Gas	2174689	1.10	2263853	96.06	70	120	
Bi	209	1	No Gas	1662417	0.66	1715841	96.89	70	120	

Calibration Standard Report

Sample Table

Sample Name	200/1000/20K
Data File Name	020CALS.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T11:13:29-05:00
Sample Type	CalStd
Level	6
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD
Be	9	1	No Gas	739729	0.00
V	51	2	He	1133669	0.00
Cr	52	2	He	1298722	0.00
Fe	56	2	He	108358855	0.00
Se	78	2	He	15368	0.00
As	75	2	He	187193	0.00
Ca	44	2	He	612343	0.00
Na	23	2	He	18045563	0.00
Mg	24	2	He	10431888	0.00
K	39	2	He	12053866	0.00
Mn	55	2	He	846809	0.00
Co	59	2	He	1979805	0.00
Ni	60	2	He	495216	0.00
Cu	63	2	He	1421961	0.00
Zn	66	2	He	245121	0.00
Al	27	2	He	54975	0.00
B	11	1	No Gas	2007037	0.00
Al	27	1	No Gas	3014245	0.00
Si	28	1	No Gas	7685743	0.00
Ag	107	1	No Gas	3055499	0.00
Cd	111	1	No Gas	572932	0.00
Sr	88	1	No Gas	5791256	0.00
Mo	95	1	No Gas	1175295	0.00
Sn	118	1	No Gas	1793681	0.00
Sb	121	1	No Gas	2485133	0.00
Ba	137	1	No Gas	840019	0.00
Tl	205	1	No Gas	4812029	0.00
Tl	203	1	No Gas	2077165	0.00
Pb	208	1	No Gas	6541115	0.00
U	238	1	No Gas	6748575	0.00
Ca	43	2	He	36151	0.00
Sb	121	2	He	1371808	0.00
Cu	63	1	No Gas	2642903	0.00

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1033558	4.47	1073327	96.29	70	120	
Ge	72	2	He	516918	0.60	538447	96.00	70	120	
Ge	72	1	No Gas	1946874	0.90	1983722	98.14	70	120	

Calibration Standard Report

In	115	1	No Gas	2149259	2.20	2263853	94.94	70	120	
Bi	209	1	No Gas	1600205	2.06	1715841	93.26	70	120	

Initial Calibration Verification (ICV) Report

Sample Table

Sample Name	ICV
Data File Name	022_ICV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T11:17:55-05:00
Sample Type	ICV
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High	QC Flag
Li	7	1	No Gas	103.867	4.089	1704735	2.15	100	103.9	90	110	
Be	9	1	No Gas	101.504	1.946	380684	0.60	100	101.5	90	110	
V	51	2	He	94.238	0.266	553854	0.26	100	94.2	90	110	
Cr	52	2	He	95.325	0.380	641251	0.35	100	95.3	90	110	
Fe	56	2	He	9926.925	0.654	56332604	0.66	10000	99.3	90	110	
Se	78	2	He	102.112	1.208	8311	1.15	100	102.1	90	110	
As	75	2	He	102.226	0.903	100004	0.91	100	102.2	90	110	
Ca	44	2	He	9852.043	0.600	315681	0.62	10000	98.5	90	110	
Na	23	2	He	9831.141	0.736	9339907	0.74	10000	98.3	90	110	
Mg	24	2	He	9923.373	0.574	5402918	0.55	10000	99.2	90	110	
K	39	2	He	9856.032	0.223	6250549	0.21	10000	98.6	90	110	
Mn	55	2	He	99.018	0.410	438257	0.41	100	99.0	90	110	
Co	59	2	He	97.190	0.716	999881	0.72	100	97.2	90	110	
Ni	60	2	He	99.807	0.807	258770	0.82	100	99.8	90	110	
Cu	63	2	He	95.256	0.320	702986	0.30	100	95.3	90	110	
Zn	66	2	He	100.110	0.785	129009	0.78	100	100.1	90	110	
Al	27	2	He	97.665	1.638	28600	1.56	100	97.7	90	110	
B	11	1	No Gas	513.328	1.632	1044641	2.07	500	102.7	90	110	
Al	27	1	No Gas	102.821	2.005	1605495	0.68	100	102.8	90	110	
Si	28	1	No Gas	514.769	2.489	4209962	1.01	500	103.0	90	110	
Ag	107	1	No Gas	103.289	1.509	1612133	1.73	100	103.3	90	110	
Cd	111	1	No Gas	101.610	0.815	296402	0.56	100	101.6	90	110	
Sr	88	1	No Gas	101.867	1.360	3012961	1.41	100	101.9	90	110	
Mo	95	1	No Gas	93.145	0.514	549546	0.21	100	93.1	90	110	
Sn	118	1	No Gas	96.051	0.208	861877	0.53	100	96.1	90	110	
Sb	121	1	No Gas	102.469	2.055	1301424	1.31	100	102.5	90	110	
Ba	137	1	No Gas	100.050	0.232	427513	0.48	100	100.0	90	110	
Tl	205	1	No Gas	103.410	1.432	2576235	0.96	100	103.4	90	110	
Tl	203	1	No Gas	93.285	0.514	980365	0.05	100	93.3	90	110	
Pb	208	1	No Gas	98.986	0.729	3350443	0.47	100	99.0	90	110	
U	238	1	No Gas	97.630	1.298	3397502	1.23	100	97.6	90	110	
Ca	43	2	He	9829.805	2.545	18553	2.55	10000	98.3	90	110	
Sb	121	2	He	92.815	0.263	651412	0.26	100	92.8	90	110	
Ti	47	2	He	101.697	2.140	19908	2.13	100	101.7	90	110	
Cu	63	1	No Gas	103.248	0.922	1401395	0.82	100	103.2	90	110	
Se	82	1	No Gas	100.133	2.759	17898	1.86	100	100.1	90	110	

QC ISTD Table

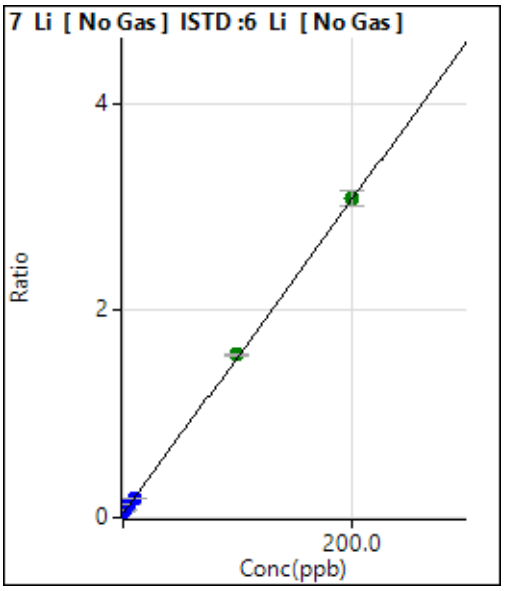
Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1048575	2.00	1073327	97.69	70	120	
Ge	72	2	He	541316	0.03	538447	100.53	70	120	
Ge	72	1	No Gas	1993256	1.32	1983722	100.48	70	120	
In	115	1	No Gas	2185539	0.32	2263853	96.54	70	120	
Bi	209	1	No Gas	1656834	0.47	1715841	96.56	70	120	

Calibration for 022_ICV.d

Batch Folder: D:\Agilent\ICPMH\1\DATA\091322A.b\
Analysis File: 091322A.batch.bin
DA Date-Time: 09/13/2022 23:25:58
Calibration Title:
Calibration Method: External Calibration
VIS Interpolation Fit:

Level	Standard Data File	Sample Name	Acq. Date-Time
1	015CALB.d	CAL BLK	09/13/2022 11:04:07
2	016CALS.d	2/10/200	09/13/2022 11:06:01
3	017CALS.d	5/25/500	09/13/2022 11:07:55
4	018CALS.d	10/50/100	09/13/2022 11:09:48
5	019CALS.d	100/500/10K	09/13/2022 11:11:41
6	020CALS.d	200/1000/20K	09/13/2022 11:13:29

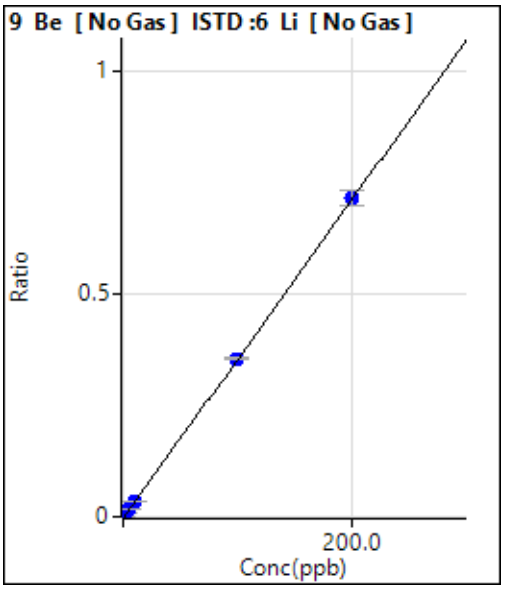
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	57018.07	0.0531	P	2.1	
2	☐	2.000	1.790	85043.55	0.0803	P	0.7	-10.5
3	☐	5.000	4.570	129180.32	0.1224	P	1.4	-8.6
4	☐	10.000	9.111	202228.13	0.1912	P	2.2	-8.9
5	☐	100.000	100.132	1626764.51	1.5700	A	1.0	0.1
6	☐	200.000	199.991	3181829.22	3.0827	A	4.6	0.0

y = 0.0151 * x + 0.0531
R = 1.0000
DL = 0.222 ppb
BEC = 3.508 ppb

Weight: <None>
Min Conc: <None>

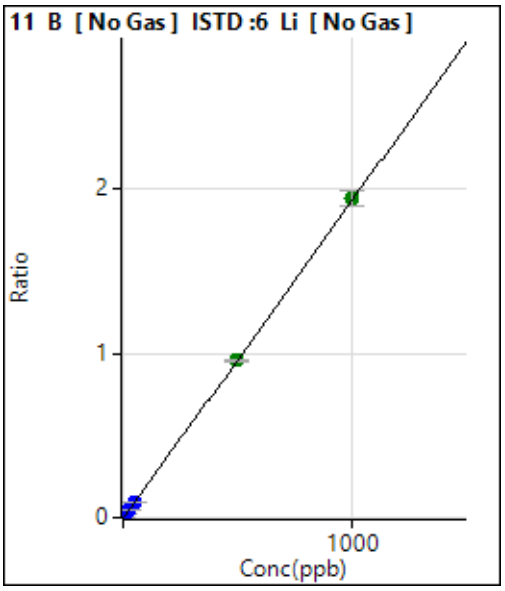


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	26.67	0.0000	P	62.2	
2	☐	2.000	1.922	7311.95	0.0069	P	2.3	-3.9
3	☐	5.000	4.758	17991.61	0.0170	P	2.8	-4.8
4	☐	10.000	9.705	36754.70	0.0347	P	1.8	-3.0
5	☐	100.000	99.401	368460.35	0.3556	P	1.3	-0.6
6	☐	200.000	200.321	739729.44	0.7166	P	4.4	0.2

y = 0.0036 * x + 2.5048E-005
R = 1.0000
DL = 0.01306 ppb
BEC = 0.007002 ppb

Weight: <None>
Min Conc: <None>

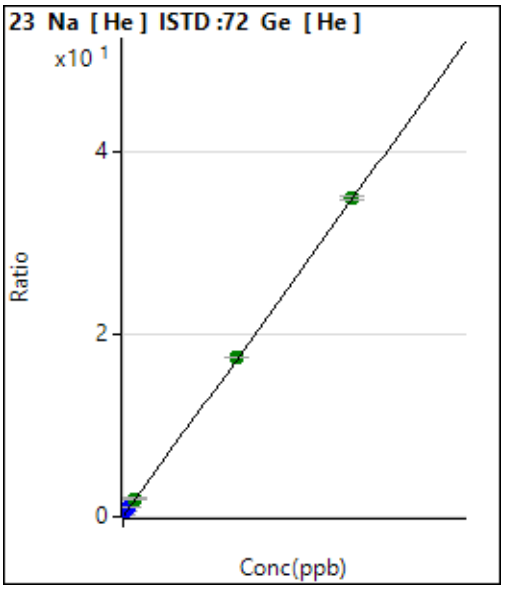
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	4450.74	0.0041	P	4.4	
2	☐	10.000	8.991	22811.91	0.0215	P	1.9	-10.1
3	☐	25.000	22.683	50652.68	0.0480	P	2.8	-9.3
4	☐	50.000	45.130	96675.21	0.0914	P	2.5	-9.7
5	☐	500.000	492.923	991423.60	0.9569	A	1.9	-1.4
6	☐	1000.000	1003.850	2007036.79	1.9444	A	4.4	0.4

y = 0.0019 * x + 0.0041
R = 1.0000
DL = 0.2825 ppb
BEC = 2.145 ppb

Weight: <None>
Min Conc: <None>

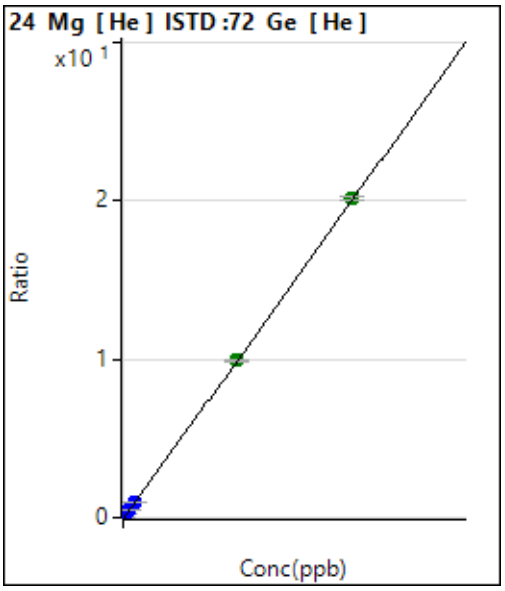


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	109859.78	0.2040	P	2.1	
2	☐	200.000	192.298	291542.87	0.5375	P	0.9	-3.9
3	☐	500.000	490.508	565368.11	1.0547	P	0.6	-1.9
4	☐	1000.000	1032.329	1070939.98	1.9944	A	2.4	3.2
5	☐	10000.00	9972.588	9401335.07	17.4994	A	0.6	-0.3
6	☐	20000.00	20012.40	18045563.48	34.9113	A	1.0	0.1

y = 0.0017 * x + 0.2040
R = 1.0000
DL = 7.361 ppb
BEC = 117.7 ppb

Weight: <None>
Min Conc: <None>

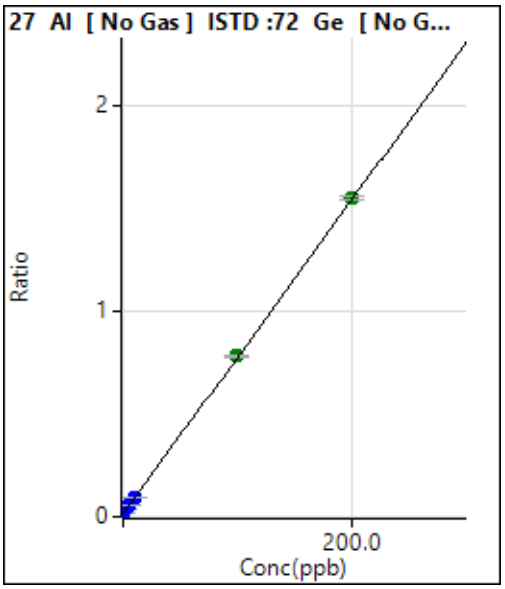
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	740.03	0.0014	P	9.1	
2	☐	200.000	194.488	106827.30	0.1970	P	1.5	-2.8
3	☐	500.000	483.341	261305.33	0.4875	P	0.4	-3.3
4	☐	1000.000	979.386	529664.12	0.9863	P	0.7	-2.1
5	☐	10000.00	9870.325	5333562.63	9.9277	A	0.6	-1.3
6	☐	20000.00	20066.34	10431888.38	20.1816	A	0.9	0.3

y = 0.0010 * x + 0.0014
R = 1.0000
DL = 0.3715 ppb
BEC = 1.367 ppb

Weight: <None>
Min Conc: <None>

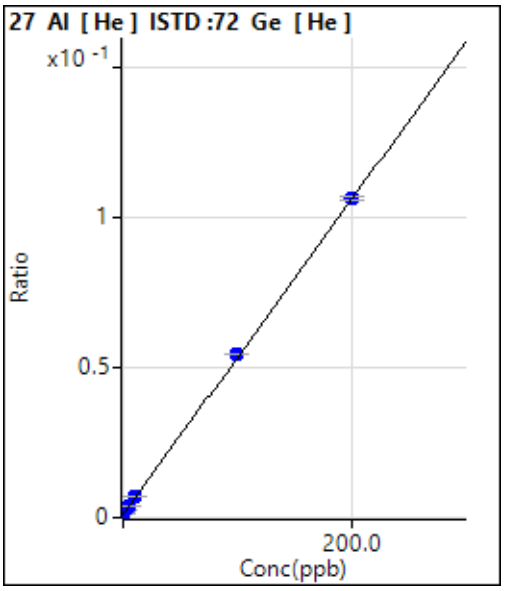


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	42986.62	0.0217	P	1.2	
2	☐	2.000	1.933	73286.12	0.0364	P	1.3	-3.3
3	☐	5.000	4.700	114608.75	0.0575	P	1.2	-6.0
4	☐	10.000	9.726	190949.61	0.0958	P	1.8	-2.7
5	☐	100.000	99.570	1548684.82	0.7808	A	1.4	-0.4
6	☐	200.000	200.237	3014244.96	1.5483	A	1.0	0.1

y = 0.0076 * x + 0.0217
R = 1.0000
DL = 0.1038 ppb
BEC = 2.842 ppb

Weight: <None>
Min Conc: <None>

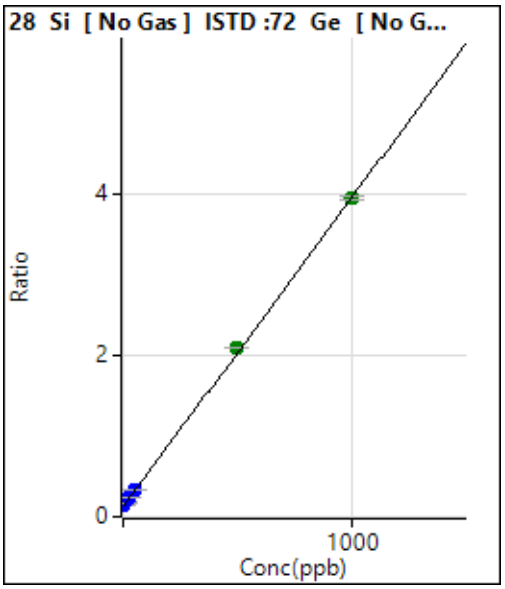
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	853.38	0.0016	P	15.6	
2	☐	2.000	1.995	1426.76	0.0026	P	15.1	-0.2
3	☐	5.000	4.588	2140.21	0.0040	P	4.6	-8.2
4	☐	10.000	10.229	3733.91	0.0070	P	4.4	2.3
5	☐	100.000	100.676	29234.46	0.0544	P	0.4	0.7
6	☐	200.000	199.661	54975.17	0.1064	P	1.1	-0.2

y = 5.2475E-004 * x + 0.0016
R = 1.0000
DL = 1.416 ppb
BEC = 3.019 ppb

Weight: <None>
Min Conc: <None>

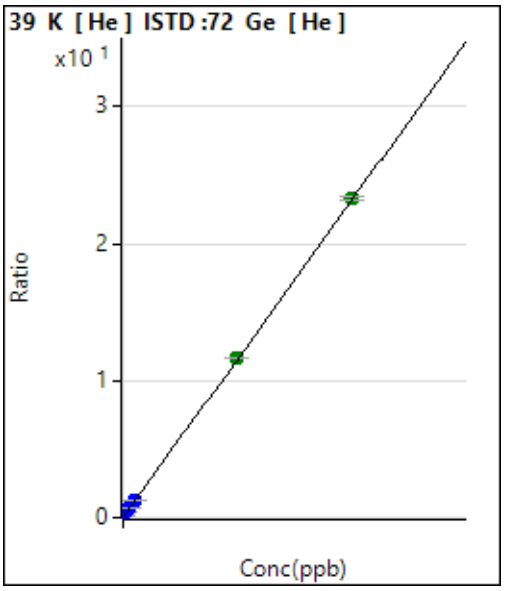


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	284003.05	0.1432	P	2.1	
2	☐	10.000	9.201	359024.81	0.1784	P	0.8	-8.0
3	☐	25.000	24.452	471818.11	0.2367	P	0.5	-2.2
4	☐	50.000	50.843	672938.30	0.3377	P	0.8	1.7
5	☐	500.000	510.925	4161174.52	2.0978	A	0.6	2.2
6	☐	1000.000	994.517	7685743.22	3.9479	A	1.0	-0.5

y = 0.0038 * x + 0.1432
R = 0.9999
DL = 2.354 ppb
BEC = 37.42 ppb

Weight: <None>
Min Conc: <None>

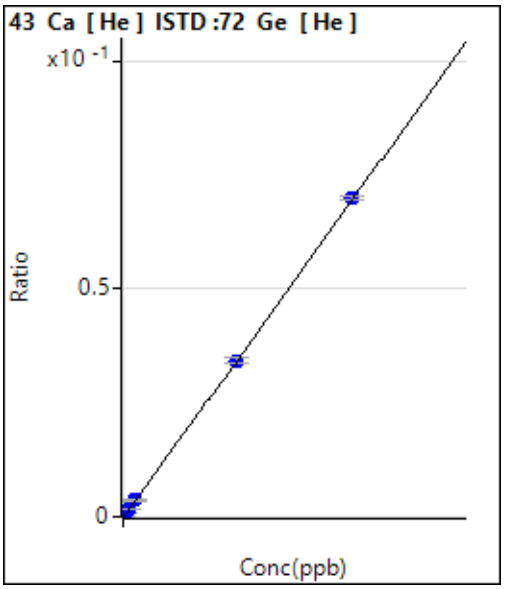
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	75800.84	0.1408	P	2.1	
2	☐	200.000	196.191	199496.59	0.3678	P	0.6	-1.9
3	☐	500.000	487.525	377901.46	0.7050	P	0.6	-2.5
4	☐	1000.000	990.433	691131.26	1.2870	P	0.4	-1.0
5	☐	10000.00	9944.724	6258639.28	11.6496	A	0.5	-0.6
6	☐	20000.00	20028.46	12053866.07	23.3193	A	0.6	0.1

y = 0.0012 * x + 0.1408
R = 1.0000
DL = 7.537 ppb
BEC = 121.6 ppb

Weight: <None>
Min Conc: <None>

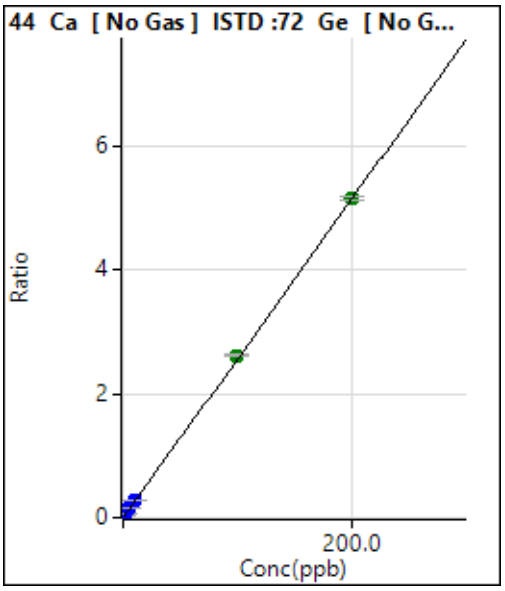


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	30.00	0.0001	P	57.2	
2	☐	200.000	222.439	450.02	0.0008	P	37.1	11.2
3	☐	500.000	442.991	856.71	0.0016	P	10.1	-11.4
4	☐	1000.000	1039.402	1973.52	0.0037	P	7.6	3.9
5	☐	10000.00	9847.036	18442.58	0.0343	P	3.9	-1.5
6	☐	20000.00	20075.71	36151.06	0.0699	P	1.4	0.4

y = 3.4810E-006 * x + 5.5612E-005
R = 1.0000
DL = 27.41 ppb
BEC = 15.98 ppb

Weight: <None>
Min Conc: <None>

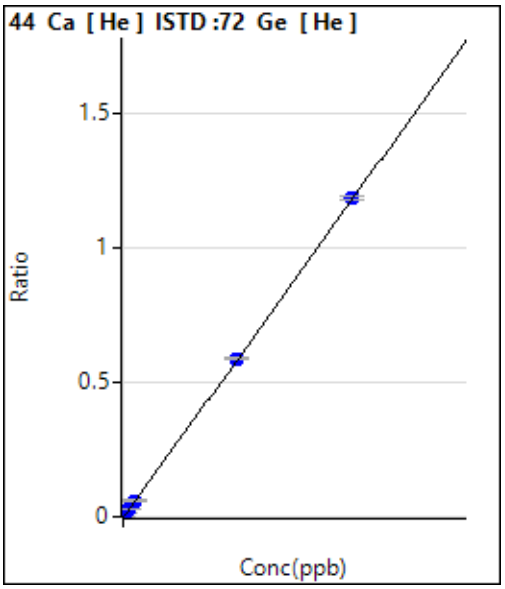
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	42893.66	0.0216	P	1.8	
2	☐	2.000	1.892	141487.37	0.0703	P	0.9	-5.4
3	☐	5.000	4.756	286911.76	0.1440	P	0.6	-4.9
4	☐	10.000	9.722	541360.46	0.2717	P	0.9	-2.8
5	☐	100.000	100.963	5192957.53	2.6182	A	1.8	1.0
6	☐	200.000	199.540	10032940.47	5.1535	A	0.7	-0.2

y = 0.0257 * x + 0.0216
R = 1.0000
DL = 0.04513 ppb
BEC = 0.8407 ppb

Weight: <None>
Min Conc: <None>

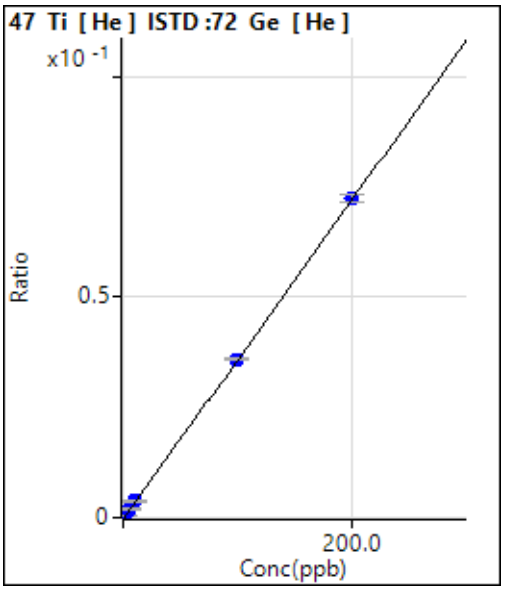


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	610.03	0.0011	P	34.6	
2	☐	200.000	196.318	6905.18	0.0127	P	2.8	-1.8
3	☐	500.000	500.687	16463.40	0.0307	P	3.0	0.1
4	☐	1000.000	997.320	32248.07	0.0601	P	2.0	-0.3
5	☐	10000.00	9933.882	315909.79	0.5880	P	1.1	-0.7
6	☐	20000.00	20033.21	612342.56	1.1847	P	1.1	0.2

y = 5.9078E-005 * x + 0.0011
R = 1.0000
DL = 19.89 ppb
BEC = 19.18 ppb

Weight: <None>
Min Conc: <None>

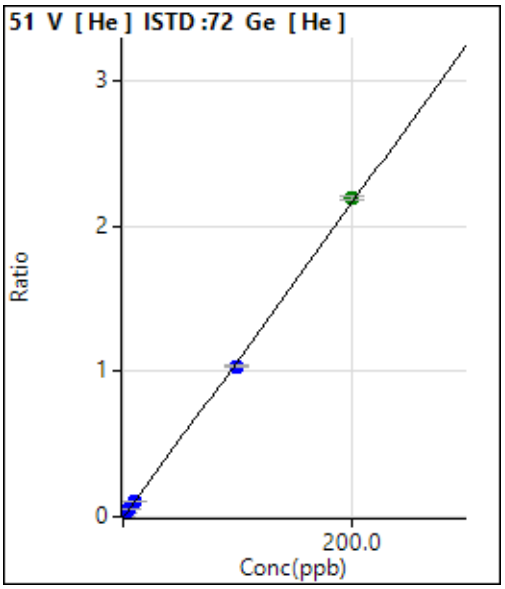
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	0.00	0.0000	P		
2	☐	2.000	1.700	333.34	0.0006	P	12.3	-15.0
3	☐	5.000	5.193	1006.72	0.0019	P	10.2	3.9
4	☐	10.000	10.266	1993.51	0.0037	P	4.8	2.7
5	☐	100.000	99.471	19327.16	0.0360	P	2.3	-0.5
6	☐	200.000	200.250	37431.42	0.0724	P	1.9	0.1

y = 3.6163E-004 * x + 0.0000E+000
R = 1.0000
DL = 0 ppb
BEC = 0 ppb

Weight: <None>
Min Conc: <None>

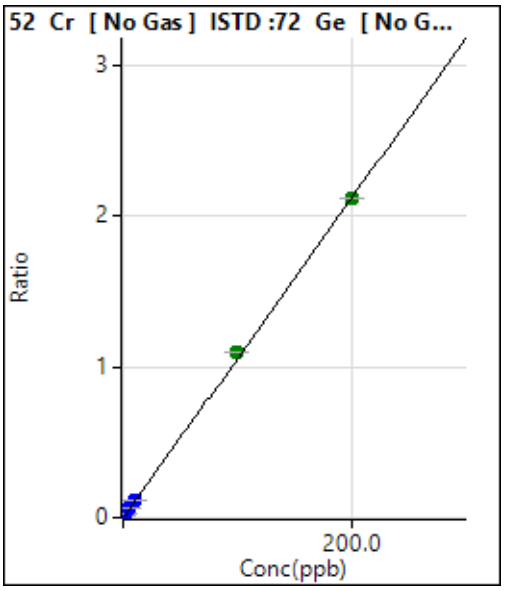


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1611.21	0.0030	P	4.9	
2	☐	2.000	1.854	12505.76	0.0231	P	2.3	-7.3
3	☐	5.000	4.703	28897.13	0.0539	P	0.6	-5.9
4	☐	10.000	9.472	56673.19	0.1055	P	1.1	-5.3
5	☐	100.000	95.421	556563.22	1.0360	P	0.6	-4.6
6	☐	200.000	202.325	1133668.60	2.1933	A	1.5	1.2

y = 0.0108 * x + 0.0030
R = 0.9996
DL = 0.0404 ppb
BEC = 0.2764 ppb

Weight: <None>
Min Conc: <None>

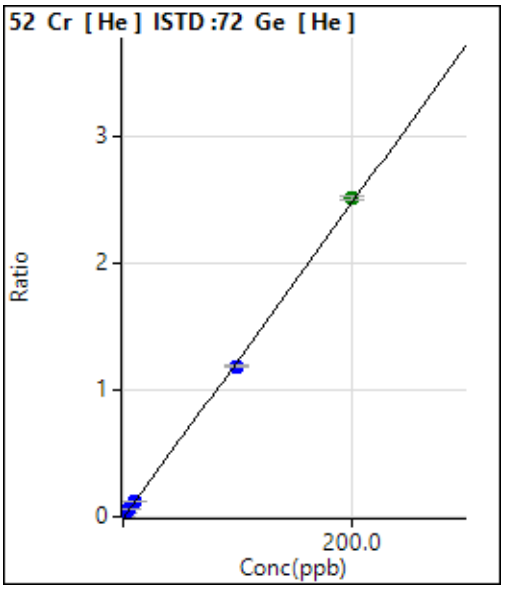
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	15465.63	0.0078	P	1.6	
2	☐	2.000	1.914	56523.56	0.0281	P	1.6	-4.3
3	☐	5.000	4.777	116435.60	0.0584	P	0.3	-4.5
4	☐	10.000	9.640	219118.90	0.1100	P	2.4	-3.6
5	☐	100.000	102.350	2166955.18	1.0925	A	0.4	2.3
6	☐	200.000	198.850	4117962.34	2.1151	A	0.6	-0.6

y = 0.0106 * x + 0.0078
R = 0.9999
DL = 0.03521 ppb
BEC = 0.7357 ppb

Weight: <None>
Min Conc: <None>

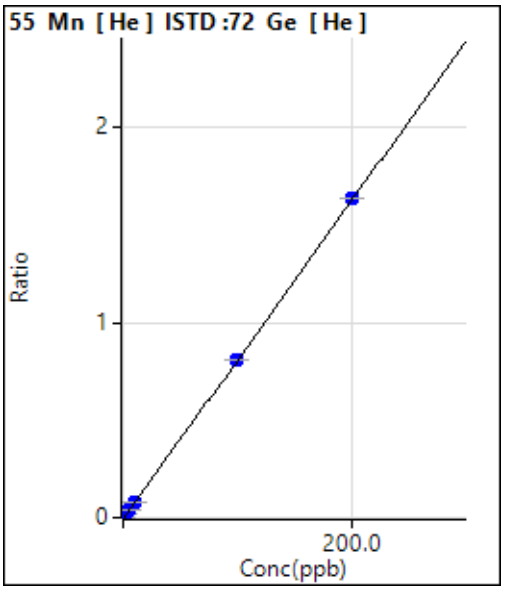


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	770.04	0.0014	P	8.6	
2	☐	2.000	1.857	13276.72	0.0245	P	3.6	-7.2
3	☐	5.000	4.648	31693.61	0.0591	P	2.2	-7.0
4	☐	10.000	9.658	65148.21	0.1213	P	0.8	-3.4
5	☐	100.000	95.453	637266.80	1.1862	P	1.1	-4.5
6	☐	200.000	202.301	1298722.43	2.5124	A	0.8	1.2

y = 0.0124 * x + 0.0014
R = 0.9996
DL = 0.0297 ppb
BEC = 0.1153 ppb

Weight: <None>
Min Conc: <None>

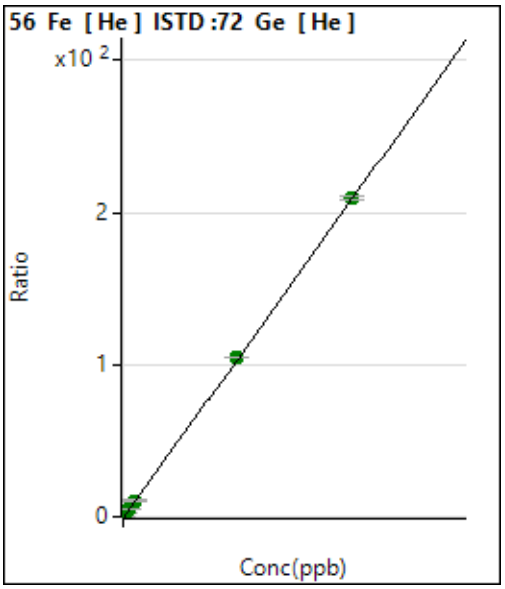
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	266.67	0.0005	P	19.6	
2	☐	2.000	1.924	8796.32	0.0162	P	5.0	-3.8
3	☐	5.000	4.874	21614.04	0.0403	P	0.9	-2.5
4	☐	10.000	9.993	44118.12	0.0822	P	1.0	-0.1
5	☐	100.000	99.166	435611.18	0.8108	P	0.4	-0.8
6	☐	200.000	200.421	846808.50	1.6382	P	0.6	0.2

y = 0.0082 * x + 4.9555E-004
R = 1.0000
DL = 0.0357 ppb
BEC = 0.06064 ppb

Weight: <None>
Min Conc: <None>

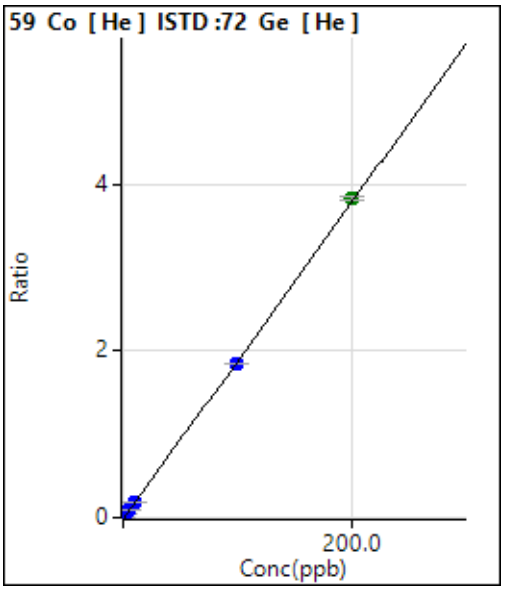


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	11688.52	0.0217	P	0.8	
2	☐	200.000	212.241	1218272.51	2.2462	A	1.7	6.1
3	☐	500.000	514.798	2903923.29	5.4173	A	1.5	3.0
4	☐	1000.000	1019.320	5748679.50	10.7052	A	1.2	1.9
5	☐	10000.00	9998.423	56311544.16	104.815	A	0.8	0.0
6	☐	20000.00	19999.33	108358855.0	209.635	A	1.2	0.0

y = 0.0105 * x + 0.0217
R = 1.0000
DL = 0.05047 ppb
BEC = 2.071 ppb

Weight: <None>
Min Conc: <None>

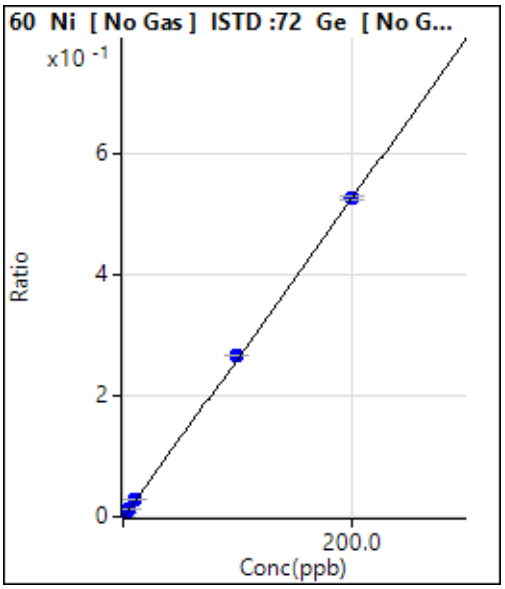
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	80.00	0.0001	P	13.0	
2	☐	2.000	1.916	19824.83	0.0366	P	3.0	-4.2
3	☐	5.000	4.830	49282.79	0.0919	P	1.1	-3.4
4	☐	10.000	9.742	99494.64	0.1853	P	1.3	-2.6
5	☐	100.000	96.957	989978.92	1.8427	P	0.5	-3.0
6	☐	200.000	201.539	1979805.49	3.8302	A	1.4	0.8

y = 0.0190 * x + 1.4864E-004
R = 0.9998
DL = 0.00304 ppb
BEC = 0.007821 ppb

Weight: <None>
Min Conc: <None>

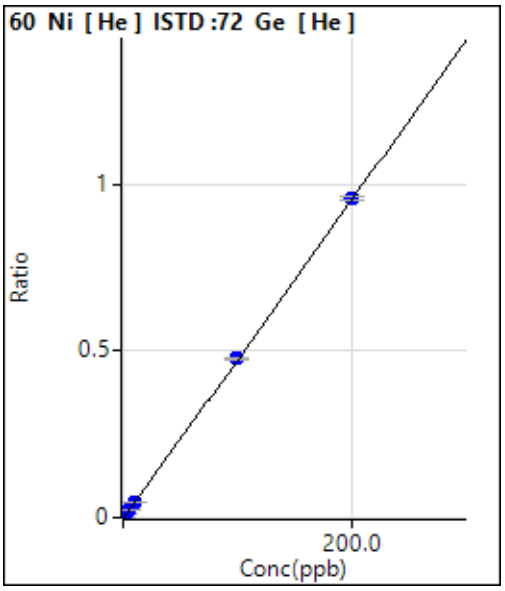


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	453.35	0.0002	P	18.5	
2	☐	2.000	1.967	10894.54	0.0054	P	6.6	-1.7
3	☐	5.000	5.060	27040.58	0.0136	P	2.4	1.2
4	☐	10.000	10.256	54328.39	0.0273	P	2.1	2.6
5	☐	100.000	100.899	528038.42	0.2662	P	0.8	0.9
6	☐	200.000	199.536	1024451.18	0.5262	P	1.3	-0.2

y = 0.0026 * x + 2.2837E-004
R = 1.0000
DL = 0.04795 ppb
BEC = 0.08663 ppb

Weight: <None>
Min Conc: <None>

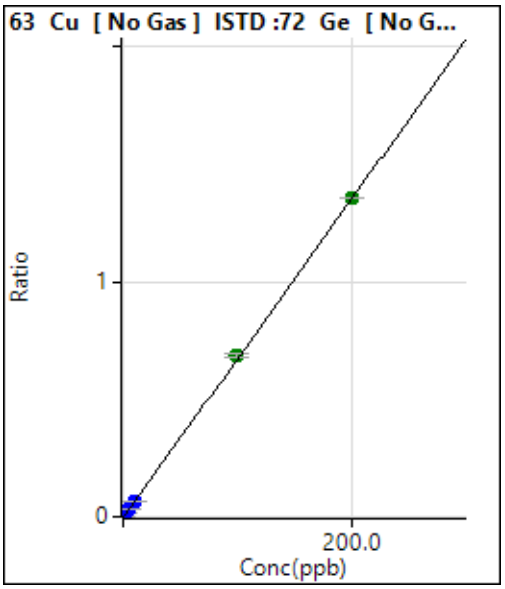
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	180.00	0.0003	P	15.1	
2	☐	2.000	2.016	5414.51	0.0100	P	4.8	0.8
3	☐	5.000	5.134	13350.12	0.0249	P	5.6	2.7
4	☐	10.000	10.117	26182.26	0.0488	P	1.2	1.2
5	☐	100.000	99.776	256731.64	0.4779	P	1.3	-0.2
6	☐	200.000	200.103	495216.37	0.9581	P	1.6	0.1

y = 0.0048 * x + 3.3444E-004
R = 1.0000
DL = 0.03167 ppb
BEC = 0.06987 ppb

Weight: <None>
Min Conc: <None>

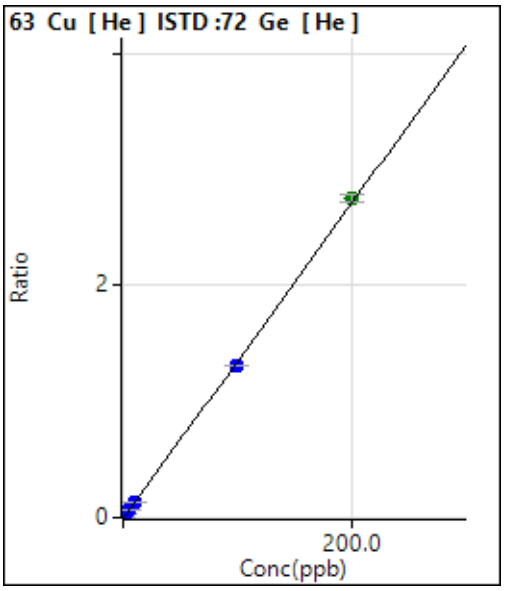


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	4210.74	0.0021	P	6.5	
2	☐	2.000	1.843	29455.76	0.0146	P	1.7	-7.9
3	☐	5.000	4.678	67534.12	0.0339	P	0.4	-6.4
4	☐	10.000	9.553	133487.60	0.0670	P	0.3	-4.5
5	☐	100.000	100.806	1361672.58	0.6865	A	1.5	0.8
6	☐	200.000	199.629	2642903.14	1.3575	A	0.6	-0.2

y = 0.0068 * x + 0.0021
R = 1.0000
DL = 0.06123 ppb
BEC = 0.3126 ppb

Weight: <None>
Min Conc: <None>

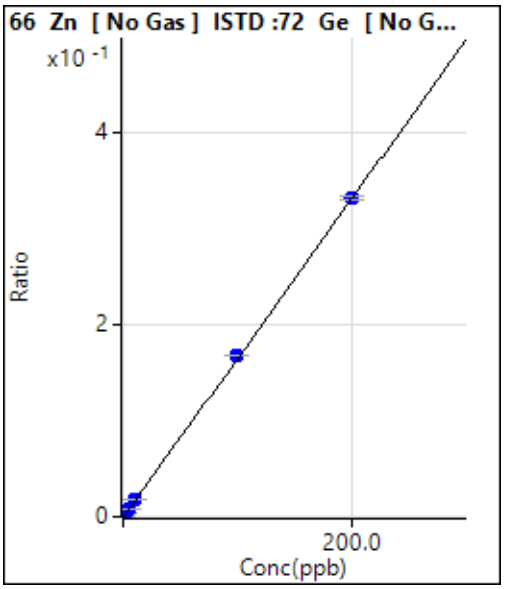
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	2260.23	0.0042	P	8.4	
2	☐	2.000	1.952	16663.84	0.0307	P	2.1	-2.4
3	☐	5.000	4.727	36679.77	0.0684	P	2.4	-5.5
4	☐	10.000	9.483	71460.74	0.1331	P	0.6	-5.2
5	☐	100.000	95.799	701667.49	1.3061	P	0.4	-4.2
6	☐	200.000	202.134	1421960.92	2.7511	A	2.1	1.1

y = 0.0136 * x + 0.0042
R = 0.9997
DL = 0.07741 ppb
BEC = 0.3089 ppb

Weight: <None>
Min Conc: <None>

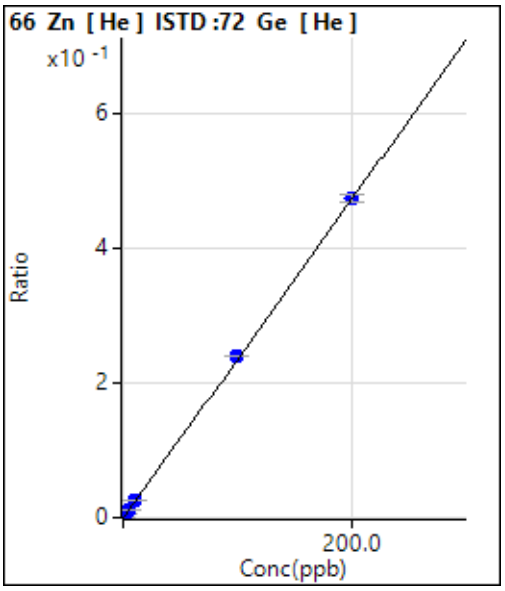


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1640.13	0.0008	P	12.5	
2	☐	2.000	1.924	8105.91	0.0040	P	2.5	-3.8
3	☐	5.000	4.814	17605.02	0.0088	P	2.5	-3.7
4	☐	10.000	10.199	35446.63	0.0178	P	0.7	2.0
5	☐	100.000	100.734	333918.90	0.1683	P	0.7	0.7
6	☐	200.000	199.629	647917.88	0.3328	P	1.0	-0.2

y = 0.0017 * x + 8.2701E-004
R = 1.0000
DL = 0.1865 ppb
BEC = 0.4973 ppb

Weight: <None>
Min Conc: <None>

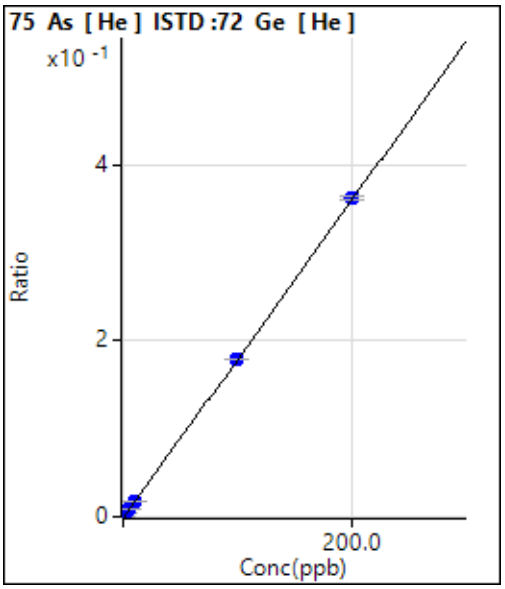
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	670.03	0.0012	P	25.0	
2	☐	2.000	1.940	3167.09	0.0058	P	1.5	-3.0
3	☐	5.000	4.725	6665.08	0.0124	P	2.8	-5.5
4	☐	10.000	9.831	13169.95	0.0245	P	1.5	-1.7
5	☐	100.000	100.585	128644.95	0.2394	P	0.5	0.6
6	☐	200.000	199.724	245121.30	0.4742	P	1.9	-0.1

y = 0.0024 * x + 0.0012
R = 1.0000
DL = 0.3937 ppb
BEC = 0.5254 ppb

Weight: <None>
Min Conc: <None>

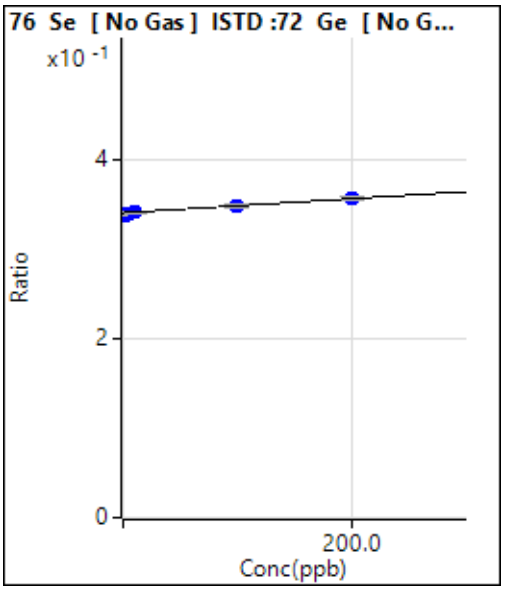


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	85.55	0.0002	P	22.5	
2	☐	2.000	1.969	2014.61	0.0037	P	7.2	-1.5
3	☐	5.000	4.960	4886.46	0.0091	P	2.4	-0.8
4	☐	10.000	9.845	9631.23	0.0179	P	0.4	-1.6
5	☐	100.000	99.065	96184.25	0.1790	P	0.6	-0.9
6	☐	200.000	200.477	187192.62	0.3621	P	1.1	0.2

y = 0.0018 * x + 1.5880E-004
R = 1.0000
DL = 0.05932 ppb
BEC = 0.08795 ppb

Weight: <None>
Min Conc: <None>

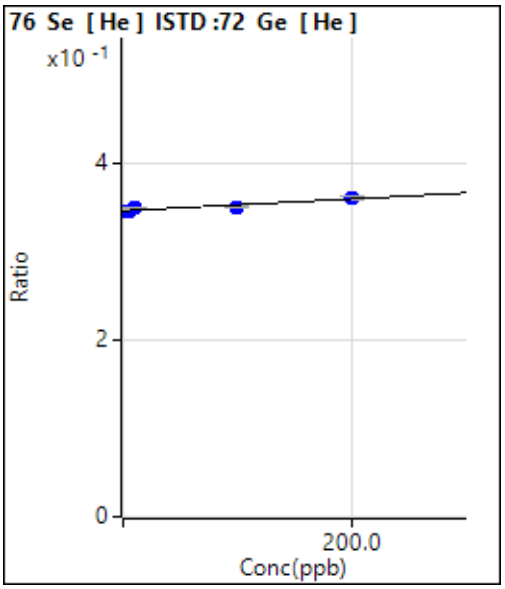
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	676241.66	0.3409	P	0.5	
2	☐	2.000	-45.333	678932.70	0.3373	P	0.2	-2366.
3	☐	5.000	-14.831	677108.40	0.3397	P	1.0	-396.6
4	☐	10.000	3.358	679863.71	0.3412	P	0.7	-66.4
5	☐	100.000	94.369	690937.10	0.3484	P	1.3	-5.6
6	☐	200.000	204.117	695075.80	0.3570	P	1.0	2.1

y = 7.9135E-005 * x + 0.3409
R = 0.9847
DL = 63.23 ppb
BEC = 4308 ppb

Weight: <None>
Min Conc: <None>

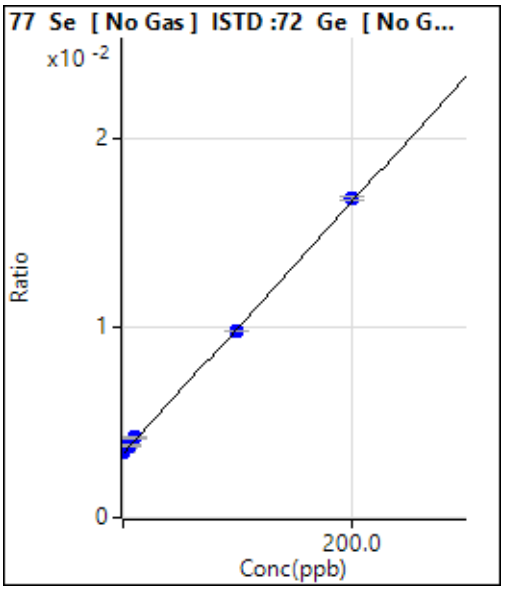


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	186965.39	0.3472	P	0.3	
2	☐	2.000	-2.526	188233.13	0.3471	P	0.7	-226.3
3	☐	5.000	-1.326	186082.37	0.3471	P	0.2	-126.5
4	☐	10.000	42.882	188026.84	0.3501	P	1.0	328.8
5	☐	100.000	68.694	189057.37	0.3519	P	0.5	-31.3
6	☐	200.000	214.212	187002.76	0.3618	P	1.0	7.1

y = 6.7933E-005 * x + 0.3472
R = 0.9665
DL = 52.47 ppb
BEC = 5111 ppb

Weight: <None>
Min Conc: <None>

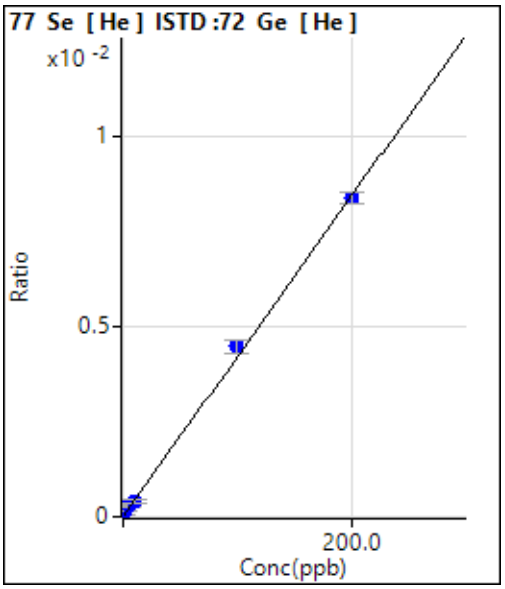
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	6888.57	0.0035	P	2.8	
2	☐	2.000	4.218	7552.24	0.0038	P	4.3	110.9
3	☐	5.000	4.988	7578.93	0.0038	P	2.8	-0.2
4	☐	10.000	11.140	8389.43	0.0042	P	2.7	11.4
5	☐	100.000	96.042	19497.68	0.0098	P	0.4	-4.0
6	☐	200.000	201.900	32776.85	0.0168	P	1.5	1.0

y = 6.6193E-005 * x + 0.0035
R = 0.9996
DL = 4.414 ppb
BEC = 52.46 ppb

Weight: <None>
Min Conc: <None>

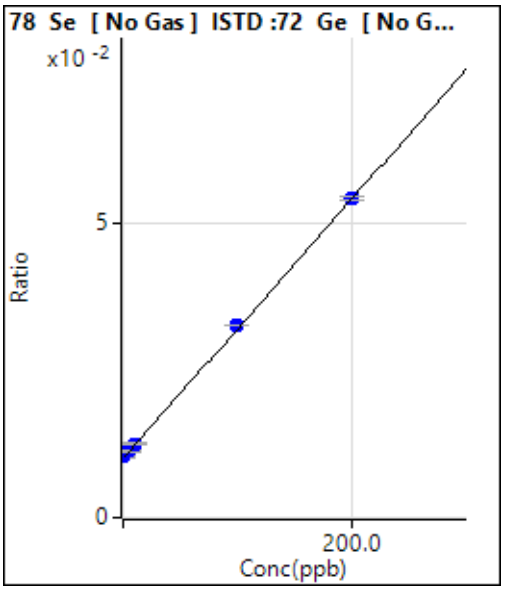


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	26.67	0.0000	P	43.5	
2	☐	2.000	2.617	86.67	0.0002	P	6.5	30.8
3	☐	5.000	5.610	153.33	0.0003	P	24.4	12.2
4	☐	10.000	8.107	210.00	0.0004	P	25.3	-18.9
5	☐	100.000	105.057	2403.59	0.0045	P	7.8	5.1
6	☐	200.000	197.545	4327.44	0.0084	P	4.2	-1.2

y = 4.2128E-005 * x + 4.9549E-005
R = 0.9995
DL = 1.534 ppb
BEC = 1.176 ppb

Weight: <None>
Min Conc: <None>

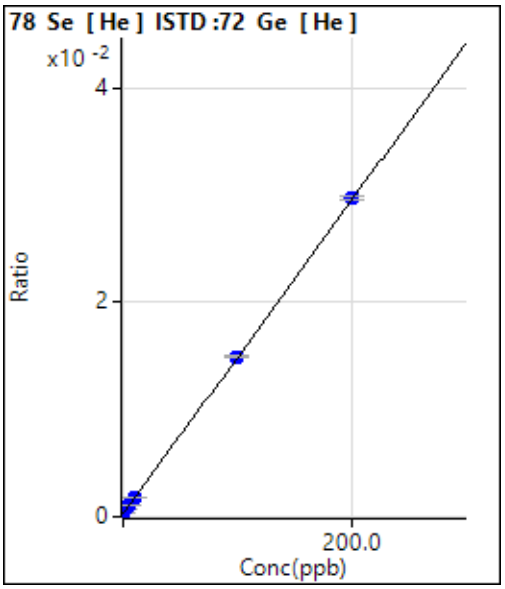
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	20616.07	0.0104	P	3.3	
2	☐	2.000	3.286	22375.54	0.0111	P	1.8	64.3
3	☐	5.000	4.232	22569.23	0.0113	P	2.0	-15.4
4	☐	10.000	9.858	25043.54	0.0126	P	3.4	-1.4
5	☐	100.000	101.063	64775.54	0.0327	P	0.4	1.1
6	☐	200.000	199.482	105783.24	0.0543	P	1.0	-0.3

y = 2.2030E-004 * x + 0.0104
R = 0.9999
DL = 4.723 ppb
BEC = 47.17 ppb

Weight: <None>
Min Conc: <None>

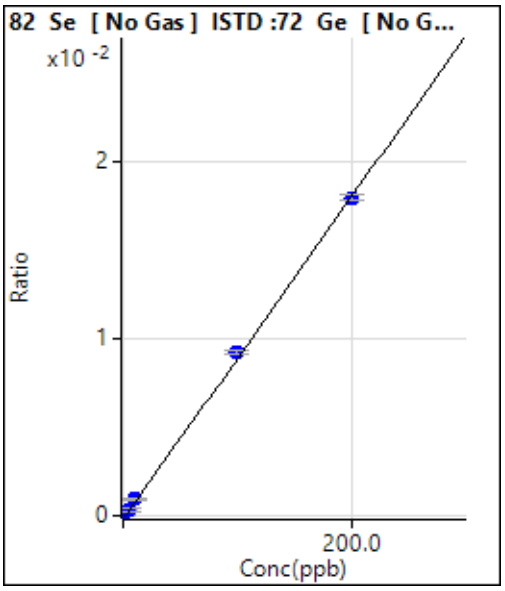


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	226.67	0.0004	P	12.2	
2	☐	2.000	2.342	414.01	0.0008	P	6.2	17.1
3	☐	5.000	4.691	593.35	0.0011	P	5.7	-6.2
4	☐	10.000	9.354	960.70	0.0018	P	8.6	-6.5
5	☐	100.000	99.216	8021.07	0.0149	P	1.5	-0.8
6	☐	200.000	200.429	15368.09	0.0297	P	1.2	0.2

y = 1.4624E-004 * x + 4.2086E-004
R = 1.0000
DL = 1.054 ppb
BEC = 2.878 ppb

Weight: <None>
Min Conc: <None>

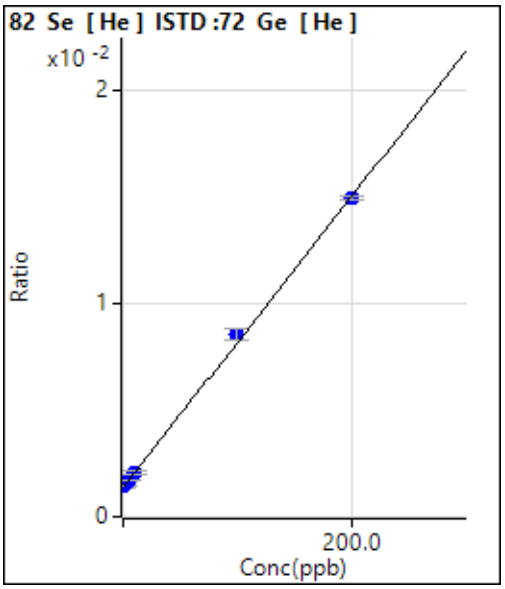
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	-303.73	-0.0002	P	-102.	
2	☐	2.000	4.158	454.09	0.0002	P	27.0	107.9
3	☐	5.000	4.668	543.82	0.0003	P	90.5	-6.6
4	☐	10.000	11.389	1767.05	0.0009	P	19.8	13.9
5	☐	100.000	102.885	18311.48	0.0092	P	2.3	2.9
6	☐	200.000	198.475	34949.79	0.0180	P	1.4	-0.8

y = 9.1225E-005 * x - 1.5354E-004
R = 0.9998
DL = 5.171 ppb
BEC = -1.683 ppb

Weight: <None>
Min Conc: <None>

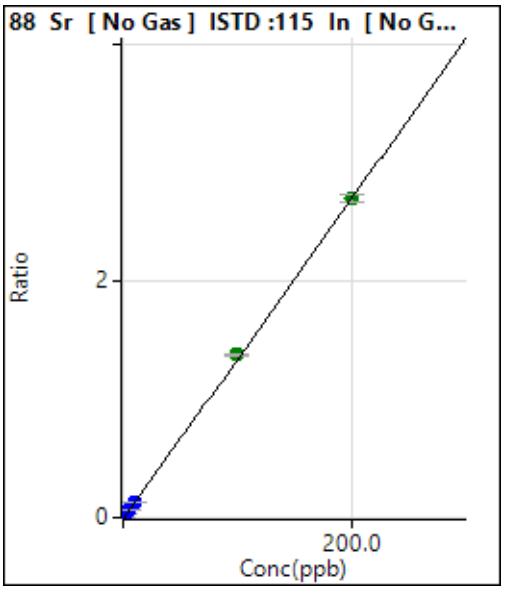


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	780.04	0.0014	P	14.0	
2	☐	2.000	0.668	810.04	0.0015	P	13.1	-66.6
3	☐	5.000	3.658	910.05	0.0017	P	0.6	-26.8
4	☐	10.000	8.805	1100.07	0.0020	P	8.2	-12.0
5	☐	100.000	104.444	4604.23	0.0086	P	6.7	4.4
6	☐	200.000	197.885	7725.70	0.0149	P	1.7	-1.1

y = 6.8203E-005 * x + 0.0014
R = 0.9996
DL = 8.887 ppb
BEC = 21.23 ppb

Weight: <None>
Min Conc: <None>

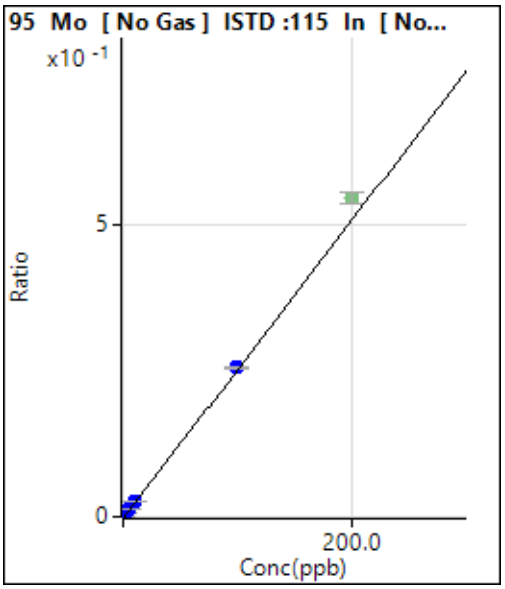
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	1620.12	0.0007	P	8.5	
2	☐	2.000	1.846	57517.03	0.0257	P	0.4	-7.7
3	☐	5.000	4.616	140316.04	0.0631	P	1.4	-7.7
4	☐	10.000	9.486	285870.17	0.1290	P	0.5	-5.1
5	☐	100.000	101.625	2990495.06	1.3753	A	1.7	1.6
6	☐	200.000	199.224	5791255.96	2.6955	A	2.5	-0.4

y = 0.0135 * x + 7.1563E-004
R = 0.9999
DL = 0.01342 ppb
BEC = 0.05291 ppb

Weight: <None>
Min Conc: <None>

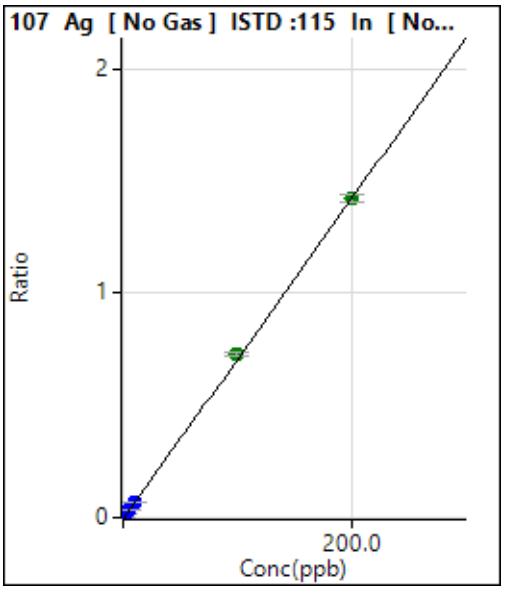


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	86.67	0.0000	P	43.9	
2	☐	2.000	1.964	11331.67	0.0051	P	3.2	-1.8
3	☐	5.000	4.872	27759.28	0.0125	P	3.7	-2.6
4	☐	10.000	9.859	55910.52	0.0252	P	1.5	-1.4
5	☐	100.000	100.021	556025.43	0.2557	P	0.9	0.0
6	☑	200.000		1175295.21	0.5471	A	3.4	

y = 0.0026 * x + 3.8302E-005
R = 1.0000
DL = 0.01974 ppb
BEC = 0.01498 ppb

Weight: <None>
Min Conc: <None>

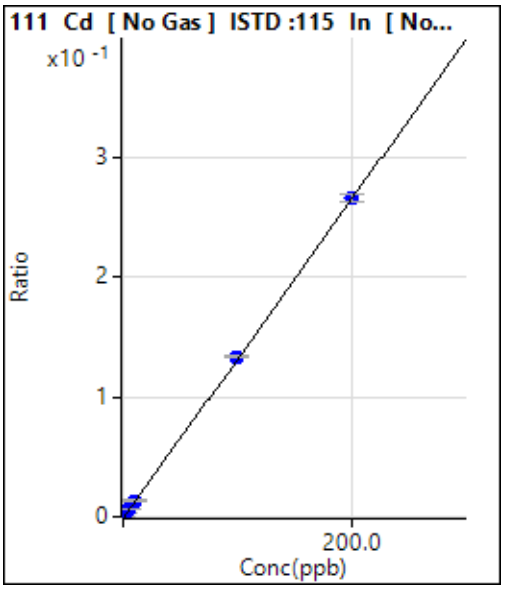
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	380.01	0.0002	P	13.5	
2	☐	2.000	1.826	29566.62	0.0132	P	0.4	-8.7
3	☐	5.000	4.595	73269.22	0.0330	P	1.0	-8.1
4	☐	10.000	9.384	148830.47	0.0672	P	0.7	-6.2
5	☐	100.000	101.781	1580504.30	0.7269	A	1.8	1.8
6	☐	200.000	199.152	3055498.81	1.4221	A	2.0	-0.4

y = 0.0071 * x + 1.6780E-004
R = 0.9999
DL = 0.009528 ppb
BEC = 0.0235 ppb

Weight: <None>
Min Conc: <None>

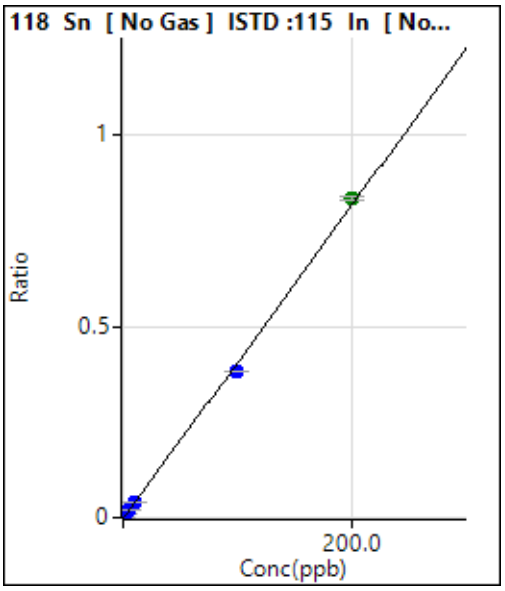


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	3.33	0.0000	P	173.2	
2	☐	2.000	1.996	5971.48	0.0027	P	2.0	-0.2
3	☐	5.000	4.902	14534.90	0.0065	P	5.5	-2.0
4	☐	10.000	10.128	29954.44	0.0135	P	2.2	1.3
5	☐	100.000	100.413	291445.27	0.1340	P	1.5	0.4
6	☐	200.000	199.790	572932.21	0.2667	P	2.4	-0.1

y = 0.0013 * x + 1.4657E-006
R = 1.0000
DL = 0.005706 ppb
BEC = 0.001098 ppb

Weight: <None>
Min Conc: <None>

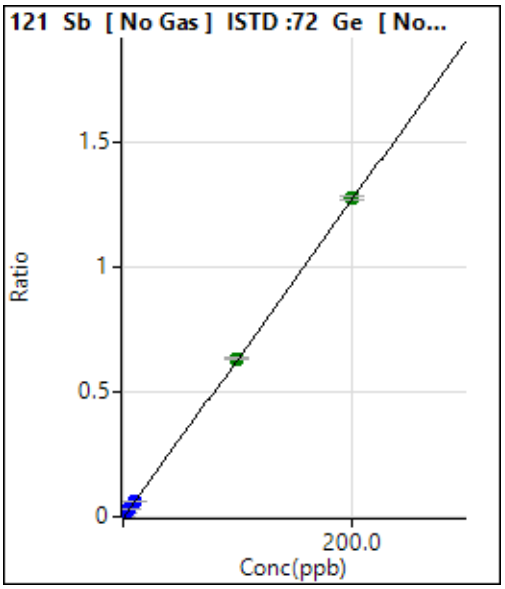
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	2400.27	0.0011	P	8.7	
2	☐	2.000	1.652	17525.21	0.0078	P	1.9	-17.4
3	☐	5.000	4.393	42321.68	0.0190	P	2.6	-12.1
4	☐	10.000	9.054	84480.89	0.0381	P	1.3	-9.5
5	☐	100.000	92.969	830103.58	0.3817	P	1.1	-7.0
6	☐	200.000	203.581	1793681.33	0.8347	A	0.8	1.8

y = 0.0041 * x + 0.0011
R = 0.9992
DL = 0.0679 ppb
BEC = 0.2589 ppb

Weight: <None>
Min Conc: <None>

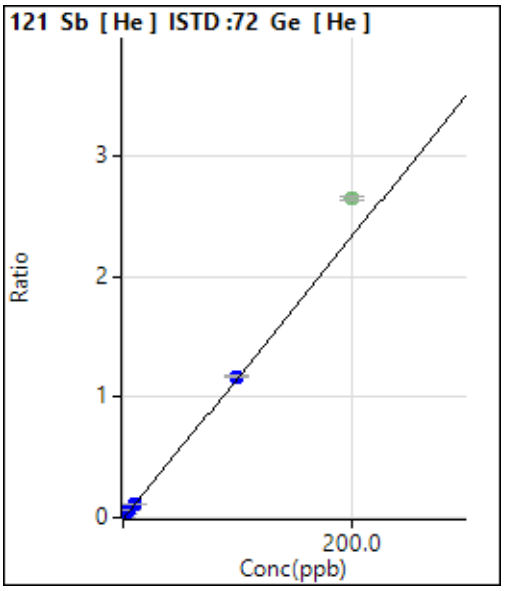


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	906.71	0.0005	P	20.8	
2	☐	2.000	1.811	24129.19	0.0120	P	1.7	-9.5
3	☐	5.000	4.597	59257.39	0.0297	P	4.0	-8.1
4	☐	10.000	9.196	117614.47	0.0590	P	1.8	-8.0
5	☐	100.000	99.327	1255454.59	0.6330	A	1.6	-0.7
6	☐	200.000	200.389	2485132.98	1.2766	A	1.4	0.2

y = 0.0064 * x + 4.5733E-004
R = 1.0000
DL = 0.04488 ppb
BEC = 0.07181 ppb

Weight: <None>
Min Conc: <None>

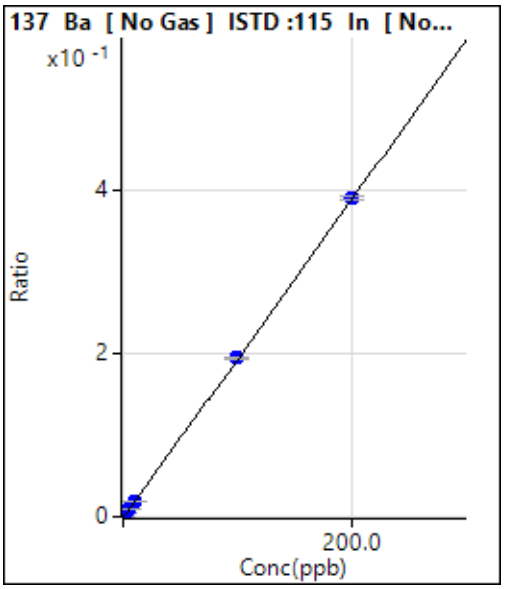
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	530.02	0.0010	P	19.0	
2	☐	2.000	2.000	13256.87	0.0244	P	2.9	0.0
3	☐	5.000	4.972	31788.81	0.0593	P	2.1	-0.6
4	☐	10.000	10.008	63577.53	0.1184	P	0.5	0.1
5	☐	100.000	100.001	630761.70	1.1741	P	1.1	0.0
6	☑	200.000		1371808.37	2.6539	A	0.7	

y = 0.0117 * x + 9.8414E-004
R = 1.0000
DL = 0.04791 ppb
BEC = 0.08389 ppb

Weight: <None>
Min Conc: <None>

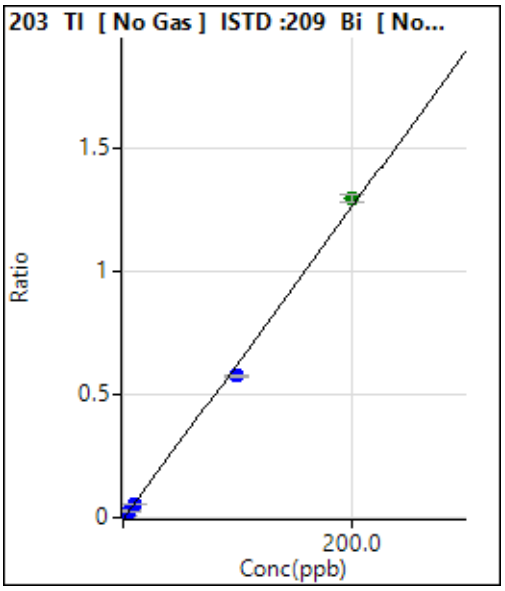


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	550.02	0.0002	P	20.8	
2	☐	2.000	1.926	8966.56	0.0040	P	2.5	-3.7
3	☐	5.000	4.747	21140.86	0.0095	P	0.1	-5.1
4	☐	10.000	9.896	43352.62	0.0196	P	0.5	-1.0
5	☐	100.000	99.859	424547.25	0.1952	P	1.3	-0.1
6	☐	200.000	200.083	840019.34	0.3909	P	1.8	0.0

y = 0.0020 * x + 2.4309E-004
R = 1.0000
DL = 0.07779 ppb
BEC = 0.1245 ppb

Weight: <None>
Min Conc: <None>

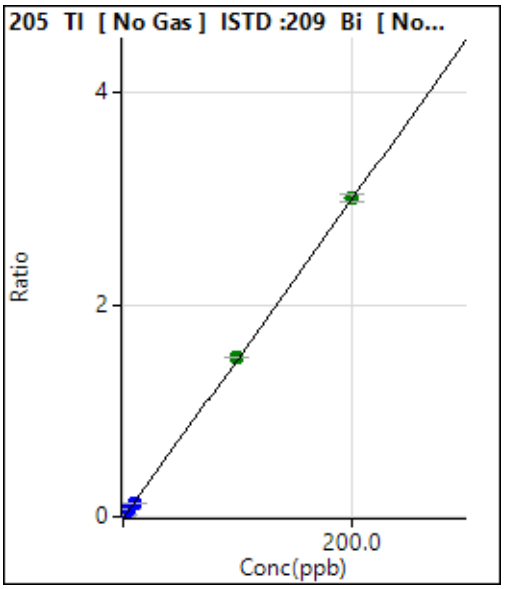
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	60.00	0.0000	P	15.4	
2	☐	2.000	1.716	18744.36	0.0109	P	3.6	-14.2
3	☐	5.000	4.306	46951.86	0.0273	P	2.3	-13.9
4	☐	10.000	8.842	96305.82	0.0561	P	1.8	-11.6
5	☐	100.000	90.751	956964.86	0.5757	P	0.7	-9.2
6	☐	200.000	204.702	2077165.33	1.2984	A	2.1	2.4

y = 0.0063 * x + 3.4926E-005
R = 0.9986
DL = 0.00255 ppb
BEC = 0.005506 ppb

Weight: <None>
Min Conc: <None>

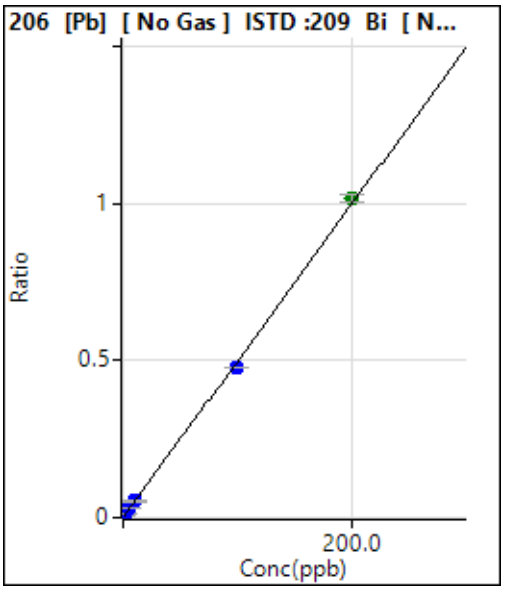


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	103.33	0.0001	P	37.6	
2	☐	2.000	1.766	45673.87	0.0266	P	0.6	-11.7
3	☐	5.000	4.351	112423.37	0.0655	P	1.1	-13.0
4	☐	10.000	8.888	229456.68	0.1337	P	2.2	-11.1
5	☐	100.000	100.077	2501731.73	1.5049	A	0.5	0.1
6	☐	200.000	200.036	4812029.20	3.0079	A	1.9	0.0

y = 0.0150 * x + 6.0016E-005
R = 1.0000
DL = 0.004499 ppb
BEC = 0.003991 ppb

Weight: <None>
Min Conc: <None>

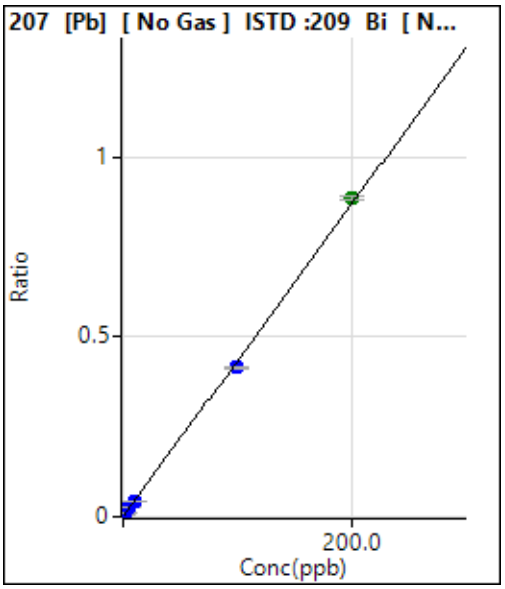
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	10644.68	0.0062	P	2.8	
2	☐	2.000	1.720	25339.40	0.0148	P	1.0	-14.0
3	☐	5.000	4.519	49267.45	0.0287	P	1.4	-9.6
4	☐	10.000	9.222	89422.07	0.0521	P	1.3	-7.8
5	☐	100.000	94.558	792676.63	0.4768	P	0.7	-5.4
6	☐	200.000	202.775	1624336.38	1.0154	A	2.9	1.4

y = 0.0050 * x + 0.0062
R = 0.9995
DL = 0.1052 ppb
BEC = 1.247 ppb

Weight: <None>
Min Conc: <None>

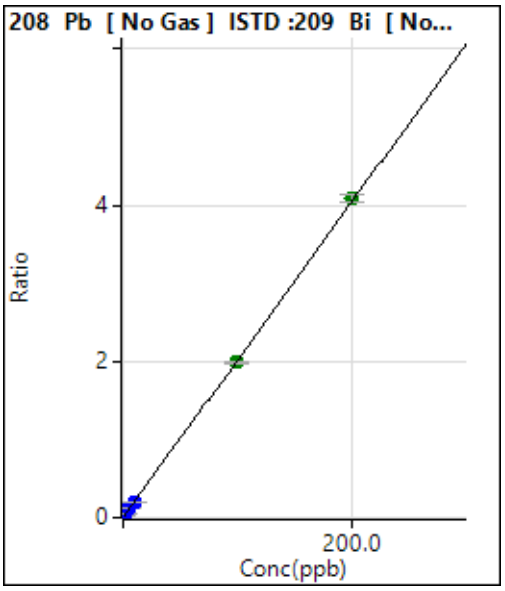


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	9297.01	0.0054	P	5.8	
2	☐	2.000	1.754	22367.08	0.0130	P	4.7	-12.3
3	☐	5.000	4.375	41900.71	0.0244	P	2.3	-12.5
4	☐	10.000	8.921	75739.52	0.0441	P	2.8	-10.8
5	☐	100.000	94.296	689337.18	0.4147	P	1.0	-5.7
6	☐	200.000	202.924	1417635.81	0.8861	A	1.5	1.5

y = 0.0043 * x + 0.0054
R = 0.9995
DL = 0.2167 ppb
BEC = 1.249 ppb

Weight: <None>
Min Conc: <None>

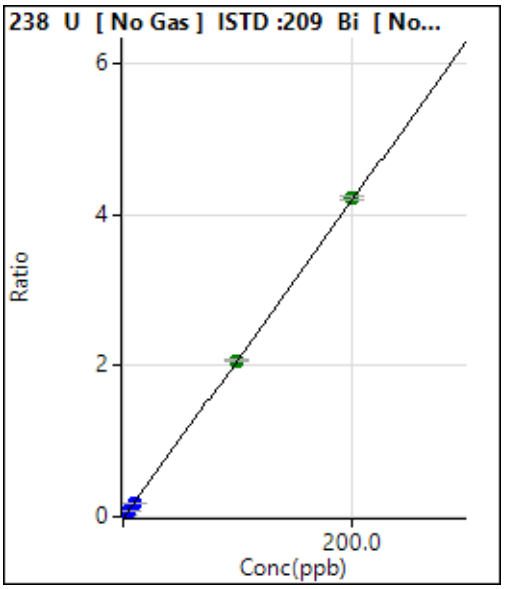
Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	42262.03	0.0246	P	4.0	
2	☐	2.000	1.715	101693.42	0.0593	P	1.7	-14.2
3	☐	5.000	4.385	194205.27	0.1131	P	1.8	-12.3
4	☐	10.000	8.968	352886.85	0.2056	P	2.0	-10.3
5	☐	100.000	97.335	3306393.88	1.9889	A	1.0	-2.7
6	☐	200.000	201.402	6541114.75	4.0891	A	2.6	0.7

y = 0.0202 * x + 0.0246
R = 0.9999
DL = 0.1448 ppb
BEC = 1.221 ppb

Weight: <None>
Min Conc: <None>

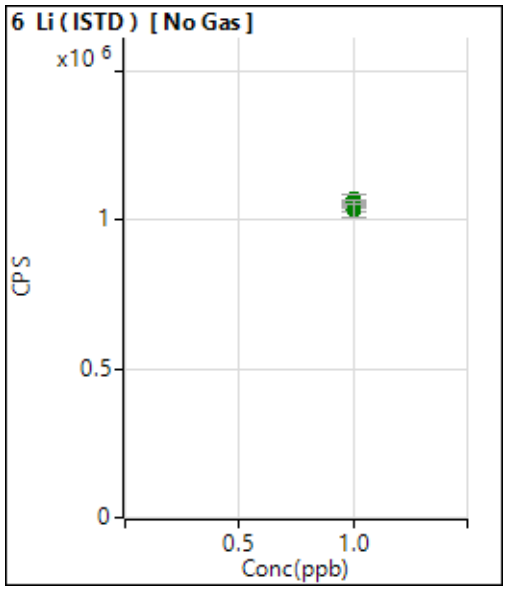


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	0.000	0.000	40.00	0.0000	P	65.6	
2	☐	2.000	1.683	60717.41	0.0354	P	0.9	-15.8
3	☐	5.000	4.178	150705.39	0.0878	P	0.7	-16.4
4	☐	10.000	8.569	308909.80	0.1800	P	1.5	-14.3
5	☐	100.000	98.573	3442017.45	2.0704	A	0.9	-1.4
6	☐	200.000	200.809	6748574.90	4.2178	A	0.8	0.4

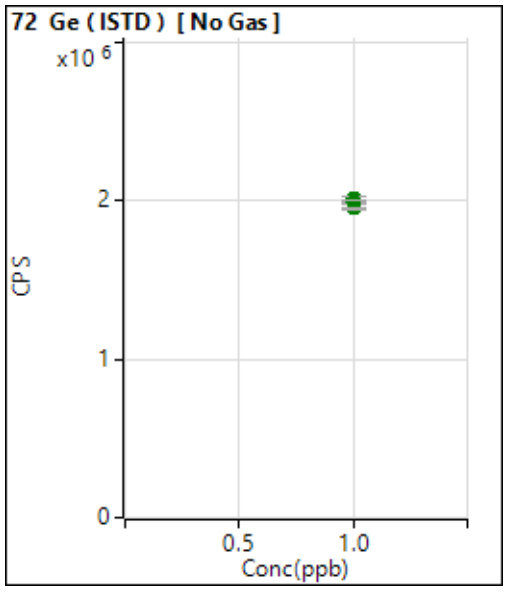
y = 0.0210 * x + 2.3228E-005
R = 1.0000
DL = 0.002177 ppb
BEC = 0.001106 ppb

Weight: <None>
Min Conc: <None>

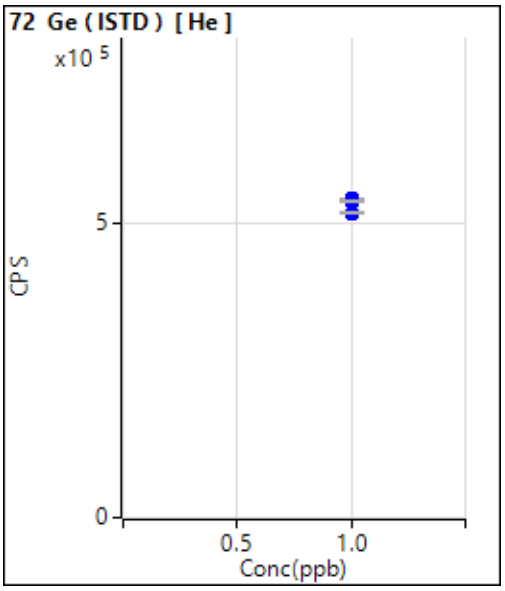
Calibration for 022_ICV.d



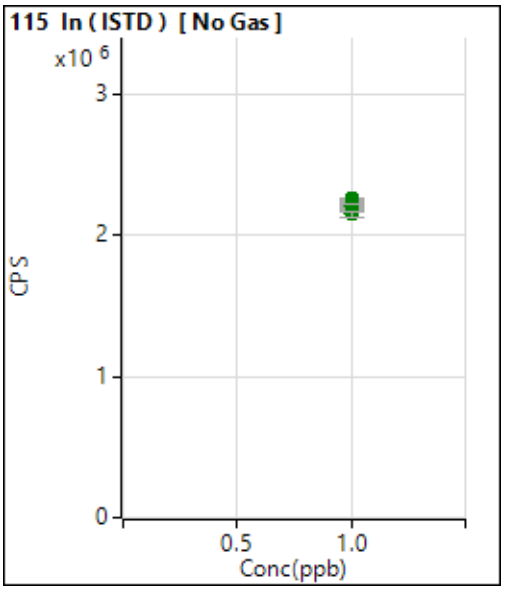
	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		1073327.36		A	2.2	
2	☐	1.000		1059792.61		A	1.5	
3	☐	1.000		1055899.68		A	1.9	
4	☐	1.000		1058179.31		A	2.0	
5	☐	1.000		1036214.92		A	1.0	
6	☐	1.000		1033558.31		A	4.5	



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		1983722.00		A	0.6	
2	☐	1.000		2012847.68		A	0.6	
3	☐	1.000		1993156.69		A	0.4	
4	☐	1.000		1992928.98		A	1.1	
5	☐	1.000		1983603.25		A	1.2	
6	☐	1.000		1946874.40		A	0.9	

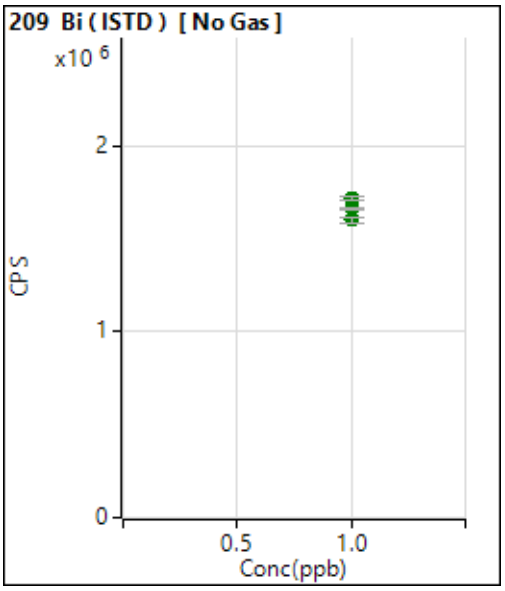


	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		538446.80		P	0.5	
2	☐	1.000		542368.64		P	0.3	
3	☐	1.000		536046.70		P	0.6	
4	☐	1.000		537023.41		P	0.6	
5	☐	1.000		537252.49		P	0.7	
6	☐	1.000		516917.61		P	0.6	



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		2263852.93		A	0.4	
2	☐	1.000		2239600.55		A	1.3	
3	☐	1.000		2222342.30		A	1.7	
4	☐	1.000		2215653.33		A	1.2	
5	☐	1.000		2174688.72		A	1.1	
6	☐	1.000		2149258.90		A	2.2	

Calibration for 022_ICV.d



	Rjct	Conc.	Calc Conc.	CPS	Ratio	Det.	RSD	%RE
1	☐	1.000		1715841.17		A	1.4	
2	☐	1.000		1716268.25		A	0.8	
3	☐	1.000		1716994.09		A	0.9	
4	☐	1.000		1716380.24		A	1.0	
5	☐	1.000		1662417.01		A	0.7	
6	☐	1.000		1600205.23		A	2.1	

Sample Report

Sample Table

Sample Name	LLICV2
Data File Name	023LCV2.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T11:19:44-05:00
Sample Type	LLCCV2
Dilution	1
Comment	
ISTD Ref FileName	015CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	1.893	1.893	5.51	87657	0.00	2	
Be	9	1	No Gas	1.970	1.970	1.97	7579	0.03	2	
V	51	2	He	1.737	1.737	0.83	11685	0.01	2	
Cr	52	2	He	1.932	1.932	2.77	13624	0.01	2	
Fe	56	2	He	209.858	209.858	0.43	1190656	0.02	200	
Se	78	2	He	2.174	2.174	14.21	396	0.55	2	
As	75	2	He	1.959	1.959	2.65	1981	0.10	2	
Ca	44	2	He	201.734	201.734	3.38	6995	2.88	200	
Na	23	2	He	188.411	188.411	0.82	284518	0.07	200	
Mg	24	2	He	194.795	194.795	1.31	105739	0.18	200	
K	39	2	He	198.822	198.822	1.14	198788	0.10	200	
Mn	55	2	He	2.051	2.051	4.28	9250	0.02	2	
Co	59	2	He	1.908	1.908	0.92	19511	0.01	2	
Ni	60	2	He	1.979	1.979	6.82	5258	0.04	2	
Cu	63	2	He	1.855	1.855	0.43	15763	0.01	2	
Zn	66	2	He	1.825	1.825	1.28	2984	0.06	2	
Al	27	2	He	2.336	2.336	19.30	1507	0.16	2	
B	11	1	No Gas	29.116	29.116	7.68	64766	0.04	10	NewName Main CR1 Failed
Al	27	1	No Gas	2.054	2.054	10.29	74734	0.00	2	
Si	28	1	No Gas	13.921	13.921	7.11	393269	0.00	10	NewName Main CR1 Failed
Ag	107	1	No Gas	1.838	1.838	2.11	29279	0.01	2	
Cd	111	1	No Gas	1.999	1.999	6.29	5881	0.03	2	
Sr	88	1	No Gas	1.852	1.852	1.53	56794	0.00	2	
Mo	95	1	No Gas	1.927	1.927	0.46	10938	0.02	2	
Sn	118	1	No Gas	1.875	1.875	3.79	19258	0.01	2	
Sb	121	1	No Gas	1.906	1.906	2.54	25215	0.01	2	
Ba	137	1	No Gas	1.957	1.957	1.20	8957	0.02	2	
Tl	205	1	No Gas	1.823	1.823	2.16	46273	0.00	2	
Tl	203	1	No Gas	1.779	1.779	0.97	19062	0.01	2	
Pb	208	1	No Gas	1.627	1.627	6.51	96771	0.00	2	
U	238	1	No Gas	1.703	1.703	2.66	60285	0.00	2	
Ca	43	2	He	178.863	178.863	14.24	363	49.23	200	
Sb	121	2	He	2.094	2.094	1.38	13694	0.02	2	
Ti	47	2	He	1.635	1.635	26.38	317	0.52	200	
Cu	63	1	No Gas	1.874	1.874	2.66	29723	0.01	2	
Se	82	1	No Gas	3.187	3.187	7.34	274	1.16	2	NewName Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1071513	1.02	1073327	99.83	70	120	
Ge	72	2	He	536024	0.66	538447	99.55	70	120	
Ge	72	1	No Gas	2002314	0.93	1983722	100.94	70	120	
In	115	1	No Gas	2203821	1.08	2263853	97.35	70	120	
Bi	209	1	No Gas	1684512	2.08	1715841	98.17	70	120	

Sample Report

Sample Table

Sample Name	LLICV5
Data File Name	024LCV5.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T11:21:37-05:00
Sample Type	LLCCV5
Dilution	1
Comment	
ISTD Ref FileName	015CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	4.656	4.656	2.41	131126	0.00	5	
Be	9	1	No Gas	4.868	4.868	2.13	18492	0.03	5	
V	51	2	He	4.657	4.657	0.91	28617	0.02	5	
Cr	52	2	He	4.787	4.787	1.60	32606	0.01	5	
Fe	56	2	He	510.259	510.259	0.97	2877359	0.02	500	
Se	78	2	He	4.678	4.678	5.17	592	0.79	5	
As	75	2	He	4.998	4.998	2.26	4921	0.10	5	
Ca	44	2	He	500.488	500.488	1.68	16450	3.04	500	
Na	23	2	He	480.806	480.806	0.81	556138	0.09	500	
Mg	24	2	He	486.381	486.381	1.49	262827	0.19	500	
K	39	2	He	494.307	494.307	0.73	381956	0.13	500	
Mn	55	2	He	4.934	4.934	0.92	21868	0.02	5	
Co	59	2	He	4.854	4.854	0.21	49503	0.01	5	
Ni	60	2	He	4.818	4.818	2.40	12536	0.04	5	
Cu	63	2	He	4.578	4.578	2.45	35584	0.01	5	
Zn	66	2	He	4.766	4.766	6.45	6715	0.07	5	
Al	27	2	He	4.876	4.876	13.65	2220	0.22	5	
B	11	1	No Gas	32.659	32.659	1.72	71330	0.05	25	NewName2 Main CR1 Failed
Al	27	1	No Gas	4.784	4.784	1.39	115886	0.00	5	
Si	28	1	No Gas	25.583	25.583	2.74	480443	0.01	25	
Ag	107	1	No Gas	4.628	4.628	0.47	73564	0.01	5	
Cd	111	1	No Gas	4.912	4.912	3.69	14528	0.03	5	
Sr	88	1	No Gas	4.602	4.602	2.25	139457	0.00	5	
Mo	95	1	No Gas	4.772	4.772	2.34	27104	0.02	5	
Sn	118	1	No Gas	4.487	4.487	1.84	43044	0.01	5	
Sb	121	1	No Gas	4.635	4.635	0.69	59740	0.01	5	
Ba	137	1	No Gas	4.733	4.733	3.62	21011	0.02	5	
Tl	205	1	No Gas	4.519	4.519	1.44	113527	0.00	5	
Tl	203	1	No Gas	4.460	4.460	2.50	47276	0.01	5	
Pb	208	1	No Gas	4.329	4.329	2.26	186971	0.00	5	
U	238	1	No Gas	4.285	4.285	2.37	150267	0.00	5	
Ca	43	2	He	527.463	527.463	9.08	1013	52.05	500	
Sb	121	2	He	4.984	4.984	1.18	31852	0.02	5	
Ti	47	2	He	4.728	4.728	15.90	917	0.52	5	
Cu	63	1	No Gas	4.643	4.643	1.19	67062	0.01	5	
Se	82	1	No Gas	6.285	6.285	4.41	837	0.75	5	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1060433	1.04	1073327	98.80	70	120	
Ge	72	2	He	535834	0.48	538447	99.51	70	120	
Ge	72	1	No Gas	1993206	0.34	1983722	100.48	70	120	
In	115	1	No Gas	2215171	1.23	2263853	97.85	70	120	
Bi	209	1	No Gas	1669568	1.60	1715841	97.30	70	120	

Initial Calibration Blank (ICB) Report

Sample Table

Sample Name	ICB
Data File Name	025_ICB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T11:23:30-05:00
Sample Type	ICB
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	0.009	961.3	56821	1.1	0.5	
Be	9	1	No Gas	0.003	149.4	37	39.4	0.5	
V	51	2	He	-0.067	-16.0	1191	4.5	2.5	
Cr	52	2	He	-0.006	-308.4	713	17.8	2.5	
Fe	56	2	He	0.957	14.3	16714	4.1	100	
Se	78	2	He	0.109	357.1	230	12.6	1	
As	75	2	He	-0.011	-176.8	73	24.0	2.5	
Ca	44	2	He	0.534	215.8	613	5.2	100	
Na	23	2	He	-7.389	-17.7	100721	0.6	100	
Mg	24	2	He	1.012	8.4	1260	2.9	100	
K	39	2	He	5.648	30.2	77587	0.8	100	
Mn	55	2	He	0.062	22.2	527	11.6	2.5	
Co	59	2	He	0.000	2154.8	80	43.3	2.5	
Ni	60	2	He	-0.010	-196.2	150	35.3	2.5	
Cu	63	2	He	-0.079	-38.0	1647	13.7	1	
Zn	66	2	He	0.236	16.8	950	5.6	2.5	
Al	27	2	He	-1.004	-30.4	557	14.6	5	
B	11	1	No Gas	6.788	11.5	18387	5.4	0.5	ICB Main CR1 Failed
Al	27	1	No Gas	-1.157	-2.5	25343	0.9	5	
Si	28	1	No Gas	-1.085	-75.4	274204	0.5	10	
Ag	107	1	No Gas	-0.008	-36.3	250	17.4	2.5	
Cd	111	1	No Gas	0.002	1.4	10	0.0	1	
Sr	88	1	No Gas	-0.016	-10.1	1083	4.7	2.5	
Mo	95	1	No Gas	0.000	-21001.5	83	59.2	2.5	
Sn	118	1	No Gas	0.017	141.6	2477	8.9	5	
Sb	121	1	No Gas	0.027	15.1	1243	5.7	2.5	
Ba	137	1	No Gas	0.070	19.4	833	7.8	2.5	
Tl	205	1	No Gas	0.013	2.5	423	1.4	1	
Tl	203	1	No Gas	0.011	32.7	170	21.2	1	
Pb	208	1	No Gas	-0.300	-18.1	31042	5.3	2.5	
U	238	1	No Gas	0.002	14.1	117	9.9	2.5	
Ca	43	2	He	4.044	158.7	37	31.5	100	
Sb	121	2	He	0.025	28.6	670	6.8	2.5	
Ti	47	2	He	0.053	173.2	10	173.2	2.5	
Se	82	1	No Gas	-0.740	-139.5	-438	-43.9	1	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1067045	3.43	1073327	99.41	70	120	
Ge	72	2	He	526728	0.71	538447	97.82	70	120	
Ge	72	1	No Gas	1972921	1.78	1983722	99.46	70	120	
In	115	1	No Gas	2190141	0.94	2263853	96.74	70	120	
Bi	209	1	No Gas	1670476	0.60	1715841	97.36	70	120	

Interference Check Solution A (ICS-A) Report

Sample Table

Sample Name	ICSA
Data File Name	026ICSA.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T11:26:21-05:00
Sample Type	ICSA
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	0.444	16.1	61283	2.2	0	ICSA Main CR1 Failed
Be	9	1	No Gas	0.022	42.3	107	31.2	0	ICSA Main CR1 Failed
V	51	2	He	0.034	53.7	1701	5.6	0	ICSA Main CR1 Failed
Cr	52	2	He	1.497	3.1	10121	2.9	0	ICSA Main CR1 Failed
Fe	56	2	He	104848.533	0.5	555737018	0.4	0	
Se	78	2	He	0.232	38.7	230	3.5	0	ICSA Main CR1 Failed
As	75	2	He	0.159	21.5	226	13.3	0	ICSA Main CR1 Failed
Ca	44	2	He	108358.739	0.5	3237881	0.3	0	
Na	23	2	He	106051.762	0.5	93113492	0.2	0	
Mg	24	2	He	105168.269	0.8	53485884	0.5	0	
K	39	2	He	105479.377	0.6	61801132	0.1	0	
Mn	55	2	He	0.344	10.4	1673	9.5	0	ICSA Main CR1 Failed
Co	59	2	He	0.113	12.4	1163	11.7	0	ICSA Main CR1 Failed
Ni	60	2	He	0.507	3.6	1397	2.5	0	ICSA Main CR1 Failed
Cu	63	2	He	0.116	4.9	2917	1.9	0	ICSA Main CR1 Failed
Zn	66	2	He	0.997	6.1	1823	4.7	0	ICSA Main CR1 Failed
Al	27	2	He	101167.717	0.3	26847582	0.4	0	
B	11	1	No Gas	4.654	11.9	13447	7.4	0	
Al	27	1	No Gas	99189.304	1.2	1444445792	0.4	0	
Si	28	1	No Gas	24.971	3.6	455915	0.7	0	
Ag	107	1	No Gas	0.080	11.1	1507	9.0	0	ICSA Main CR1 Failed
Cd	111	1	No Gas	1.068	11.0	2914	11.3	0	ICSA Main CR1 Failed
Sr	88	1	No Gas	0.763	1.3	22519	1.7	0	ICSA Main CR1 Failed
Mo	95	1	No Gas	2203.844	1.3	11498132	1.4	0	
Sn	118	1	No Gas	0.200	13.6	3831	5.2	0	ICSA Main CR1 Failed
Sb	121	1	No Gas	0.237	3.8	3757	4.3	0	ICSA Main CR1 Failed
Ba	137	1	No Gas	0.419	8.5	2167	8.4	0	ICSA Main CR1 Failed
Tl	205	1	No Gas	0.035	5.1	930	4.3	0	ICSA Main CR1 Failed
Tl	203	1	No Gas	0.033	39.1	387	33.8	0	ICSA Main CR1 Failed
Pb	208	1	No Gas	-0.119	-22.9	35320	1.9	0	ICSA Main CR1 Failed
U	238	1	No Gas	0.056	16.1	1904	16.2	0	ICSA Main CR1 Failed
Ca	43	2	He	102052.929	0.6	179681	0.9	0	
Sb	121	2	He	0.249	9.8	1977	7.3	0	ICSA Main CR1 Failed
Ti	47	2	He	2139.698	0.4	391320	1.1	0	
Se	82	1	No Gas	1.927	80.0	42	632.5	0	ICSA Main CR1 Failed

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1023647	0.92	1073327	95.37	70	120	
Ge	72	2	He	505711	0.68	538447	93.92	70	120	
Ge	72	1	No Gas	1910175	1.41	1983722	96.29	70	120	
In	115	1	No Gas	2041369	1.92	2263853	90.17	70	120	
Bi	209	1	No Gas	1588692	0.55	1715841	92.59	70	120	

Interference Check Solution AB (ICS-AB) Report

Sample Table

Sample Name	ICSAB
Data File Name	027ICSB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T11:28:16-05:00
Sample Type	ICSB
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High	QC Flag
Li	7	1	No Gas	100.176	2.553	1584354	1.10	100	100.2	180	120	ICSB Main CR1 Failed
Be	9	1	No Gas	99.906	1.469	360569	0.27	100	99.9	80	120	
V	51	2	He	98.277	0.314	543130	0.60	100	98.3	80	120	
Cr	52	2	He	98.884	0.036	625548	0.33	100	98.9	80	120	
Fe	56	2	He	113667.329	0.500	606492898	0.32	100	113667.3	80	120	
Se	78	2	He	103.192	1.604	7896	1.23	100	103.2	80	120	
As	75	2	He	101.804	1.199	93659	1.09	100	101.8	80	120	
Ca	44	2	He	115863.944	1.631	3485335	1.97	100	115863.9	80	120	ICSB Main CR1 Failed
Na	23	2	He	115276.514	0.687	101879072	0.66	100	115276.5	80	120	
Mg	24	2	He	114383.953	0.598	58561171	0.60	100	114384.0	80	120	
K	39	2	He	113076.632	0.335	66690064	0.54	100	113076.6	80	120	ICSB Main CR1 Failed
Mn	55	2	He	102.274	0.618	425707	0.98	100	102.3	80	120	
Co	59	2	He	98.773	0.543	955649	0.79	100	98.8	80	120	
Ni	60	2	He	100.955	0.186	246154	0.28	100	101.0	80	120	
Cu	63	2	He	94.682	0.494	657145	0.19	100	94.7	80	120	
Zn	66	2	He	102.542	2.334	124252	2.01	100	102.5	80	120	
Al	27	2	He	99128.838	0.884	26481624	0.77	100	99128.8	80	120	ICSB Main CR1 Failed
B	11	1	No Gas	539.897	2.247	1056846	1.06	100	539.9	80	120	
Al	27	1	No Gas	98053.789	1.155	1412053899	0.37	100	98053.8	80	120	ICSB Main CR1 Failed
Si	28	1	No Gas	546.243	0.741	4217803	1.20	100	546.2	80	120	
Ag	107	1	No Gas	98.138	0.805	1486883	2.01	100	98.1	80	120	
Cd	111	1	No Gas	101.689	1.229	287910	0.78	100	101.7	80	120	
Sr	88	1	No Gas	106.971	1.258	3070683	0.24	100	107.0	80	120	
Mo	95	1	No Gas	2232.783	1.157	12106207	0.53	100	2232.8	80	120	ICSB Main CR1 Failed
Sn	118	1	No Gas	98.529	1.252	858051	0.80	100	98.5	80	120	
Sb	121	1	No Gas	106.211	0.697	1278536	1.74	100	106.2	80	120	
Ba	137	1	No Gas	102.907	0.996	426781	0.87	100	102.9	80	120	
Tl	205	1	No Gas	101.546	0.880	2436055	0.63	100	101.5	80	120	
Tl	203	1	No Gas	92.669	2.376	937662	1.23	100	92.7	80	120	
Pb	208	1	No Gas	100.413	2.530	3271792	1.69	100	100.4	80	120	
U	238	1	No Gas	105.609	1.895	3538601	1.15	100	105.6	80	120	
Ca	43	2	He	109910.345	0.519	194800	0.38	100	109910.3	80	120	ICSB Main CR1 Failed
Sb	121	2	He	104.555	0.452	624906	0.15	100	104.6	80	120	
Ti	47	2	He	2210.071	0.446	406876	0.80	100	2210.1	80	120	ICSB Main CR1 Failed
Cu	63	1	No Gas	99.495	1.510	1279908	1.22	100	99.5	80	120	
Se	82	1	No Gas	104.634	2.664	17743	3.61	100	104.6	80	120	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1008978	1.72	1073327	94.00	70	120	
Ge	72	2	He	509076	0.36	538447	94.55	70	120	
Ge	72	1	No Gas	1888930	1.22	1983722	95.22	70	120	
In	115	1	No Gas	2121417	1.22	2263853	93.71	70	120	
Bi	209	1	No Gas	1595483	1.41	1715841	92.99	70	120	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	029_CCV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T11:36:37-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Li	7	1	No Gas	96.718	2.882	1576346	1.20	100	96.7	90	110	
Be	9	1	No Gas	97.980	1.880	363972	0.39	100	98.0	90	110	
V	51	2	He	94.349	0.135	558230	0.15	100	94.3	90	110	
Cr	52	2	He	94.572	0.237	640468	0.31	100	94.6	90	110	
Fe	56	2	He	9823.923	0.269	56122564	0.28	10000	98.2	90	110	
Se	78	2	He	98.976	0.779	8117	0.81	100	99.0	90	110	
As	75	2	He	97.170	0.226	95701	0.09	100	97.2	90	110	
Ca	44	2	He	9770.605	0.445	315180	0.64	10000	97.7	90	110	
Na	23	2	He	9964.092	1.573	9528357	1.64	10000	99.6	90	110	
Mg	24	2	He	9814.937	0.116	5379787	0.28	10000	98.1	90	110	
K	39	2	He	9879.078	0.661	6307119	0.85	10000	98.8	90	110	
Mn	55	2	He	98.324	0.932	438109	0.93	100	98.3	90	110	
Co	59	2	He	95.782	0.660	992014	0.46	100	95.8	90	110	
Ni	60	2	He	98.330	1.117	256651	0.91	100	98.3	90	110	
Cu	63	2	He	94.142	1.071	699453	0.90	100	94.1	90	110	
Zn	66	2	He	98.168	0.469	127371	0.60	100	98.2	90	110	
Al	27	2	He	102.949	1.639	30303	1.73	100	102.9	90	110	
B	11	1	No Gas	494.742	3.724	997034	2.14	500	98.9	90	110	
Al	27	1	No Gas	102.999	1.100	1629422	1.31	100	103.0	90	110	
Si	28	1	No Gas	493.966	2.221	4104466	1.10	5000	9.9	90	110	CCV Main CR1-2 Failed
Ag	107	1	No Gas	99.181	0.913	1578180	0.27	100	99.2	90	110	
Cd	111	1	No Gas	97.714	0.971	290615	1.43	100	97.7	90	110	
Sr	88	1	No Gas	97.183	0.684	2930578	0.72	100	97.2	90	110	
Mo	95	1	No Gas	96.951	0.300	552271	0.84	100	97.0	90	110	
Sn	118	1	No Gas	90.253	1.084	825792	0.93	100	90.3	90	110	
Sb	121	1	No Gas	97.718	2.885	1257244	1.93	100	97.7	90	110	
Ba	137	1	No Gas	96.341	0.326	419722	0.54	100	96.3	90	110	
Tl	205	1	No Gas	98.235	1.672	2516166	0.39	100	98.2	90	110	
Tl	203	1	No Gas	88.137	1.093	952360	0.62	100	88.1	90	110	CCV Main CR1-2 Failed
Pb	208	1	No Gas	95.884	0.780	3338418	1.48	100	95.9	90	110	
U	238	1	No Gas	97.497	0.558	3488902	1.95	100	97.5	90	110	
Ca	43	2	He	10156.334	2.152	19297	2.28	10000	101.6	90	110	
Sb	121	2	He	98.534	0.467	630457	0.52	100	98.5	90	110	
Ti	47	2	He	99.236	3.556	19558	3.74	100	99.2	90	110	
Cu	63	1	No Gas	100.014	1.354	1375336	0.97	100	100.0	90	110	
Se	82	1	No Gas	100.003	1.697	18111	1.96	100	100.0	90	110	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1038545	1.61	1073327	96.76	70	120	
Ge	72	2	He	544952	0.20	538447	101.21	70	120	
Ge	72	1	No Gas	2019253	1.05	1983722	101.79	70	120	
In	115	1	No Gas	2228231	0.67	2263853	98.43	70	120	
Bi	209	1	No Gas	1703657	1.61	1715841	99.29	70	120	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	030_CCB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T11:38:25-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	0.003	3439.9	57189	1.3	0.5	
Be	9	1	No Gas	0.003	125.6	38	37.7	0.5	
V	51	2	He	0.073	21.1	2052	4.2	2.5	
Cr	52	2	He	0.389	9.7	3394	6.7	2.5	
Fe	56	2	He	1.339	6.4	19404	2.6	100	
Se	78	2	He	0.171	66.5	242	3.6	2	
As	75	2	He	-0.004	-192.7	82	10.2	2.5	
Ca	44	2	He	-2.766	-87.1	527	15.2	100	
Na	23	2	He	2.392	119.8	113001	1.6	100	
Mg	24	2	He	0.257	45.0	887	7.9	100	
K	39	2	He	7.228	11.5	80956	0.7	100	
Mn	55	2	He	0.047	56.6	480	25.6	2.5	
Co	59	2	He	0.000	-4740.1	80	54.5	2.5	
Ni	60	2	He	0.025	100.0	247	27.0	2.5	
Cu	63	2	He	-0.027	-26.8	2084	3.2	2	
Zn	66	2	He	-0.040	-111.0	623	8.8	2.5	
Al	27	2	He	-1.275	-7.3	497	4.6	5	
B	11	1	No Gas	14.215	15.0	33963	11.2	0.5	CCB Main CR1 Failed
Al	27	1	No Gas	-1.147	-7.8	26228	3.9	5	
Si	28	1	No Gas	-4.127	-10.9	258590	0.5	10	
Ag	107	1	No Gas	0.008	33.1	510	8.5	2.5	
Cd	111	1	No Gas	0.004	114.1	17	91.7	1	
Sr	88	1	No Gas	-0.021	-8.0	957	6.1	2.5	
Mo	95	1	No Gas	0.026	25.1	237	16.0	2.5	
Sn	118	1	No Gas	0.001	1853.8	2394	9.0	5	
Sb	121	1	No Gas	0.138	9.6	2717	5.0	2.5	
Ba	137	1	No Gas	-0.090	-2.4	150	6.7	2.5	
Tl	205	1	No Gas	0.039	7.6	1097	6.6	1	
Tl	203	1	No Gas	0.037	23.9	450	20.4	1	
Pb	208	1	No Gas	-0.259	-18.6	32644	4.6	2.5	
U	238	1	No Gas	0.005	15.8	207	12.2	2.5	
Ca	43	2	He	6.926	114.3	43	35.3	100	
Sb	121	2	He	0.099	16.0	1163	9.4	2.5	
Ti	47	2	He	0.034	86.6	7	86.6	2.5	
Cu	63	1	No Gas	-0.015	-125.5	4107	6.5	2.5	
Se	82	1	No Gas	-0.510	-312.0	-405	-71.8	2	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1075650	2.05	1073327	100.22	70	120	
Ge	72	2	He	542840	0.80	538447	100.82	70	120	
Ge	72	1	No Gas	2030281	1.60	1983722	102.35	70	120	
In	115	1	No Gas	2247221	0.77	2263853	99.27	70	120	
Bi	209	1	No Gas	1681855	0.66	1715841	98.02	70	120	

Sample Report

Sample Table

Sample Name	LCS-183371
Data File Name	031SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T11:40:19-05:00
Sample Type	Sample
Dilution	1
Comment	DOD 183371
ISTD Ref FileName	015CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	0.042	0.042	327.94	60526	0.00	2000	
Be	9	1	No Gas	51.827	51.827	3.85	208706	0.02	2000	
V	51	2	He	50.279	50.279	0.76	307724	0.02	2000	
Cr	52	2	He	50.747	50.747	1.29	354973	0.01	2000	
Fe	56	2	He	5394.737	5394.737	0.40	31804670	0.02	200000	
Se	78	2	He	55.616	55.616	2.31	4810	1.16	2000	
As	75	2	He	53.528	53.528	1.60	54434	0.10	2000	
Ca	44	2	He	5176.678	5176.678	0.86	172595	3.00	200000	
Na	23	2	He	5357.313	5357.313	1.32	5338845	0.10	200000	
Mg	24	2	He	5522.757	5522.757	0.32	3123751	0.18	200000	
K	39	2	He	5447.748	5447.748	1.04	3624045	0.15	200000	
Mn	55	2	He	52.677	52.677	0.63	242309	0.02	2000	
Co	59	2	He	51.933	51.933	0.83	554997	0.01	2000	
Ni	60	2	He	53.411	53.411	1.54	143924	0.04	2000	
Cu	63	2	He	52.060	52.060	0.92	400145	0.01	2000	
Zn	66	2	He	54.977	54.977	0.89	73908	0.07	2000	
Al	27	2	He	114.819	114.819	1.96	34767	0.33	2000	
B	11	1	No Gas	5.354	5.354	7.98	16306	0.03	2000	
Al	27	1	No Gas	113.094	113.094	0.61	1869216	0.01	2000	
Si	28	1	No Gas	118.319	118.319	3.20	1259985	0.01	2000	
Ag	107	1	No Gas	49.331	49.331	1.90	813908	0.01	2000	
Cd	111	1	No Gas	53.816	53.816	1.82	165909	0.03	2000	
Sr	88	1	No Gas	0.053	0.053	7.18	3307	0.00	2000	
Mo	95	1	No Gas	53.077	53.077	1.41	313457	0.02	2000	
Sn	118	1	No Gas	-0.031	-0.031	-12.59	2154	0.00	2000	
Sb	121	1	No Gas	49.583	49.583	1.76	668678	0.01	2000	
Ba	137	1	No Gas	52.389	52.389	2.27	236847	0.02	2000	
Tl	205	1	No Gas	51.872	51.872	0.72	1407855	0.00	2000	
Tl	203	1	No Gas	47.147	47.147	1.99	539758	0.01	2000	
Pb	208	1	No Gas	48.336	48.336	1.19	1804970	0.00	2000	
U	238	1	No Gas	0.001	0.001	75.36	90	0.00	2000	
Ca	43	2	He	5047.211	5047.211	2.81	9910	50.93	200000	
Sb	121	2	He	54.346	54.346	1.11	359037	0.02	2000	
Ti	47	2	He	53.297	53.297	2.76	10838	0.49	2000	
Cu	63	1	No Gas	51.121	51.121	0.50	738447	0.01	2000	
Zn	66	1	No Gas	55.708	55.708	0.82	197657	0.03	2000	
Se	82	1	No Gas	50.862	50.862	5.05	9487	0.54	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1126647	3.83	1073327	104.97	70	120	
Ge	72	2	He	562277	0.38	538447	104.43	70	120	
Ge	72	1	No Gas	2114669	0.24	1983722	106.60	70	120	
In	115	1	No Gas	2310016	1.02	2263853	102.04	70	120	

Sample Report

Bi	209	1	No Gas	1804936	0.87	1715841	105.19	70	120	

Sample Report

Sample Table

Sample Name	HS22081514-22
Data File Name	032SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T11:42:11-05:00
Sample Type	Sample
Dilution	20
Comment	DOD 183371
ISTD Ref FileName	015CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	2.646	52.923	1.62	97555	0.00	2000	
Be	9	1	No Gas	0.077	1.534	8.28	313	0.02	2000	
V	51	2	He	0.347	6.948	6.39	3657	0.01	2000	
Cr	52	2	He	14.643	292.862	1.56	99221	0.01	2000	
Fe	56	2	He	1953.528	39070.551	1.68	11101750	0.02	200000	
Se	78	2	He	0.236	4.730	261.24	247	0.10	2000	
As	75	2	He	2.242	44.849	1.75	2279	0.10	2000	
Ca	44	2	He	5001.342	100026.846	2.14	160645	3.11	200000	
Na	23	2	He	16843.562	336871.245	1.95	15932148	0.11	200000	
Mg	24	2	He	3549.295	70985.896	1.93	1934066	0.18	200000	
K	39	2	He	64.205	1284.094	4.16	116495	0.06	200000	
Mn	55	2	He	126.045	2520.896	1.10	558159	0.02	2000	
Co	59	2	He	1.850	37.003	2.44	19130	0.01	2000	
Ni	60	2	He	9.037	180.732	2.04	23607	0.04	2000	
Cu	63	2	He	2.340	46.800	4.39	19498	0.01	2000	
Zn	66	2	He	6.613	132.262	4.28	9157	0.07	2000	
Al	27	2	He	14.695	293.894	3.05	5034	0.29	2000	
B	11	1	No Gas	5.358	107.162	9.87	15163	0.04	2000	
Al	27	1	No Gas	14.249	284.971	1.13	261586	0.01	2000	
Si	28	1	No Gas	1526.907	30538.133	1.00	12013385	0.01	2000	
Ag	107	1	No Gas	0.027	0.534	20.94	800	0.00	2000	
Cd	111	1	No Gas	1.166	23.321	6.89	3474	0.03	2000	
Sr	88	1	No Gas	85.855	1717.095	1.29	2592814	0.00	2000	
Mo	95	1	No Gas	0.247	4.934	5.40	1493	0.02	2000	
Sn	118	1	No Gas	0.107	2.132	5.14	3340	0.00	2000	
Sb	121	1	No Gas	0.130	2.602	7.66	2580	0.01	2000	
Ba	137	1	No Gas	251.886	5037.726	4.35	1098385	0.02	2000	
Tl	205	1	No Gas	0.047	0.935	22.74	1310	0.00	2000	
Tl	203	1	No Gas	0.050	0.991	10.77	600	0.01	2000	
Pb	208	1	No Gas	-0.339	-6.788	-10.95	30565	0.00	2000	
U	238	1	No Gas	0.061	1.223	3.68	2247	0.00	2000	
Ca	43	2	He	5077.144	101542.882	5.08	9600	52.89	200000	
Sb	121	2	He	0.127	2.542	18.92	1340	0.01	2000	
Ti	47	2	He	0.137	2.733	58.11	27	0.51	2000	
Cu	63	1	No Gas	2.526	50.517	1.34	38689	0.01	2000	
Zn	66	1	No Gas	6.941	138.824	1.43	24833	0.03	2000	
Se	82	1	No Gas	1.730	34.601	37.56	8	20.67	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1046542	1.98	1073327	97.50	70	120	
Ge	72	2	He	541709	1.25	538447	100.61	70	120	
Ge	72	1	No Gas	2007462	0.87	1983722	101.20	70	120	
In	115	1	No Gas	2231703	1.90	2263853	98.58	70	120	

Sample Report

Bi	209	1	No Gas	1718491	0.42	1715841	100.15	70	120	

Sample Report

Sample Table

Sample Name	HS22081514-22SD
Data File Name	033SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T11:44:02-05:00
Sample Type	Sample
Dilution	100
Comment	DOD 183371
ISTD Ref FileName	015CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	0.462	46.193	18.32	64877	0.00	2000	
Be	9	1	No Gas	0.019	1.892	25.14	100	0.02	2000	
V	51	2	He	0.137	13.662	6.64	2424	0.01	2000	
Cr	52	2	He	3.554	355.383	0.91	24686	0.01	2000	
Fe	56	2	He	415.700	41570.028	1.21	2373665	0.02	200000	
Se	78	2	He	0.116	11.554	164.80	237	0.05	2000	
As	75	2	He	0.455	45.472	1.91	531	0.09	2000	
Ca	44	2	He	1029.366	102936.597	0.91	33581	3.07	200000	
Na	23	2	He	3441.751	344175.114	0.37	3346219	0.10	200000	
Mg	24	2	He	686.174	68617.406	0.79	374811	0.18	200000	
K	39	2	He	16.277	1627.727	3.81	86523	0.02	200000	
Mn	55	2	He	25.371	2537.129	1.28	112648	0.02	2000	
Co	59	2	He	0.384	38.441	3.04	4041	0.01	2000	
Ni	60	2	He	1.743	174.302	7.74	4704	0.04	2000	
Cu	63	2	He	0.451	45.089	5.22	5598	0.01	2000	
Zn	66	2	He	1.679	167.948	2.13	2830	0.06	2000	
Al	27	2	He	2.641	264.072	11.17	1610	0.16	2000	
B	11	1	No Gas	3.376	337.596	1.84	11515	0.03	2000	
Al	27	1	No Gas	2.724	272.408	3.48	85298	0.00	2000	
Si	28	1	No Gas	313.932	31393.180	0.99	2701802	0.01	2000	
Ag	107	1	No Gas	0.001	0.110	296.38	397	0.00	2000	
Cd	111	1	No Gas	0.224	22.400	14.51	680	0.03	2000	
Sr	88	1	No Gas	15.911	1591.133	1.74	488130	0.00	2000	
Mo	95	1	No Gas	0.058	5.825	10.63	423	0.01	2000	
Sn	118	1	No Gas	-0.030	-3.019	-40.77	2117	0.00	2000	
Sb	121	1	No Gas	0.067	6.701	6.27	1777	0.00	2000	
Ba	137	1	No Gas	48.703	4870.250	1.68	215529	0.02	2000	
Tl	205	1	No Gas	0.016	1.617	3.25	523	0.00	2000	
Tl	203	1	No Gas	0.013	1.341	42.89	207	0.01	2000	
Pb	208	1	No Gas	-0.449	-44.869	-5.22	26898	0.00	2000	
U	238	1	No Gas	0.012	1.213	9.94	480	0.00	2000	
Ca	43	2	He	1049.601	104960.057	9.80	2010	52.21	200000	
Sb	121	2	He	0.072	7.238	20.31	993	0.01	2000	
Ti	47	2	He	0.085	8.489	34.15	17	0.51	2000	
Cu	63	1	No Gas	0.455	45.512	7.05	10478	0.00	2000	
Zn	66	1	No Gas	1.670	167.025	5.66	7245	0.02	2000	
Se	82	1	No Gas	3.001	300.144	63.04	242	1.24	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1079016	1.58	1073327	100.53	70	120	
Ge	72	2	He	542081	0.78	538447	100.67	70	120	
Ge	72	1	No Gas	2009957	0.26	1983722	101.32	70	120	
In	115	1	No Gas	2261011	1.90	2263853	99.87	70	120	

Sample Report

Bi	209	1	No Gas	1726473	1.25	1715841	100.62	70	120	

Sample Report

Sample Table

Sample Name	HS22081514-22PDS
Data File Name	034SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T11:45:55-05:00
Sample Type	Sample
Dilution	20
Comment	DOD 183371
ISTD Ref FileName	015CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	2.466	49.325	1.56	96194	0.00	2000	
Be	9	1	No Gas	97.023	1940.461	1.13	368940	0.03	2000	
V	51	2	He	93.883	1877.669	0.30	553038	0.02	2000	
Cr	52	2	He	108.921	2178.427	0.41	734279	0.01	2000	
Fe	56	2	He	11787.769	235755.380	1.23	67042776	0.02	200000	
Se	78	2	He	100.191	2003.829	1.05	8178	1.23	2000	
As	75	2	He	100.687	2013.733	0.28	98725	0.10	2000	
Ca	44	2	He	14624.632	292492.639	0.50	469377	3.12	200000	
Na	23	2	He	26471.222	529424.444	1.18	25018520	0.11	200000	
Mg	24	2	He	13259.148	265182.955	0.45	7235392	0.18	200000	
K	39	2	He	9938.605	198772.092	0.47	6316687	0.16	200000	
Mn	55	2	He	234.459	4689.171	1.57	1039731	0.02	2000	
Co	59	2	He	96.612	1932.243	0.27	996210	0.01	2000	
Ni	60	2	He	106.246	2124.928	0.33	276082	0.04	2000	
Cu	63	2	He	95.306	1906.116	0.26	704964	0.01	2000	
Zn	66	2	He	105.234	2104.684	0.36	135889	0.08	2000	
Al	27	2	He	115.214	2304.282	4.68	33662	0.34	2000	
B	11	1	No Gas	3.342	66.839	4.91	11275	0.03	2000	
Al	27	1	No Gas	111.542	2230.841	1.29	1774488	0.01	2000	
Si	28	1	No Gas	1500.341	30006.827	2.28	11968642	0.01	2000	
Ag	107	1	No Gas	98.579	1971.583	2.40	1568688	0.01	2000	
Cd	111	1	No Gas	99.017	1980.343	2.47	294453	0.03	2000	
Sr	88	1	No Gas	85.211	1704.219	1.51	2569806	0.00	2000	
Mo	95	1	No Gas	97.987	1959.737	2.55	558103	0.02	2000	
Sn	118	1	No Gas	0.052	1.039	9.70	2837	0.00	2000	
Sb	121	1	No Gas	98.085	1961.702	2.48	1271638	0.01	2000	
Ba	137	1	No Gas	352.821	7056.415	2.29	1535732	0.02	2000	
Tl	205	1	No Gas	96.964	1939.283	1.15	2429808	0.00	2000	
Tl	203	1	No Gas	87.972	1759.444	0.46	929892	0.01	2000	
Pb	208	1	No Gas	96.302	1926.040	0.36	3279595	0.00	2000	
U	238	1	No Gas	0.061	1.219	11.56	2174	0.00	2000	
Ca	43	2	He	14732.826	294656.514	0.22	27855	52.89	200000	
Sb	121	2	He	98.438	1968.756	0.20	627071	0.02	2000	
Ti	47	2	He	101.141	2022.824	1.18	19845	0.51	2000	
Cu	63	1	No Gas	99.050	1981.005	3.34	1372745	0.01	2000	
Zn	66	1	No Gas	104.975	2099.501	1.49	356881	0.03	2000	
Se	82	1	No Gas	96.638	1932.756	2.17	17623	0.55	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1062985	1.26	1073327	99.04	70	120	
Ge	72	2	He	542553	0.05	538447	100.76	70	120	
Ge	72	1	No Gas	2035152	2.43	1983722	102.59	70	120	
In	115	1	No Gas	2228607	1.79	2263853	98.44	70	120	

Sample Report

Bi	209	1	No Gas	1666433	0.77	1715841	97.12	70	120	

Sample Report

Sample Table

Sample Name	HS22081514-04
Data File Name	036SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T11:49:37-05:00
Sample Type	Sample
Dilution	20
Comment	DOD 183371
ISTD Ref FileName	015CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	0.598	11.968	7.46	66953	0.00	2000	
Be	9	1	No Gas	0.014	0.284	17.96	82	0.02	2000	
V	51	2	He	0.363	7.260	1.17	3756	0.01	2000	
Cr	52	2	He	3.064	61.273	1.25	21410	0.01	2000	
Fe	56	2	He	321.601	6432.029	1.46	1840659	0.02	200000	
Se	78	2	He	-0.074	-1.483	-878.20	223	-0.03	2000	
As	75	2	He	0.097	1.939	26.49	181	0.05	2000	
Ca	44	2	He	732.446	14648.923	3.61	24095	3.04	200000	
Na	23	2	He	3878.884	77577.675	0.37	3760831	0.10	200000	
Mg	24	2	He	598.519	11970.378	0.13	327349	0.18	200000	
K	39	2	He	80.923	1618.466	3.50	127195	0.06	200000	
Mn	55	2	He	18.618	372.356	0.30	82817	0.02	2000	
Co	59	2	He	0.141	2.825	8.66	1537	0.01	2000	
Ni	60	2	He	0.396	7.923	8.38	1210	0.03	2000	
Cu	63	2	He	0.823	16.452	2.77	8343	0.01	2000	
Zn	66	2	He	3.563	71.260	4.50	5254	0.07	2000	
Al	27	2	He	85.764	1715.288	1.69	25280	0.34	2000	
B	11	1	No Gas	2.328	46.555	7.04	9303	0.03	2000	
Al	27	1	No Gas	87.197	1743.938	2.65	1388329	0.01	2000	
Si	28	1	No Gas	1125.904	22518.081	2.48	9001157	0.01	2000	
Ag	107	1	No Gas	-0.007	-0.144	-71.36	263	0.00	2000	
Cd	111	1	No Gas	0.009	0.176	64.43	30	0.03	2000	
Sr	88	1	No Gas	13.426	268.525	0.62	412779	0.00	2000	
Mo	95	1	No Gas	0.028	0.564	1.73	250	0.01	2000	
Sn	118	1	No Gas	-0.077	-1.544	-18.18	1683	0.00	2000	
Sb	121	1	No Gas	0.143	2.851	6.80	2760	0.01	2000	
Ba	137	1	No Gas	22.264	445.288	1.34	98975	0.02	2000	
Tl	205	1	No Gas	0.013	0.258	21.32	443	0.00	2000	
Tl	203	1	No Gas	0.013	0.252	11.33	200	0.01	2000	
Pb	208	1	No Gas	-0.482	-9.630	-3.54	25991	0.00	2000	
U	238	1	No Gas	0.010	0.193	12.86	393	0.00	2000	
Ca	43	2	He	739.470	14789.410	4.63	1427	51.83	200000	
Sb	121	2	He	0.132	2.636	14.26	1373	0.01	2000	
Ti	47	2	He	1.443	28.859	33.14	283	0.51	2000	
Cu	63	1	No Gas	0.806	16.129	4.36	15369	0.01	2000	
Zn	66	1	No Gas	3.668	73.351	1.47	14014	0.03	2000	
Se	82	1	No Gas	0.504	10.072	405.01	-221	-0.23	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1076460	1.43	1073327	100.29	70	120	
Ge	72	2	He	542604	0.56	538447	100.77	70	120	
Ge	72	1	No Gas	2023045	1.94	1983722	101.98	70	120	
In	115	1	No Gas	2264121	1.13	2263853	100.01	70	120	

Sample Report

Bi	209	1	No Gas	1741773	0.74	1715841	101.51	70	120	

Sample Report

Sample Table

Sample Name	HS22081514-09
Data File Name	037SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T11:51:29-05:00
Sample Type	Sample
Dilution	20
Comment	DOD 183371
ISTD Ref FileName	015CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	0.440	8.792	5.81	63829	0.00	2000	
Be	9	1	No Gas	0.014	0.288	69.78	82	0.02	2000	
V	51	2	He	0.670	13.403	4.57	5552	0.01	2000	
Cr	52	2	He	4.200	84.003	1.45	29021	0.01	2000	
Fe	56	2	He	218.854	4377.086	0.42	1254535	0.02	200000	
Se	78	2	He	-0.135	-2.691	-100.27	217	-0.06	2000	
As	75	2	He	0.074	1.489	29.64	159	0.05	2000	
Ca	44	2	He	183.191	3663.817	2.26	6478	2.83	200000	
Na	23	2	He	2362.874	47257.482	1.61	2330640	0.10	200000	
Mg	24	2	He	133.538	2670.766	1.62	73503	0.18	200000	
K	39	2	He	27.914	558.290	5.57	93770	0.03	200000	
Mn	55	2	He	2.398	47.957	0.42	10884	0.02	2000	
Co	59	2	He	0.142	2.836	5.21	1540	0.01	2000	
Ni	60	2	He	6.038	120.759	2.54	15839	0.04	2000	
Cu	63	2	He	0.187	3.741	16.54	3651	0.01	2000	
Zn	66	2	He	1.654	33.077	7.56	2797	0.06	2000	
Al	27	2	He	112.341	2246.825	2.64	32800	0.34	2000	
B	11	1	No Gas	3.014	60.285	2.73	10644	0.03	2000	
Al	27	1	No Gas	112.053	2241.057	0.63	1780045	0.01	2000	
Si	28	1	No Gas	1327.341	26546.812	0.71	10608839	0.01	2000	
Ag	107	1	No Gas	-0.008	-0.158	-32.38	253	0.00	2000	
Cd	111	1	No Gas	0.007	0.132	27.40	23	0.03	2000	
Sr	88	1	No Gas	3.193	63.861	0.34	99753	0.00	2000	
Mo	95	1	No Gas	0.053	1.055	5.47	393	0.01	2000	
Sn	118	1	No Gas	-0.077	-1.535	-15.54	1693	0.00	2000	
Sb	121	1	No Gas	0.086	1.722	3.95	2044	0.00	2000	
Ba	137	1	No Gas	4.006	80.128	3.56	18327	0.02	2000	
Tl	205	1	No Gas	0.010	0.202	16.57	370	0.00	2000	
Tl	203	1	No Gas	0.009	0.185	49.29	163	0.01	2000	
Pb	208	1	No Gas	-0.465	-9.297	-3.33	26675	0.00	2000	
U	238	1	No Gas	0.009	0.178	28.99	367	0.00	2000	
Ca	43	2	He	150.292	3005.844	18.92	313	47.96	200000	
Sb	121	2	He	0.089	1.775	16.18	1097	0.01	2000	
Ti	47	2	He	1.481	29.627	19.80	290	0.51	2000	
Cu	63	1	No Gas	0.187	3.738	5.04	6892	0.00	2000	
Zn	66	1	No Gas	1.645	32.904	4.10	7239	0.02	2000	
Se	82	1	No Gas	0.857	17.142	170.68	-152	-0.56	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1067374	0.63	1073327	99.45	70	120	
Ge	72	2	He	541804	0.73	538447	100.62	70	120	
Ge	72	1	No Gas	2032004	1.45	1983722	102.43	70	120	
In	115	1	No Gas	2272023	1.22	2263853	100.36	70	120	

Sample Report

Bi	209	1	No Gas	1748486	0.77	1715841	101.90	70	120	

Sample Report

Sample Table

Sample Name	HS22081514-12
Data File Name	038SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T11:53:22-05:00
Sample Type	Sample
Dilution	20
Comment	DOD 183371
ISTD Ref FileName	015CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	2.491	49.825	2.89	94463	0.00	2000	
Be	9	1	No Gas	0.042	0.837	17.87	182	0.02	2000	
V	51	2	He	0.256	5.119	6.96	3130	0.01	2000	
Cr	52	2	He	2.199	43.983	1.89	15606	0.01	2000	
Fe	56	2	He	44.389	887.778	1.40	264515	0.02	200000	
Se	78	2	He	-0.092	-1.834	-317.92	221	-0.04	2000	
As	75	2	He	0.066	1.322	51.47	151	0.04	2000	
Ca	44	2	He	2006.246	40124.912	1.76	64997	3.09	200000	
Na	23	2	He	18979.799	379595.979	1.09	17991002	0.11	200000	
Mg	24	2	He	1684.249	33684.985	1.18	920886	0.18	200000	
K	39	2	He	88.964	1779.275	0.97	132396	0.07	200000	
Mn	55	2	He	72.897	1457.945	1.02	323843	0.02	2000	
Co	59	2	He	1.758	35.150	3.47	18226	0.01	2000	
Ni	60	2	He	2.068	41.362	7.06	5558	0.04	2000	
Cu	63	2	He	0.110	2.203	14.00	3094	0.00	2000	
Zn	66	2	He	1.610	32.197	4.47	2747	0.06	2000	
Al	27	2	He	5.435	108.702	12.53	2410	0.23	2000	
B	11	1	No Gas	2.195	43.894	6.20	8719	0.03	2000	
Al	27	1	No Gas	5.149	102.981	2.22	123508	0.00	2000	
Si	28	1	No Gas	1238.412	24768.241	1.53	9894633	0.01	2000	
Ag	107	1	No Gas	0.002	0.032	104.40	403	0.00	2000	
Cd	111	1	No Gas	0.044	0.890	36.04	137	0.03	2000	
Sr	88	1	No Gas	39.455	789.103	2.25	1202063	0.00	2000	
Mo	95	1	No Gas	0.045	0.906	13.84	347	0.01	2000	
Sn	118	1	No Gas	-0.084	-1.689	-8.34	1607	-0.01	2000	
Sb	121	1	No Gas	0.042	0.833	45.58	1463	0.00	2000	
Ba	137	1	No Gas	15.460	309.191	1.14	68453	0.02	2000	
Tl	205	1	No Gas	0.013	0.265	22.24	457	0.00	2000	
Tl	203	1	No Gas	0.018	0.350	13.77	257	0.01	2000	
Pb	208	1	No Gas	-0.624	-12.483	-1.08	21177	0.00	2000	
U	238	1	No Gas	0.002	0.046	46.86	127	0.00	2000	
Ca	43	2	He	2060.847	41216.943	1.95	3927	52.47	200000	
Sb	121	2	He	0.034	0.687	47.45	753	0.00	2000	
Ti	47	2	He	0.034	0.680	86.60	7	0.51	2000	
Cu	63	1	No Gas	0.228	4.567	14.56	7442	0.00	2000	
Zn	66	1	No Gas	1.524	30.481	8.28	6812	0.02	2000	
Se	82	1	No Gas	0.537	10.739	222.13	-213	-0.25	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1039474	0.37	1073327	96.85	70	120	
Ge	72	2	He	543217	0.50	538447	100.89	70	120	
Ge	72	1	No Gas	2027391	1.33	1983722	102.20	70	120	
In	115	1	No Gas	2249562	0.61	2263853	99.37	70	120	

Sample Report

Bi	209	1	No Gas	1758654	0.72	1715841	102.50	70	120	

Sample Report

Sample Table

Sample Name	HS22081514-13
Data File Name	039SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T11:55:14-05:00
Sample Type	Sample
Dilution	20
Comment	DOD 183371
ISTD Ref FileName	015CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	1.782	35.648	7.06	83633	0.00	2000	
Be	9	1	No Gas	0.010	0.190	9.12	62	0.02	2000	
V	51	2	He	0.435	8.699	2.00	4194	0.01	2000	
Cr	52	2	He	1.196	23.928	0.57	8866	0.01	2000	
Fe	56	2	He	70.764	1415.278	1.65	415726	0.02	200000	
Se	78	2	He	-0.525	-10.502	-27.31	187	-0.28	2000	
As	75	2	He	0.044	0.885	75.00	130	0.03	2000	
Ca	44	2	He	824.526	16490.513	1.62	27147	3.04	200000	
Na	23	2	He	12740.626	254812.526	1.60	12143979	0.10	200000	
Mg	24	2	He	816.176	16323.521	1.22	447749	0.18	200000	
K	39	2	He	69.332	1386.648	8.66	120351	0.06	200000	
Mn	55	2	He	19.215	384.294	2.74	85771	0.02	2000	
Co	59	2	He	1.056	21.114	4.65	11005	0.01	2000	
Ni	60	2	He	2.604	52.078	4.08	6969	0.04	2000	
Cu	63	2	He	5.968	119.356	3.90	46446	0.01	2000	
Zn	66	2	He	49.682	993.646	1.80	64751	0.08	2000	
Al	27	2	He	0.283	5.669	84.03	943	0.03	2000	
B	11	1	No Gas	1.995	39.897	3.64	8353	0.02	2000	
Al	27	1	No Gas	0.357	7.146	23.59	50161	0.00	2000	
Si	28	1	No Gas	988.407	19768.141	0.80	8071197	0.01	2000	
Ag	107	1	No Gas	-0.010	-0.194	-14.18	223	0.00	2000	
Cd	111	1	No Gas	0.013	0.267	65.20	43	0.03	2000	
Sr	88	1	No Gas	15.778	315.553	1.91	485374	0.00	2000	
Mo	95	1	No Gas	0.020	0.406	61.38	203	0.01	2000	
Sn	118	1	No Gas	0.704	14.083	4.36	8937	0.01	2000	
Sb	121	1	No Gas	0.048	0.965	22.27	1573	0.00	2000	
Ba	137	1	No Gas	7.798	155.969	1.18	35078	0.02	2000	
Tl	205	1	No Gas	0.004	0.078	34.54	210	0.00	2000	
Tl	203	1	No Gas	0.001	0.021	523.60	73	0.00	2000	
Pb	208	1	No Gas	-0.309	-6.180	-7.87	32520	0.00	2000	
U	238	1	No Gas	0.001	0.030	20.44	97	0.00	2000	
Ca	43	2	He	822.850	16457.010	2.00	1590	51.75	200000	
Sb	121	2	He	0.048	0.963	11.36	843	0.01	2000	
Ti	47	2	He	0.085	1.699	91.92	17	0.51	2000	
Cu	63	1	No Gas	5.733	114.659	2.33	84401	0.01	2000	
Zn	66	1	No Gas	49.172	983.443	1.15	169870	0.03	2000	
Se	82	1	No Gas	1.404	28.083	35.97	-52	-2.71	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1043969	2.33	1073327	97.26	70	120	
Ge	72	2	He	544616	0.73	538447	101.15	70	120	
Ge	72	1	No Gas	2056764	1.64	1983722	103.68	70	120	
In	115	1	No Gas	2267401	2.29	2263853	100.16	70	120	

Sample Report

Bi	209	1	No Gas	1767301	0.32	1715841	103.00	70	120	

Sample Report

Sample Table

Sample Name	HS22081514-17
Data File Name	040SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T11:57:07-05:00
Sample Type	Sample
Dilution	100
Comment	DOD 183371
ISTD Ref FileName	015CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	-0.064	-6.377	-165.81	56187	0.00	2000	
Be	9	1	No Gas	0.003	0.289	96.02	38	0.01	2000	
V	51	2	He	0.553	55.308	2.54	4891	0.01	2000	
Cr	52	2	He	1.116	111.623	6.68	8326	0.01	2000	
Fe	56	2	He	52.048	5204.822	1.66	308888	0.02	200000	
Se	78	2	He	0.019	1.853	324.45	231	0.01	2000	
As	75	2	He	0.041	4.079	41.24	127	0.03	2000	
Ca	44	2	He	16.767	1676.670	10.53	1157	1.45	200000	
Na	23	2	He	288.342	28834.157	1.14	383450	0.08	200000	
Mg	24	2	He	17.489	1748.913	6.18	10324	0.17	200000	
K	39	2	He	7.912	791.171	32.43	81644	0.01	200000	
Mn	55	2	He	0.247	24.709	12.65	1370	0.02	2000	
Co	59	2	He	0.024	2.409	22.10	330	0.01	2000	
Ni	60	2	He	0.237	23.716	16.04	800	0.03	2000	
Cu	63	2	He	0.021	2.071	83.05	2440	0.00	2000	
Zn	66	2	He	0.252	25.235	16.65	1003	0.03	2000	
Al	27	2	He	28.375	2837.513	3.99	8973	0.32	2000	
B	11	1	No Gas	0.907	90.727	12.11	6356	0.01	2000	
Al	27	1	No Gas	26.452	2645.193	2.27	451783	0.01	2000	
Si	28	1	No Gas	192.478	19247.770	0.88	1779312	0.01	2000	
Ag	107	1	No Gas	-0.011	-1.094	-17.47	200	-0.01	2000	
Cd	111	1	No Gas	0.001	0.114	169.71	7	0.02	2000	
Sr	88	1	No Gas	0.374	37.440	2.64	12890	0.00	2000	
Mo	95	1	No Gas	0.010	1.016	39.72	143	0.01	2000	
Sn	118	1	No Gas	-0.081	-8.074	-15.54	1627	0.00	2000	
Sb	121	1	No Gas	0.037	3.688	17.55	1400	0.00	2000	
Ba	137	1	No Gas	0.864	86.386	4.61	4304	0.02	2000	
Tl	205	1	No Gas	0.004	0.375	53.14	200	0.00	2000	
Tl	203	1	No Gas	0.002	0.186	102.30	80	0.00	2000	
Pb	208	1	No Gas	-0.594	-59.383	-3.49	21698	0.00	2000	
U	238	1	No Gas	0.001	0.074	130.59	67	0.00	2000	
Ca	43	2	He	10.329	1032.865	132.48	50	20.66	200000	
Sb	121	2	He	0.030	2.979	36.10	727	0.00	2000	
Ti	47	2	He	0.558	55.816	15.15	110	0.51	2000	
Cu	63	1	No Gas	0.016	1.612	122.49	4514	0.00	2000	
Zn	66	1	No Gas	0.298	29.754	7.52	2674	0.01	2000	
Se	82	1	No Gas	0.044	4.368	1764.05	-303	-0.01	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1077529	2.89	1073327	100.39	70	120	
Ge	72	2	He	544610	0.89	538447	101.14	70	120	
Ge	72	1	No Gas	2022965	0.68	1983722	101.98	70	120	
In	115	1	No Gas	2230235	0.29	2263853	98.52	70	120	

Sample Report

Bi	209	1	No Gas	1715078	1.08	1715841	99.96	70	120	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	041_CCV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T11:59:00-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Li	7	1	No Gas	96.580	3.923	1547477	2.34	100	96.6	90	110	
Be	9	1	No Gas	98.299	2.592	358964	0.66	100	98.3	90	110	
V	51	2	He	94.575	0.560	557477	0.44	100	94.6	90	110	
Cr	52	2	He	95.089	0.469	641566	0.43	100	95.1	90	110	
Fe	56	2	He	9980.413	0.458	56805242	0.87	10000	99.8	90	110	
Se	78	2	He	98.836	0.496	8076	0.43	100	98.8	90	110	
As	75	2	He	97.411	0.584	95581	0.59	100	97.4	90	110	
Ca	44	2	He	9808.992	0.272	315245	0.92	10000	98.1	90	110	
Na	23	2	He	9881.336	0.587	9415033	0.88	10000	98.8	90	110	
Mg	24	2	He	9961.829	0.474	5440083	0.95	10000	99.6	90	110	
K	39	2	He	9788.252	0.383	6226634	0.83	10000	97.9	90	110	
Mn	55	2	He	98.822	0.169	438697	0.80	100	98.8	90	110	
Co	59	2	He	96.681	0.995	997592	0.91	100	96.7	90	110	
Ni	60	2	He	99.345	0.877	258332	0.45	100	99.3	90	110	
Cu	63	2	He	94.725	1.465	701124	0.80	100	94.7	90	110	
Zn	66	2	He	100.027	1.411	129281	0.87	100	100.0	90	110	
Al	27	2	He	99.914	1.252	29328	1.99	100	99.9	90	110	
B	11	1	No Gas	494.362	5.370	979223	3.55	500	98.9	90	110	
Al	27	1	No Gas	102.643	2.704	1620767	3.40	100	102.6	90	110	
Si	28	1	No Gas	493.231	0.907	4090570	0.42	5000	9.9	90	110	CCV Main CR1-2 Failed
Ag	107	1	No Gas	100.747	0.673	1591473	1.64	100	100.7	90	110	
Cd	111	1	No Gas	99.499	0.405	293755	1.43	100	99.5	90	110	
Sr	88	1	No Gas	98.588	1.102	2950947	0.20	100	98.6	90	110	
Mo	95	1	No Gas	98.053	0.476	554436	0.75	100	98.1	90	110	
Sn	118	1	No Gas	91.233	0.952	828579	0.29	100	91.2	90	110	
Sb	121	1	No Gas	98.104	0.183	1259843	1.33	100	98.1	90	110	
Ba	137	1	No Gas	97.589	0.774	422022	0.51	100	97.6	90	110	
Tl	205	1	No Gas	99.920	0.681	2513942	0.75	100	99.9	90	110	
Tl	203	1	No Gas	90.394	0.763	959363	0.87	100	90.4	90	110	
Pb	208	1	No Gas	97.495	0.668	3333139	0.51	100	97.5	90	110	
U	238	1	No Gas	99.633	0.742	3501324	0.22	100	99.6	90	110	
Ca	43	2	He	9746.362	2.655	18453	3.35	10000	97.5	90	110	
Sb	121	2	He	99.493	0.939	634210	0.67	100	99.5	90	110	
Ti	47	2	He	97.909	0.347	19224	0.82	100	97.9	90	110	
Cu	63	1	No Gas	98.347	2.625	1349739	2.77	100	98.3	90	110	
Se	82	1	No Gas	99.083	5.057	17900	4.61	100	99.1	90	110	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1021216	2.84	1073327	95.14	70	120	
Ge	72	2	He	542938	0.90	538447	100.83	70	120	
Ge	72	1	No Gas	2015065	1.26	1983722	101.58	70	120	
In	115	1	No Gas	2211904	1.09	2263853	97.71	70	120	
Bi	209	1	No Gas	1673165	0.55	1715841	97.51	70	120	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	042_CCB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T12:00:48-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	0.093	32.5	55487	0.3	0.5	
Be	9	1	No Gas	0.006	72.7	47	32.7	0.5	
V	51	2	He	0.011	70.0	1697	2.4	2.5	
Cr	52	2	He	0.349	5.7	3150	4.1	2.5	
Fe	56	2	He	1.029	11.6	17745	3.7	100	
Se	78	2	He	0.093	131.7	237	4.2	2	
As	75	2	He	-0.009	-151.5	78	17.3	2.5	
Ca	44	2	He	-2.962	-54.0	523	9.8	100	
Na	23	2	He	-9.179	-17.7	102756	1.4	100	
Mg	24	2	He	0.029	570.2	767	11.8	100	
K	39	2	He	4.261	21.6	79585	0.5	100	
Mn	55	2	He	0.013	72.7	330	13.2	2.5	
Co	59	2	He	0.001	74.6	97	11.9	2.5	
Ni	60	2	He	0.036	16.4	277	5.5	2.5	
Cu	63	2	He	-0.137	-11.1	1273	8.7	2	
Zn	66	2	He	-0.018	-337.2	657	11.6	2.5	
Al	27	2	He	-1.495	-10.8	437	10.8	5	
B	11	1	No Gas	13.512	16.3	30762	13.3	0.5	CCB Main CR1 Failed
Al	27	1	No Gas	-1.493	-0.8	20746	2.7	5	
Si	28	1	No Gas	-4.259	-17.3	255732	0.8	10	
Ag	107	1	No Gas	-0.008	-47.2	250	25.0	2.5	
Cd	111	1	No Gas	0.009	39.0	30	33.3	1	
Sr	88	1	No Gas	-0.024	-15.7	893	12.3	2.5	
Mo	95	1	No Gas	0.005	43.3	117	9.9	2.5	
Sn	118	1	No Gas	-0.013	-133.7	2304	8.0	5	
Sb	121	1	No Gas	0.144	16.3	2770	9.4	2.5	
Ba	137	1	No Gas	-0.085	-14.1	173	29.6	2.5	
Tl	205	1	No Gas	0.035	17.6	1003	16.9	1	
Tl	203	1	No Gas	0.028	13.6	367	12.6	1	
Pb	208	1	No Gas	-0.624	-3.5	20570	4.8	2.5	
U	238	1	No Gas	0.003	39.3	143	28.2	2.5	
Ca	43	2	He	-3.721	-453.3	23	137.8	100	
Sb	121	2	He	0.104	8.2	1207	4.6	2.5	
Ti	47	2	He	0.051	100.1	10	100.0	2.5	
Cu	63	1	No Gas	-0.128	-14.5	2517	8.3	2.5	
Se	82	1	No Gas	0.047	2400.7	-301	-68.6	2	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1017285	0.80	1073327	94.78	70	120	
Ge	72	2	He	546214	0.19	538447	101.44	70	120	
Ge	72	1	No Gas	2016085	1.93	1983722	101.63	70	120	
In	115	1	No Gas	2283192	2.33	2263853	100.85	70	120	
Bi	209	1	No Gas	1707124	1.21	1715841	99.49	70	120	

Sample Report

Sample Table

Sample Name	HS22081514-18
Data File Name	043SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T12:02:42-05:00
Sample Type	Sample
Dilution	20
Comment	DOD 183371
ISTD Ref FileName	015CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	0.175	3.505	58.95	58207	0.00	2000	
Be	9	1	No Gas	0.035	0.691	15.01	155	0.02	2000	
V	51	2	He	0.673	13.457	5.97	5580	0.01	2000	
Cr	52	2	He	1.327	26.541	2.55	9720	0.01	2000	
Fe	56	2	He	277.560	5551.190	1.94	1591286	0.02	200000	
Se	78	2	He	0.027	0.538	723.06	231	0.01	2000	
As	75	2	He	0.079	1.573	30.12	163	0.05	2000	
Ca	44	2	He	39.222	784.443	8.38	1874	2.09	200000	
Na	23	2	He	464.012	9280.236	0.66	547697	0.08	200000	
Mg	24	2	He	42.638	852.763	1.20	24028	0.18	200000	
K	39	2	He	60.486	1209.711	1.95	114435	0.05	200000	
Mn	55	2	He	1.499	29.980	5.71	6919	0.02	2000	
Co	59	2	He	0.197	3.934	2.71	2110	0.01	2000	
Ni	60	2	He	0.511	10.225	4.53	1510	0.03	2000	
Cu	63	2	He	1.095	21.899	4.77	10357	0.01	2000	
Zn	66	2	He	2.109	42.178	5.56	3387	0.06	2000	
Al	27	2	He	170.582	3411.641	1.78	49462	0.34	2000	
B	11	1	No Gas	6.031	120.616	4.23	16485	0.04	2000	
Al	27	1	No Gas	182.021	3640.417	6.69	2884934	0.01	2000	
Si	28	1	No Gas	1035.997	20719.946	0.90	8408241	0.01	2000	
Ag	107	1	No Gas	-0.009	-0.173	-37.19	240	0.00	2000	
Cd	111	1	No Gas	0.005	0.108	119.83	20	0.03	2000	
Sr	88	1	No Gas	1.027	20.542	4.91	32998	0.00	2000	
Mo	95	1	No Gas	0.016	0.311	59.19	177	0.01	2000	
Sn	118	1	No Gas	-0.040	-0.809	-27.33	2020	0.00	2000	
Sb	121	1	No Gas	0.076	1.518	21.48	1927	0.00	2000	
Ba	137	1	No Gas	4.210	84.199	2.84	19124	0.02	2000	
Tl	205	1	No Gas	0.014	0.280	20.86	477	0.00	2000	
Tl	203	1	No Gas	0.011	0.229	18.74	190	0.01	2000	
Pb	208	1	No Gas	-0.476	-9.514	-3.27	26538	0.00	2000	
U	238	1	No Gas	0.010	0.208	13.99	427	0.00	2000	
Ca	43	2	He	58.145	1162.904	31.93	140	41.53	200000	
Sb	121	2	He	0.095	1.892	31.46	1137	0.01	2000	
Ti	47	2	He	1.426	28.522	3.50	280	0.51	2000	
Cu	63	1	No Gas	1.100	21.994	3.71	19631	0.01	2000	
Zn	66	1	No Gas	2.121	42.418	5.19	8913	0.02	2000	
Se	82	1	No Gas	0.210	4.207	501.94	-275	-0.08	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1043738	2.66	1073327	97.24	70	120	
Ge	72	2	He	542938	0.39	538447	100.83	70	120	
Ge	72	1	No Gas	2047537	0.86	1983722	103.22	70	120	
In	115	1	No Gas	2260594	2.70	2263853	99.86	70	120	

Sample Report

Bi	209	1	No Gas	1764993	1.40	1715841	102.86	70	120	

Sample Report

Sample Table

Sample Name	MBLK-183432
Data File Name	045SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T12:08:26-05:00
Sample Type	Sample
Dilution	1
Comment	DOD 183432
ISTD Ref FileName	015CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	0.041	0.041	224.00	55765	0.00	2000	
Be	9	1	No Gas	-0.001	-0.001	-189.04	23	0.00	2000	
V	51	2	He	0.295	0.295	2.95	3459	0.01	2000	
Cr	52	2	He	0.040	0.040	28.65	1080	0.00	2000	
Fe	56	2	He	0.900	0.900	17.45	17415	0.01	200000	
Se	78	2	He	-0.196	-0.196	-136.05	219	-0.09	2000	
As	75	2	He	0.010	0.010	238.46	99	0.01	2000	
Ca	44	2	He	5.842	5.842	12.98	827	0.71	200000	
Na	23	2	He	-12.557	-12.557	-7.42	101927	-0.01	200000	
Mg	24	2	He	11.576	11.576	3.76	7279	0.16	200000	
K	39	2	He	4.882	4.882	28.76	81882	0.01	200000	
Mn	55	2	He	0.046	0.046	73.64	487	0.01	2000	
Co	59	2	He	-0.004	-0.004	-38.12	43	-0.01	2000	
Ni	60	2	He	0.018	0.018	185.69	237	0.01	2000	
Cu	63	2	He	-0.045	-0.045	-22.13	2004	0.00	2000	
Zn	66	2	He	0.230	0.230	29.72	1000	0.02	2000	
Al	27	2	He	4.548	4.548	6.41	2220	0.20	2000	
B	11	1	No Gas	1.678	1.678	7.77	7671	0.02	2000	
Al	27	1	No Gas	4.322	4.322	0.89	114310	0.00	2000	
Si	28	1	No Gas	73.735	73.735	4.32	889989	0.01	2000	
Ag	107	1	No Gas	-0.006	-0.006	-59.64	287	0.00	2000	
Cd	111	1	No Gas	0.002	0.002	150.32	10	0.02	2000	
Sr	88	1	No Gas	-0.011	-0.011	-13.14	1317	0.00	2000	
Mo	95	1	No Gas	0.008	0.008	21.99	137	0.01	2000	
Sn	118	1	No Gas	0.025	0.025	145.88	2684	0.00	2000	
Sb	121	1	No Gas	0.012	0.012	53.80	1123	0.00	2000	
Ba	137	1	No Gas	-0.022	-0.022	-84.24	463	0.00	2000	
Tl	205	1	No Gas	0.004	0.004	52.63	223	0.00	2000	
Tl	203	1	No Gas	0.001	0.001	282.58	73	0.00	2000	
Pb	208	1	No Gas	-0.543	-0.543	-6.14	25217	0.00	2000	
U	238	1	No Gas	0.000	0.000	2812.98	43	0.00	2000	
Ca	43	2	He	-0.590	-0.590	-2608.42	30	-1.97	200000	
Sb	121	2	He	0.011	0.011	87.80	620	0.00	2000	
Ti	47	2	He	0.082	0.082	69.19	17	0.49	2000	
Cu	63	1	No Gas	-0.019	-0.019	-34.64	4174	0.00	2000	
Zn	66	1	No Gas	0.240	0.240	14.54	2567	0.01	2000	
Se	82	1	No Gas	1.582	1.582	78.31	-19	-8.24	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1037546	2.32	1073327	96.67	70	120	
Ge	72	2	He	559208	0.26	538447	103.86	70	120	
Ge	72	1	No Gas	2092810	0.09	1983722	105.50	70	120	
In	115	1	No Gas	2306089	0.89	2263853	101.87	70	120	

Sample Report

Bi	209	1	No Gas	1843318	0.49	1715841	107.43	70	120	

Sample Report

Sample Table

Sample Name	LCS-183432
Data File Name	046SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T12:10:20-05:00
Sample Type	Sample
Dilution	1
Comment	DOD 183432
ISTD Ref FileName	015CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	-0.011	-0.011	-349.49	56200	0.00	2000	
Be	9	1	No Gas	52.161	52.161	2.82	197915	0.03	2000	
V	51	2	He	49.161	49.161	0.17	300759	0.02	2000	
Cr	52	2	He	49.428	49.428	0.58	345583	0.01	2000	
Fe	56	2	He	5266.901	5266.901	0.20	31034767	0.02	200000	
Se	78	2	He	53.161	53.161	0.84	4605	1.15	2000	
As	75	2	He	52.139	52.139	1.08	52996	0.10	2000	
Ca	44	2	He	5031.062	5031.062	1.06	167672	3.00	200000	
Na	23	2	He	5189.120	5189.120	0.60	5172152	0.10	200000	
Mg	24	2	He	5301.971	5301.971	0.62	2997274	0.18	200000	
K	39	2	He	5304.508	5304.508	1.54	3529001	0.15	200000	
Mn	55	2	He	51.537	51.537	0.72	236948	0.02	2000	
Co	59	2	He	50.365	50.365	0.47	537963	0.01	2000	
Ni	60	2	He	51.800	51.800	0.87	139515	0.04	2000	
Cu	63	2	He	50.025	50.025	1.49	384387	0.01	2000	
Zn	66	2	He	53.981	53.981	0.90	72540	0.07	2000	
Al	27	2	He	108.812	108.812	3.32	32979	0.33	2000	
B	11	1	No Gas	1.173	1.173	15.57	6798	0.02	2000	
Al	27	1	No Gas	110.703	110.703	0.83	1806027	0.01	2000	
Si	28	1	No Gas	93.207	93.207	0.57	1042594	0.01	2000	
Ag	107	1	No Gas	48.088	48.088	2.77	790453	0.01	2000	
Cd	111	1	No Gas	52.692	52.692	1.90	161861	0.03	2000	
Sr	88	1	No Gas	0.030	0.030	8.01	2580	0.00	2000	
Mo	95	1	No Gas	51.170	51.170	1.59	301103	0.02	2000	
Sn	118	1	No Gas	-0.090	-0.090	-11.02	1593	-0.01	2000	
Sb	121	1	No Gas	48.330	48.330	0.97	643039	0.01	2000	
Ba	137	1	No Gas	50.411	50.411	1.49	227113	0.02	2000	
Tl	205	1	No Gas	50.108	50.108	2.92	1350416	0.00	2000	
Tl	203	1	No Gas	45.215	45.215	1.72	514144	0.01	2000	
Pb	208	1	No Gas	46.269	46.269	2.22	1717825	0.00	2000	
U	238	1	No Gas	0.000	0.000	88.31	60	0.00	2000	
Ca	43	2	He	4981.627	4981.627	3.77	9777	50.95	200000	
Sb	121	2	He	52.832	52.832	0.55	348861	0.02	2000	
Ti	47	2	He	53.705	53.705	1.65	10915	0.49	2000	
Cu	63	1	No Gas	49.178	49.178	0.70	700991	0.01	2000	
Zn	66	1	No Gas	53.651	53.651	1.18	187857	0.03	2000	
Se	82	1	No Gas	53.774	53.774	2.95	9914	0.54	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1061023	2.57	1073327	98.85	70	120	
Ge	72	2	He	561980	0.35	538447	104.37	70	120	
Ge	72	1	No Gas	2086206	0.22	1983722	105.17	70	120	
In	115	1	No Gas	2301917	1.83	2263853	101.68	70	120	

Sample Report

Bi	209	1	No Gas	1792825	1.87	1715841	104.49	70	120	

Sample Report

Sample Table

Sample Name	HS22090337-01SD
Data File Name	048SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T12:14:05-05:00
Sample Type	Sample
Dilution	5
Comment	DOD 183432
ISTD Ref FileName	015CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	5.740	28.698	4.64	147542	0.00	2000	
Be	9	1	No Gas	0.004	0.020	40.17	42	0.01	2000	
V	51	2	He	0.109	0.544	14.27	2375	0.00	2000	
Cr	52	2	He	0.730	3.652	2.55	5975	0.01	2000	
Fe	56	2	He	8.733	43.667	1.87	64465	0.01	200000	
Se	78	2	He	0.309	1.543	36.40	265	0.12	2000	
As	75	2	He	0.051	0.257	54.79	143	0.04	2000	
Ca	44	2	He	2619.608	13098.041	0.51	88752	2.95	200000	
Na	23	2	He	149516.278	747581.388	0.93	147735254	0.10	200000	
Mg	24	2	He	2003.979	10019.895	1.23	1148214	0.17	200000	
K	39	2	He	452.187	2260.933	0.53	378059	0.12	200000	
Mn	55	2	He	13.333	66.664	1.94	62302	0.02	2000	
Co	59	2	He	0.015	0.073	33.72	243	0.01	2000	
Ni	60	2	He	0.086	0.428	13.04	423	0.02	2000	
Cu	63	2	He	0.140	0.702	10.10	3477	0.00	2000	
Zn	66	2	He	0.471	2.357	16.94	1343	0.04	2000	
Al	27	2	He	1.075	5.376	30.96	1223	0.09	2000	
B	11	1	No Gas	9.093	45.466	1.95	22882	0.04	2000	
Al	27	1	No Gas	1.549	7.743	26.30	69641	0.00	2000	
Si	28	1	No Gas	2431.722	12158.608	2.26	19631451	0.01	2000	>LDR
Ag	107	1	No Gas	-0.007	-0.033	-42.66	270	0.00	2000	
Cd	111	1	No Gas	0.001	0.006	170.47	7	0.02	2000	
Sr	88	1	No Gas	61.659	308.296	0.95	1863433	0.00	2000	
Mo	95	1	No Gas	0.011	0.056	61.34	150	0.01	2000	
Sn	118	1	No Gas	-0.093	-0.466	-26.22	1513	-0.01	2000	
Sb	121	1	No Gas	0.013	0.066	45.83	1127	0.00	2000	
Ba	137	1	No Gas	50.111	250.554	0.51	218990	0.02	2000	
Tl	205	1	No Gas	0.006	0.030	29.32	250	0.00	2000	
Tl	203	1	No Gas	0.003	0.015	81.37	90	0.00	2000	
Pb	208	1	No Gas	-0.743	-3.716	-3.50	16091	0.00	2000	
U	238	1	No Gas	0.001	0.003	116.73	57	0.00	2000	
Ca	43	2	He	2733.376	13666.881	4.96	5448	50.17	200000	
Sb	121	2	He	0.017	0.085	61.55	673	0.00	2000	
Ti	47	2	He	0.113	0.566	65.15	23	0.49	2000	
Cu	63	1	No Gas	1.250	6.251	4.39	22048	0.01	2000	
Zn	66	1	No Gas	0.622	3.111	2.49	3871	0.02	2000	
Se	82	1	No Gas	0.136	0.679	349.11	-294	-0.05	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1053673	2.21	1073327	98.17	70	120	
Ge	72	2	He	569308	0.77	538447	105.73	70	120	
Ge	72	1	No Gas	2078633	1.35	1983722	104.78	70	120	
In	115	1	No Gas	2232416	0.49	2263853	98.61	70	120	
Bi	209	1	No Gas	1669809	0.84	1715841	97.32	70	120	

Sample Report

Sample Table

Sample Name	HS22090337-01MS
Data File Name	049SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T12:15:58-05:00
Sample Type	Sample
Dilution	1
Comment	DOD 183432
ISTD Ref FileName	015CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	28.443	28.443	0.73	504302	0.01	2000	
Be	9	1	No Gas	51.740	51.740	1.06	192869	0.03	2000	
V	51	2	He	47.953	47.953	0.74	298771	0.02	2000	
Cr	52	2	He	47.232	47.232	0.95	336308	0.01	2000	
Fe	56	2	He	4984.010	4984.010	0.62	29905252	0.02	200000	
Se	78	2	He	26.734	26.734	1.49	2478	1.08	2000	
As	75	2	He	51.129	51.129	1.08	52923	0.10	2000	
Ca	44	2	He	18342.330	18342.330	0.10	620765	2.95	200000	
Na	23	2	He	745389.448	745389.448	1.48	739859509	0.10	200000	>LDR
Mg	24	2	He	15040.104	15040.104	0.79	8656652	0.17	200000	
K	39	2	He	7462.000	7462.000	0.22	5022372	0.15	200000	
Mn	55	2	He	115.063	115.063	0.54	538332	0.02	2000	
Co	59	2	He	47.180	47.180	0.56	513169	0.01	2000	
Ni	60	2	He	47.686	47.686	0.64	130804	0.04	2000	
Cu	63	2	He	45.775	45.775	0.40	358378	0.01	2000	
Zn	66	2	He	51.332	51.332	1.25	70278	0.07	2000	
Al	27	2	He	107.074	107.074	0.64	33059	0.32	2000	
B	11	1	No Gas	38.778	38.778	1.13	82417	0.05	2000	
Al	27	1	No Gas	110.173	110.173	1.03	1782495	0.01	2000	
Si	28	1	No Gas	12550.260	12550.260	1.50	99605899	0.01	2000	>LDR
Ag	107	1	No Gas	42.794	42.794	0.96	686313	0.01	2000	
Cd	111	1	No Gas	48.037	48.037	0.90	143943	0.03	2000	
Sr	88	1	No Gas	296.082	296.082	0.94	8992573	0.00	2000	
Mo	95	1	No Gas	49.519	49.519	0.54	284243	0.02	2000	
Sn	118	1	No Gas	-0.067	-0.067	-29.36	1763	0.00	2000	
Sb	121	1	No Gas	45.080	45.080	0.55	594800	0.01	2000	
Ba	137	1	No Gas	316.245	316.245	0.94	1386908	0.02	2000	
Tl	205	1	No Gas	44.796	44.796	0.86	1060115	0.00	2000	
Tl	203	1	No Gas	44.407	44.407	1.19	443314	0.01	2000	
Pb	208	1	No Gas	46.367	46.367	0.56	1511316	0.00	2000	
U	238	1	No Gas	0.007	0.007	19.51	270	0.00	2000	
Ca	43	2	He	18607.216	18607.216	2.10	37097	50.16	200000	
Sb	121	2	He	49.900	49.900	1.11	335546	0.01	2000	
Ti	47	2	He	53.371	53.371	1.78	11045	0.48	2000	
Cu	63	1	No Gas	56.037	56.037	3.11	791640	0.01	2000	
Zn	66	1	No Gas	51.667	51.667	1.36	179430	0.03	2000	
Se	82	1	No Gas	28.583	28.583	3.58	5075	0.56	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1041957	0.94	1073327	97.08	70	120	
Ge	72	2	He	572258	0.42	538447	106.28	70	120	
Ge	72	1	No Gas	2068624	1.39	1983722	104.28	70	120	
In	115	1	No Gas	2245018	0.05	2263853	99.17	70	120	
Bi	209	1	No Gas	1573711	0.16	1715841	91.72	70	120	

Sample Report

Sample Table

Sample Name	HS22090337-01MSD
Data File Name	050SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T12:17:51-05:00
Sample Type	Sample
Dilution	1
Comment	DOD 183432
ISTD Ref FileName	015CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	28.423	28.423	0.71	495844	0.01	2000	
Be	9	1	No Gas	52.836	52.836	1.21	193773	0.03	2000	
V	51	2	He	49.277	49.277	0.58	309003	0.02	2000	
Cr	52	2	He	48.315	48.315	0.22	346258	0.01	2000	
Fe	56	2	He	5080.381	5080.381	0.32	30684266	0.02	200000	
Se	78	2	He	29.962	29.962	1.96	2766	1.08	2000	
As	75	2	He	52.778	52.778	0.64	54986	0.10	2000	
Ca	44	2	He	18584.029	18584.029	0.94	633067	2.94	200000	
Na	23	2	He	761052.250	761052.250	0.83	760394282	0.10	200000	>LDR
Mg	24	2	He	15285.077	15285.077	0.38	8855342	0.17	200000	
K	39	2	He	7524.764	7524.764	1.25	5097182	0.15	200000	
Mn	55	2	He	116.899	116.899	0.74	550516	0.02	2000	
Co	59	2	He	47.996	47.996	0.46	525485	0.01	2000	
Ni	60	2	He	48.595	48.595	1.15	134169	0.04	2000	
Cu	63	2	He	47.206	47.206	0.46	371938	0.01	2000	
Zn	66	2	He	52.289	52.289	1.06	72047	0.07	2000	
Al	27	2	He	117.387	117.387	0.71	36395	0.32	2000	
B	11	1	No Gas	40.188	40.188	0.99	83880	0.05	2000	
Al	27	1	No Gas	114.890	114.890	3.27	1872268	0.01	2000	
Si	28	1	No Gas	12650.715	12650.715	1.98	101261355	0.01	2000	>LDR
Ag	107	1	No Gas	46.155	46.155	1.15	712378	0.01	2000	
Cd	111	1	No Gas	51.068	51.068	3.00	147245	0.03	2000	
Sr	88	1	No Gas	309.313	309.313	1.50	9040686	0.00	2000	
Mo	95	1	No Gas	52.843	52.843	1.39	291905	0.02	2000	
Sn	118	1	No Gas	-0.047	-0.047	-49.70	1874	0.00	2000	
Sb	121	1	No Gas	46.184	46.184	1.49	614529	0.01	2000	
Ba	137	1	No Gas	327.304	327.304	2.00	1381253	0.02	2000	
Tl	205	1	No Gas	46.292	46.292	0.93	1092530	0.00	2000	
Tl	203	1	No Gas	45.972	45.972	0.94	457692	0.01	2000	
Pb	208	1	No Gas	47.569	47.569	0.99	1545262	0.00	2000	
U	238	1	No Gas	0.007	0.007	25.81	253	0.00	2000	
Ca	43	2	He	18943.190	18943.190	2.20	38016	49.83	200000	
Sb	121	2	He	51.437	51.437	0.77	348151	0.01	2000	
Ti	47	2	He	52.908	52.908	4.01	11021	0.48	2000	
Cu	63	1	No Gas	58.598	58.598	0.79	834542	0.01	2000	
Zn	66	1	No Gas	52.241	52.241	1.26	182975	0.03	2000	
Se	82	1	No Gas	29.031	29.031	6.14	5202	0.56	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1025141	1.16	1073327	95.51	70	120	
Ge	72	2	He	576022	0.13	538447	106.98	70	120	
Ge	72	1	No Gas	2086553	1.70	1983722	105.18	70	120	
In	115	1	No Gas	2160955	2.13	2263853	95.45	70	120	
Bi	209	1	No Gas	1569485	0.53	1715841	91.47	70	120	

Sample Report

Sample Table

Sample Name	HS22090337-01PDS
Data File Name	051SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T12:19:43-05:00
Sample Type	Sample
Dilution	1
Comment	DOD 183432
ISTD Ref FileName	015CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	29.013	29.013	1.63	499769	0.01	2000	
Be	9	1	No Gas	108.937	108.937	1.34	395369	0.03	2000	
V	51	2	He	100.282	100.282	1.13	630344	0.02	2000	
Cr	52	2	He	98.394	98.394	0.39	708051	0.01	2000	
Fe	56	2	He	10324.832	10324.832	0.65	62676649	0.02	200000	
Se	78	2	He	105.165	105.165	0.35	9150	1.15	2000	
As	75	2	He	105.655	105.655	1.00	110562	0.10	2000	
Ca	44	2	He	24107.536	24107.536	0.73	825375	2.92	200000	
Na	23	2	He	771826.986	771826.986	0.68	775260548	0.10	200000	>LDR
Mg	24	2	He	20535.240	20535.240	1.17	11959090	0.17	200000	
K	39	2	He	12981.908	12981.908	1.19	8781276	0.15	200000	
Mn	55	2	He	169.210	169.210	0.74	800952	0.02	2000	
Co	59	2	He	101.862	101.862	1.74	1120947	0.01	2000	
Ni	60	2	He	99.419	99.419	0.76	275744	0.04	2000	
Cu	63	2	He	94.382	94.382	0.96	745119	0.01	2000	
Zn	66	2	He	104.132	104.132	1.30	143516	0.07	2000	
Al	27	2	He	115.251	115.251	3.45	35930	0.32	2000	
B	11	1	No Gas	40.993	40.993	1.75	84586	0.05	2000	
Al	27	1	No Gas	113.949	113.949	1.99	1853652	0.01	2000	
Si	28	1	No Gas	12950.494	12950.494	0.96	103444578	0.01	2000	>LDR
Ag	107	1	No Gas	99.599	99.599	1.08	1545784	0.01	2000	
Cd	111	1	No Gas	103.162	103.162	1.22	299204	0.03	2000	
Sr	88	1	No Gas	310.707	310.707	0.57	9134332	0.00	2000	
Mo	95	1	No Gas	107.959	107.959	0.66	599741	0.02	2000	
Sn	118	1	No Gas	-0.079	-0.079	-8.65	1603	0.00	2000	
Sb	121	1	No Gas	97.914	97.914	1.47	1299174	0.01	2000	
Ba	137	1	No Gas	382.695	382.695	1.36	1624362	0.02	2000	
Tl	205	1	No Gas	104.377	104.377	0.85	2413610	0.00	2000	
Tl	203	1	No Gas	94.933	94.933	1.55	925989	0.01	2000	
Pb	208	1	No Gas	103.597	103.597	1.27	3252788	0.00	2000	
U	238	1	No Gas	0.008	0.008	12.03	293	0.00	2000	
Ca	43	2	He	24144.173	24144.173	2.05	48696	49.58	200000	
Sb	121	2	He	101.395	101.395	0.87	689354	0.01	2000	
Ti	47	2	He	108.505	108.505	2.13	22719	0.48	2000	
Cu	63	1	No Gas	118.573	118.573	1.38	1680405	0.01	2000	
Zn	66	1	No Gas	104.131	104.131	0.72	362243	0.03	2000	
Se	82	1	No Gas	101.054	101.054	1.83	18873	0.54	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1014631	1.80	1073327	94.53	70	120	
Ge	72	2	He	579101	1.31	538447	107.55	70	120	
Ge	72	1	No Gas	2081979	1.00	1983722	104.95	70	120	
In	115	1	No Gas	2173156	1.02	2263853	95.99	70	120	
Bi	209	1	No Gas	1537859	0.80	1715841	89.63	70	120	

Sample Report

Sample Table

Sample Name	HS22081514-03
Data File Name	052SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T12:21:34-05:00
Sample Type	Sample
Dilution	50
Comment	DOD 183371
ISTD Ref FileName	015CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	0.175	8.748	46.78	60576	0.00	2000	
Be	9	1	No Gas	0.020	1.004	41.25	105	0.02	2000	
V	51	2	He	0.199	9.949	9.17	3027	0.01	2000	
Cr	52	2	He	0.866	43.294	4.55	7165	0.01	2000	
Fe	56	2	He	25.799	1289.967	1.01	171876	0.02	200000	
Se	78	2	He	0.059	2.943	297.50	253	0.02	2000	
As	75	2	He	0.047	2.346	70.16	143	0.03	2000	
Ca	44	2	He	41.556	2077.801	10.55	2110	1.97	200000	
Na	23	2	He	740.990	37049.513	0.96	876077	0.08	200000	
Mg	24	2	He	37.480	1874.014	0.20	22986	0.16	200000	
K	39	2	He	39.476	1973.807	3.06	109710	0.04	200000	
Mn	55	2	He	1.101	55.050	0.68	5585	0.02	2000	
Co	59	2	He	0.047	2.355	20.37	613	0.01	2000	
Ni	60	2	He	0.208	10.419	6.70	783	0.03	2000	
Cu	63	2	He	0.633	31.635	6.93	7526	0.01	2000	
Zn	66	2	He	1.021	51.033	7.92	2154	0.05	2000	
Al	27	2	He	16.149	807.450	3.27	5918	0.27	2000	
B	11	1	No Gas	1.994	99.714	3.69	8688	0.02	2000	
Al	27	1	No Gas	15.337	766.853	0.69	291222	0.01	2000	
Si	28	1	No Gas	375.866	18793.286	3.52	3320757	0.01	2000	
Ag	107	1	No Gas	0.066	3.294	10.69	1470	0.00	2000	
Cd	111	1	No Gas	0.004	0.216	42.50	17	0.03	2000	
Sr	88	1	No Gas	0.773	38.648	1.61	25725	0.00	2000	
Mo	95	1	No Gas	0.034	1.684	20.15	287	0.01	2000	
Sn	118	1	No Gas	-0.067	-3.363	-19.72	1807	0.00	2000	
Sb	121	1	No Gas	0.263	13.145	15.35	4471	0.01	2000	
Ba	137	1	No Gas	1.838	91.906	0.78	8827	0.02	2000	
Tl	205	1	No Gas	0.025	1.270	21.33	750	0.00	2000	
Tl	203	1	No Gas	0.028	1.382	21.41	357	0.01	2000	
Pb	208	1	No Gas	-0.470	-23.480	-11.93	25764	0.00	2000	
U	238	1	No Gas	0.001	0.047	73.28	73	0.00	2000	
Ca	43	2	He	42.503	2125.130	59.86	120	35.42	200000	
Sb	121	2	He	0.212	10.615	10.56	2044	0.01	2000	
Ti	47	2	He	0.251	12.559	22.77	53	0.47	2000	
Cu	63	1	No Gas	0.969	48.442	12.16	18259	0.01	2000	
Zn	66	1	No Gas	1.091	54.534	14.04	5541	0.02	2000	
Se	82	1	No Gas	0.548	27.390	60.31	-218	-0.25	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1085949	1.04	1073327	101.18	70	120	
Ge	72	2	He	588356	1.35	538447	109.27	70	120	
Ge	72	1	No Gas	2101185	2.21	1983722	105.92	70	120	
In	115	1	No Gas	2303202	1.62	2263853	101.74	70	120	

Sample Report

Bi	209	1	No Gas	1701254	2.24	1715841	99.15	70	120	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	053_CCV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T12:23:26-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Li	7	1	No Gas	99.191	2.228	1632249	0.96	100	99.2	90	110	
Be	9	1	No Gas	101.333	2.605	380325	0.91	100	101.3	90	110	
V	51	2	He	95.142	1.060	599639	0.73	100	95.1	90	110	
Cr	52	2	He	95.126	0.554	686260	0.46	100	95.1	90	110	
Fe	56	2	He	9910.973	1.163	60315426	1.08	10000	99.1	90	110	
Se	78	2	He	101.959	2.709	8900	2.69	100	102.0	90	110	
As	75	2	He	97.942	0.631	102757	0.64	100	97.9	90	110	
Ca	44	2	He	10117.915	1.316	347657	1.06	10000	101.2	90	110	
Na	23	2	He	10205.303	0.901	10392914	0.49	10000	102.1	90	110	
Mg	24	2	He	10026.392	0.399	5854477	0.72	10000	100.3	90	110	
K	39	2	He	10096.284	0.798	6864588	0.41	10000	101.0	90	110	
Mn	55	2	He	98.809	0.111	469010	0.37	100	98.8	90	110	
Co	59	2	He	96.415	1.423	1063752	1.36	100	96.4	90	110	
Ni	60	2	He	97.999	1.072	272482	0.67	100	98.0	90	110	
Cu	63	2	He	94.406	0.990	747187	0.59	100	94.4	90	110	
Zn	66	2	He	98.306	1.181	135875	1.20	100	98.3	90	110	
Al	27	2	He	103.627	0.705	32488	1.02	100	103.6	90	110	
B	11	1	No Gas	510.112	1.206	1039104	2.54	500	102.0	90	110	
Al	27	1	No Gas	103.421	1.152	1709370	0.57	100	103.4	90	110	
Si	28	1	No Gas	502.840	1.832	4360926	1.52	5000	10.1	90	110	CCV Main CR1-2 Failed
Ag	107	1	No Gas	101.234	3.178	1637166	1.08	100	101.2	90	110	
Cd	111	1	No Gas	98.574	2.046	297998	0.67	100	98.6	90	110	
Sr	88	1	No Gas	100.342	1.068	3076177	1.42	100	100.3	90	110	
Mo	95	1	No Gas	99.459	2.513	575847	0.71	100	99.5	90	110	
Sn	118	1	No Gas	90.812	2.256	844570	0.11	100	90.8	90	110	
Sb	121	1	No Gas	95.205	1.670	1280089	0.46	100	95.2	90	110	
Ba	137	1	No Gas	96.920	2.231	429187	0.32	100	96.9	90	110	
Tl	205	1	No Gas	98.278	2.683	2482458	1.13	100	98.3	90	110	
Tl	203	1	No Gas	89.313	1.779	951749	0.45	100	89.3	90	110	CCV Main CR1-2 Failed
Pb	208	1	No Gas	95.898	1.751	3292583	0.21	100	95.9	90	110	
U	238	1	No Gas	96.263	2.311	3396563	0.83	100	96.3	90	110	
Ca	43	2	He	9992.209	2.827	20225	2.90	10000	99.9	90	110	
Sb	121	2	He	97.279	0.758	663059	0.36	100	97.3	90	110	
Ti	47	2	He	101.560	1.954	21320	1.56	100	101.6	90	110	
Cu	63	1	No Gas	99.392	1.870	1428157	0.73	100	99.4	90	110	
Se	82	1	No Gas	97.457	3.182	18431	2.04	100	97.5	90	110	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1049546	2.63	1073327	97.78	70	120	
Ge	72	2	He	580527	0.40	538447	107.82	70	120	
Ge	72	1	No Gas	2110035	1.20	1983722	106.37	70	120	
In	115	1	No Gas	2265581	2.13	2263853	100.08	70	120	
Bi	209	1	No Gas	1680274	1.58	1715841	97.93	70	120	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	054_CCB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T12:25:14-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	0.063	161.7	59264	0.5	0.5	
Be	9	1	No Gas	0.007	76.9	57	40.8	0.5	
V	51	2	He	0.035	47.8	1946	5.6	2.5	
Cr	52	2	He	0.378	11.0	3531	8.4	2.5	
Fe	56	2	He	1.195	2.7	19755	0.7	100	
Se	78	2	He	-0.090	-121.1	235	4.0	2	
As	75	2	He	-0.006	-123.0	86	9.0	2.5	
Ca	44	2	He	-3.340	-55.8	540	11.6	100	
Na	23	2	He	140.512	1.3	258389	0.5	100	CCB Main CR1 Failed
Mg	24	2	He	-0.023	-136.8	780	2.2	100	
K	39	2	He	10.922	32.0	88533	2.4	100	
Mn	55	2	He	0.058	32.0	560	15.9	2.5	
Co	59	2	He	0.003	49.4	117	13.1	2.5	
Ni	60	2	He	0.019	76.7	247	16.9	2.5	
Cu	63	2	He	0.290	4.5	4694	2.1	2	
Zn	66	2	He	0.060	85.9	800	9.0	2.5	
Al	27	2	He	-1.335	-32.3	510	25.7	5	
B	11	1	No Gas	12.079	17.9	30089	13.7	0.5	CCB Main CR1 Failed
Al	27	1	No Gas	-1.437	-2.0	22552	2.2	5	
Si	28	1	No Gas	-2.162	-10.4	284046	0.4	10	
Ag	107	1	No Gas	0.039	28.7	1013	17.4	2.5	
Cd	111	1	No Gas	0.012	72.3	40	66.1	1	
Sr	88	1	No Gas	-0.019	-14.6	1043	8.6	2.5	
Mo	95	1	No Gas	0.023	22.1	223	13.7	2.5	
Sn	118	1	No Gas	-0.014	-48.8	2297	2.4	5	
Sb	121	1	No Gas	0.144	16.6	2894	11.0	2.5	
Ba	137	1	No Gas	-0.077	-14.5	213	23.6	2.5	
Tl	205	1	No Gas	0.034	18.1	953	16.0	1	
Tl	203	1	No Gas	0.023	18.0	310	14.8	1	
Pb	208	1	No Gas	-0.603	-1.4	21074	1.6	2.5	
U	238	1	No Gas	0.005	51.7	207	41.2	2.5	
Ca	43	2	He	2.258	507.9	37	63.0	100	
Sb	121	2	He	0.135	10.5	1483	6.2	2.5	
Ti	47	2	He	0.048	100.0	10	100.0	2.5	
Cu	63	1	No Gas	0.369	9.9	9737	5.0	2.5	
Se	82	1	No Gas	-0.991	-192.6	-513	-71.1	2	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1096111	2.33	1073327	102.12	70	120	
Ge	72	2	He	577110	0.25	538447	107.18	70	120	
Ge	72	1	No Gas	2105620	0.36	1983722	106.14	70	120	
In	115	1	No Gas	2289463	0.48	2263853	101.13	70	120	
Bi	209	1	No Gas	1691141	1.09	1715841	98.56	70	120	

Sample Report

Sample Table

Sample Name	HS22081514-16
Data File Name	055SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T12:27:36-05:00
Sample Type	Sample
Dilution	1
Comment	DOD 183432
ISTD Ref FileName	015CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	6.000	6.000	2.23	159683	0.00	2000	
Be	9	1	No Gas	0.086	0.086	15.92	367	0.02	2000	
V	51	2	He	0.347	0.347	6.44	4078	0.01	2000	
Cr	52	2	He	0.444	0.444	10.93	4197	0.01	2000	
Fe	56	2	He	241.734	241.734	1.81	1545181	0.02	200000	
Se	78	2	He	0.138	0.138	315.89	267	0.05	2000	
As	75	2	He	0.207	0.207	21.00	322	0.06	2000	
Ca	44	2	He	2369.349	2369.349	0.67	85327	2.78	200000	
Na	23	2	He	34312.130	34312.130	0.38	36106382	0.10	200000	
Mg	24	2	He	2329.885	2329.885	1.40	1417654	0.16	200000	
K	39	2	He	598.439	598.439	0.76	503903	0.12	200000	
Mn	55	2	He	44.292	44.292	0.83	219152	0.02	2000	
Co	59	2	He	3.510	3.510	1.96	40424	0.01	2000	
Ni	60	2	He	6.679	6.679	3.17	19531	0.03	2000	
Cu	63	2	He	10.219	10.219	2.11	86514	0.01	2000	
Zn	66	2	He	76.735	76.735	0.58	110638	0.07	2000	
Al	27	2	He	11.294	11.294	12.41	4541	0.25	2000	
B	11	1	No Gas	45.017	45.017	2.00	101056	0.04	2000	
Al	27	1	No Gas	10.874	10.874	2.07	228749	0.00	2000	
Si	28	1	No Gas	16033.080	16033.080	2.18	134459245	0.01	2000	>LDR
Ag	107	1	No Gas	0.038	0.038	16.12	1053	0.00	2000	
Cd	111	1	No Gas	0.060	0.060	12.34	197	0.03	2000	
Sr	88	1	No Gas	52.292	52.292	1.73	1701728	0.00	2000	
Mo	95	1	No Gas	0.025	0.025	19.14	243	0.01	2000	
Sn	118	1	No Gas	0.037	0.037	35.80	2914	0.00	2000	
Sb	121	1	No Gas	0.088	0.088	12.01	2220	0.00	2000	
Ba	137	1	No Gas	88.037	88.037	0.87	413798	0.02	2000	
Tl	205	1	No Gas	0.015	0.015	11.17	503	0.00	2000	
Tl	203	1	No Gas	0.011	0.011	21.79	183	0.01	2000	
Pb	208	1	No Gas	-0.503	-0.503	-9.69	25971	0.00	2000	
U	238	1	No Gas	0.010	0.010	20.95	417	0.00	2000	
Ca	43	2	He	2407.531	2407.531	4.69	5101	47.20	200000	
Sb	121	2	He	0.072	0.072	33.43	1103	0.01	2000	
Ti	47	2	He	0.244	0.244	77.98	53	0.46	2000	
Cu	63	1	No Gas	10.661	10.661	2.85	162933	0.01	2000	
Zn	66	1	No Gas	78.159	78.159	1.78	286082	0.03	2000	
Se	82	1	No Gas	1.376	1.376	87.75	-64	-2.15	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1108718	0.89	1073327	103.30	70	120	
Ge	72	2	He	604687	0.24	538447	112.30	70	120	
Ge	72	1	No Gas	2187542	1.76	1983722	110.27	70	120	
In	115	1	No Gas	2403880	1.48	2263853	106.19	70	120	

Sample Report

Bi	209	1	No Gas	1793171	0.77	1715841	104.51	70	120	

Sample Report

Sample Table

Sample Name	HS22081514-20
Data File Name	056SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T12:29:30-05:00
Sample Type	Sample
Dilution	1
Comment	DOD 183432
ISTD Ref FileName	015CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	22.837	22.837	0.70	432638	0.01	2000	
Be	9	1	No Gas	0.145	0.145	7.93	588	0.02	2000	
V	51	2	He	0.841	0.841	2.93	7313	0.01	2000	
Cr	52	2	He	3.105	3.105	1.83	24158	0.01	2000	
Fe	56	2	He	130.363	130.363	0.53	839067	0.02	200000	
Se	78	2	He	0.221	0.221	157.63	274	0.08	2000	
As	75	2	He	0.377	0.377	16.90	508	0.07	2000	
Ca	44	2	He	9226.196	9226.196	1.07	330172	2.79	200000	
Na	23	2	He	81053.111	81053.111	1.07	85097982	0.10	200000	
Mg	24	2	He	7911.196	7911.196	0.59	4810292	0.16	200000	
K	39	2	He	378.667	378.667	1.16	350000	0.11	200000	
Mn	55	2	He	112.175	112.175	0.30	554399	0.02	2000	
Co	59	2	He	1.908	1.908	2.07	22008	0.01	2000	
Ni	60	2	He	24.915	24.915	1.23	72288	0.03	2000	
Cu	63	2	He	7.907	7.907	0.71	67491	0.01	2000	
Zn	66	2	He	84.923	84.923	1.44	122327	0.07	2000	
Al	27	2	He	14.544	14.544	2.80	5571	0.26	2000	
B	11	1	No Gas	12.166	12.166	1.51	29985	0.04	2000	
Al	27	1	No Gas	13.442	13.442	0.92	270971	0.00	2000	
Si	28	1	No Gas	28160.922	28160.922	0.85	235449056	0.01	2000	>LDR
Ag	107	1	No Gas	0.021	0.021	31.01	753	0.00	2000	
Cd	111	1	No Gas	0.144	0.144	20.61	457	0.03	2000	
Sr	88	1	No Gas	206.038	206.038	2.30	6541814	0.00	2000	
Mo	95	1	No Gas	0.181	0.181	7.64	1177	0.02	2000	
Sn	118	1	No Gas	-0.102	-0.102	-10.61	1507	-0.01	2000	
Sb	121	1	No Gas	0.094	0.094	23.05	2300	0.00	2000	
Ba	137	1	No Gas	310.341	310.341	1.31	1422821	0.02	2000	
Tl	205	1	No Gas	0.006	0.006	19.52	270	0.00	2000	
Tl	203	1	No Gas	0.007	0.007	46.44	140	0.01	2000	
Pb	208	1	No Gas	-0.651	-0.651	-2.29	20207	0.00	2000	
U	238	1	No Gas	0.024	0.024	6.80	913	0.00	2000	
Ca	43	2	He	9603.275	9603.275	2.15	20242	47.44	200000	
Sb	121	2	He	0.079	0.079	23.33	1157	0.01	2000	
Ti	47	2	He	0.366	0.366	33.07	80	0.46	2000	
Cu	63	1	No Gas	8.630	8.630	0.45	132518	0.01	2000	
Zn	66	1	No Gas	86.609	86.609	0.94	316154	0.03	2000	
Se	82	1	No Gas	0.926	0.926	83.78	-151	-0.62	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1084102	0.67	1073327	101.00	70	120	
Ge	72	2	He	604499	0.19	538447	112.27	70	120	
Ge	72	1	No Gas	2182572	0.51	1983722	110.02	70	120	
In	115	1	No Gas	2347347	2.00	2263853	103.69	70	120	

Sample Report

Bi	209	1	No Gas	1756254	1.03	1715841	102.36	70	120	

Sample Report

Sample Table

Sample Name	HS22081514-21
Data File Name	057SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T12:31:24-05:00
Sample Type	Sample
Dilution	1
Comment	DOD 183432
ISTD Ref FileName	015CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	49.825	49.825	5.03	849348	0.01	2000	
Be	9	1	No Gas	0.205	0.205	3.58	797	0.03	2000	
V	51	2	He	0.287	0.287	8.87	3513	0.01	2000	
Cr	52	2	He	6.933	6.933	0.26	50353	0.01	2000	
Fe	56	2	He	13620.511	13620.511	1.00	82176507	0.02	200000	
Se	78	2	He	0.140	0.140	103.22	254	0.06	2000	
As	75	2	He	4.359	4.359	1.80	4622	0.09	2000	
Ca	44	2	He	88244.395	88244.395	0.42	3001246	2.94	200000	
Na	23	2	He	203482.315	203482.315	1.11	203226350	0.10	200000	>LDR
Mg	24	2	He	61600.304	61600.304	0.65	35657997	0.17	200000	
K	39	2	He	918.518	918.518	0.40	692841	0.13	200000	
Mn	55	2	He	1982.287	1982.287	0.70	9323422	0.02	2000	>LDR
Co	59	2	He	24.056	24.056	1.75	263195	0.01	2000	
Ni	60	2	He	36.783	36.783	1.89	101520	0.04	2000	
Cu	63	2	He	1.350	1.350	1.38	12980	0.01	2000	
Zn	66	2	He	23.227	23.227	2.42	32376	0.07	2000	
Al	27	2	He	11.145	11.145	7.75	4277	0.26	2000	
B	11	1	No Gas	12.720	12.720	3.87	30214	0.04	2000	
Al	27	1	No Gas	10.479	10.479	1.81	215129	0.00	2000	
Si	28	1	No Gas	27253.315	27253.315	1.63	221153897	0.01	2000	>LDR
Ag	107	1	No Gas	0.024	0.024	26.84	770	0.00	2000	
Cd	111	1	No Gas	0.515	0.515	8.48	1550	0.03	2000	
Sr	88	1	No Gas	1499.165	1499.165	0.97	45576784	0.00	2000	
Mo	95	1	No Gas	0.257	0.257	3.09	1563	0.02	2000	
Sn	118	1	No Gas	-0.088	-0.088	-12.05	1573	-0.01	2000	
Sb	121	1	No Gas	0.100	0.100	17.53	2310	0.00	2000	
Ba	137	1	No Gas	1830.934	1830.934	0.77	8036189	0.02	2000	>LDR
Tl	205	1	No Gas	0.009	0.009	15.76	323	0.00	2000	
Tl	203	1	No Gas	0.005	0.005	82.54	110	0.00	2000	
Pb	208	1	No Gas	-0.756	-0.756	-1.94	15424	0.00	2000	
U	238	1	No Gas	0.186	0.186	4.44	6445	0.00	2000	
Ca	43	2	He	86293.679	86293.679	0.79	172925	49.90	200000	
Sb	121	2	He	0.117	0.117	4.53	1353	0.01	2000	
Ti	47	2	He	0.176	0.176	42.10	37	0.48	2000	
Cu	63	1	No Gas	2.676	2.676	2.76	42971	0.01	2000	
Zn	66	1	No Gas	23.385	23.385	0.79	84144	0.03	2000	
Se	82	1	No Gas	1.143	1.143	137.65	-104	-1.10	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1052381	3.34	1073327	98.05	70	120	
Ge	72	2	He	575576	0.68	538447	106.90	70	120	
Ge	72	1	No Gas	2118589	1.81	1983722	106.80	70	120	
In	115	1	No Gas	2247769	1.72	2263853	99.29	70	120	
Bi	209	1	No Gas	1643910	0.39	1715841	95.81	70	120	

Sample Report

Sample Table

Sample Name	HS22081514-23
Data File Name	058SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T12:33:18-05:00
Sample Type	Sample
Dilution	1
Comment	DOD 183432
ISTD Ref FileName	015CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	42.949	42.949	4.71	748954	0.01	2000	
Be	9	1	No Gas	0.324	0.324	2.47	1258	0.03	2000	
V	51	2	He	0.951	0.951	3.75	7572	0.01	2000	
Cr	52	2	He	81.008	81.008	0.84	573794	0.01	2000	
Fe	56	2	He	2266.582	2266.582	0.73	13550405	0.02	200000	
Se	78	2	He	-0.126	-0.126	-34.25	229	-0.05	2000	
As	75	2	He	0.448	0.448	16.05	551	0.08	2000	
Ca	44	2	He	102466.606	102466.606	1.52	3450199	2.97	200000	
Na	23	2	He	369760.117	369760.117	0.94	365543875	0.10	200000	>LDR
Mg	24	2	He	77124.952	77124.952	0.89	44200251	0.17	200000	
K	39	2	He	1636.730	1636.730	0.75	1159681	0.14	200000	
Mn	55	2	He	313.721	313.721	1.08	1461127	0.02	2000	
Co	59	2	He	5.872	5.872	1.83	63675	0.01	2000	
Ni	60	2	He	95.429	95.429	0.43	260477	0.04	2000	
Cu	63	2	He	90.913	90.913	1.10	706408	0.01	2000	
Zn	66	2	He	147.930	147.930	0.58	200349	0.07	2000	
Al	27	2	He	26.155	26.155	5.46	8726	0.30	2000	
B	11	1	No Gas	7.816	7.816	2.74	20488	0.04	2000	
Al	27	1	No Gas	24.095	24.095	1.34	424928	0.01	2000	
Si	28	1	No Gas	15389.601	15389.601	0.14	122133065	0.01	2000	>LDR
Ag	107	1	No Gas	0.079	0.079	15.67	1650	0.00	2000	
Cd	111	1	No Gas	1.033	1.033	9.25	3104	0.03	2000	
Sr	88	1	No Gas	1784.809	1784.809	1.05	54345176	0.00	2000	
Mo	95	1	No Gas	0.449	0.449	6.53	2667	0.02	2000	
Sn	118	1	No Gas	0.051	0.051	25.25	2854	0.00	2000	
Sb	121	1	No Gas	0.096	0.096	15.09	2214	0.00	2000	
Ba	137	1	No Gas	2088.118	2088.118	0.58	9180164	0.02	2000	>LDR
Tl	205	1	No Gas	0.018	0.018	22.50	533	0.00	2000	
Tl	203	1	No Gas	0.018	0.018	21.62	240	0.01	2000	
Pb	208	1	No Gas	-0.462	-0.462	-3.63	24560	0.00	2000	
U	238	1	No Gas	0.043	0.043	6.47	1487	0.00	2000	
Ca	43	2	He	100256.502	100256.502	1.29	198904	50.40	200000	
Sb	121	2	He	0.093	0.093	12.71	1183	0.01	2000	
Ti	47	2	He	0.113	0.113	64.76	23	0.48	2000	
Cu	63	1	No Gas	98.142	98.142	2.46	1382944	0.01	2000	
Zn	66	1	No Gas	148.597	148.597	0.73	513044	0.03	2000	
Se	82	1	No Gas	3.137	3.137	57.14	278	1.13	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1064337	1.08	1073327	99.16	70	120	
Ge	72	2	He	569884	1.04	538447	105.84	70	120	
Ge	72	1	No Gas	2069337	1.73	1983722	104.32	70	120	
In	115	1	No Gas	2251220	1.16	2263853	99.44	70	120	
Bi	209	1	No Gas	1603123	1.96	1715841	93.43	70	120	

Sample Report

Sample Table

Sample Name	HS22090337-01SD
Data File Name	061SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T12:47:21-05:00
Sample Type	Sample
Dilution	50
Comment	DOD 183432
ISTD Ref FileName	015CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	0.579	28.949	7.86	67914	0.00	2000	
Be	9	1	No Gas	0.004	0.201	118.36	43	0.01	2000	
V	51	2	He	0.491	24.554	1.67	4840	0.01	2000	
Cr	52	2	He	0.761	38.043	3.19	6335	0.01	2000	
Fe	56	2	He	2.182	109.099	1.70	25965	0.01	200000	
Se	78	2	He	0.025	1.256	966.08	247	0.01	2000	
As	75	2	He	0.038	1.887	45.31	132	0.03	2000	
Ca	44	2	He	261.642	13082.082	3.70	9664	2.71	200000	
Na	23	2	He	15523.547	776177.362	1.02	15800417	0.10	200000	
Mg	24	2	He	200.849	10042.472	2.17	118457	0.17	200000	
K	39	2	He	51.161	2558.063	2.40	116484	0.04	200000	
Mn	55	2	He	1.419	70.938	2.51	7042	0.02	2000	
Co	59	2	He	0.002	0.091	76.54	107	0.00	2000	
Ni	60	2	He	0.025	1.232	84.35	263	0.01	2000	
Cu	63	2	He	0.333	16.652	5.78	5081	0.01	2000	
Zn	66	2	He	0.282	14.088	15.16	1113	0.03	2000	
Al	27	2	He	-0.488	-24.418	-38.62	773	-0.06	2000	
B	11	1	No Gas	1.770	88.519	8.16	8303	0.02	2000	
Al	27	1	No Gas	-0.546	-27.300	-8.07	36773	0.00	2000	
Si	28	1	No Gas	261.934	13096.707	0.65	2405786	0.01	2000	
Ag	107	1	No Gas	0.024	1.213	42.04	790	0.00	2000	
Cd	111	1	No Gas	0.001	0.052	357.16	7	0.02	2000	
Sr	88	1	No Gas	5.597	279.847	1.04	177404	0.00	2000	
Mo	95	1	No Gas	0.010	0.487	12.30	147	0.01	2000	
Sn	118	1	No Gas	-0.099	-4.963	-8.62	1517	-0.01	2000	
Sb	121	1	No Gas	0.040	1.991	10.19	1493	0.00	2000	
Ba	137	1	No Gas	4.774	238.676	1.85	22206	0.02	2000	
Tl	205	1	No Gas	0.000	-0.025	-316.29	93	0.00	2000	
Tl	203	1	No Gas	-0.001	-0.068	-152.54	47	0.00	2000	
Pb	208	1	No Gas	-0.548	-27.397	-1.50	24213	0.00	2000	
U	238	1	No Gas	-0.001	-0.028	-127.93	20	0.00	2000	
Ca	43	2	He	225.757	11287.836	10.44	490	46.07	200000	
Sb	121	2	He	0.021	1.050	21.08	717	0.00	2000	
Ti	47	2	He	0.016	0.789	173.21	3	0.47	2000	
Cu	63	1	No Gas	0.470	23.489	7.63	11161	0.00	2000	
Zn	66	1	No Gas	0.342	17.086	14.98	2930	0.01	2000	
Se	82	1	No Gas	0.773	38.665	143.32	-173	-0.45	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1097013	0.57	1073327	102.21	70	120	
Ge	72	2	He	582487	0.54	538447	108.18	70	120	
Ge	72	1	No Gas	2100630	0.85	1983722	105.89	70	120	
In	115	1	No Gas	2321567	1.36	2263853	102.55	70	120	

Sample Report

Bi	209	1	No Gas	1783236	1.70	1715841	103.93	70	120	

Sample Report

Sample Table

Sample Name	HS22090337-01PDS
Data File Name	062SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T12:49:14-05:00
Sample Type	Sample
Dilution	10
Comment	DOD 183432
ISTD Ref FileName	015CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	2.846	28.461	3.78	104160	0.00	2000	
Be	9	1	No Gas	100.840	1008.404	2.10	390378	0.03	2000	
V	51	2	He	95.719	957.186	1.03	596312	0.02	2000	
Cr	52	2	He	95.271	952.708	1.01	679381	0.01	2000	
Fe	56	2	He	10081.047	100810.470	0.77	60644384	0.02	200000	
Se	78	2	He	100.067	1000.671	0.97	8639	1.16	2000	
As	75	2	He	99.896	998.962	0.43	103601	0.10	2000	
Ca	44	2	He	11323.498	113234.982	0.94	384523	2.94	200000	
Na	23	2	He	86365.771	863657.707	1.00	86073085	0.10	200000	
Mg	24	2	He	11283.542	112835.425	1.58	6512311	0.17	200000	
K	39	2	He	10488.010	104880.100	1.54	7045403	0.15	200000	
Mn	55	2	He	105.417	1054.167	1.21	494574	0.02	2000	
Co	59	2	He	99.679	996.787	1.25	1087072	0.01	2000	
Ni	60	2	He	98.044	980.442	1.50	269463	0.04	2000	
Cu	63	2	He	94.137	941.373	1.30	736479	0.01	2000	
Zn	66	2	He	99.456	994.560	0.53	135875	0.07	2000	
Al	27	2	He	100.583	1005.832	1.63	31199	0.32	2000	
B	11	1	No Gas	4.548	45.480	5.92	13994	0.03	2000	
Al	27	1	No Gas	99.810	998.096	1.91	1634726	0.01	2000	
Si	28	1	No Gas	1285.171	12851.706	1.38	10569299	0.01	2000	
Ag	107	1	No Gas	99.067	990.668	1.78	1613930	0.01	2000	
Cd	111	1	No Gas	98.906	989.056	0.61	301168	0.03	2000	
Sr	88	1	No Gas	28.371	283.712	0.94	877108	0.00	2000	
Mo	95	1	No Gas	100.647	1006.466	0.93	586983	0.02	2000	
Sn	118	1	No Gas	-0.105	-1.054	-18.83	1433	-0.01	2000	
Sb	121	1	No Gas	97.947	979.473	2.24	1303778	0.01	2000	
Ba	137	1	No Gas	120.306	1203.065	1.04	536492	0.02	2000	
Tl	205	1	No Gas	98.535	985.352	0.80	2515504	0.00	2000	
Tl	203	1	No Gas	88.340	883.400	0.73	951345	0.01	2000	
Pb	208	1	No Gas	97.027	970.271	0.78	3366067	0.00	2000	
U	238	1	No Gas	0.001	0.013	103.53	87	0.00	2000	
Ca	43	2	He	11105.156	111051.561	3.43	22212	50.00	200000	
Sb	121	2	He	98.170	981.704	0.53	661433	0.01	2000	
Ti	47	2	He	102.585	1025.849	2.03	21287	0.48	2000	
Cu	63	1	No Gas	102.741	1027.409	2.59	1461313	0.01	2000	
Zn	66	1	No Gas	100.537	1005.375	2.06	350943	0.03	2000	
Se	82	1	No Gas	100.441	1004.408	3.08	18815	0.53	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1082432	2.36	1073327	100.85	70	120	
Ge	72	2	He	573856	0.83	538447	106.58	70	120	
Ge	72	1	No Gas	2089147	1.65	1983722	105.31	70	120	
In	115	1	No Gas	2281433	0.70	2263853	100.78	70	120	

Sample Report

Bi	209	1	No Gas	1697877	1.94	1715841	98.95	70	120	

Sample Report

Sample Table

Sample Name	HS22081514-21
Data File Name	063SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T12:51:03-05:00
Sample Type	Sample
Dilution	20
Comment	DOD 183432
ISTD Ref FileName	015CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	2.287	45.740	6.09	97096	0.00	2000	
Be	9	1	No Gas	0.012	0.239	19.60	75	0.02	2000	
V	51	2	He	0.070	1.403	25.21	2159	0.00	2000	
Cr	52	2	He	1.091	21.823	2.86	8620	0.01	2000	
Fe	56	2	He	703.063	14061.269	1.73	4253593	0.02	200000	
Se	78	2	He	0.321	6.422	70.24	269	0.12	2000	
As	75	2	He	0.217	4.336	11.98	317	0.07	2000	
Ca	44	2	He	4134.525	82690.499	1.70	141235	2.93	200000	
Na	23	2	He	10416.754	208335.075	1.30	10515062	0.10	200000	
Mg	24	2	He	3173.837	63476.749	0.67	1837957	0.17	200000	
K	39	2	He	48.978	979.555	2.52	113648	0.04	200000	
Mn	55	2	He	97.348	1946.964	0.71	458130	0.02	2000	
Co	59	2	He	1.249	24.983	4.12	13747	0.01	2000	
Ni	60	2	He	2.011	40.214	2.59	5731	0.04	2000	
Cu	63	2	He	0.215	4.291	6.35	4094	0.01	2000	
Zn	66	2	He	1.500	29.996	4.31	2760	0.05	2000	
Al	27	2	He	-0.480	-9.594	-65.55	767	-0.06	2000	
B	11	1	No Gas	1.210	24.194	2.33	7174	0.02	2000	
Al	27	1	No Gas	-0.327	-6.538	-11.14	40954	0.00	2000	
Si	28	1	No Gas	1338.750	26774.997	0.97	11243821	0.01	2000	
Ag	107	1	No Gas	0.017	0.337	34.13	673	0.00	2000	
Cd	111	1	No Gas	0.033	0.660	23.67	107	0.03	2000	
Sr	88	1	No Gas	73.751	1475.027	1.09	2336055	0.00	2000	
Mo	95	1	No Gas	0.035	0.703	32.73	300	0.01	2000	
Sn	118	1	No Gas	-0.113	-2.263	-6.12	1397	-0.01	2000	
Sb	121	1	No Gas	0.358	7.167	4.53	5851	0.01	2000	
Ba	137	1	No Gas	85.051	1701.019	0.82	389213	0.02	2000	
Tl	205	1	No Gas	0.016	0.329	19.98	540	0.00	2000	
Tl	203	1	No Gas	0.014	0.285	17.16	220	0.01	2000	
Pb	208	1	No Gas	-0.737	-14.744	-1.16	17142	0.00	2000	
U	238	1	No Gas	0.009	0.189	25.40	390	0.00	2000	
Ca	43	2	He	4324.672	86493.440	2.24	8696	49.73	200000	
Sb	121	2	He	0.290	5.806	7.53	2527	0.01	2000	
Ti	47	2	He	0.048	0.961	0.60	10	0.48	2000	
Cu	63	1	No Gas	0.272	5.442	6.82	8476	0.00	2000	
Zn	66	1	No Gas	1.519	30.371	3.60	7162	0.02	2000	
Se	82	1	No Gas	0.579	11.572	176.35	-217	-0.27	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1106295	1.32	1073327	103.07	70	120	
Ge	72	2	He	575577	0.61	538447	106.90	70	120	
Ge	72	1	No Gas	2135805	1.57	1983722	107.67	70	120	
In	115	1	No Gas	2340187	1.04	2263853	103.37	70	120	

Sample Report

Bi	209	1	No Gas	1756197	0.45	1715841	102.35	70	120	

Sample Report

Sample Table

Sample Name	HS22081514-23
Data File Name	064SMPL.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T12:53:04-05:00
Sample Type	Sample
Dilution	20
Comment	DOD 183432
ISTD Ref FileName	015CALB.d
Sample QC Pass/Fail	Pass
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	FinalConc	Conc %RSD	CPS	%RSD	LDR	QC Flag
Li	7	1	No Gas	2.051	41.016	4.03	90576	0.00	2000	
Be	9	1	No Gas	0.019	0.388	12.84	102	0.02	2000	
V	51	2	He	0.131	2.620	10.18	2514	0.01	2000	
Cr	52	2	He	4.896	97.918	2.17	35450	0.01	2000	
Fe	56	2	He	117.712	2354.237	0.47	715542	0.02	200000	
Se	78	2	He	-0.079	-1.576	-190.03	233	-0.03	2000	
As	75	2	He	0.035	0.703	8.67	127	0.03	2000	
Ca	44	2	He	4887.340	97746.803	0.46	165213	2.96	200000	
Na	23	2	He	18645.572	372911.448	1.00	18546383	0.10	200000	
Mg	24	2	He	3997.272	79945.436	1.29	2291926	0.17	200000	
K	39	2	He	81.158	1623.161	2.26	133769	0.06	200000	
Mn	55	2	He	15.031	300.622	2.00	70284	0.02	2000	
Co	59	2	He	0.311	6.230	14.83	3457	0.01	2000	
Ni	60	2	He	5.006	100.127	1.65	13847	0.04	2000	
Cu	63	2	He	4.897	97.940	1.32	40320	0.01	2000	
Zn	66	2	He	7.620	152.392	2.54	10995	0.07	2000	
Al	27	2	He	1.049	20.980	39.17	1217	0.09	2000	
B	11	1	No Gas	0.997	19.947	7.06	6533	0.02	2000	
Al	27	1	No Gas	0.470	9.406	15.65	52764	0.00	2000	
Si	28	1	No Gas	750.651	15013.026	0.32	6297079	0.01	2000	
Ag	107	1	No Gas	0.006	0.120	59.97	497	0.00	2000	
Cd	111	1	No Gas	0.055	1.101	8.47	177	0.03	2000	
Sr	88	1	No Gas	88.351	1767.022	2.13	2816877	0.00	2000	
Mo	95	1	No Gas	0.029	0.586	6.50	267	0.01	2000	
Sn	118	1	No Gas	-0.107	-2.142	-12.90	1463	-0.01	2000	
Sb	121	1	No Gas	0.111	2.220	12.39	2430	0.00	2000	
Ba	137	1	No Gas	99.173	1983.460	1.78	456793	0.02	2000	
Tl	205	1	No Gas	0.006	0.123	32.56	267	0.00	2000	
Tl	203	1	No Gas	0.007	0.136	19.01	137	0.00	2000	
Pb	208	1	No Gas	-0.764	-15.275	-2.89	16171	0.00	2000	
U	238	1	No Gas	0.002	0.030	53.58	97	0.00	2000	
Ca	43	2	He	5049.581	100991.615	2.71	10050	50.24	200000	
Sb	121	2	He	0.104	2.082	15.45	1257	0.01	2000	
Ti	47	2	He	0.032	0.647	86.60	7	0.49	2000	
Cu	63	1	No Gas	4.967	99.331	1.10	74856	0.01	2000	
Zn	66	1	No Gas	7.701	154.018	1.95	28470	0.03	2000	
Se	82	1	No Gas	0.515	10.297	259.15	-221	-0.23	2000	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1075736	0.85	1073327	100.22	70	120	
Ge	72	2	He	569955	0.43	538447	105.85	70	120	
Ge	72	1	No Gas	2088681	1.72	1983722	105.29	70	120	
In	115	1	No Gas	2356442	2.20	2263853	104.09	70	120	

Sample Report

Bi	209	1	No Gas	1753624	1.44	1715841	102.20	70	120	

Continuing Calibration Verification (CCV) Report

Sample Table

Sample Name	CCV
Data File Name	065_CCV.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T12:54:56-05:00
Sample Type	CCV
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Exp Value	%Rec	%Low	%High2	QC Flag
Li	7	1	No Gas	99.079	5.473	1630483	2.88	100	99.1	90	110	
Be	9	1	No Gas	100.025	2.681	375614	0.77	100	100.0	90	110	
V	51	2	He	94.382	0.110	579699	0.32	100	94.4	90	110	
Cr	52	2	He	95.238	0.536	669542	0.32	100	95.2	90	110	
Fe	56	2	He	9969.360	1.113	59122469	0.94	10000	99.7	90	110	
Se	78	2	He	98.719	1.357	8405	1.53	100	98.7	90	110	
As	75	2	He	97.581	0.966	99767	0.95	100	97.6	90	110	
Ca	44	2	He	9914.017	0.577	331977	0.36	10000	99.1	90	110	
Na	23	2	He	10123.563	1.494	10047583	1.29	10000	101.2	90	110	
Mg	24	2	He	9958.105	1.372	5666121	1.22	10000	99.6	90	110	
K	39	2	He	9954.580	0.888	6596760	0.81	10000	99.5	90	110	
Mn	55	2	He	99.192	0.410	458811	0.33	100	99.2	90	110	
Co	59	2	He	97.492	2.625	1048229	2.78	100	97.5	90	110	
Ni	60	2	He	98.996	0.524	268236	0.52	100	99.0	90	110	
Cu	63	2	He	93.745	0.376	723062	0.57	100	93.7	90	110	
Zn	66	2	He	98.185	0.845	132247	1.05	100	98.2	90	110	
Al	27	2	He	102.077	1.881	31199	1.82	100	102.1	90	110	
B	11	1	No Gas	498.648	5.045	1015599	2.62	500	99.7	90	110	
Al	27	1	No Gas	102.958	1.203	1671633	2.71	100	103.0	90	110	
Si	28	1	No Gas	495.067	1.721	4220489	0.46	5000	9.9	90	110	CCV Main CR1-2 Failed
Ag	107	1	No Gas	100.949	0.851	1631991	1.27	100	100.9	90	110	
Cd	111	1	No Gas	98.187	1.070	296663	1.01	100	98.2	90	110	
Sr	88	1	No Gas	99.300	1.882	3042142	1.96	100	99.3	90	110	
Mo	95	1	No Gas	97.851	0.880	566259	0.67	100	97.9	90	110	
Sn	118	1	No Gas	90.750	0.588	843574	0.81	100	90.7	90	110	
Sb	121	1	No Gas	98.942	0.670	1306620	2.19	100	98.9	90	110	
Ba	137	1	No Gas	97.594	0.698	431958	1.02	100	97.6	90	110	
Tl	205	1	No Gas	98.321	1.329	2540551	0.14	100	98.3	90	110	
Tl	203	1	No Gas	89.587	2.037	976454	1.16	100	89.6	90	110	CCV Main CR1-2 Failed
Pb	208	1	No Gas	96.898	1.884	3402426	0.86	100	96.9	90	110	
U	238	1	No Gas	97.363	2.227	3513842	1.03	100	97.4	90	110	
Ca	43	2	He	9989.726	1.807	19704	2.02	10000	99.9	90	110	
Sb	121	2	He	97.572	0.451	648095	0.44	100	97.6	90	110	
Ti	47	2	He	99.395	3.515	20335	3.73	100	99.4	90	110	
Cu	63	1	No Gas	99.662	1.673	1406260	0.93	100	99.7	90	110	
Se	82	1	No Gas	96.313	0.982	17886	0.87	100	96.3	90	110	

QC ISTD Table

Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1050089	2.46	1073327	97.83	70	120	
Ge	72	2	He	565715	0.21	538447	105.06	70	120	
Ge	72	1	No Gas	2072079	1.56	1983722	104.45	70	120	
In	115	1	No Gas	2263726	0.47	2263853	99.99	70	120	
Bi	209	1	No Gas	1718549	1.19	1715841	100.16	70	120	

Continuing Calibration Blank (CCB) Report

Sample Table

Sample Name	CCB
Data File Name	066_CCB.d
Data Path Name	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq Date Time	2022-09-13T12:56:44-05:00
Sample Type	CCB
Dilution	1
Comment	
ISTD Ref File Name	015CALB.d
Sample QC Pass/Fail	Fail
ISTD Pass/Fail	Pass

QC Analyte Table

Name	Mass	Tune Step	Tune Mode	Conc	Conc %RSD	CPS	CPS %RSD	Upper Limit	QC Flag
Li	7	1	No Gas	0.024	276.8	57341	0.5	0.5	
Be	9	1	No Gas	0.010	60.5	67	34.6	0.5	
V	51	2	He	-0.059	-11.7	1330	4.1	2.5	
Cr	52	2	He	0.392	9.9	3564	7.4	2.5	
Fe	56	2	He	1.066	9.3	18606	2.5	100	
Se	78	2	He	0.123	500.9	248	19.4	2	
As	75	2	He	-0.004	-448.0	86	22.8	2.5	
Ca	44	2	He	-3.827	-18.3	513	4.1	100	
Na	23	2	He	54.827	0.8	169321	1.2	100	
Mg	24	2	He	-0.001	-13189.1	777	12.0	100	
K	39	2	He	5.779	57.1	83464	2.5	100	
Mn	55	2	He	0.012	73.2	337	12.4	2.5	
Co	59	2	He	0.002	208.2	103	39.1	2.5	
Ni	60	2	He	0.023	138.4	250	32.7	2.5	
Cu	63	2	He	0.091	18.6	3074	5.2	2	
Zn	66	2	He	-0.023	-462.1	673	19.8	2.5	
Al	27	2	He	-1.571	-17.1	430	18.5	5	
B	11	1	No Gas	12.618	18.5	30529	14.3	0.5	CCB Main CR1 Failed
Al	27	1	No Gas	-1.487	-0.6	21373	1.0	5	
Si	28	1	No Gas	-4.352	-12.3	261714	0.3	10	
Ag	107	1	No Gas	0.009	29.5	540	6.4	2.5	
Cd	111	1	No Gas	0.006	74.7	23	65.5	1	
Sr	88	1	No Gas	-0.020	-10.7	1033	7.9	2.5	
Mo	95	1	No Gas	0.015	65.0	177	31.2	2.5	
Sn	118	1	No Gas	-0.001	-1577.0	2450	5.4	5	
Sb	121	1	No Gas	0.147	10.5	2877	6.7	2.5	
Ba	137	1	No Gas	-0.076	-21.7	220	31.8	2.5	
Tl	205	1	No Gas	0.029	10.8	853	10.0	1	
Tl	203	1	No Gas	0.029	21.9	377	18.8	1	
Pb	208	1	No Gas	-0.805	-1.3	14624	2.7	2.5	
U	238	1	No Gas	0.003	55.6	140	39.8	2.5	
Ca	43	2	He	4.305	115.6	40	25.0	100	
Sb	121	2	He	0.128	10.8	1410	6.2	2.5	
Ti	47	2	He	0.033	86.6	7	86.6	2.5	
Cu	63	1	No Gas	0.094	1.4	5718	1.6	2.5	
Se	82	1	No Gas	0.587	407.5	-211	-216.7	2	

QC ISTD Table

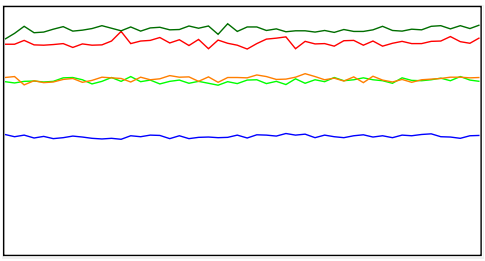
Name	Mass	Tune Step	Tune Mode	CPS	%RSD	Ref CPS	%Rec	%QC Low	%QC High	QC Flag
Li	6	1	No Gas	1071931	2.38	1073327	99.87	70	120	
Ge	72	2	He	566042	1.10	538447	105.13	70	120	
Ge	72	1	No Gas	2068871	1.57	1983722	104.29	70	120	
In	115	1	No Gas	2321522	2.02	2263853	102.55	70	120	
Bi	209	1	No Gas	1743154	0.51	1715841	101.59	70	120	

Tune Check Report

Operator Name	ALSHS NoUser
Acq/Data Batch	D:\Agilent\ICPMH\1\DATA\091322A.b
Acq. Date-Time	09/13/2022 10:14:46
Report Comment	---
Instrument Name	G8422A SG22121190

[No Gas]

Sensitivity



Sampling Period [sec]	0.514
Integration Time [sec]	0.1

Mass	Range	Count	Resp [cps/(ug/l)]	Resp (Required) [cps/(ug/l)]	Resp (Flag)
9	5000	4294	42944.95		
24	20000	14069	140694.26		
59	50000	23878	238777.89		
115	50000	35575	355752.46		
208	20000	18247	182472.64		

Mass	Resp Ratio	Resp Ratio (Required)	Resp Ratio (Flag)
9		-	
24		-	
59		-	
115		-	
208		-	

Mass	RSD%	RSD% (Required)	RSD% (Flag)
9	1.602	5.000	
24	1.231	5.000	
59	1.244	5.000	
115	1.343	5.000	
208	1.242	5.000	

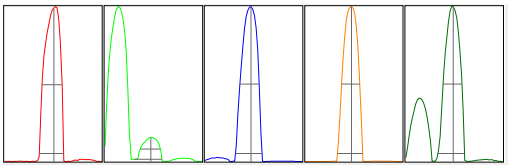
Mass	Background	Background (Required)	Background (Flag)
9	0.700		
24	0.500		
59	0.600		
115	0.500		
208	4.600		

Oxide/Doubly Charged Ratio

Oxide	156 / 140 0.537 %
Doubly Charged	70 / 140 0.879 %

Tune Check Report

Resolution/Axis



Integration Time [sec]	0.1
Acquisition Time [sec]	37.4
Y Axis	Linear

Mass	Peak Height	Axis	Axis (Required)	Axis (Flag)
9	4336.81	9.05	8.90 - 9.10	
24	14174.25	23.95	23.90 - 24.10	
59	24419.92	58.95	58.90 - 59.10	
115	35503.00	114.95	114.90 - 115.10	
208	18049.56	208.00	207.90 - 208.10	

Mass	W-50%	W-5%	W-5% (Required)	W-5% (Flag)
9	0.61	0.741		
24	0.61	0.835		
59	0.59	0.813		
115	0.56	0.770		
208	0.58	0.814		

Tune Parameters

Plasma Parameters

Plasma Mode	---	Nebulizer Gas	0.80 L/min	Dilution Gas	0.25 L/min
RF Power	1550 W	Option Gas	---	Auxiliary Gas	0.90 L/min
RF Matching	1.80 V	Nebulizer Pump	0.10 rps	Plasma Gas	15.0 L/min
Sample Depth	8.0 mm	S/C Temp	2 °C		

Lens Parameters

Extract 1	0.0 V	Omega Lens	10.8 V	Deflect	13.2 V
Extract 2	-200.0 V	Cell Entrance	-30 V	Plate Bias	-35 V
Omega Bias	-75 V	Cell Exit	-50 V		

Cell Parameters

Use Gas	No	3rd Gas Flow	---	Energy Discrimination	5.0 V
He Flow	0.0 mL/min	OctP Bias	-8.0 V		
H2 Flow	0.0 mL/min	OctP RF	200 V		

QP Parameters

Mass Gain	122	Axis Gain	0.9994	QP Bias	-3.0 V
Mass Offset	125	Axis Offset	0.02		

Hardware Settings

Torch

Torch H	0.1 mm	Torch V	-0.1 mm

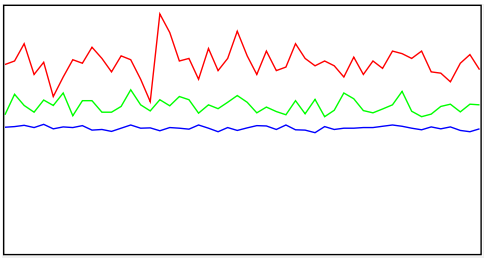
EM

Discriminator	4.5 mV	Analog HV	2121 V	Pulse HV	1094 V

[He]

Tune Check Report

Sensitivity



Sampling Period [sec]	0.306
Integration Time [sec]	0.1

Mass	Range	Count	Resp [cps/(ug/l)]	Resp (Required) [cps/(ug/l)]	Resp (Flag)
9	200	155	1549.29		
24	1000	598	5978.88		
59	20000	10150	101500.89		

Mass	Resp Ratio	Resp Ratio (Required)	Resp Ratio (Flag)
9		-	
24		-	
59		-	

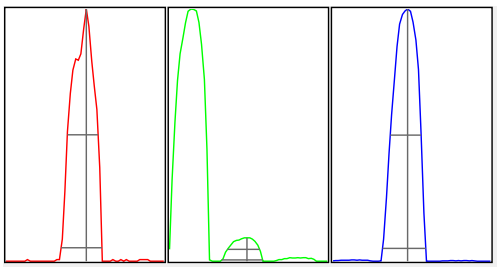
Mass	RSD%	RSD% (Required)	RSD% (Flag)
9	7.901	5.000	Fail
24	4.859	5.000	
59	1.605	5.000	

Mass	Background	Background (Required)	Background (Flag)
9	0.400		
24	0.100		
59	0.200		

Oxide/Doubly Charged Ratio

Oxide	156 / 140 0.295 %
Doubly Charged	70 / 140 0.854 %

Resolution/Axis



Integration Time [sec]	0.1
Acquisition Time [sec]	22.24
Y Axis	Linear

Mass	Peak Height	Axis	Axis (Required)	Axis (Flag)
9	162.52	9.05	8.90 - 9.10	
24	601.40	24.00	23.90 - 24.10	
59	10132.65	58.95	58.90 - 59.10	

Mass	W-50%	W-5%	W-5% (Required)	W-5% (Flag)
9	0.57	0.764		
24	0.60	0.768		

Tune Check Report

Mass	W-50%	W-5%	W-5% (Required)	W-5% (Flag)
59	0.58	0.808		

Tune Parameters

Plasma Parameters

Plasma Mode	---	Nebulizer Gas	0.80 L/min	Dilution Gas	0.25 L/min
RF Power	1550 W	Option Gas	---	Auxiliary Gas	0.90 L/min
RF Matching	1.80 V	Nebulizer Pump	0.10 rps	Plasma Gas	15.0 L/min
Sample Depth	8.0 mm	S/C Temp	2 °C		

Lens Parameters

Extract 1	0.0 V	Omega Lens	9.9 V	Deflect	0.6 V
Extract 2	-200.0 V	Cell Entrance	-40 V	Plate Bias	-60 V
Omega Bias	-80 V	Cell Exit	-60 V		

Cell Parameters

Use Gas	Yes	3rd Gas Flow	---	Energy Discrimination	3.0 V
He Flow	4.0 mL/min	OctP Bias	-18.0 V		
H2 Flow	0.0 mL/min	OctP RF	190 V		

QP Parameters

Mass Gain	122	Axis Gain	0.9994	QP Bias	-15.0 V
Mass Offset	125	Axis Offset	0.02		

Hardware Settings

Torch

Torch H	0.1 mm	Torch V	-0.1 mm

EM

Discriminator	4.5 mV	Analog HV	2121 V	Pulse HV	1094 V

HS22081514 ALS Kelso Report K2210054

ALS WO# HS22081514

ALS Environmental
ALS Group USA, Corp
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September 07, 2022 **Analytical Report for Service Request No:** K2210054

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

RE: HS22081514

Dear Dane,

Enclosed are the results of the sample(s) submitted to our laboratory September 01, 2022
For your reference, these analyses have been assigned our service request number **K2210054.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3260. You may also contact me via email at Luke.Rahn@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Luke Rahn
Project Manager

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Table of Contents

Acronyms
Qualifiers
State Certifications, Accreditations, And Licenses
Case Narrative
Chain of Custody
Metals
Raw Data
    Metals

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
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Phone (360)577-7222 Fax (360)636-1068
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1317 South 13th Ave, Kelso, WA 98626 | 1-360-577-7222 | www.alsglobal.com

ALS Environmental

Client: ALS Environmental - US
Project: HS22081514
Sample Matrix: Water

Service Request: K2210054
Date Received: 09/01/2022

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

Sample Receipt:

Twenty three water samples were received for analysis at ALS Environmental on 09/01/2022. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Metals:

No significant anomalies were noted with this analysis.

Approved by _____ Date 09/07/2022

Chain of Custody

ALS Environmental—Kelso Laboratory
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~~K22010~~ K2210054

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Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887
www.alsglobal.com

Subcontract Chain of Custody

SAMPLING STATE: **Texas** **COC ID:** **19654**

SUBCONTRACT TO:

ALS Environmental Kelso
1317 S. 13th Avenue
Kelso, WA 98626

Phone: +1 360 501 3312

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	Dane J. Wacasey
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	Dane.Wacasey@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:	HS22081514
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS22081514-01**	**ICT2_082522**	**Groundwater**	**25 Aug 2022 07:05**
	Mercury by 7470, DOD samples			12 Sep 2022
2.	**HS22081514-02**	**ICT4_082522**	**Groundwater**	**25 Aug 2022 07:15**
	Mercury by 7470, DOD samples			12 Sep 2022
3.	**HS22081514-03**	**ICT7_082522**	**Groundwater**	**25 Aug 2022 07:25**
	Mercury by 7470, DOD samples			12 Sep 2022
4.	**HS22081514-04**	**ICT8_082522**	**Groundwater**	**25 Aug 2022 07:35**
	Mercury by 7470, DOD samples			12 Sep 2022
5.	**HS22081514-05**	**ICT11_082522**	**Groundwater**	**25 Aug 2022 07:45**
	Mercury by 7470, DOD samples			12 Sep 2022
6.	**HS22081514-06**	**ICT11_082522_a**	**Groundwater**	**25 Aug 2022 07:45**
	Mercury by 7470, DOD samples			12 Sep 2022
7.	**HS22081514-07**	**ICT12A_082522**	**Groundwater**	**25 Aug 2022 08:00**
	Mercury by 7470, DOD samples			12 Sep 2022
8.	**HS22081514-08**	**ICT12B_082522**	**Groundwater**	**25 Aug 2022 08:10**
	Mercury by 7470, DOD samples			12 Sep 2022
9.	**HS22081514-09**	**ICT12C_082522**	**Groundwater**	**25 Aug 2022 08:20**

K2210054

Subcontract Chain of Custody

SAMPLING STATE: Texas **COC ID: 19654**

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
	Mercury by 7470, DOD samples			12 Sep 2022
10.	**HS22081514-10**	**ICT12D_082522**	**Groundwater**	**25 Aug 2022 08:30**
	Mercury by 7470, DOD samples			12 Sep 2022
11.	**HS22081514-11**	**ICT12D_082522_a**	**Groundwater**	**25 Aug 2022 08:30**
	Mercury by 7470, DOD samples			12 Sep 2022
12.	**HS22081514-12**	**ICT12E_082522**	**Groundwater**	**25 Aug 2022 08:50**
	Mercury by 7470, DOD samples			12 Sep 2022
13.	**HS22081514-13**	**ICT13A_082522**	**Groundwater**	**25 Aug 2022 09:00**
	Mercury by 7470, DOD samples			12 Sep 2022
14.	**HS22081514-14**	**ICT13B_082522**	**Groundwater**	**25 Aug 2022 09:10**
	Mercury by 7470, DOD samples			12 Sep 2022
15.	**HS22081514-15**	**ICT13C_082522**	**Groundwater**	**25 Aug 2022 09:20**
	Mercury by 7470, DOD samples			12 Sep 2022
16.	**HS22081514-16**	**ICT13D_082522**	**Groundwater**	**25 Aug 2022 09:30**
	Mercury by 7470, DOD samples			12 Sep 2022
17.	**HS22081514-17**	**ICT13E_082522**	**Groundwater**	**25 Aug 2022 09:40**
	Mercury by 7470, DOD samples			12 Sep 2022
18.	**HS22081514-18**	**ICT13F_082522**	**Groundwater**	**25 Aug 2022 09:50**
	Mercury by 7470, DOD samples			12 Sep 2022
19.	**HS22081514-19**	**ICT14A_082522**	**Groundwater**	**25 Aug 2022 09:55**
	Mercury by 7470, DOD samples			12 Sep 2022
20.	**HS22081514-20**	**ICT14B_082522**	**Groundwater**	**25 Aug 2022 10:05**
	Mercury by 7470, DOD samples			12 Sep 2022
21.	**HS22081514-21**	**ICT14C_082522**	**Groundwater**	**25 Aug 2022 10:15**
	Mercury by 7470, DOD samples			12 Sep 2022
22.	**HS22081514-22**	**ICT14D_082522**	**Groundwater**	**25 Aug 2022 10:30**
	Mercury by 7470, DOD samples (MS/MSD Designated)			12 Sep 2022
23.	**HS22081514-23**	**ICT14E_082522**	**Groundwater**	**25 Aug 2022 10:50**
	Mercury by 7470, DOD samples			12 Sep 2022

KZ210054

Subcontract Chain of Custody

SAMPLING STATE: **Texas** **COC ID:** **19654**

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

QC Level: DOD IV (DoD Data Package)

AUG 2 3 2022

Relinquished By:		Date/Time:	
Received By:		Date/Time:	9/1/22 1010
Cooler ID(s):		Temperature(s):	

PM LL

Cooler Receipt and Preservation Form

Client ALS Houston Service Request K22 10054

Received: 9/1/22 Opened: 9/1/22 By: ZH Unloaded: 9/1/22 By: ZH

1. Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 1 front
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID / NA	Out of temp indicate with "X"	PM Notified if out of temp	Tracking Number NA	Filed
	21.4	IR2	19654			578949974353	

4. Was a Temperature Blank present in cooler? NA Y (N) If yes, notate the temperature in the appropriate column above:
   If no, take the temperature of a representative sample bottle contained within the cooler; notate in the column "Sample Temp":
5. Were samples received within the method specified temperature ranges? NA Y (N)
   If no, were they received on ice and same day as collected? If not, notate the cooler # below and notify the PM. NA (Y) N

If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*

6. Packing material: *Inserts* *Baggies* (*Bubble Wrap*) *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
7. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
8. Were samples received in good condition (unbroken) NA (Y) N
9. Were all sample labels complete (ie, analysis, preservation, etc.)? NA (Y) N
10. Did all sample labels and tags agree with custody papers? NA (Y) N
11. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
12. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA (Y) N
13. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
14. Was C12/Res negative? (NA) Y N
15. Were 100ml sterile microbiology bottles filled exactly to the 100ml mark? (NA) Y N Under filled Overfilled

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, Resolutions: Temp NOT an issue, Samples for metals analysis.

1/13/22 *Page ____ of ____*

Metals

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K2210054
Project:	HS22081514	**Date Collected:**	08/25/22 07:05
Sample Matrix:	Water	**Date Received:**	09/01/22 10:10
Sample Name:	ICT2_082522	**Basis:**	NA
Lab Code:	K2210054-001		

Total Metals

Analyte Name	Analysis Method	Result	Units	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Mercury	7470A	ND U	ug/L	0.20	0.05	0.02	1	09/02/22 16:35	09/02/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K2210054
Project:	HS22081514	**Date Collected:**	08/25/22 07:15
Sample Matrix:	Water	**Date Received:**	09/01/22 10:10
Sample Name:	ICT4_082522	**Basis:**	NA
Lab Code:	K2210054-002		

Total Metals

Analyte Name	Analysis Method	Result	Units	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Mercury	7470A	ND U	ug/L	0.20	0.05	0.02	1	09/02/22 16:37	09/02/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K2210054
Project:	HS22081514	**Date Collected:**	08/25/22 07:25
Sample Matrix:	Water	**Date Received:**	09/01/22 10:10
Sample Name:	ICT7_082522	**Basis:**	NA
Lab Code:	K2210054-003		

Total Metals

Analyte Name	Analysis Method	Result	Units	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Mercury	7470A	ND U	ug/L	0.20	0.05	0.02	1	09/02/22 16:38	09/02/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K2210054
Project:	HS22081514	**Date Collected:**	08/25/22 07:35
Sample Matrix:	Water	**Date Received:**	09/01/22 10:10
Sample Name:	ICT8_082522	**Basis:**	NA
Lab Code:	K2210054-004		

Total Metals

Analyte Name	Analysis Method	Result	Units	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Mercury	7470A	ND U	ug/L	0.20	0.05	0.02	1	09/06/22 11:52	09/02/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K2210054
Project:	HS22081514	**Date Collected:**	08/25/22 07:45
Sample Matrix:	Water	**Date Received:**	09/01/22 10:10
Sample Name:	ICT11_082522	**Basis:**	NA
Lab Code:	K2210054-005		

Total Metals

Analyte Name	Analysis Method	Result	Units	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Mercury	7470A	ND U	ug/L	0.20	0.05	0.02	1	09/06/22 11:53	09/02/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K2210054
Project:	HS22081514	**Date Collected:**	08/25/22 07:45
Sample Matrix:	Water	**Date Received:**	09/01/22 10:10
Sample Name:	ICT11_082522_a	**Basis:**	NA
Lab Code:	K2210054-006		

Total Metals

Analyte Name	Analysis Method	Result	Units	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Mercury	7470A	ND U	ug/L	0.20	0.05	0.02	1	09/06/22 11:55	09/02/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K2210054
Project:	HS22081514	**Date Collected:**	08/25/22 08:00
Sample Matrix:	Water	**Date Received:**	09/01/22 10:10
Sample Name:	ICT12A_082522	**Basis:**	NA
Lab Code:	K2210054-007		

Total Metals

Analyte Name	Analysis Method	Result	Units	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Mercury	7470A	ND U	ug/L	0.20	0.05	0.02	1	09/06/22 11:56	09/02/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K2210054
Project:	HS22081514	**Date Collected:**	08/25/22 08:10
Sample Matrix:	Water	**Date Received:**	09/01/22 10:10
Sample Name:	ICT12B_082522	**Basis:**	NA
Lab Code:	K2210054-008		

Total Metals

Analyte Name	Analysis Method	Result	Units	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Mercury	7470A	ND U	ug/L	0.20	0.05	0.02	1	09/06/22 11:58	09/02/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K2210054
Project:	HS22081514	**Date Collected:**	08/25/22 08:20
Sample Matrix:	Water	**Date Received:**	09/01/22 10:10
Sample Name:	ICT12C_082522	**Basis:**	NA
Lab Code:	K2210054-009		

Total Metals

Analyte Name	Analysis Method	Result	Units	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Mercury	7470A	ND U	ug/L	0.20	0.05	0.02	1	09/06/22 12:00	09/02/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K2210054
Project:	HS22081514	**Date Collected:**	08/25/22 08:30
Sample Matrix:	Water	**Date Received:**	09/01/22 10:10
Sample Name:	ICT12D_082522	**Basis:**	NA
Lab Code:	K2210054-010		

Total Metals

Analyte Name	Analysis Method	Result	Units	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Mercury	7470A	ND U	ug/L	0.20	0.05	0.02	1	09/06/22 12:01	09/02/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K2210054
Project:	HS22081514	**Date Collected:**	08/25/22 08:30
Sample Matrix:	Water	**Date Received:**	09/01/22 10:10
Sample Name:	ICT12D_082522_a	**Basis:**	NA
Lab Code:	K2210054-011		

Total Metals

Analyte Name	Analysis Method	Result	Units	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Mercury	7470A	ND U	ug/L	0.20	0.05	0.02	1	09/06/22 12:03	09/02/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K2210054
Project:	HS22081514	**Date Collected:**	08/25/22 08:50
Sample Matrix:	Water	**Date Received:**	09/01/22 10:10
Sample Name:	ICT12E_082522	**Basis:**	NA
Lab Code:	K2210054-012		

Total Metals

Analyte Name	Analysis Method	Result	Units	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Mercury	7470A	ND U	ug/L	0.20	0.05	0.02	1	09/06/22 12:08	09/02/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K2210054
Project:	HS22081514	**Date Collected:**	08/25/22 09:00
Sample Matrix:	Water	**Date Received:**	09/01/22 10:10
Sample Name:	ICT13A_082522	**Basis:**	NA
Lab Code:	K2210054-013		

Total Metals

Analyte Name	Analysis Method	Result	Units	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Mercury	7470A	ND U	ug/L	0.20	0.05	0.02	1	09/06/22 12:09	09/02/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K2210054
Project:	HS22081514	**Date Collected:**	08/25/22 09:10
Sample Matrix:	Water	**Date Received:**	09/01/22 10:10
Sample Name:	ICT13B_082522	**Basis:**	NA
Lab Code:	K2210054-014		

Total Metals

Analyte Name	Analysis Method	Result	Units	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Mercury	7470A	ND U	ug/L	0.20	0.05	0.02	1	09/06/22 12:11	09/02/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K2210054
Project:	HS22081514	**Date Collected:**	08/25/22 09:20
Sample Matrix:	Water	**Date Received:**	09/01/22 10:10
Sample Name:	ICT13C_082522	**Basis:**	NA
Lab Code:	K2210054-015		

Total Metals

Analyte Name	Analysis Method	Result	Units	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Mercury	7470A	ND U	ug/L	0.20	0.05	0.02	1	09/06/22 12:13	09/02/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K2210054
Project:	HS22081514	**Date Collected:**	08/25/22 09:30
Sample Matrix:	Water	**Date Received:**	09/01/22 10:10
Sample Name:	ICT13D_082522	**Basis:**	NA
Lab Code:	K2210054-016		

Total Metals

Analyte Name	Analysis Method	Result	Units	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Mercury	7470A	ND U	ug/L	0.20	0.05	0.02	1	09/06/22 12:14	09/02/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K2210054
Project:	HS22081514	**Date Collected:**	08/25/22 09:40
Sample Matrix:	Water	**Date Received:**	09/01/22 10:10
Sample Name:	ICT13E_082522	**Basis:**	NA
Lab Code:	K2210054-017		

Total Metals

Analyte Name	Analysis Method	Result	Units	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Mercury	7470A	ND U	ug/L	0.20	0.05	0.02	1	09/06/22 12:16	09/02/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K2210054
Project:	HS22081514	**Date Collected:**	08/25/22 09:50
Sample Matrix:	Water	**Date Received:**	09/01/22 10:10
Sample Name:	ICT13F_082522	**Basis:**	NA
Lab Code:	K2210054-018		

Total Metals

Analyte Name	Analysis Method	Result	Units	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Mercury	7470A	ND U	ug/L	0.20	0.05	0.02	1	09/06/22 12:18	09/02/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K2210054
Project:	HS22081514	**Date Collected:**	08/25/22 09:55
Sample Matrix:	Water	**Date Received:**	09/01/22 10:10
Sample Name:	ICT14A_082522	**Basis:**	NA
Lab Code:	K2210054-019		

Total Metals

Analyte Name	Analysis Method	Result	Units	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Mercury	7470A	ND U	ug/L	0.20	0.05	0.02	1	09/06/22 12:19	09/02/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K2210054
Project:	HS22081514	**Date Collected:**	08/25/22 10:05
Sample Matrix:	Water	**Date Received:**	09/01/22 10:10
Sample Name:	ICT14B_082522	**Basis:**	NA
Lab Code:	K2210054-020		

Total Metals

Analyte Name	Analysis Method	Result	Units	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Mercury	7470A	ND U	ug/L	0.20	0.05	0.02	1	09/06/22 12:21	09/02/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K2210054
Project:	HS22081514	**Date Collected:**	08/25/22 10:15
Sample Matrix:	Water	**Date Received:**	09/01/22 10:10
Sample Name:	ICT14C_082522	**Basis:**	NA
Lab Code:	K2210054-021		

Total Metals

Analyte Name	Analysis Method	Result	Units	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Mercury	7470A	ND U	ug/L	0.20	0.05	0.02	1	09/06/22 12:22	09/02/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K2210054
Project:	HS22081514	**Date Collected:**	08/25/22 10:30
Sample Matrix:	Water	**Date Received:**	09/01/22 10:10
Sample Name:	ICT14D_082522	**Basis:**	NA
Lab Code:	K2210054-022		

Total Metals

Analyte Name	Analysis Method	Result	Units	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Mercury	7470A	ND U	ug/L	0.20	0.05	0.02	1	09/06/22 12:27	09/02/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K2210054
Project:	HS22081514	**Date Collected:**	08/25/22 10:50
Sample Matrix:	Water	**Date Received:**	09/01/22 10:10
Sample Name:	ICT14E_082522	**Basis:**	NA
Lab Code:	K2210054-023		

Total Metals

Analyte Name	Analysis Method	Result	Units	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Mercury	7470A	ND U	ug/L	0.20	0.05	0.02	1	09/06/22 12:34	09/02/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K2210054
Project:	HS22081514	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	NA
Lab Code:	KQ2214961-01		

Total Metals

Analyte Name	Analysis Method	Result	Units	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Mercury	7470A	ND U	ug/L	0.20	0.05	0.02	1	09/06/22 11:48	09/02/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	K2210054
Project:	HS22081514	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	NA
Lab Code:	KQ2214966-03		

Total Metals

Analyte Name	Analysis Method	Result	Units	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Mercury	7470A	ND U	ug/L	0.20	0.05	0.02	1	09/02/22 16:32	09/02/22	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	K2210054
Project:	HS22081514	**Date Collected:**	08/25/22
Sample Matrix:	Water	**Date Received:**	09/01/22
		Date Analyzed:	09/6/22
		Date Extracted:	09/2/22

Duplicate Matrix Spike Summary
Total Metals

Sample Name:	ICT14D_082522	**Units:**	ug/L
Lab Code:	K2210054-022	**Basis:**	NA
Analysis Method:	7470A		
Prep Method:	Method		

		Matrix Spike KQ2214961-03			Duplicate Matrix Spike KQ2214961-04					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Mercury	ND U	4.66	5.00	93	4.63	5.00	93	82-119	<1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS22081514
Sample Matrix: Water

Service Request: K2210054
Date Analyzed: 09/06/22

Lab Control Sample Summary
Total Metals

Units:ug/L
Basis:NA

Lab Control Sample
KQ2214961-02

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Mercury	7470A	4.67	5.00	93	82-119

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS22081514
Sample Matrix: Water

Service Request: K2210054
Date Analyzed: 09/02/22

Lab Control Sample Summary
Total Metals

Units:ug/L
Basis:NA

Lab Control Sample
KQ2214966-04

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Mercury	7470A	4.73	5.00	95	82-119

ALS Group USA, Corp.
dba ALS Environmental

Prep Summary Report

Client: ALS Environmental - US **Service Request:** K2210054
Project: HS22081514
Sample Matrix: Water

Metals

Prep Method: Method **Extraction Lot:** 405793
Analytical Method: 7470A **Extraction Date:** 09/02/22 13:45

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
ICT2_082522	K2210054-001	8/25/22	9/1/22	10.0000 mL	10 mL	
ICT4_082522	K2210054-002	8/25/22	9/1/22	10.0000 mL	10 mL	
ICT7_082522	K2210054-003	8/25/22	9/1/22	10.0000 mL	10 mL	
Method Blank	KQ2214966-03MB	NA	NA	10.0000 mL	10 mL	
Lab Control Sample	KQ2214966-04LCS	NA	NA	10.0000 mL	10 mL	

ALS Group USA, Corp.
dba ALS Environmental

Prep Summary Report

Client: ALS Environmental - US **Service Request:** K2210054
Project: HS22081514
Sample Matrix: Water

Metals

Prep Method: Method **Extraction Lot:** 405788
Analytical Method: 7470A **Extraction Date:** 09/02/22 13:45

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
ICT8_082522	K2210054-004	8/25/22	9/1/22	10.0000 mL	10 mL	
ICT11_082522	K2210054-005	8/25/22	9/1/22	10.0000 mL	10 mL	
ICT11_082522_a	K2210054-006	8/25/22	9/1/22	10.0000 mL	10 mL	
ICT12A_082522	K2210054-007	8/25/22	9/1/22	10.0000 mL	10 mL	
ICT12B_082522	K2210054-008	8/25/22	9/1/22	10.0000 mL	10 mL	
ICT12C_082522	K2210054-009	8/25/22	9/1/22	10.0000 mL	10 mL	
ICT12D_082522	K2210054-010	8/25/22	9/1/22	10.0000 mL	10 mL	
ICT12D_082522_a	K2210054-011	8/25/22	9/1/22	10.0000 mL	10 mL	
ICT12E_082522	K2210054-012	8/25/22	9/1/22	10.0000 mL	10 mL	
ICT13A_082522	K2210054-013	8/25/22	9/1/22	10.0000 mL	10 mL	
ICT13B_082522	K2210054-014	8/25/22	9/1/22	10.0000 mL	10 mL	
ICT13C_082522	K2210054-015	8/25/22	9/1/22	10.0000 mL	10 mL	
ICT13D_082522	K2210054-016	8/25/22	9/1/22	10.0000 mL	10 mL	
ICT13E_082522	K2210054-017	8/25/22	9/1/22	10.0000 mL	10 mL	
ICT13F_082522	K2210054-018	8/25/22	9/1/22	10.0000 mL	10 mL	
ICT14A_082522	K2210054-019	8/25/22	9/1/22	10.0000 mL	10 mL	
ICT14B_082522	K2210054-020	8/25/22	9/1/22	10.0000 mL	10 mL	
ICT14C_082522	K2210054-021	8/25/22	9/1/22	10.0000 mL	10 mL	
ICT14D_082522	K2210054-022	8/25/22	9/1/22	10.0000 mL	10 mL	
ICT14E_082522	K2210054-023	8/25/22	9/1/22	10.0000 mL	10 mL	
Method Blank	KQ2214961-01MB	NA	NA	10.0000 mL	10 mL	
Lab Control Sample	KQ2214961-02LCS	NA	NA	10.0000 mL	10 mL	
Matrix Spike	KQ2214961-03MS	8/25/22	9/1/22	10.0000 mL	10 mL	
Duplicate Matrix Spike	KQ2214961-04DMS	8/25/22	9/1/22	10.0000 mL	10 mL	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K2210054
Project: HS22081514

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Concentration Units: ug/L

Sample ID / Analyte	Method	Analysis Batch:	Result	True Value	% Rec	% Rec. Limits
ICV 09/02/22 16:24						
Mercury	7470A	776342	4.88	5.00	98	90-110
CCV 09/02/22 16:29						
Mercury	7470A	776342	4.99	5.00	100	90-110
CCV 09/02/22 16:48						
Mercury	7470A	776342	4.94	5.00	99	90-110
ICV 09/06/22 11:40						
Mercury	7470A	776472	5.04	5.00	101	90-110
CCV 09/06/22 11:45						
Mercury	7470A	776472	5.01	5.00	100	90-110
CCV 09/06/22 12:05						
Mercury	7470A	776472	5.03	5.00	101	90-110
CCV 09/06/22 12:24						
Mercury	7470A	776472	5.06	5.00	101	90-110
CCV 09/06/22 12:35						
Mercury	7470A	776472	5.06	5.00	101	90-110

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K2210054
Project: HS22081514

INITIAL AND CONTINUING CALIBRATION BLANKS

Concentration Units: ug/L

Sample ID / Analyte	Method	Analysis Batch:	Result	C
ICB 09/02/22 16:25				
Mercury	7470A	776342	-0.0260	J
CCB 09/02/22 16:30				
Mercury	7470A	776342	-0.0260	J
CCB 09/02/22 16:50				
Mercury	7470A	776342	-0.0230	J
ICB 09/06/22 11:42				
Mercury	7470A	776472	0.02	U
CCB 09/06/22 11:47				
Mercury	7470A	776472	0.02	U
CCB 09/06/22 12:06				
Mercury	7470A	776472	0.02	U
CCB 09/06/22 12:26				
Mercury	7470A	776472	0.02	U
CCB 09/06/22 12:37				
Mercury	7470A	776472	0.02	U

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K2210054
Project: HS22081514

LOW LEVEL INITIAL AND LOW LEVEL CONTINUING CALIBRATION VERIFICATION

Concentration Units: ug/L

Sample ID / Analyte	Method	Analysis Batch:	Result	True Value	% Rec	% Rec. Limits	Analysis Date
LLICV							
Mercury	7470A	776342	0.20	0.2	98	50-150	09/02/22 16:27
LLICV							
Mercury	7470A	776472	0.20	0.2	98	50-150	09/06/22 11:44

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K2210054
Project: HS22081514

POST SPIKE SAMPLE RECOVERY

Concentration Units: ug/L

Sample ID / Analyte	Method	Analysis Batch:	Initial Sample Result	Post Spike Result	True Value	% Rec	% Rec. Limits	Analysis Date
K2210054-022A								
Mercury	7470A	776472	0.02 U	4.33	5.00	87	80-120	09/06/22 12:32

Results flagged with a pound (#) indicate the control criteria is not applicable.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K2210054
Project: HS22081514/

Detection Limits

Instrument: K-CVAA-03 **Matrix:** Water

Analyte	Wavelength (nm)	Units	LOQ	LOD	MDL
Mercury	253	ug/L	0.2	0.05	0.02

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K2210054
Project: HS22081514/

Analysis Run Log

Instrument ID: **K-CVAA-03** **Analytical BatchID:** **776342**

Sample	Dilution Factor	Date/Time	Hg
ZZZZZZ	1	09/02/22 16:14	
ZZZZZZ	1	09/02/22 16:16	
ZZZZZZ	1	09/02/22 16:17	
ZZZZZZ	1	09/02/22 16:19	
ZZZZZZ	1	09/02/22 16:21	
ZZZZZZ	1	09/02/22 16:22	
ICV1	1	09/02/22 16:24	X
ICB1	1	09/02/22 16:25	X
LLICV1	1	09/02/22 16:27	X
CCV1	1	09/02/22 16:29	X
CCB1	1	09/02/22 16:30	X
KQ2214966-03MB	1	09/02/22 16:32	X
KQ2214966-04LCS	1	09/02/22 16:34	X
K2210054-001	1	09/02/22 16:35	X
K2210054-002	1	09/02/22 16:37	X
K2210054-003	1	09/02/22 16:38	X
ZZZZZZ	1	09/02/22 16:40	
ZZZZZZ	1	09/02/22 16:42	
ZZZZZZ	1	09/02/22 16:43	
ZZZZZZ	1	09/02/22 16:45	
ZZZZZZ	1	09/02/22 16:47	
CCV2	1	09/02/22 16:48	X
CCB2	1	09/02/22 16:50	X
ZZZZZZ	1	09/02/22 16:51	
ZZZZZZ	1	09/02/22 16:53	
ZZZZZZ	1	09/02/22 16:55	
ZZZZZZ	1	09/02/22 16:56	
ZZZZZZ	1	09/02/22 16:58	
ZZZZZZ	1	09/02/22 16:59	
ZZZZZZ	1	09/02/22 17:01	
ZZZZZZ	1	09/02/22 17:03	
ZZZZZZ	1	09/02/22 17:04	
ZZZZZZ	1	09/02/22 17:06	
ZZZZZZ	1	09/02/22 17:08	
ZZZZZZ	1	09/02/22 17:09	
ZZZZZZ	1	09/02/22 17:11	
ZZZZZZ	1	09/02/22 17:12	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K2210054
Project: HS22081514/

Analysis Run Log

Instrument ID: **K-CVAA-03** **Analytical BatchID:** **776342**

Sample	Dilution Factor	Date/Time	Hg
ZZZZZZ	1	09/02/22 17:14	
ZZZZZZ	1	09/02/22 17:16	
ZZZZZZ	1	09/02/22 17:17	
ZZZZZZ	1	09/02/22 17:19	
ZZZZZZ	1	09/02/22 17:21	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K2210054
Project: HS22081514/

Analysis Run Log

Instrument ID: **K-CVAA-04** **Analytical BatchID:** **776472**

Sample	Dilution Factor	Date/Time	Hg
ZZZZZZ	1	09/06/22 11:31	
ZZZZZZ	1	09/06/22 11:32	
ZZZZZZ	1	09/06/22 11:34	
ZZZZZZ	1	09/06/22 11:35	
ZZZZZZ	1	09/06/22 11:37	
ZZZZZZ	1	09/06/22 11:39	
ICV1	1	09/06/22 11:40	X
ICB1	1	09/06/22 11:42	X
LLICV1	1	09/06/22 11:44	X
CCV1	1	09/06/22 11:45	X
CCB1	1	09/06/22 11:47	X
KQ2214961-01MB	1	09/06/22 11:48	X
KQ2214961-02LCS	1	09/06/22 11:50	X
K2210054-004	1	09/06/22 11:52	X
K2210054-005	1	09/06/22 11:53	X
K2210054-006	1	09/06/22 11:55	X
K2210054-007	1	09/06/22 11:56	X
K2210054-008	1	09/06/22 11:58	X
K2210054-009	1	09/06/22 12:00	X
K2210054-010	1	09/06/22 12:01	X
K2210054-011	1	09/06/22 12:03	X
CCV2	1	09/06/22 12:05	X
CCB2	1	09/06/22 12:06	X
K2210054-012	1	09/06/22 12:08	X
K2210054-013	1	09/06/22 12:09	X
K2210054-014	1	09/06/22 12:11	X
K2210054-015	1	09/06/22 12:13	X
K2210054-016	1	09/06/22 12:14	X
K2210054-017	1	09/06/22 12:16	X
K2210054-018	1	09/06/22 12:18	X
K2210054-019	1	09/06/22 12:19	X
K2210054-020	1	09/06/22 12:21	X
K2210054-021	1	09/06/22 12:22	X
CCV3	1	09/06/22 12:24	X
CCB3	1	09/06/22 12:26	X
K2210054-022	1	09/06/22 12:27	X
K2210054-022MS	1	09/06/22 12:29	X

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US **Service Request:** K2210054
Project: HS22081514/

Analysis Run Log

Instrument ID: **K-CVAA-04** **Analytical BatchID:** **776472**

Sample	Dilution Factor	Date/Time	Hg
K2210054-022DMS	1	09/06/22 12:31	X
K2210054-022PS	1	09/06/22 12:32	X
K2210054-023	1	09/06/22 12:34	X
CCV4	1	09/06/22 12:35	X
CCB4	1	09/06/22 12:37	X

Raw Data

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Metals

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
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CVAA Mercury Water Data Review Form

K-CVAA-03

Element:	Hg		
Analysis Lot #:	090222C HG3		
Starlims #:	776342		
Cal. STD/CCV Source:	HG3-85-M		
Pipette IDs:	HG-41585305/HG-38883934		
16mL Tube Lot #:	P7554803		
KMnO4:	HG3-85-B	Expiration Date:	8/29/2023
K2S2O8:	HG3-84-L	Expiration Date:	8/4/2023
NH2OH-HCl/NaCl	HG3-84-T	Expiration Date:	8/25/2023
SnCl2/HCl:	HG3-85-F 9/2/22	Expiration Date:	7/1/2023

Service Request Numbers:

K2210054, K2210056, K2210061, K2210062, K2210064

	Yes	No	NA
1) Appropriate standardization completed	X		
2) ICV within 10% of true value	X		
3) CCVs in control (+/- 10%)	X		
4) CCBs and or ICBs below MRL	X		
5) CCV/CCB check run every 10 samples	X		
6) All reported samples within calibration range	X		
7) Calculations correct	X		

Comments:

Data reviewed against service request(s) to ensure no samples were omitted: _____ (Initials)

Primary Reviewed By: _____ Date: 9/2/22

Secondary Reviewed By: _____ Date: 9/2/22

Data Review Form

Instrument ID#: **K-CVAA-03**
DataFile Name: **R:\ICP\WIP\DATA\K-CVAA-03 (M-7600)\090222C HG3.csv**
RUNNO: **776342**

K2210054

No exceptions to report.

K2210056

No exceptions to report.

K2210061

No exceptions to report.

K2210062

No exceptions to report.

K2210064

No exceptions to report.

Primary Approver: 9/2/22
Secondary Approver: 9/2/22

CVAA Hg ANALYTICAL WORKSHEET

Method: 7470	Cal. Inter. Std* (100ppb): HG3-85-M 2nd Source Inter Std** (1ppm): HG3-84-V

Analysis For: Hg — DATA

Pos.	SAMPLE NUMBER	Measured (µg/L)	Dilution Factor	Recoveries (ICV, CCV, LCS, MS)		Comments:
1	Cal. Blk.	0.000	~	~		
2	Std 0.2*	0.200	~	(0.1-50mL)		
3	Std 0.5*	0.500	~	(0.25-50mL)		
4	Std 1.0*	1.000	~	(0.5-50mL)		
5	Std 5.0*	5.000	~	(2.5-50mL)		
6	Std 10.0*	10.000	~	(5.0-50mL)		
7	ICV1**	4.884	~	98%		
8	ICB1	-0.026	~			
9	LLICV1*	0.196	~	98%		
10	CCV1*	4.987	~	100%		
11	CCB1	-0.026	~			
12	KQ2214966-03	-0.004	~			
13	KQ2214966-04	4.731	~	95%		
14	K2210054-001	-0.023	~			
15	K2210054-002	0.016	~			
16	K2210054-003	0.001	~			
17	K2210056-001	-0.003	~			
18	K2210061-001	-0.002	~			
19	K2210061-002	0.012	~			
20	K2210061-003	0.005	~			
21	K2210061-004	0.257	~			
22	CCV2	4.941	~	99%		
23	CCB2	-0.023	~			
24	K2210061-005	0.018	~			
25	K2210061-006	0.067	~			
26	K2210061-007	0.005	~			
27	K2210062-001	-0.001	~			
28	K2210062-002	0.000	~			
29	K2210062-003	0.001	~			
30	K2210062-003A	4.768	~	95%		
31	KQ2214966-01	4.571	~	91%		
32	KQ2214966-02	4.589	~	92%		

Comments:

CVAA Hg ANALYTICAL WORKSHEET

Analysis For: Hg **DATA**

Pos.	SAMPLE NUMBER	Measured (µg/L)	Dilution Factor	Recoveries (ICV, CCV, LCS, MS)		Comments:
33	K2210062-004	-0.021	~			
34	CCV3	4.923	~	98%		
35	CCB3	-0.026	~			
36	K2210064-001	-0.004	~			
37	K2210064-002	-0.004	~			
38	K2210064-003	-0.001	~			
39	K2210064-004	-0.002	~			
40	K2210064-005	0.000	~			
41	CCV4	4.908	~	98%		
42	CCB4	-0.023	~			
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Comments:

Soil/Tissue Spike Level:

Method	Spike Level	MRL	LCS Limit	MS Limit	RPD	Post-Spike @ 5ppb
7470A Water	5.0 µg/L	0.2 µg/L	80-120%	75-125%	20%	+/- 20%
245.1 Water	5.0 µg/L	0.2 µg/L	85-115%	70-130%	20%	+/- 20%
7470A TCLP	5.0 µg/L	1.0 µg/L	80-120%	75-125%	20%	+/- 20%
7471A Soil LCSS	7.1mg/kg	0.02 mg/kg	51-149%	80-120%	20%	+/- 20%
7471A Tissue Dorm	0.41 mg/kg	0.02 mg/kg	68-136%	80-120%	20%	+/- 20%

Report Generated By Teledyne Leeman QuickTrace

Analyst: alkls.nouser

Worksheet file: C:\Users\Public\Documents\Teledyne CETAC\QuickTrace\Worksheets\090222C HG3.wszf

Creation Date: 9/2/2022 3:59:08 PM

Comment:

Results

Sample Name / Aliq. Vol. / Diln. Vol / DF	Type / Spike Vol	Conc (ug/L) / % Recovery	µAbs	%RSD	Residual	Flags	Wt. (g)	Vol (ml)
Calibration Blank	STD	0.000	217	1.98	0.00			
1.0000	N/A							
Replicates		210.5	217.9	218.7	220.1			
Standard #1 (0.2 ug/L)	STD	0.200	3652	2.11	7.28			
1.0000	N/A							
Replicates		3719.5	3712.8	3616.0	3561.3			
Standard #2 (0.5 ug/L)	STD	0.500	8760	2.24	15.43			
1.0000	N/A							
Replicates		8927.6	8880.4	8740.8	8490.8			
Standard #3 (1 ug/L)	STD	1.000	17317	2.28	31.73			
1.0000	N/A							
Replicates		17652.8	17587.0	17237.8	16792.0			
Standard #4 (5 ug/L)	STD	5.000	84841	1.86	105.62			
1.0000	N/A							
Replicates		86226.1	85817.3	84607.5	82711.3			
Standard #5 (10 ug/L)	STD	10.000	165020	0.93	-56.90			
1.0000	N/A							
Replicates		165310.1	166440.5	165487.7	162841.2			

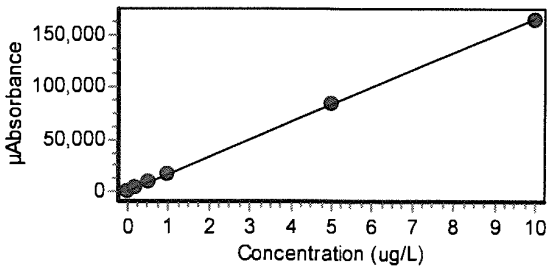
Calibration

Equation: Abs = 16574.619x + 216.810

R2: 0.99978

SEE: 1198.7490

Flags:



ICV1	ICV	4.884	81162	0.90				
1.0000	97.67							
Replicates		81185.8	81848.7	81460.2	80154.3			
ICB1	ICB	-0.026	-221	5.41				
1.0000	N/A							
Replicates		-191.5	-214.1	-244.3	-236.1			
LLICV1	CRDL	0.196	3471	1.19				
1.0000	98.16							
Replicates		3490.1	3502.6	3474.6	3415.1			

Sample Name	Aliq. Vol.	Diln. Vol	DF	Type	Spike Vol	Conc (ug/L)	% Recovery	µAbs	%RSD	Residual Flags	Wt. (g)	Vol (ml)
CCV1			1.0000	CCV		4.987	99.75	82880	0.96			
Replicates	83002.8	83611.9	83146.9	81759.9								
CCB1			1.0000	CCB		-0.026	N/A	-206	2.69			
Replicates	-192.6	-201.4	-216.4	-215.0								
KQ2214966-03			1.0000	UNK		-0.004	N/A	144	25.50			
Replicates	143.0	153.3	118.0	160.7								
KQ2214966-04			1.0000	UNK		4.731	N/A	78638	1.00			
Replicates	78959.2	79328.9	78742.9	77519.9								
K2210054-001			1.0000	UNK		-0.023	N/A	-160	3.67			
Replicates	-143.7	-161.0	-158.0	-177.4								
K2210054-002			1.0000	UNK		0.016	N/A	482	6.62			
Replicates	494.6	495.7	481.5	457.9								
K2210054-003			1.0000	UNK		0.001	N/A	241	22.92			
Replicates	240.5	239.5	249.5	236.3								
K2210056-001			1.0000	UNK		-0.003	N/A	159	28.41			
Replicates	154.4	155.1	182.6	144.4								
K2210061-001			1.0000	UNK		-0.002	N/A	191	25.13			
Replicates	187.2	183.8	196.3	196.7								
K2210061-002			1.0000	UNK		0.012	N/A	424	9.19			
Replicates	398.5	436.9	419.4	439.7								
K2210061-003			1.0000	UNK		0.005	N/A	295	9.00			
Replicates	303.0	288.6	300.0	290.3								
K2210061-004			1.0000	UNK		0.257	N/A	4474	0.40			
Replicates	4463.0	4478.3	4495.8	4457.7								
CCV2			1.0000	CCV		4.941	98.81	82107	1.00			
Replicates	82323.1	82838.2	82334.7	80930.7								
CCB2			1.0000	CCB		-0.023	N/A	-167	2.07			
Replicates	-167.0	-156.6	-175.3	-170.8								
K2210061-005			1.0000	UNK		0.018	N/A	523	2.72			
Replicates	520.6	512.2	529.0	530.0								

Sample Name	Aliq. Vol.	Diln. Vol	DF	Type	Spike Vol	Conc (ug/L)	% Recovery	µAbs	%RSD	Residual Flags	Wt. (g)	Vol (ml)
K2210061-006			1.0000	UNK	N/A	0.067		1324	1.06			
Replicates	1309.1	1320.7	1333.2	1333.9								
K2210061-007			1.0000	UNK	N/A	0.005		303	12.17			
Replicates	318.2	301.7	297.4	294.9								
K2210062-001			1.0000	UNK	N/A	-0.001		202	70.59			
Replicates	188.0	213.4	205.9	198.9								
K2210062-002			1.0000	UNK	N/A	0.000		215	504.64			
Replicates	216.9	205.9	213.5	224.7								
K2210062-003			1.0000	UNK	N/A	0.001		238	37.56			
Replicates	235.0	239.0	230.0	249.0								
K2210062-003A			1.0000	UNK	N/A	4.768		79239	0.83			
Replicates	79422.2	79881.7	79326.7	78325.4								
KQ2214966-01			1.0000	UNK	N/A	4.571		75975	0.92			
Replicates	76194.2	76632.9	76083.4	74991.4								
KQ2214966-02			1.0000	UNK	N/A	4.589		76281	0.92			
Replicates	76493.8	76937.0	76402.9	75290.0								
K2210062-004			1.0000	UNK	N/A	-0.021		-135	2.98			
Replicates	-125.7	-136.7	-129.5	-149.5								
CCV3			1.0000	CCV		4.923	98.46	81810	0.99			
Replicates	82037.1	82515.2	82045.1	80641.7								
CCB3			1.0000	CCB	N/A	-0.026		-215	5.43			
Replicates	-195.0	-195.7	-240.9	-229.5								
K2210064-001			1.0000	UNK	N/A	-0.004		150	6.82			
Replicates	153.7	145.2	154.7	148.2								
K2210064-002			1.0000	UNK	N/A	-0.004		156	16.79			
Replicates	158.2	145.2	153.0	169.4								
K2210064-003			1.0000	UNK	N/A	-0.001		199	9.22			
Replicates	196.7	200.2	199.0	200.2								
K2210064-004			1.0000	UNK	N/A	-0.002		186	17.38			
Replicates	185.6	193.1	180.8	182.6								

Sample Name	Aliq. Vol.	Diln. Vol	DF	Type	Spike Vol	Conc (ug/L)	% Recovery	µAbs	%RSD	Residual Flags	Wt. (g)	Vol (ml)
K2210064-005			1.0000	UNK		0.000	N/A	220	346.03			
Replicates		235.3		211.6		210.9		222.7				
CCV4			1.0000	CCV		4.908	98.15	81559	0.95			
Replicates		81712.0		82258.2		81811.6		80456.1				
CCB4			1.0000	CCB		-0.023	N/A	-172	4.64			
Replicates		-149.3		-173.3		-172.6		-193.5				

Preparation Information Benchsheet

Prep Run#: 405793
Team: Metals/JHINSON
Number of Copies to make: 5

Prep WorkFlow: HgDigAq
Prep Method: Method

Status: Prepped
Prep Date/Time: 9/2/22 13:45

#	Lab Code	Client ID	B#	Method /Test	pH	Matrix	Amt. Ext.	Final Vol	Sample Description
1	KQ2214966-03	MB		7470A/Hg T		Liquid	10.0000mL	10.00mL	
2	KQ2214966-04	LCS		7470A/Hg T		Liquid	10.0000mL	10.00mL	
3	K2210054-001	ICT2_082522	.01	7470A/Hg T		Water	10.0000mL	10.00mL	
4	K2210054-002	ICT4_082522	.01	7470A/Hg T		Water	10.0000mL	10.00mL	
5	K2210054-003	ICT7_082522	.01	7470A/Hg T		Water	10.0000mL	10.00mL	
6	K2210056-001	Air Compressor	.01	7470A/Hg T		Water	10.0000mL	10.00mL	
7	K2210061-001	MW-4	.01	7470A/Hg T		Water	10.0000mL	10.00mL	
8	K2210061-002	MW-11R	.01	7470A/Hg T		Water	10.0000mL	10.00mL	
9	K2210061-003	MW-17	.01	7470A/Hg T		Water	10.0000mL	10.00mL	
10	K2210061-004	MW-20	.01	7470A/Hg T		Water	5.0000mL	10.00mL	
11	K2210061-005	MW-22R	.01	7470A/Hg T		Water	10.0000mL	10.00mL	
12	K2210061-006	MW-10R	.01	7470A/Hg T		Water	10.0000mL	10.00mL	
13	K2210061-007	MW-5R	.01	7470A/Hg T		Water	10.0000mL	10.00mL	
14	K2210062-001	130_082422	.01	7470A/Hg T		Ground Water	10.0000mL	10.00mL	
15	K2210062-002	130_082422_a	.01	7470A/Hg T		Ground Water	10.0000mL	10.00mL	
16	K2210062-003	CO9_082422	.01	7470A/Hg T		Ground Water	10.0000mL	10.00mL	
17	KQ2214966-01	K2210062-003 MS	.01	7470A/Hg T		Liquid	10.0000mL	10.00mL	
18	KQ2214966-02	K2210062-003 DMS	.01	7470A/Hg T		Liquid	10.0000mL	10.00mL	
19	K2210062-004	125_082422	.01	7470A/Hg T		Ground Water	10.0000mL	10.00mL	
20	K2210064-001	18CPTMW01DW_080822	.01	7470A/Hg T		Water	10.0000mL	10.00mL	
21	K2210064-002	18CPTMW01SW_080822	.01	7470A/Hg T		Water	10.0000mL	10.00mL	
22	K2210064-003	17WW08_080822	.01	7470A/Hg T		Water	10.0000mL	10.00mL	
23	K2210064-004	17WW08_080822_a	.01	7470A/Hg T		Water	10.0000mL	10.00mL	
24	K2210064-005	18WW24_080822	.01	7470A/Hg T		Water	10.0000mL	10.00mL	

Spiking Solutions

Name: K-MET Hg Source Standard 1000 ug/L Inventory ID 224676 Logbook Ref: HG3-84-V Expires On: 09/25/2022

KQ2214966-01 0.05mL KQ2214966-02 0.05mL KQ2214966-04 0.05mL

Preparation Materials

K-MET 100ml Centrifuge Tube 2106023 (220673)
K-MET 16 mL Tube GL5221 (223546)
K-MET H2SO4 Hg 61139 (219381)
K-MET HNO3 Hg 22E1062003 (223986)

Preparation Information Benchsheet

Prep Run#: 405793
Team: Metals/JHINSON

Prep WorkFlow: HgDigAq
Prep Method:

Status: Prepped
Prep Date/Time: 9/2/22 13:45

Preparation Steps

Step: Digestion
Started: 9/2/22 13:45
Finished: 9/2/22 15:45
By: JHINSON
Comments

Preparation Equipment

K-BlockDigester-15	Digestion	IR Thermometer ID: IR03		K-BlockDigester-15	Digestion	Temperature	94.7 deg C
K-BlockDigester-15	Digestion	Temperature Check Location	22	K-BlockDigester-17	Digestion	IR Thermometer ID: IR03	
K-BlockDigester-17	Digestion	Temperature	94.8 deg C	K-BlockDigester-17	Digestion	Temperature Check Location	65
HG-39591307	Digestion			K-U72662	Digestion		
K-U52540	Digestion						

Comments: Cal Std: HG3-85-M.

Reviewed By: Date: 9/2/22

Preparation Information Benchsheet *DOP

RUSH 9/2

Prep Run#: 405793
Team: Metals
Number of Copies to make: 5

Prep WorkFlow: HgDigAq
Prep Method: Method

Status: Draft
Prep Date/Time: 9/2/22 08:20 AM

#	Lab Code	Client ID	B#	√	Test	Matrix	Amt Ext.	pH	Int Vol	Final Vol	Surr Added	Spike Added
1	KQ2214966-03	Method Blank			7470A/Hg T	Liquid						
2	KQ2214966-04	Lab Control Sample			7470A/Hg T	Liquid						
3	K2210054-001	ICT2_082522	.01		7470A/Hg T	Water						
4	K2210054-002	ICT4_082522	.01		7470A/Hg T	Water						
5	K2210054-003	ICT7_082522	.01		7470A/Hg T	Water						
6	K2210056-001	Air Compressor	.01		7470A/Hg T	Water						
7	K2210061-001	MW-4	.01		7470A/Hg T	Water						
8	K2210061-002	MW-11R	.01		7470A/Hg T	Water						
9	K2210061-003	MW-17	.01		7470A/Hg T	Water						
10	K2210061-004	MW-20	.01		7470A/Hg T	Water	5?					
11	K2210061-005	MW-22R	.01		7470A/Hg T	Water						
12	K2210061-006	MW-10R	.01		7470A/Hg T	Water						
13	K2210061-007	MW-5R	.01		7470A/Hg T	Water						
14	K2210062-001	130_082422	.01		7470A/Hg T	Ground Water						
15	K2210062-002	130_082422_a	.01		7470A/Hg T	Ground Water						
16	K2210062-003	CO9_082422	.01		7470A/Hg T	Ground Water						
17	KQ2214966-01	Matrix Spike	.01		7470A/Hg T	Liquid						
18	KQ2214966-02	Duplicate Matrix Spike	.01		7470A/Hg T	Liquid						
19	K2210062-004	125_082422	.01		7470A/Hg T	Ground Water						
20	K2210064-001	18CPTMW01DW_080822	.01		7470A/Hg T	Water						
21	K2210064-002	18CPTMW01SW_080822	.01		7470A/Hg T	Water						
22	K2210064-003	17WW08_080822	.01		7470A/Hg T	Water						
23	K2210064-004	17WW08_080822_a	.01		7470A/Hg T	Water						
24	K2210064-005	18WW24_080822	.01		7470A/Hg T	Water						

Comments: Cal Std: HG3-85-M BLK 15/94 7/22 1315-1515 BLK 17/94 8/65 1315-1515

Surrogate ID: _____ Spike ID: _____

Witnessed By: _____

Analyst: _____ Assisted By: _____

CVAA Mercury Water Data Review Form

K-CVAA-04

Element:	Hg		
Analysis Lot #:	090622A HG4		
Starlims #:	776472		
Cal. STD/CCV Source:	HG3-85-M		
Pipette IDs:	HG-41585305/HG-38883934		
16mL Tube Lot #:	P7554803		
KMnO4:	HG3-85-B	Expiration Date:	8/29/2023
K2S2O8:	HG3-84-L	Expiration Date:	8/4/2023
NH2OH-HCl/NaCl	HG3-84-T	Expiration Date:	8/25/2023
SnCl2/HCl:	HG3-85-F	Expiration Date:	7/1/2023

Service Request Numbers:

K2210054

	Yes	No	NA
1) Appropriate standardization completed	X		
2) ICV within 10% of true value	X		
3) CCVs in control (+/- 10%)	X		
4) CCBs and or ICBs below MRL	X		
5) CCV/CCB check run every 10 samples	X		
6) All reported samples within calibration range	X		
7) Calculations correct	X		

Comments:

Data reviewed against service request(s) to ensure no samples were omitted: _____ (Initials)

Primary Reviewed By: _____ Date: 9/6/22

Secondary Reviewed By: _____ Date: 9/6/22

Data Review Form

Instrument ID#: **K-CVAA-04**
DataFile Name: **R:\ICP\WIP\DATA\K-CVAA-04 (M-7600)\090622A HG4.csv**
RUNNO: **776472**

K2210054

No exceptions to report.

Primary Approver: 9/6/22
Secondary Approver: 9/6/22

CVAA Hg ANALYTICAL WORKSHEET

Method: 7470	Cal. Inter. Std* (100ppb): HG3-85-M 2nd Source Inter Std** (1ppm): HG3-84-V

Analysis For: Hg

DATA

Pos.	SAMPLE NUMBER	Measured (µg/L)	Dilution Factor	Recoveries (ICV, CCV, LCS, MS)		Comments:
1	Cal. Blk.	0.000	~	~		
2	Std 0.2*	0.200	~	(0.1-50mL)		
3	Std 0.5*	0.500	~	(0.25-50mL)		
4	Std 1.0*	1.000	~	(0.5-50mL)		
5	Std 5.0*	5.000	~	(2.5-50mL)		
6	Std 10.0*	10.000	~	(5.0-50mL)		
7	ICV1**	5.038	~	101%		
8	ICB1	-0.013	~			
9	LLICV1*	0.195	~	98%		
10	CCV1*	5.006	~	100%		
11	CCB1	-0.011	~			
12	KQ2214961-01	-0.005	~			
13	KQ2214961-02	4.667	~	93%		
14	K2210054-004	-0.012	~			
15	K2210054-005	0.016	~			
16	K2210054-006	0.015	~			
17	K2210054-007	-0.003	~			
18	K2210054-008	0.009	~			
19	K2210054-009	0.002	~			
20	K2210054-010	-0.001	~			
21	K2210054-011	0.000	~			
22	CCV2	5.031	~	101%		
23	CCB2	-0.011	~			
24	K2210054-012	0.000	~			
25	K2210054-013	0.005	~			
26	K2210054-014	-0.001	~			
27	K2210054-015	0.001	~			
28	K2210054-016	0.001	~			
29	K2210054-017	-0.003	~			
30	K2210054-018	-0.002	~			
31	K2210054-019	-0.004	~			
32	K2210054-020	0.000	~			

Comments:

R:\ICP\MISC\Document Control\CVAA Controlled - HgRunForm 10-17-17

CVAA Hg ANALYTICAL WORKSHEET

Analysis For: Hg			**DATA**			
Pos.	**SAMPLE NUMBER**	**Measured (µg/L)**	**Dilution Factor**	**Recoveries (ICV, CCV, LCS, MS)**		**Comments:**
33	K2210054-021	0.008	~			
34	CCV3	5.060	~	101%		
35	CCB3	-0.010	~			
36	K2210054-022	0.007	~			
37	KQ2214961-03	4.657	~	93%		
38	KQ2214961-04	4.629	~	93%		
39	K2210054-022A	4.330	~	87%		
40	K2210054-023	-0.006	~			
41	CCV4	5.063	~	101%		
42	CCB4	-0.009	~			
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Comments:						

Soil/Tissue Spike Level:

Method	Spike Level	MRL	LCS Limit	MS Limit	RPD	Post-Spike @ 5ppb
7470A Water	5.0 µg/L	0.2 µg/L	80-120%	75-125%	20%	+/- 20%
245.1 Water	5.0 µg/L	0.2 µg/L	85-115%	70-130%	20%	+/- 20%
7470A TCLP	5.0 µg/L	1.0 µg/L	80-120%	75-125%	20%	+/- 20%
7471A Soil LCSS	7.1mg/kg	0.02 mg/kg	51-149%	80-120%	20%	+/- 20%
7471A Tissue Dorm	0.41 mg/kg	0.02 mg/kg	68-136%	80-120%	20%	+/- 20%

[CVAA Controlled - HgRunForm 10-17-17] HG2.XLS

Report Generated By Teledyne Leeman QuickTrace

Analyst: alkls.nouser

Worksheet file: C:\Users\Public\Documents\Teledyne CETAC\QuickTrace\Worksheets\090622A HG4.wszf

Creation Date: 9/6/2022 11:14:31 AM

Comment:

Results

Sample Name	Aliq. Vol.	Diln. Vol	DF	Type	Spike Vol	Conc (ug/L)	% Recovery	µAbs	%RSD	Residual	Flags	Wt. (g)	Vol (ml)
Calibration Blank				STD		0.000		140	6.91				
		1.0000					N/A						
Replicates	153.6	136.7	130.7	141.0									
Standard #1 (0.2 ug/L)				STD		0.200		1870	1.16	-1.60%			
		1.0000					N/A						
Replicates	1845.8	1860.8	1877.3	1896.1									
Standard #2 (1 ug/L)				STD		0.500		4503	1.59	-0.72%			
		1.0000					N/A						
Replicates	4415.6	4476.8	4545.3	4575.4									
Standard #3 (2.5 ug/L)				STD		1.000		6031	1.31	-32.98%			
		1.0000					N/A						
Replicates	5925.3	6017.3	6076.4	6104.6									
Standard #4 (5 ug/L)				STD		5.000		44065	1.49	-0.04%			
		1.0000					N/A						
Replicates	43208.0	43924.0	44411.7	44717.4									
Standard #5 (10 ug/L)				STD		10.000		88326	1.48	0.34%			
		1.0000					N/A						
Replicates	86592.1	88087.2	89060.2	89563.2									
ICV1				ICV		5.038		44420	1.54				
		1.0000					100.77						
Replicates	43543.0	44256.6	44773.0	45106.1									
ICB1				ICB		-0.013		29	11.71				
		1.0000					N/A						
Replicates	36.8	36.8	9.8	33.5									
LLICV1				CRDL		0.195		1851	1.32				
		1.0000					97.31						
Replicates	1818.8	1859.8	1871.1	1853.9									

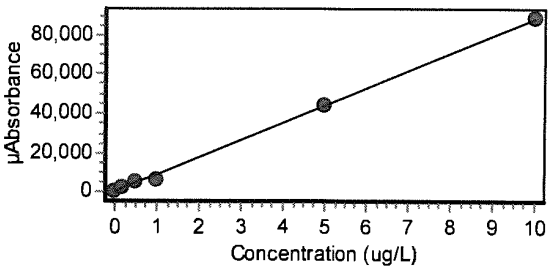
Calibration

Equation: Abs = 8788.450x + 140.476

R2: 0.99849 RSE: 19.07%

SEE: 1682.3610

Flags: C



Sample Name	Type	Conc (ug/L)	µAbs	%RSD	Residual Flags	Wt. (g)	Vol (ml)
Aliq. Vol.	Diln. Vol	DF	Spike Vol	% Recovery			
CCV1	CCV	5.006	44137	1.40			
	1.0000			100.12			
Replicates	43322.2	44050.1	44419.6	44757.1			
CCB1	CCB	-0.011	42	17.18			
	1.0000			N/A			
Replicates	63.4	46.5	25.5	31.4			
KQ2214961-01	UNK	-0.005	93	43.66			
	1.0000			N/A			
Replicates	105.9	115.6	73.9	77.8			
KQ2214961-02	UNK	4.667	41158	0.90			
	1.0000			N/A			
Replicates	40718.8	41043.9	41273.9	41596.7			
K2210054-004	UNK	-0.012	38	13.99			
	1.0000			N/A			
Replicates	22.8	56.2	40.9	31.2			
K2210054-005	UNK	0.016	278	3.58			
	1.0000			N/A			
Replicates	272.1	283.1	280.8	276.0			
K2210054-006	UNK	0.015	269	9.38			
	1.0000			N/A			
Replicates	252.3	270.9	280.7	273.2			
K2210054-007	UNK	-0.003	113	43.34			
	1.0000			N/A			
Replicates	97.0	112.0	120.5	123.2			
K2210054-008	UNK	0.009	220	23.72			
	1.0000			N/A			
Replicates	244.8	224.0	211.3	200.8			
K2210054-009	UNK	0.002	161	20.27			
	1.0000			N/A			
Replicates	157.6	167.0	160.2	159.2			
K2210054-010	UNK	-0.001	134	136.38			
	1.0000			N/A			
Replicates	143.1	127.9	124.9	139.9			
K2210054-011	UNK	0.000	139	155.79			
	1.0000			N/A			
Replicates	124.6	147.8	123.1	160.1			
CCV2	CCV	5.031	44352	1.48			
	1.0000			100.61			
Replicates	43488.4	44219.3	44724.0	44975.7			
CCB2	CCB	-0.011	42	11.97			
	1.0000			N/A			
Replicates	30.0	49.0	33.9	54.5			

Sample Name	Type	Conc (ug/L)	µAbs	%RSD	Residual Flags	Wt. (g)	Vol (ml)
Aliq. Vol.	Diln. Vol	DF	Spike Vol	% Recovery			
K2210054-012	UNK	0.000	144	335.69			
	1.0000		N/A				
Replicates	135.0	136.2	143.2	163.2			
K2210054-013	UNK	0.005	181	31.48			
	1.0000		N/A				
Replicates	169.0	185.8	197.3	173.1			
K2210054-014	UNK	-0.001	128	173.36			
	1.0000		N/A				
Replicates	135.5	152.9	121.8	102.4			
K2210054-015	UNK	0.001	151	72.70			
	1.0000		N/A				
Replicates	158.9	140.9	151.2	151.7			
K2210054-016	UNK	0.001	152	107.57			
	1.0000		N/A				
Replicates	160.1	133.8	159.2	154.5			
K2210054-017	UNK	-0.003	112	35.08			
	1.0000		N/A				
Replicates	106.9	103.4	126.1	111.8			
K2210054-018	UNK	-0.002	119	13.53			
	1.0000		N/A				
Replicates	120.0	118.9	120.9	114.3			
K2210054-019	UNK	-0.004	106	23.30			
	1.0000		N/A				
Replicates	105.1	112.9	110.3	94.6			
K2210054-020	UNK	0.000	138	526.34			
	1.0000		N/A				
Replicates	123.4	156.1	138.6	133.4			
K2210054-021	UNK	0.008	212	6.09			
	1.0000		N/A				
Replicates	206.7	213.0	217.0	210.3			
CCV3	CCV	5.060	44611	1.39			
	1.0000		101.20				
Replicates	43844.8	44413.4	44922.2	45264.0			
CCB3	CCB	-0.010	56	13.24			
	1.0000		N/A				
Replicates	69.9	60.0	48.5	45.5			
K2210054-022	UNK	0.007	204	51.28			
	1.0000		N/A				
Replicates	182.0	171.2	222.2	239.5			
KQ2214961-03	UNK	4.657	41069	1.17			
	1.0000		N/A				
Replicates	40476.5	40931.2	41277.5	41590.0			

Sample Name	Aliq. Vol.	Diln. Vol	DF	Type	Spike Vol	Conc (ug/L)	% Recovery	µAbs	%RSD	Residual	Flags	Wt. (g)	Vol (ml)
KQ2214961-04				UNK		4.629		40820	1.16				
			1.0000				N/A						
Replicates	40207.5	40731.3	41031.1	41311.0									
K2210054-022A				UNK		4.330		38190	1.19				
			1.0000				N/A						
Replicates	37577.0	38126.0	38470.4	38588.0									
K2210054-023				UNK		-0.006		86	41.09				
			1.0000				N/A						
Replicates	103.5	85.5	54.1	100.0									
CCV4				CCV		5.063		44637	1.35				
			1.0000				101.26						
Replicates	43860.8	44516.8	44917.5	45254.5									
CCB4				CCB		-0.009		61	23.78				
			1.0000				N/A						
Replicates	46.4	88.5	51.9	55.9									

Preparation Information Benchsheet

Prep Run#: 405788
Team: Metals/JHINSON
Number of Copies to make: 1

Prep WorkFlow: HgDigAq
Prep Method: Method

Status: Prepped
Prep Date/Time: 9/2/22 13:45

#	Lab Code	Client ID	B#	Method /Test	pH	Matrix	Amt. Ext.	Final Vol	Sample Description
1	KQ2214961-01	MB		7470A/Hg T		Liquid	10.0000mL	10.00mL	
2	KQ2214961-02	LCS		7470A/Hg T		Liquid	10.0000mL	10.00mL	
3	K2210054-004	ICT8_082522	.01	7470A/Hg T		Water	10.0000mL	10.00mL	
4	K2210054-005	ICT11_082522	.01	7470A/Hg T		Water	10.0000mL	10.00mL	
5	K2210054-006	ICT11_082522_a	.01	7470A/Hg T		Water	10.0000mL	10.00mL	
6	K2210054-007	ICT12A_082522	.01	7470A/Hg T		Water	10.0000mL	10.00mL	
7	K2210054-008	ICT12B_082522	.01	7470A/Hg T		Water	10.0000mL	10.00mL	
8	K2210054-009	ICT12C_082522	.01	7470A/Hg T		Water	10.0000mL	10.00mL	
9	K2210054-010	ICT12D_082522	.01	7470A/Hg T		Water	10.0000mL	10.00mL	
10	K2210054-011	ICT12D_082522_a	.01	7470A/Hg T		Water	10.0000mL	10.00mL	
11	K2210054-012	ICT12E_082522	.01	7470A/Hg T		Water	10.0000mL	10.00mL	
12	K2210054-013	ICT13A_082522	.01	7470A/Hg T		Water	10.0000mL	10.00mL	
13	K2210054-014	ICT13B_082522	.01	7470A/Hg T		Water	10.0000mL	10.00mL	
14	K2210054-015	ICT13C_082522	.01	7470A/Hg T		Water	10.0000mL	10.00mL	
15	K2210054-016	ICT13D_082522	.01	7470A/Hg T		Water	10.0000mL	10.00mL	
16	K2210054-017	ICT13E_082522	.01	7470A/Hg T		Water	10.0000mL	10.00mL	
17	K2210054-018	ICT13F_082522	.01	7470A/Hg T		Water	10.0000mL	10.00mL	
18	K2210054-019	ICT14A_082522	.01	7470A/Hg T		Water	10.0000mL	10.00mL	
19	K2210054-020	ICT14B_082522	.01	7470A/Hg T		Water	10.0000mL	10.00mL	
20	K2210054-021	ICT14C_082522	.01	7470A/Hg T		Water	10.0000mL	10.00mL	
21	K2210054-022	ICT14D_082522	.01	7470A/Hg T		Water	10.0000mL	10.00mL	
22	KQ2214961-03	K2210054-022 MS	.01	7470A/Hg T		Liquid	10.0000mL	10.00mL	
23	KQ2214961-04	K2210054-022 DMS	.01	7470A/Hg T		Liquid	10.0000mL	10.00mL	
24	K2210054-023	ICT14E_082522	.01	7470A/Hg T		Water	10.0000mL	10.00mL	

Spiking Solutions

Name: K-MET Hg Source Standard 1000 ug/L Inventory ID 224676 Logbook Ref: HG3-84-V Expires On: 09/25/2022

KQ2214961-02 0.05mL KQ2214961-03 0.05mL KQ2214961-04 0.05mL

Preparation Materials

K-MET 100ml Centrifuge Tube 2106023 (220673)
K-MET 16 mL Tube GL5221 (223546)
K-MET H2SO4 Hg 61139 (219381)
K-MET HNO3 Hg 22E1062003 (223986)

Preparation Information Benchsheet

Prep Run#: 405788
Team: Metals/JHINSON

Prep WorkFlow: HgDigAq
Prep Method:

Status: Prepped
Prep Date/Time: 9/2/22 13:45

Preparation Steps

Step: Digestion
Started: 9/2/22 13:45
Finished: 9/2/22 15:45
By: JHINSON
Comments

Preparation Equipment

K-BlockDigester-15	Digestion	IR Thermometer ID: IR03		K-BlockDigester-15	Digestion	Temperature	94.7 deg C
K-BlockDigester-15	Digestion	Temperature Check Location	22	K-BlockDigester-17	Digestion	IR Thermometer ID: IR03	
K-BlockDigester-17	Digestion	Temperature	94.8 deg C	K-BlockDigester-17	Digestion	Temperature Check Location	65
K-U72662	Digestion			K-U52540	Digestion		
HG-39591307	Digestion						

Comments: Cal Std: HG3-85-M.

Reviewed By: Date: 9/6/22

Preparation Information Benchsheet *POD 9/12

Prep Run#: 405788 +PS
Team: Metals
Number of Copies to make: 1

Prep WorkFlow: HgDigAq
Prep Method: Method

Status: Draft
Prep Date/Time: 9/2/22 08:00 AM

#	Lab Code	Client ID	B#	√	Test	Matrix	Amt Ext.	pH	Int Vol	Final Vol	Surr Added	Spike Added
1	KQ2214961-01	Method Blank			7470A/Hg T	Liquid						
2	KQ2214961-02	Lab Control Sample			7470A/Hg T	Liquid	95					
3	K2210054-004	ICT8_082522	.01		7470A/Hg T	Water						
4	K2210054-005	ICT11_082522	.01		7470A/Hg T	Water						
5	K2210054-006	ICT11_082522_a	.01		7470A/Hg T	Water						
6	K2210054-007	ICT12A_082522	.01		7470A/Hg T	Water						
7	K2210054-008	ICT12B_082522	.01		7470A/Hg T	Water						
8	K2210054-009	ICT12C_082522	.01		7470A/Hg T	Water						
9	K2210054-010	ICT12D_082522	.01		7470A/Hg T	Water						
10	K2210054-011	ICT12D_082522_a	.01		7470A/Hg T	Water						
11	K2210054-012	ICT12E_082522	.01		7470A/Hg T	Water						
12	K2210054-013	ICT13A_082522	.01		7470A/Hg T	Water						
13	K2210054-014	ICT13B_082522	.01		7470A/Hg T	Water						
14	K2210054-015	ICT13C_082522	.01		7470A/Hg T	Water						
15	K2210054-016	ICT13D_082522	.01		7470A/Hg T	Water						
16	K2210054-017	ICT13E_082522	.01		7470A/Hg T	Water						
17	K2210054-018	ICT13F_082522	.01		7470A/Hg T	Water						
18	K2210054-019	ICT14A_082522	.01		7470A/Hg T	Water						
19	K2210054-020	ICT14B_082522	.01		7470A/Hg T	Water						
20	K2210054-021	ICT14C_082522	.01		7470A/Hg T	Water						
21	K2210054-022	ICT14D_082522	.01		7470A/Hg T	Water						
22	KQ2214961-03	Matrix Spike	.01		7470A/Hg T	Liquid	93					
23	KQ2214961-04	Duplicate Matrix Spike	.01		7470A/Hg T	Liquid	93	57				
24	K2210054-023	ICT14E_082522	.01		7470A/Hg T	Water						

Comments: Cal Std: HG3-35-M Blk 13 | 94.7 | 8 2 1315-1515 Blk 17 | 94.8 | 65 1345-1545

Surrogate ID: _____ Spike ID: _____

Witnessed By: _____

Analyst: _____ Assisted By: 776472

HS22081514-E2200851-Perch Level IV

ALS WO# HS22081514

September 12, 2022 Service Request No:E2200851

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

Laboratory Results for: HS22081514

Dear Dane,

Enclosed are the results of the sample(s) submitted to our laboratory August 29, 2022
For your reference, these analyses have been assigned our service request number **E2200851.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current TNI standards, where applicable, and except as noted in the laboratory case narrative provided. All results are intended to be considered in their entirety and ALS Environmental is not responsible for use of less than the complete final report. Results apply only to the items submitted to the laboratory, as received for analysis. In accordance with the current TNI Standard, a statement on the estimated uncertainty of measurement of any quantitative analysis will be supplied upon request.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Corey Grandits
Project Manager

ADDRESS 10450 Stancliff Rd., Suite 210, Houston, TX 77099
PHONE +1 281 530 5656 | FAX +1 281 530 5887
ALS Group USA, Corp.
dba ALS Environmental

Certificate of Analysis

ALS Environmental - Houston HRMS
10450 Stancliff Rd, Suite 210, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

ALS Environmental

Client:	ALS Environmental – US	**Service Request No.:**	E2200851
Project:	HS22081514	**Date Received:**	08/27/22
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed in adherence to the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Twenty-three samples were received for analysis at ALS Environmental in Houston on 08/27/22.

The samples were received in good condition and are consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Data Validation Notes and Discussion

Precision and Accuracy:

EQ2200385-02/03, EQ2200387-02/03: Laboratory Control Spike/Duplicate Laboratory Control Spike (LCS/DLCS) samples were analyzed and reported in addition to a MS/MSD for this extraction batch. The MS/MSD was performed on sample ICT14D_082522; the report is included.

The batch precision (MS/DMS) measurements were determined on another order in the extraction batch. The MS/DMS results are not included in this report.

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 group USA Corp dba 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.

Client: ALS Environmental - US **Service Request:**E2200851
Project: HS22081514

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
E2200851-001	ICT2_082522	8/25/2022	0705
E2200851-002	ICT4_082522	8/25/2022	0715
E2200851-003	ICT7_082522	8/25/2022	0725
E2200851-004	ICT8_082522	8/25/2022	0735
E2200851-005	ICT11_082522	8/25/2022	0745
E2200851-006	ICT11_082522_a	8/25/2022	0745
E2200851-007	ICT12A_082522	8/25/2022	0800
E2200851-008	ICT12B_082522	8/25/2022	0810
E2200851-009	ICT12C_082522	8/25/2022	0820
E2200851-010	ICT12D_082522	8/25/2022	0830
E2200851-011	ICT12D_082522_a	8/25/2022	0830
E2200851-012	ICT12E_082522	8/25/2022	0850
E2200851-013	ICT13A_082522	8/25/2022	0900
E2200851-014	ICT13B_082522	8/25/2022	0910
E2200851-015	ICT13C_082522	8/25/2022	0920
E2200851-016	ICT13D_082522	8/25/2022	0930
E2200851-017	ICT13E_082522	8/25/2022	0940
E2200851-018	ICT13F_082522	8/25/2022	0950
E2200851-019	ICT14A_082522	8/25/2022	0955
E2200851-020	ICT14B_082522	8/25/2022	1005
E2200851-021	ICT14C_082522	8/25/2022	1015
E2200851-022	ICT14D_082522	8/25/2022	1030
E2200851-023	ICT14E_082522	8/25/2022	1050

Service Request Summary

Folder #: **E2200851**
Client Name: ALS Environmental - US
Project Name: HS22081514
Project Number:
Report To: Dane Wacasey
ALS Group USA, Corp. 10450 Stancliff Road Houston, TX 77099-4338 USA
281-575-2190

Phone Number: 281-530-5887
Cell Number: dane.wacasey@alsglobal.com
Fax Number:
E-mail:

Project Chemist: Corey Grandits
Originating Lab: HOUSTON
Logged By: JGUIN
Date Received: 08/27/22 - 08/29/22
Internal Due Date: 9/12/2022
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number: HS22081514
EDD: No EDD Specified

25 120 mL-Plastic Bottle Natural WM Unpreserved
Location: EHRMS-AirArch 1
Pressure Gas:
Rush

Lab Samp No.	Client Samp No	Matrix	Collected	HOUSTON ClO4 DOD/6850
E2200851-001	ICT2_082522	Water	08/25/22 0705	**IV**
E2200851-002	ICT4_082522	Water	08/25/22 0715	**IV**
E2200851-003	ICT7_082522	Water	08/25/22 0725	**IV**
E2200851-004	ICT8_082522	Water	08/25/22 0735	**IV**
E2200851-005	ICT11_082522	Water	08/25/22 0745	**IV**
E2200851-006	ICT11_082522_a	Water	08/25/22 0745	**IV**
E2200851-007	ICT12A_082522	Water	08/25/22 0800	**IV**
E2200851-008	ICT12B_082522	Water	08/25/22 0810	**IV**
E2200851-009	ICT12C_082522	Water	08/25/22 0820	**IV**
E2200851-010	ICT12D_082522	Water	08/25/22 0830	**IV**
E2200851-011	ICT12D_082522_a	Water	08/25/22 0830	**IV**
E2200851-012	ICT12E_082522	Water	08/25/22 0850	**IV**
E2200851-013	ICT13A_082522	Water	08/25/22 0900	**IV**
E2200851-014	ICT13B_082522	Water	08/25/22 0910	**IV**
E2200851-015	ICT13C_082522	Water	08/25/22 0920	**IV**
E2200851-016	ICT13D_082522	Water	08/25/22 0930	**IV**

Service Request Summary

Folder #: **E2200851**
Client Name: ALS Environmental - US
Project Name: HS22081514
Project Number:

Report To: Dane Wacasey
ALS Group USA, Corp. 10450 Stancliff Road Houston, TX 77099-4338 USA
281-575-2190

Phone Number: 281-530-5887
Cell Number: dane.wacasey@alsglobal.com
Fax Number:
E-mail:

Project Chemist: Corey Grandits
Originating Lab: HOUSTON
Logged By: JGUIN
Date Received: 08/27/22 - 08/29/22
Internal Due Date: 9/12/2022
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number: HS22081514
EDD: No EDD Specified

25 120 mL-Plastic Bottle Natural WM Unpreserved
Location: EHRMS-AirArch 1
Pressure Gas:
Rush

Lab Samp No.	Client Samp No	Matrix	Collected	HOUSTON ClO4 DOD/6850
E2200851-017	ICT13E_082522	Water	08/25/22 0940	**IV**
E2200851-018	ICT13F_082522	Water	08/25/22 0950	**IV**
E2200851-019	ICT14A_082522	Water	08/25/22 0955	**IV**
E2200851-020	ICT14B_082522	Water	08/25/22 1005	**IV**
E2200851-021	ICT14C_082522	Water	08/25/22 1015	**IV**
E2200851-022	ICT14D_082522	Water	08/25/22 1030	**IV**
E2200851-023	ICT14E_082522	Water	08/25/22 1050	**IV**

Service Request Summary

Folder #: **E2200851**
Client Name: ALS Environmental - US
Project Name: HS22081514
Project Number:

Report To: Dane Wacasey
ALS Group USA, Corp. 10450 Stancliff Road Houston, TX 77099-4338 USA
281-575-2190

Phone Number: 281-530-5887
Cell Number: dane.wacasey@alsglobal.com
Fax Number:
E-mail:

Project Chemist: Corey Grandits
Originating Lab: HOUSTON
Logged By: JGUIN
Date Received: 08/27/22 - 08/29/22
Internal Due Date: 9/12/2022
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: Y
Report to MDL?: Y
P.O. Number: HS22081514
EDD: No EDD Specified

25 120 mL-Plastic Bottle Natural WM Unpreserved
Location: EHRMS-AirArch 1
Pressure Gas:
Rush

Test Comments:

Group	Test/Method	Samples	Comments
Semivoa GCMS	ClO4 DOD/6850	1	MS/MSD

Data Qualifiers

Lab Standard

+	Possible Tedlar bag artifact.
A	TIC is a suspected aldol-condensation product
B	Analyte found in the associated method blank as well as in the sample.
BC	Reported results are not blank corrected.
BH	The back section of the tube yielded higher results than the front.
BT	Results indicated possible breakthrough; back section >=10% front section.
C	Result identification confirmed.
D	Compound identified in an analysis at a secondary dilution factor
D	Spike was diluted out
DE	Reported results are corrected for desorption efficiency.
E	Estimated value. Concentration above calibration range
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
H1	Sample analysis performed past holding time. See case narrative.
H2	Initial analysis within holding time. Reanalysis for the required dilution was past holding time.
H3	Sample was received and analyzed past holding time.
H4	Sample was extracted past required extraction holding time, but analyzed within analysis holding time. See case narrative.
I	(Auto) The reference ion ratio was outside acceptance criteria, which may indicate a potential bias to this result.
I	Internal standard not within the specified limits. See case narrative.
I	The reference ion ratio was outside acceptance criteria, which may indicate a potential bias to this result.
J	Estimated Value. Concentration found below MRL.
K	A deflection in the QC ion may indicate interference with the quantitation of this ion. The concentration of this analyte should be considered as an estimate.
K	Analyte was detected above the method reporting limit prior to normalization.
K	The reference ion ratio was outside acceptance criteria, which may indicate a potential bias to this result.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
L1	Laboratory control sample recovery outside the specified limits; results may be biased high.
L2	Laboratory control sample recovery outside the specified limits; results may be biased low.
L3	Laboratory control sample recovery outside the specified limits.
M	Matrix interference; results may be biased high.
M	The duplicate injection precision not met.

Data Qualifiers

Lab Standard

M1	Matrix interference due to coelution with a non-target compound; results may be biased high.
N	Presumptive evidence of a compound for TICs that have been identified based on a mass spectral library search.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
P	Indicates chlorodiphenyl ether interference present at the retention time of the target compound.
P	Pesticide/Aroclor target analyte > 40% difference for detected concentrations between GC columns
Q	Indicates as estimated value because the P and P + 2 theoretical abundance ratio does not meet method criteria.
R	Duplicate Precision not met.
R1	Duplicate precision not within the specified limits; however, the results are below the MRL and considered estimated.
S	Surrogate recovery not within specified limits.
S	The reported value was determined by the Method of Standard Additions (MSA).
T	Analyte is a tentatively identified compound, result is estimated.
U	Compound was analyzed for, but was not detected (ND).
V1	The continuing calibration verification standard was outside (biased high) the specified limits for this compound.
V2	The continuing calibration verification standard was outside (biased low) the specified limits for this compound.
W	Result quantified, but the corresponding peak was detected outside the generated retention time window.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
X	See case narrative.
Y	Recovery outside limits
Y	The chromatogram resembles a petroleum product but does not match the calibration standard.
Z	The chromatogram does not resemble a petroleum product.
i	The MRL/MDL has been elevated due to a matrix interference.

ALS Laboratory Group

Acronyms

Cal	Calibration
Conc	CONCentration
Dioxin(s)	Polychlorinated dibenzo-p-dioxin(s)
EDL	Estimated Detection Limit
EMPC	Estimated Maximum Possible Concentration
Flags	Data qualifiers
Furan(s)	Polychlorinated dibenzofuran(s)
g	Grams
ICAL	Initial CALibration
ID	IDentifier
Ions	Masses monitored for the analyte during data acquisition
L	Liter (s)
LCS	Laboratory Control Sample
DLCS	Duplicate Laboratory Control Sample
MB	Method Blank
MCL	Method Calibration Limit
MDL	Method Detection Limit
mL	Milliliters
MS	Matrix Spiked sample
DMS	Duplicate Matrix Spiked sample
NO	Number of peaks meeting all identification criteria
PCDD(s)	Polychlorinated dibenzo-p-dioxin(s)
PCDF(s)	Polychlorinated dibenzofuran(s)
ppb	Parts per billion
ppm	Parts per million
ppq	Parts per quadrillion
ppt	Parts per trillion
QA	Quality Assurance
QC	Quality Control
Ratio	Ratio of areas from monitored ions for an analyte
% Rec.	Percent recovery
RPD	Relative Percent Difference
RRF	Relative Response Factor
RT	Retention Time
SDG	Sample Delivery Group
S/N	Signal-to-noise ratio
TEF	Toxicity Equivalence Factor
TEQ	Toxicity Equivalence Quotient

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ALS Environmental

State Certifications, Accreditations, and Licenses

Agency	Number	Expire Date
Arizona Department of Health Services	AZ0793	5/27/2023
Arkansas Department of Environmental Quality	22-041-0	3/27/2023
California Department of Health Services	2919-2023	4/30/2023
Department of Defense	L22-90	3/31/2024
Florida Department of Health	E87611-36	6/30/2023
Florida Department of Health	E87611-36	6/30/2023
Florida Department of Health	E87611-36	6/30/2023
Florida Department of Health	E87611-36	6/30/2023
Hawaii Department of Health	2022	4/30/2023
Illinois Environmental Protection Agency	2000322022-9	5/9/2023
Kansas Department of Health and Environment	E-10352 2022-2023	7/31/2023
Louisiana Department of Environmental Quality	03087-2022	6/30/2023
Louisiana Department of Health and Hospitals	LA028	12/31/2022
Maine Department of Health and Human Services	2022017	6/5/2024
Maryland Department of the Environment	343	6/30/2023
Michigan Depratment of Environmental Quality	9971-2022	4/30/2023
Minnesota Department of Health	2228443	12/31/2022
Nebraska Department of Health and Human Services	NE-OS-25-13	4/30/2023
Nevada Department of Conservation and Natural Resources	TX026932023-1	7/31/2023
New Hampshire Environmental Laboratory Accreditation Program	209422	4/24/2023
New Jersey Department of Environmental Protection	TX008-2023	6/30/2023
New York Department of Health	11707	3/31/2023
Oklahoma Department of Environmental Quality	2022-141	8/31/2023
Oregon Environmental Laboratory Accreditation Program	TX200002	5/15/2023
Pennsylvania Department of Environmental Protection	68-03441-016	6/30/2023
Perry Johnson Laboratory Accreditation	L22-91	3/31/2024
Tennessee Department of Environment and Concervation	04016-2022	4/30/2023
Texas Commision on Environmental Quality	T104704231-22-29	4/30/2023
United States Department of Agriculture	P330-19-00299	10/10/2022
Utah Department of Health Environmental Laboratory Certification	TX026932022-13	7/31/2023
Washington Department of Health	C819-2022	11/14/2022

ALS

Chain of Custody

ALS Environmental - Houston HRMS
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Subcontract Chain of Custody

SAMPLING STATE: **Texas** **COC ID:** **19642**

SUBCONTRACT TO:

ALS Environmental
10450 Stancliff RoadSuite 210
Houston, TX 77084

Phone: +1 281 530 5656

CUSTOMER INFORMATION:

Company:	ALS Houston
Contact:	Dane J. Wacasey
Address:	10450 Stancliff Rd, Ste 210
Phone:	+1 281 530 5656
Email:	Dane.Wacasey@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:	HS22081514
TSR:	Sonia West

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
1.	**HS22081514-01**	**ICT2_082522**	**Groundwater**	**25 Aug 2022 07:05**
	Provide Level II and Level IV reports in separate pdf			12 Sep 2022
2.	**HS22081514-02**	**ICT4_082522**	**Groundwater**	**25 Aug 2022 07:15**
	Provide Level II and Level IV reports in separate pdf			12 Sep 2022
3.	**HS22081514-03**	**ICT7_082522**	**Groundwater**	**25 Aug 2022 07:25**
	Provide Level II and Level IV reports in separate pdf			12 Sep 2022
4.	**HS22081514-04**	**ICT8_082522**	**Groundwater**	**25 Aug 2022 07:35**
	Provide Level II and Level IV reports in separate pdf			12 Sep 2022
5.	**HS22081514-05**	**ICT11_082522**	**Groundwater**	**25 Aug 2022 07:45**
	Provide Level II and Level IV reports in separate pdf			12 Sep 2022
6.	**HS22081514-06**	**ICT11_082522_a**	**Groundwater**	**25 Aug 2022 07:45**
	Provide Level II and Level IV reports in separate pdf			12 Sep 2022
7.	**HS22081514-07**	**ICT12A_082522**	**Groundwater**	**25 Aug 2022 08:00**
	Provide Level II and Level IV reports in separate pdf			12 Sep 2022
8.	**HS22081514-08**	**ICT12B_082522**	**Groundwater**	**25 Aug 2022 08:10**
	Provide Level II and Level IV reports in separate pdf			12 Sep 2022
9.	**HS22081514-09**	**ICT12C_082522**	**Groundwater**	**25 Aug 2022 08:20**

Subcontract Chain of Custody

SAMPLING STATE: Texas **COC ID:** 19642

	LAB SAMPLE ID	CLIENT SAMPLE ID	MATRIX	COLLECT DATE
	ANALYSIS REQUESTED			DUE DATE
	Provide Level II and Level IV reports in separate pdf			12 Sep 2022
10.	HS22081514-10	ICT12D_082522	Groundwater	25 Aug 2022 08:30
	Provide Level II and Level IV reports in separate pdf			12 Sep 2022
11.	HS22081514-11	ICT12D_082522_a	Groundwater	25 Aug 2022 08:30
	Provide Level II and Level IV reports in separate pdf			12 Sep 2022
12.	HS22081514-12	ICT12E_082522	Groundwater	25 Aug 2022 08:50
	Provide Level II and Level IV reports in separate pdf			12 Sep 2022
13.	HS22081514-13	ICT13A_082522	Groundwater	25 Aug 2022 09:00
	Provide Level II and Level IV reports in separate pdf			12 Sep 2022
14.	HS22081514-14	ICT13B_082522	Groundwater	25 Aug 2022 09:10
	Provide Level II and Level IV reports in separate pdf			12 Sep 2022
15.	HS22081514-15	ICT13C_082522	Groundwater	25 Aug 2022 09:20
	Provide Level II and Level IV reports in separate pdf			12 Sep 2022
16.	HS22081514-16	ICT13D_082522	Groundwater	25 Aug 2022 09:30
	Provide Level II and Level IV reports in separate pdf			12 Sep 2022
17.	HS22081514-17	ICT13E_082522	Groundwater	25 Aug 2022 09:40
	Provide Level II and Level IV reports in separate pdf			12 Sep 2022
18.	HS22081514-18	ICT13F_082522	Groundwater	25 Aug 2022 09:50
	Provide Level II and Level IV reports in separate pdf			12 Sep 2022
19.	HS22081514-19	ICT14A_082522	Groundwater	25 Aug 2022 09:55
	Provide Level II and Level IV reports in separate pdf			12 Sep 2022
20.	HS22081514-20	ICT14B_082522	Groundwater	25 Aug 2022 10:05
	Provide Level II and Level IV reports in separate pdf			12 Sep 2022
21.	HS22081514-21	ICT14C_082522	Groundwater	25 Aug 2022 10:15
	Provide Level II and Level IV reports in separate pdf			12 Sep 2022
22.	HS22081514-22	ICT14D_082522	Groundwater	25 Aug 2022 10:30
	Provide Level II and Level IV reports in separate pdf			12 Sep 2022
23.	HS22081514-23	ICT14E_082522	Groundwater	25 Aug 2022 10:50
	Provide Level II and Level IV reports in separate pdf			12 Sep 2022

Subcontract Chain of Custody

SAMPLING STATE: Texas **COC ID:** 19642

Comments: Please analyze for the analysis listed above.
Send report to the emails shown above.
HS22081514-MS/MSD

QC Level: DOD IV (DoD Data Package)

Relinquished By: _____ Date/Time: _____

Received By: _____ Date/Time: _____

Cooler ID(s): _____ Temperature(s): _____

Cooler Receipt Form

ALS Environmental

Project Chemist _____

Client/Project ALS Houston Thermometer ID IR31

Date/Time Received: 8/27/22 1055 Initials: JG. Date/Time Logged in: 8/29/22 1650 Initials JG.

1. Method of delivery: ○ US Mail ○ Fed Ex ○ UPS ○ DHL ○ Courier ✓ Client
2. Samples received in: ✓ Cooler ○ Box ○ Envelope ○ Other _____
3. Were custody seals on coolers? ○ Yes ✓ No
   Were they intact? ○ Yes ○ No ✓ N/A
   Were they signed and dated? ○ Yes ○ No ✓ N/A
   If yes, how many and where?
4. Packing Material: ○ Inserts ✓ Baggies ○ Bubble Wrap ○ Gel Packs ✓ Wet Ice ○ Sleeves ○ Other _____
5. Foreign or Regulated Soil? ○ Yes ✓ No Location of Sampling: _____

Cooler Tracking Number	COC ID	Date Opened	Time Opened	Opened By	Temp. °C	Temp Blank?
		8/27/22	1055	CG	1.8	✓
						☐
						☐
						☐

6. Were custody papers properly filled out (ink, signed, dated, etc)? ✓ Yes ○ No
7. Did all bottles arrive in good condition (not broken, no signs of leakage)? ✓ Yes ○ No
8. Were all sample labels complete (i.e., sample ID, analysis, preservation, etc)? ✓ Yes ○ No
9. Were appropriate bottles/containers and volumes received for the requested tests? ✓ Yes ○ No
10. Did sample labels and tags agree with custody documents? ✓ Yes ○ No

Notes, Discrepancies, & Resolutions:

Service request Label:

HS-HRMSCoolerReceipt R1.0

ALS Environmental - Houston HRMS

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SAMPLE ACCEPTANCE POLICY

This policy outlines the criteria samples must meet to be accepted by ALS Environmental – Houston HRMS.

Cooler Custody Seals (desirable, mandatory if specified in SAP):

- ✓ Intact on outside of cooler, signed and dated

Chain-of-Custody (COC) documentation (mandatory):

The following is required on each COC:

- ✓ Sample ID, the location, date and time of collection, collector's name, preservation type, sample type, and any other special remarks concerning the sampleThe COC must be completed in ink.
- ✓ Signature and date of relinquishing party.

In the absence of a COC at sample receipt, the COC will be requested from the client.

Sample Integrity (mandatory):

Samples are inspected upon arrival to ensure that sample integrity was not compromised during transfer to the laboratory.

- ✓ Sample containers must arrive in good condition (not broken or leaking).
- ✓ Samples must be labeled appropriately, including Sample IDs, and requested test using durable labels and indelible ink.
- ✓ The correct type of sample bottle must be used for the method requested.
- ✓ An appropriate sample volume, or weight, must be received.
- ✓ Sample IDs and number of containers must reconcile with the COC.
- ✓ Samples must be received within the method defined holding time.

Temperature Requirement (varies by sample matrix):

- ✓ Aqueous and Non-aqueous samples must be shipped and stored cold, at 0 to 6ºC.
- ✓ Tissue samples must be shipped and stored frozen, at -20 to -10ºC.
- ✓ Air samples are shipped and stored cold, at 0 to 6ºC
- ✓ The sample temperature must be recorded on the COC

All cooler inspections are documented on the Cooler Receipt Form (CRF). A separate CRF is completed for each service request. Any samples not meeting the above criteria are noted on the CRF and the Project Manager notified. The Project Manager must resolve any sample integrity issues with the client prior to proceeding with the analysis. Such resolutions are documented in writing and filed with the project folder. Data associated with samples received outside of this acceptance policy will be qualified on the case narrative of the final report

Preparation Information Benchsheets

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Preparation Information Benchsheet

Prep Run#: 405716 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/GRIVERA **Prep Method:** Method **Prep Date/Time:** 9/1/22 10:30

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	E2200851-001	ICT2_082522	.01	6850/ClO4 DOD			Water	10mL	
2	E2200851-002	ICT4_082522	.01	6850/ClO4 DOD			Water	10mL	
3	E2200851-003	ICT7_082522	.01	6850/ClO4 DOD			Water	10mL	
4	E2200851-004	ICT8_082522	.01	6850/ClO4 DOD			Water	10mL	
5	E2200851-005	ICT11_082522	.01	6850/ClO4 DOD			Water	10mL	
6	E2200851-006	ICT11_082522_a	.01	6850/ClO4 DOD			Water	10mL	
7	E2200851-007	ICT12A_082522	.01	6850/ClO4 DOD			Water	10mL	
8	E2200851-008	ICT12B_082522	.01	6850/ClO4 DOD			Water	10mL	
9	E2200851-009	ICT12C_082522	.01	6850/ClO4 DOD			Water	10mL	
10	E2200851-010	ICT12D_082522	.01	6850/ClO4 DOD			Water	10mL	
11	E2200851-011	ICT12D_082522_a	.01	6850/ClO4 DOD			Water	10mL	
12	E2200851-012	ICT12E_082522	.01	6850/ClO4 DOD			Water	10mL	
13	E2200851-013	ICT13A_082522	.01	6850/ClO4 DOD			Water	10mL	
14	E2200851-014	ICT13B_082522	.01	6850/ClO4 DOD			Water	10mL	
15	E2200851-015	ICT13C_082522	.01	6850/ClO4 DOD			Water	10mL	
16	E2200851-016	ICT13D_082522	.01	6850/ClO4 DOD			Water	10mL	
17	E2200851-017	ICT13E_082522	.01	6850/ClO4 DOD			Water	10mL	
18	E2200851-018	ICT13F_082522	.01	6850/ClO4 DOD			Water	10mL	
19	E2200851-019	ICT14A_082522	.01	6850/ClO4 DOD			Water	10mL	
20	E2200851-020	ICT14B_082522	.01	6850/ClO4 DOD			Water	10mL	
21	EQ2200385-01	MB		6850/ClO4 DOD			Liquid	10mL	
22	EQ2200385-02	LCS		6850/ClO4 DOD			Liquid	10mL	
23	EQ2200385-03	DLCS		6850/ClO4 DOD			Liquid	10mL	

Spiking Solutions

Name: Perchlorate Intermediate Stock1 Inventory ID 222798 Logbook Ref: Perchlorate (1st Source) Expires On: 10/29/2022

EQ2200385-02 1.00µL EQ2200385-03 1.00µL

Name: Perchlorate Internal Standard 1ug/mL Inventory ID 223118 Logbook Ref: Perchlorate Internal Standard Expires On: 10/31/2022

E2200851-001	100.00µL	E2200851-002	100.00µL	E2200851-003	100.00µL	E2200851-004	100.00µL	E2200851-005	100.00µL	E2200851-006	100.00µL
E2200851-007	100.00µL	E2200851-008	100.00µL	E2200851-009	100.00µL	E2200851-010	100.00µL	E2200851-011	100.00µL	E2200851-012	100.00µL
E2200851-013	100.00µL	E2200851-014	100.00µL	E2200851-015	100.00µL	E2200851-016	100.00µL	E2200851-017	100.00µL	E2200851-018	100.00µL
E2200851-019	100.00µL	E2200851-020	100.00µL	EQ2200385-01	100.00µL	EQ2200385-02	100.00µL	EQ2200385-03	100.00µL		

Preparation Information Benchsheet

Prep Run#: 405716 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/GRIVERA **Prep Method:** Method **Prep Date/Time:** 9/1/22 10:30

Preparation Materials

Water HPLC Grade	5/12/2022 Water (223056)	6850 Amber Glass screw vial	2mL Screw Top Vial (221894)	6850 0.45um syringe filters	6850 Syringe Filters (224414)
6850 Luer-Lok Syringes	Luer-Lok Syringes (221305)	6850 Pipette Tips 50-1000 uL	6850 Pipette Tips (221929)		

Preparation Steps

Step: Preparation
Started: 9/1/22 10:30
Finished: 9/1/22 11:15
By: GRIVERA
Comments

Comments: _____

Reviewed By: _____ Date: _____

Chain of Custody

Relinquished By: _____ Date: _____ Extracts Examined

Received By: _____ Date: _____ Yes No

Preparation Information Benchsheet

Prep Run#: 405735 **Prep WorkFlow:** GenExt28Day **Status:** Prepped
Team: Semivoa GCMS/GRIVERA **Prep Method:** Method **Prep Date/Time:** 9/1/22 13:30

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	E2200850-001	HBW7_082622	.01	6850/ClO4 DOD			Water	10mL	
2	E2200850-002	HBW10_082622	.01	6850/ClO4 DOD			Water	10mL	
3	E2200850-003	HBW1_082622	.01	6850/ClO4 DOD			Water	10mL	
4	E2200850-004	HBW1_082622_a	.01	6850/ClO4 DOD			Water	10mL	
5	E2200850-005	GPW1_082622	.01	6850/ClO4 DOD			Water	10mL	
6	E2200850-006	GPW3_082622	.01	6850/ClO4 DOD			Water	10mL	
7	E2200851-021	ICT14C_082522	.01	6850/ClO4 DOD			Water	10mL	
8	E2200851-022	ICT14D_082522	.01	6850/ClO4 DOD			Water	10mL	
9	E2200851-023	ICT14E_082522	.01	6850/ClO4 DOD			Water	10mL	
10	E2200861-001	LH18/24-SP650_083022_AIX	.01	6850/ClO4 DOD			Water	10mL	
11	E2200861-002	LH18/24-SP650_083022_BIX	.01	6850/ClO4 DOD			Water	10mL	
12	E2200864-001	130_083122	.01	6850/ClO4 DOD			Water	10mL	
13	E2200864-002	17WW03_083122	.01	6850/ClO4 DOD			Water	10mL	
14	E2200864-003	17WW01_083122	.01	6850/ClO4 DOD			Water	10mL	
15	E2200864-004	17WW02_083122	.01	6850/ClO4 DOD			Water	10mL	
16	E2200864-005	17WW02_083122_a	.01	6850/ClO4 DOD			Water	10mL	
17	E2200864-006	17WW06_083122	.01	6850/ClO4 DOD			Water	10mL	
18	EQ2200387-01	MB		6850/ClO4 DOD			Liquid	10mL	
19	EQ2200387-02	LCS		6850/ClO4 DOD			Liquid	10mL	
20	EQ2200387-03	DLCS		6850/ClO4 DOD			Liquid	10mL	
21	EQ2200387-04	ICT14D_082522 MS	.02	6850/ClO4 DOD			Liquid	10mL	
22	EQ2200387-05	ICT14D_082522 DMS	.02	6850/ClO4 DOD			Liquid	10mL	
23	EQ2200387-06	17WW06_083122 MS	.02	6850/ClO4 DOD			Liquid	10mL	
24	EQ2200387-07	17WW06_083122 DMS	.02	6850/ClO4 DOD			Liquid	10mL	
25	R2207855-003	2208170817Y WB-5-280	.01	6850/ClO4			Water	10mL	
26	R2207855-011	2208181449Y WB-14-520	.01	6850/ClO4			Water	10mL	

Spiking Solutions

Name: Perchlorate Intermediate Stock1 Inventory ID 222798 Logbook Ref: Perchlorate (1st Source) Expires On: 10/29/2022

EQ2200387-02 1.00µL EQ2200387-02 1.00µL EQ2200387-03 1.00µL EQ2200387-03 1.00µL EQ2200387-04 1.00µL EQ2200387-05 1.00µL
EQ2200387-06 1.00µL EQ2200387-07 1.00µL

Name: Perchlorate Internal Standard 1ug/mL Inventory ID 223118 Logbook Ref: Perchlorate Internal Standard Expires On: 10/31/2022

Preparation Information Benchsheet

Prep Run#: 405735 **Prep WorkFlow:** GenExt28Day **Status:** Prepped

Team: Semivoa GCMS/GRIVERA **Prep Method:** Method **Prep Date/Time:** 9/1/22 13:30

E2200850-001	100.00µL	E2200850-002	100.00µL	E2200850-003	100.00µL	E2200850-004	100.00µL	E2200850-005	100.00µL	E2200850-006	100.00µL
E2200851-021	100.00µL	E2200851-022	100.00µL	E2200851-023	100.00µL	E2200861-001	100.00µL	E2200861-002	100.00µL	E2200864-001	100.00µL
E2200864-002	100.00µL	E2200864-003	100.00µL	E2200864-004	100.00µL	E2200864-005	100.00µL	E2200864-006	100.00µL	EQ2200387-01	100.00µL
EQ2200387-01	100.00µL	EQ2200387-02	100.00µL	EQ2200387-02	100.00µL	EQ2200387-03	100.00µL	EQ2200387-03	100.00µL	EQ2200387-04	100.00µL
EQ2200387-05	100.00µL	EQ2200387-06	100.00µL	EQ2200387-07	100.00µL	R2207855-003	100.00µL	R2207855-011	100.00µL		

Preparation Materials

Water HPLC Grade	5/12/2022 Water (223056)	6850 Amber Glass screw vial	2mL Screw Top Vial (221894)	6850 0.45um syringe filters	6850 Syringe Filters (224414)
6850 Luer-Lok Syringes	Luer-Lok Syringes (221305)	6850 Pipette Tips 50-1000 uL	6850 Pipette Tips (221929)		

Preparation Steps

Step: Preparation
Started: 9/1/22 13:30
Finished: 9/1/22 14:25
By: GRIVERA
Comments

Comments: _____

Reviewed By: _____ Date: _____

Chain of Custody

Relinquished By: _____ Date: _____ Extracts Examined

Received By: _____ Date: _____ Yes No

Analytical Results

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	HS22081514	**Date Collected:**	8/25/22 0705
Sample Matrix:	Water	**Date Received:**	8/27/22
Sample Name:	ICT2_082522	**Units:**	µg/L
Lab Code:	E2200851-001	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**570**		5.00	2.50	1.25	50	9/ 1/22	9/9/22 16:32	405716	776946	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	HS22081514	**Date Collected:**	8/25/22 0715
Sample Matrix:	Water	**Date Received:**	8/27/22
Sample Name:	ICT4_082522	**Units:**	µg/L
Lab Code:	E2200851-002	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**3770**		10.0	5.00	2.50	100	9/ 1/22	9/9/22 16:41	405716	776946	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	HS22081514	**Date Collected:**	8/25/22 0725
Sample Matrix:	Water	**Date Received:**	8/27/22
Sample Name:	ICT7_082522	**Units:**	µg/L
Lab Code:	E2200851-003	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**311**		1.00	0.500	0.250	10	9/ 1/22	9/9/22 16:49	405716	776946	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	HS22081514	**Date Collected:**	8/25/22 0735
Sample Matrix:	Water	**Date Received:**	8/27/22
Sample Name:	ICT8_082522	**Units:**	µg/L
Lab Code:	E2200851-004	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**336**		1.00	0.500	0.250	10	9/ 1/22	9/9/22 16:58	405716	776946	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	HS22081514	**Date Collected:**	8/25/22 0745
Sample Matrix:	Water	**Date Received:**	8/27/22
Sample Name:	ICT11_082522	**Units:**	µg/L
Lab Code:	E2200851-005	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**9240**		50.0	25.0	12.5	500	9/ 1/22	9/9/22 17:06	405716	776946	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	HS22081514	**Date Collected:**	8/25/22 0745
Sample Matrix:	Water	**Date Received:**	8/27/22
Sample Name:	ICT11_082522_a	**Units:**	µg/L
Lab Code:	E2200851-006	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**8500**		50.0	25.0	12.5	500	9/ 1/22	9/9/22 17:14	405716	776946	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	HS22081514	**Date Collected:**	8/25/22 0800
Sample Matrix:	Water	**Date Received:**	8/27/22
Sample Name:	ICT12A_082522	**Units:**	µg/L
Lab Code:	E2200851-007	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**10200**		100	50.0	25.0	1000	9/ 1/22	9/9/22 17:23	405716	776946	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	HS22081514	**Date Collected:**	8/25/22 0810
Sample Matrix:	Water	**Date Received:**	8/27/22
Sample Name:	ICT12B_082522	**Units:**	µg/L
Lab Code:	E2200851-008	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**33800**		200	100	50.0	2000	9/ 1/22	9/9/22 17:40	405716	776946	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	HS22081514	**Date Collected:**	8/25/22 0820
Sample Matrix:	Water	**Date Received:**	8/27/22
Sample Name:	ICT12C_082522	**Units:**	µg/L
Lab Code:	E2200851-009	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**646**		5.00	2.50	1.25	50	9/ 1/22	9/9/22 17:48	405716	776946	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	HS22081514	**Date Collected:**	8/25/22 0830
Sample Matrix:	Water	**Date Received:**	8/27/22
Sample Name:	ICT12D_082522	**Units:**	µg/L
Lab Code:	E2200851-010	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**122**		1.00	0.500	0.250	10	9/ 1/22	9/9/22 17:56	405716	776946	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	HS22081514	**Date Collected:**	8/25/22 0830
Sample Matrix:	Water	**Date Received:**	8/27/22
Sample Name:	ICT12D_082522_a	**Units:**	µg/L
Lab Code:	E2200851-011	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**114**		1.00	0.500	0.250	10	9/ 1/22	9/9/22 18:05	405716	776946	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	HS22081514	**Date Collected:**	8/25/22 0850
Sample Matrix:	Water	**Date Received:**	8/27/22
Sample Name:	ICT12E_082522	**Units:**	µg/L
Lab Code:	E2200851-012	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**41400**		200	100	50.0	2000	9/ 1/22	9/9/22 18:13	405716	776946	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	HS22081514	**Date Collected:**	8/25/22 0900
Sample Matrix:	Water	**Date Received:**	8/27/22
Sample Name:	ICT13A_082522	**Units:**	µg/L
Lab Code:	E2200851-013	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**10100**		50.0	25.0	12.5	500	9/ 1/22	9/9/22 18:21	405716	776946	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	HS22081514	**Date Collected:**	8/25/22 0910
Sample Matrix:	Water	**Date Received:**	8/27/22
Sample Name:	ICT13B_082522	**Units:**	µg/L
Lab Code:	E2200851-014	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**255**		1.00	0.500	0.250	10	9/ 1/22	9/9/22 18:30	405716	776946	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	HS22081514	**Date Collected:**	8/25/22 0920
Sample Matrix:	Water	**Date Received:**	8/27/22
Sample Name:	ICT13C_082522	**Units:**	µg/L
Lab Code:	E2200851-015	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**4210**		20.0	10.0	5.00	200	9/ 1/22	9/9/22 18:38	405716	776946	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	HS22081514	**Date Collected:**	8/25/22 0930
Sample Matrix:	Water	**Date Received:**	8/27/22
Sample Name:	ICT13D_082522	**Units:**	µg/L
Lab Code:	E2200851-016	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.161**		0.100	0.0500	0.0250	1	9/ 1/22	9/12/22 13:38	405716	777190	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	HS22081514	**Date Collected:**	8/25/22 0940
Sample Matrix:	Water	**Date Received:**	8/27/22
Sample Name:	ICT13E_082522	**Units:**	µg/L
Lab Code:	E2200851-017	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**602**		5.00	2.50	1.25	50	9/ 1/22	9/9/22 18:55	405716	776946	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	HS22081514	**Date Collected:**	8/25/22 0950
Sample Matrix:	Water	**Date Received:**	8/27/22
Sample Name:	ICT13F_082522	**Units:**	µg/L
Lab Code:	E2200851-018	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.802**		0.100	0.0500	0.0250	1	9/ 1/22	9/9/22 19:12	405716	776946	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	HS22081514	**Date Collected:**	8/25/22 0955
Sample Matrix:	Water	**Date Received:**	8/27/22
Sample Name:	ICT14A_082522	**Units:**	µg/L
Lab Code:	E2200851-019	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**186**		1.00	0.500	0.250	10	9/ 1/22	9/9/22 19:20	405716	776946	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	HS22081514	**Date Collected:**	8/25/22 1005
Sample Matrix:	Water	**Date Received:**	8/29/22
Sample Name:	ICT14B_082522	**Units:**	µg/L
Lab Code:	E2200851-020	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**6330**		50.0	25.0	12.5	500	9/ 1/22	9/9/22 19:29	405716	776946	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	HS22081514	**Date Collected:**	8/25/22 1015
Sample Matrix:	Water	**Date Received:**	8/27/22
Sample Name:	ICT14C_082522	**Units:**	µg/L
Lab Code:	E2200851-021	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**2720**		10.0	5.00	2.50	100	9/ 1/22	9/12/22 15:08	405735	777190	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	HS22081514	**Date Collected:**	8/25/22 1030
Sample Matrix:	Water	**Date Received:**	8/27/22
Sample Name:	ICT14D_082522	**Units:**	µg/L
Lab Code:	E2200851-022	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**5.10**		0.100	0.0500	0.0250	1	9/ 1/22	9/12/22 13:46	405735	777190	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	HS22081514	**Date Collected:**	8/25/22 1050
Sample Matrix:	Water	**Date Received:**	8/27/22
Sample Name:	ICT14E_082522	**Units:**	µg/L
Lab Code:	E2200851-023	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**4030**		20.0	10.0	5.00	200	9/ 1/22	9/12/22 15:10	405735	777190	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	HS22081514	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	EQ2200385-01	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	0.100	0.0500	0.0250	1	9/ 1/22	9/9/22 15:14	405716	776946	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	HS22081514	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	EQ2200387-01	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	ND	U	0.100	0.0500	0.0250	1	9/ 1/22	9/9/22 13:50	405735	776946	

Accuracy & Precision

ALS Environmental - Houston HRMS
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ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS22081514
Sample Matrix: Water

Service Request: E2200851
Date Analyzed: 9/ 9/22

Lab Control Sample Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Units: µg/L
Basis: NA

Extraction Lot: 405716

	Lab Control Sample EQ2200385-02			Duplicate Lab Control Sample EQ2200385-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	0.0994	0.100	99	0.0979	0.100	98	84 - 119	2	15

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	HS22081514	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2200385-02	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.0994**	J	0.100	0.0500	0.0250	1	9/ 1/22	9/9/22 15:22	405716	776946	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	HS22081514	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2200385-03	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.0979**	J	0.100	0.0500	0.0250	1	9/ 1/22	9/9/22 16:23	405716	776946	

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: HS22081514
Sample Matrix: Water

Service Request: E2200851
Date Analyzed: 9/ 9/22

Lab Control Sample Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Units: µg/L
Basis: NA

Extraction Lot: 405735

	Lab Control Sample EQ2200387-02			Duplicate Lab Control Sample EQ2200387-03					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	0.104	0.100	104	0.0941	0.100	94	84 - 119	10	15

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	HS22081514	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2200387-02	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.104**		0.100	0.0500	0.0250	1	9/ 1/22	9/9/22 13:58	405735	776946	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	HS22081514	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Duplicate Lab Control Sample	**Units:**	µg/L
Lab Code:	EQ2200387-03	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.0941**	J	0.100	0.0500	0.0250	1	9/ 1/22	9/9/22 14:07	405735	776946	

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	HS22081514	**Date Collected:**	8/25/22
Sample Matrix:	Water	**Date Received:**	8/27/22
		Date Analyzed:	9/ 9/22

Matrix Spike Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Sample Name:	ICT14D_082522	**Units:**	µg/L
Lab Code:	E2200851-022	**Basis:**	NA

Analytical Method: 6850
Prep Method: Method

		ICT14D_082522MS				ICT14D_082522DMS					
		Matrix Spike				**Duplicate Matrix Spike**					
		EQ2200387-04				EQ2200387-05					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**		**Result**	**Spike Amount**	**% Rec**		**% Rec Limits**	**RPD**	**RPD Limit**
Perchlorate	5.10	5.41	0.100	313	#	5.22	0.100	123	#	84 - 119	4	15

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	HS22081514	**Date Collected:**	8/25/22 1030
Sample Matrix:	Water	**Date Received:**	8/27/22
Sample Name:	ICT14D_082522	**Units:**	µg/L
Lab Code:	EQ2200387-04	**Basis:**	NA
Run Type:	Matrix Spike		

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**5.41**		0.100	0.0500	0.0250	1	9/ 1/22	9/9/22 20:02	405735	776946	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	HS22081514	**Date Collected:**	8/25/22 1030
Sample Matrix:	Water	**Date Received:**	8/27/22
Sample Name:	ICT14D_082522	**Units:**	µg/L
Lab Code:	EQ2200387-05 Duplicate	**Basis:**	NA
Run Type:	Matrix Spike		

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**5.22**		0.100	0.0500	0.0250	1	9/ 1/22	9/9/22 20:11	405735	776946	

Initial Calibration

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

20220909

1st Review: GRivera
2nd Review: Kneir

Injection Log
LCMS01 -Shimadzu 8050

ICAL Date: 9/9/2022
Cal. Std. xp: 10/29/2022
ICAL ID: **EC2200013**

Mobile Phases **A:** 0.10% Formic Acid/Water 3100820-05 **B:** MeOH 218535

			File Name	Acquisition Method	Dilution	R	Comments	Date/Time
1	PERCHLORATE1		20220909_013	Perchlorate6850c.lcm	1x	☒	224623	9/9/2022 11:35
2	PERCHLORATE2		20220909_014	Perchlorate6850c.lcm	1x	☒	224624	9/9/2022 11:52
3	PERCHLORATE3		20220909_015	Perchlorate6850c.lcm	1x	☒	224625	9/9/2022 12:01
4	PERCHLORATE4		20220909_016	Perchlorate6850c.lcm	1x	☒	224626	9/9/2022 12:09
5	PERCHLORATE5		20220909_017	Perchlorate6850c.lcm	1x	☒	224628	9/9/2022 12:17
6	PERCHLORATE6		20220909_018	Perchlorate6850c.lcm	1x	☒	224629	9/9/2022 12:26
7	PERCHLORATE7		20220909_019	Perchlorate6850c.lcm	1x	☒	224631	9/9/2022 12:34
8	PERCHLORATE8		20220909_020	Perchlorate6850c.lcm	1x	☒	224632	9/9/2022 12:43
9	PERCHLORATE9		20220909_021	Perchlorate6850c.lcm	1x	☒	224634	9/9/2022 12:51
10	PERCHLORATE10		20220909_022	Perchlorate6850c.lcm	1x	☒	224636	9/9/2022 12:59
11	PERCHLORATEICV		20220909_023	Perchlorate6850c.lcm	1x	☒	224637	9/9/2022 13:08
12	IB		20220909_024	Perchlorate6850c.lcm	1x	☒		9/9/2022 13:16
13	LODV		20220909_025	Perchlorate6850c.lcm	1x	☒	224622	9/9/2022 13:25
14	ICS		20220909_026	Perchlorate6850c.lcm	1x	☒		9/9/2022 13:33
15	PERCHLORATE7		20220909_027	Perchlorate6850c.lcm	1x	☒	224631	9/9/2022 13:41
16	EQ2200387-01		20220909_028	Perchlorate6850c.lcm	1x	☒		9/9/2022 13:50
17	EQ2200387-02		20220909_029	Perchlorate6850c.lcm	1x	☒		9/9/2022 13:58
18	EQ2200387-03		20220909_030	Perchlorate6850c.lcm	1x	☒		9/9/2022 14:07
19	E2200861-001		20220909_031	Perchlorate6850c.lcm	1x	☒		9/9/2022 14:48
20	E2200861-002		20220909_032	Perchlorate6850c.lcm	1x	☒		9/9/2022 14:57
21	PERCHLORATE7		20220909_033	Perchlorate6850c.lcm	1x	☒	224631	9/9/2022 15:05
22	EQ2200385-01		20220909_034	Perchlorate6850c.lcm	1x	☒		9/9/2022 15:14
23	EQ2200385-02		20220909_035	Perchlorate6850c.lcm	1x	☒		9/9/2022 15:22
24	EQ2200385-03		20220909_036	Perchlorate6850c.lcm	1x	☒		9/9/2022 16:23
25	E2200851-001		20220909_037	Perchlorate6850c.lcm	50x	☒		9/9/2022 16:32
26	E2200851-002		20220909_038	Perchlorate6850c.lcm	100x	☒		9/9/2022 16:41
27	E2200851-003		20220909_039	Perchlorate6850c.lcm	10x	☒		9/9/2022 16:49
28	E2200851-004		20220909_040	Perchlorate6850c.lcm	10x	☒		9/9/2022 16:58
29	E2200851-005		20220909_041	Perchlorate6850c.lcm	500x	☒		9/9/2022 17:06
30	E2200851-006		20220909_042	Perchlorate6850c.lcm	500x	☒		9/9/2022 17:14
31	E2200851-007		20220909_043	Perchlorate6850c.lcm	1000x	☒		9/9/2022 17:23
32	PERCHLORATE7		20220909_044	Perchlorate6850c.lcm	1x	☒	224631	9/9/2022 17:31
33	E2200851-008		20220909_045	Perchlorate6850c.lcm	2000x	☒		9/9/2022 17:40
34	E2200851-009		20220909_046	Perchlorate6850c.lcm	50x	☒		9/9/2022 17:48
35	E2200851-010		20220909_047	Perchlorate6850c.lcm	10x	☒		9/9/2022 17:56
36	E2200851-011		20220909_048	Perchlorate6850c.lcm	10x	☒		9/9/2022 18:05
37	E2200851-012		20220909_049	Perchlorate6850c.lcm	2000x	☒		9/9/2022 18:13
38	E2200851-013		20220909_050	Perchlorate6850c.lcm	500x	☒		9/9/2022 18:21
39	E2200851-014		20220909_051	Perchlorate6850c.lcm	10x	☒		9/9/2022 18:30
40	E2200851-015		20220909_052	Perchlorate6850c.lcm	200x	☒		9/9/2022 18:38
41	E2200851-016		20220909_053	Perchlorate6850c.lcm	1x	☒	DNU-IR	9/9/2022 18:47
42	E2200851-017		20220909_054	Perchlorate6850c.lcm	50x	☒		9/9/2022 18:55
43	PERCHLORATE7		20220909_055	Perchlorate6850c.lcm	1x	☒	224631	9/9/2022 19:03
44	E2200851-018		20220909_056	Perchlorate6850c.lcm	1x	☒		9/9/2022 19:12
45	E2200851-019		20220909_057	Perchlorate6850c.lcm	10x	☒		9/9/2022 19:20
46	E2200851-020		20220909_058	Perchlorate6850c.lcm	500x	☒		9/9/2022 19:29
47	PERCHLORATE7		20220909_059	Perchlorate6850c.lcm	1x	☒	224631	9/9/2022 19:37
48	R2207855-003		20220909_060	Perchlorate6850c.lcm	1x	☒		9/9/2022 19:45
49	R2207855-011DNU-IS		20220909_061	Perchlorate6850c.lcm	1x	☒	DNU-IS out of range	9/9/2022 19:54
50	EQ2200387-04		20220909_062	Perchlorate6850c.lcm	1x	☒		9/9/2022 20:02
51	EQ2200387-05		20220909_063	Perchlorate6850c.lcm	1x	☒		9/9/2022 20:11
52	EQ2200387-06		20220909_064	Perchlorate6850c.lcm	1x	☒	MS over ICAL range	9/9/2022 20:19
53	EQ2200387-07		20220909_065	Perchlorate6850c.lcm	1x	☒	DMS over ICAL range	9/9/2022 20:27
54	E2200850-001		20220909_066	Perchlorate6850c.lcm	1x	☒	Reanalyze: carryover	9/9/2022 20:36
55	E2200850-002		20220909_067	Perchlorate6850c.lcm	1x	☒	Reanalyze: carryover	9/9/2022 20:44
56	E2200850-003		20220909_068	Perchlorate6850c.lcm	1x	☒	Reanalyze: carryover	9/9/2022 20:53
57	E2200850-004		20220909_069	Perchlorate6850c.lcm	1x	☒	Reanalyze: carryover	9/9/2022 21:01
58	PERCHLORATE7		20220909_070	Perchlorate6850c.lcm	1x	☒	224631	9/9/2022 21:09
59	E2200850-005		20220909_071	Perchlorate6850c.lcm	1x	☒	Reanalyze CCV failed	9/9/2022 21:18
60	E2200850-006		20220909_072	Perchlorate6850c.lcm	1x	☒	Reanalyze CCV failed	9/9/2022 21:26
61	E2200864-001		20220909_073	Perchlorate6850c.lcm	1x	☒	Reanalyze CCV failed	9/9/2022 21:34
62	E2200864-002		20220909_074	Perchlorate6850c.lcm	1x	☒	Reanalyze CCV failed	9/9/2022 21:43
63	E2200864-003		20220909_075	Perchlorate6850c.lcm	1x	☒	DNU-over ICAL range	9/9/2022 21:51
64	E2200864-004		20220909_076	Perchlorate6850c.lcm	1x	☒	DNU-over ICAL range	9/9/2022 22:00
65	E2200864-005		20220909_077	Perchlorate6850c.lcm	1x	☒	DNU-over ICAL range	9/9/2022 22:08
66	E2200864-006		20220909_078	Perchlorate6850c.lcm	1x	☒	DNU-over ICAL range	9/9/2022 22:16

20220909

1st Review: GRivera
2nd Review: Kneir

Injection Log
LCMS01 -Shimadzu 8050

ICAL Date: 9/9/2022
Cal. Std. xp: 10/29/2022
ICAL ID: **EC2200013**

Mobile Phases **A:** 0.10% Formic Acid/Water 3100820-05 **B:** MeOH 218535

			File Name	Acquisition Method	Dilution	R	Comments	Date/Time
67	PERCHLORATE7		20220909_079	Perchlorate6850c.lcm	1x	☒	224631-CCV failed high	9/9/2022 22:25
68	E2200851-021		20220909_080	Perchlorate6850c.lcm	1x	☒	DNU-over ICAL range	9/9/2022 22:33
69	E2200851-022		20220909_081	Perchlorate6850c.lcm	1x	☒	Reanalyze CCV failed	9/9/2022 22:41
70	E2200851-023		20220909_082	Perchlorate6850c.lcm	1x	☒	DNU-over ICAL range	9/9/2022 22:50
71	PERCHLORATE7		20220909_083	Perchlorate6850c.lcm	1x	☒	224631-CCV failed high	9/9/2022 22:58
72	E2200852-001		20220909_084	Perchlorate6850c.lcm	1x	☒	Reanalyze CCV failed	9/9/2022 23:07
73	E2200852-002		20220909_085	Perchlorate6850c.lcm	1x	☒	Reanalyze CCV failed	9/9/2022 23:15
74	E2200852-003		20220909_086	Perchlorate6850c.lcm	1x	☒	Reanalyze CCV failed	9/9/2022 23:24
75	E2200852-004		20220909_087	Perchlorate6850c.lcm	1x	☒	Reanalyze CCV failed	9/9/2022 23:32
76	E2200852-005		20220909_088	Perchlorate6850c.lcm	1x	☒	Reanalyze CCV failed	9/9/2022 23:40
77	E2200852-006		20220909_089	Perchlorate6850c.lcm	1x	☒	Reanalyze CCV failed	9/9/2022 23:49
78	E2200852-007		20220909_090	Perchlorate6850c.lcm	1x	☒	Reanalyze CCV failed	9/9/2022 23:57
79	PERCHLORATE7		20220909_091	Perchlorate6850c.lcm	1x	☒	224631	9/10/2022 0:06
80	E2200852-008		20220909_092	Perchlorate6850c.lcm	1000x	☒	DNU-over ICAL range	9/10/2022 0:14
81	E2200852-009		20220909_093	Perchlorate6850c.lcm	1000x	☒	DNU-over ICAL range	9/10/2022 0:22
82	E2200852-010		20220909_094	Perchlorate6850c.lcm	1000x	☒	Run a 500x	9/10/2022 0:31
83	E2200852-011		20220909_095	Perchlorate6850c.lcm	1000x	☒	DNU-over ICAL range	9/10/2022 0:39
84	E2200852-012		20220909_096	Perchlorate6850c.lcm	1000x	☒	DNU-over ICAL range	9/10/2022 0:47
85	E2200852-013		20220909_097	Perchlorate6850c.lcm	1000x	☒	DNU-over ICAL range	9/10/2022 0:56
86	E2200852-014		20220909_098	Perchlorate6850c.lcm	1000x	☒	DNU-over ICAL range	9/10/2022 1:04
87	E2200852-015		20220909_099	Perchlorate6850c.lcm	1x	☒	Reanalyze: carryover	9/10/2022 1:13
88	E2200852-016		20220909_100	Perchlorate6850c.lcm	1x	☒	DNU-over ICAL range	9/10/2022 1:21
89	PERCHLORATE7		20220909_101	Perchlorate6850c.lcm	1x	☒	224631	9/10/2022 1:29
90	E2200852-017		20220909_102	Perchlorate6850c.lcm	1x	☒	DNU-over ICAL range	9/10/2022 1:38
91	E2200852-019		20220909_103	Perchlorate6850c.lcm	1000x	☒	DNU-over ICAL range	9/10/2022 1:46
92	PERCHLORATE7		20220909_104	Perchlorate6850c.lcm	1x	☒	224631-CCV failed high	9/10/2022 1:55
93	IB		20220909_105	Perchlorate6850c.lcm	1x	☒		9/10/2022 2:03
94	IB		20220909_106	Perchlorate6850c.lcm	1x	☒		9/10/2022 2:12
95	null		20220909_107	Perchlorate6850c.lcm	1x	☒		9/10/2022 2:17
96	null		20220909_108	Perchlorate6850c.lcm	1x	☒		9/10/2022 2:22

Initial Calibration - Detailed Report

Calibration ID: EC2200013 **Instrument ID:** E-LCMS-01
Column Name: 1

#	Lab Code	Sample Name	File Location	Aquisition Date
01	EC2200013-01	PERCHLORATE1	20220909_013	09/09/2022 11:35
02	EC2200013-02	PERCHLORATE2	20220909_014	09/09/2022 11:52
03	EC2200013-03	PERCHLORATE3	20220909_015	09/09/2022 12:01
04	EC2200013-04	PERCHLORATE4	20220909_016	09/09/2022 12:09
05	EC2200013-05	PERCHLORATE5	20220909_017	09/09/2022 12:17
06	EC2200013-06	PERCHLORATE6	20220909_018	09/09/2022 12:26
07	EC2200013-07	PERCHLORATE7	20220909_019	09/09/2022 12:34
08	EC2200013-08	PERCHLORATE8	20220909_020	09/09/2022 12:43
09	EC2200013-09	PERCHLORATE9	20220909_021	09/09/2022 12:51
10	EC2200013-10	PERCHLORATE10	20220909_022	09/09/2022 12:59

Analyte **Curve Fit** **Weighting**

Perchlorate **Average RF** **RSD = 7.827** **Average RF = 0.1354**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.1000	0.1628	02	0.5000	0.1427	03	0.7000	0.1329	04	1.0000	0.1318
05	2.0000	0.1326	06	5.0000	0.1273	07	10.0000	0.1353	08	20.0000	0.1312
09	30.0000	0.1303	10	50.0000	0.127						

Analyte

Perchlorate

#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D	#	Amount	Calculated Conc	%D
01	0.1000	0.120	20.3	02	0.5000	0.527	5.4	03	0.7000	0.687	-1.8
04	1.0000	0.973	-2.7	05	2.0000	1.96	-2.1	06	5.0000	4.70	-5.9
07	10.0000	9.99	-0.1	08	20.0000	19.4	-3.1	09	30.0000	28.9	-3.8
10	50.0000	46.9	-6.2								

Initial Calibration Verification Summary Report

Calibration ID:	EC2200013	**Instrument ID:**	E-LCMS-01
Datafile ID:	20220909_023	**Column Name:**	1

Analyte	Lab Code	Type	Curve Fit	True Value	Calc Conc	Units	Result	Criteria
Perchlorate	EC2200013-11	T	Average RF	10	10.678	ng/mL	6.8	<= 15

Insight Report

Printed at 9/9/2022 1:20:08 PM

Method File: I:\LCMS01\DATA\20220909\20220909.lcm
Project File: I:\LCMS01\DATA\20220909\20220909-ICAL.damlp

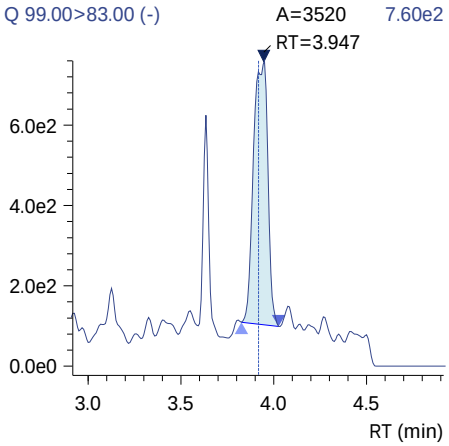
PERCHLORATE1

Sample ID: PERCHLORATE1
Date Acquired: 9/9/2022 11:35:32 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_013.lcd
Vial: 20 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	MI R1	3.947	3520	216224	0.1203	ng/mL	49.18	26.81-49.79
Perchlorate 2	M	3.921	1731	216224	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.915	216224	216224	1.0000	ng/mL	----	

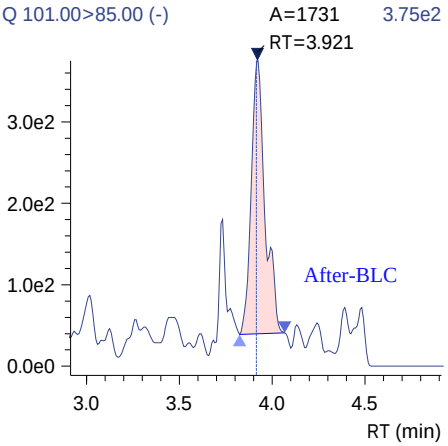
Perchlorate

Conc 0.1203



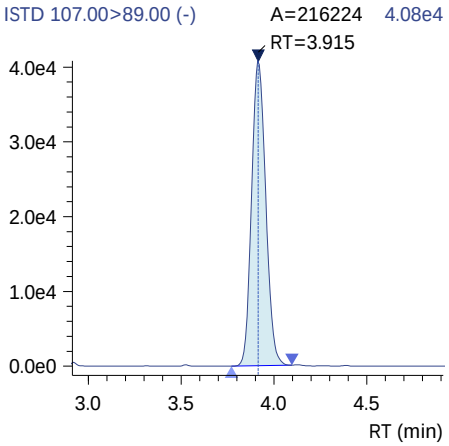
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/9/2022 1:21:18 PM

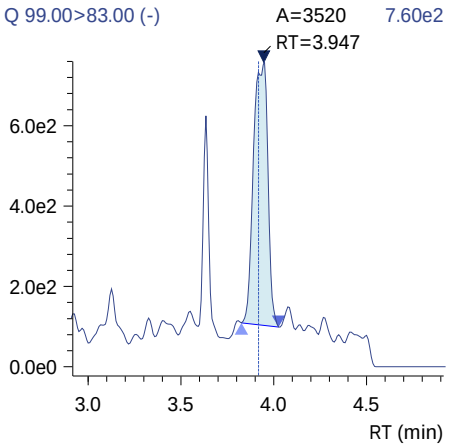
Method File: I:\LCMS01\DATA\20220909\20220909.lcm
Project File: I:\LCMS01\DATA\20220909\20220909-ICAL.damlp

PERCHLORATE1

Sample ID: PERCHLORATE1
Date Acquired: 9/9/2022 11:35:32 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_013.lcd
Vial: 20 | Inj. Volume: 25.0000uL | Tray: 1

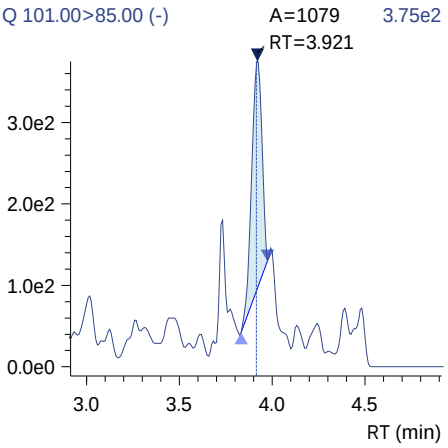
Perchlorate

Conc 0.1203



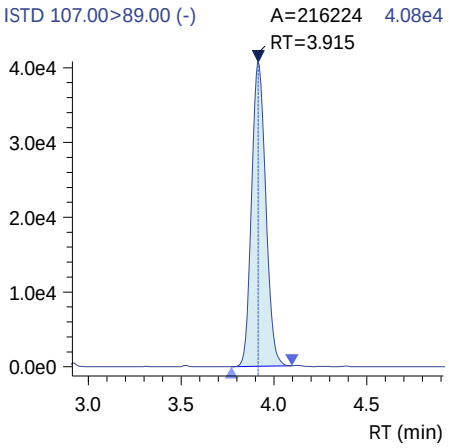
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/9/2022 1:20:08 PM

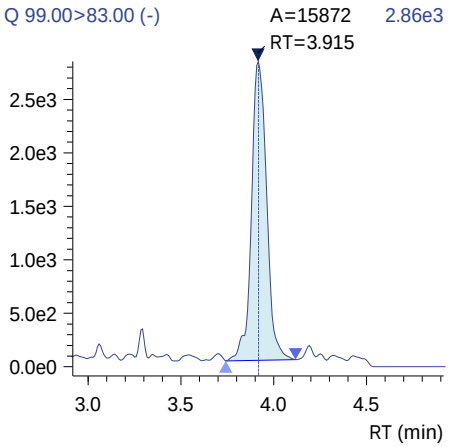
PERCHLORATE2

Sample ID: PERCHLORATE2
Date Acquired: 9/9/2022 11:52:35 AM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_014.lcd
Vial: 21 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.915	15872	222527	0.5269	ng/mL	30.66	26.81-49.79
Perchlorate 2	Auto	3.918	4866	222527	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.915	222527	222527	1.0000	ng/mL	----	

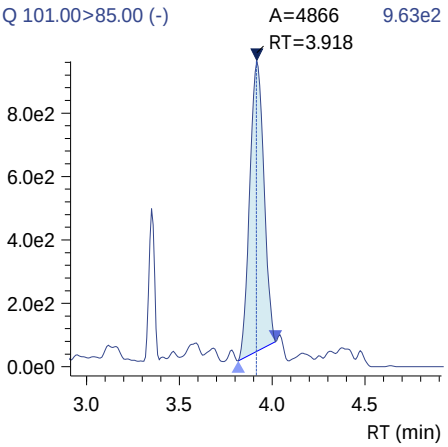
Perchlorate

Conc 0.5269



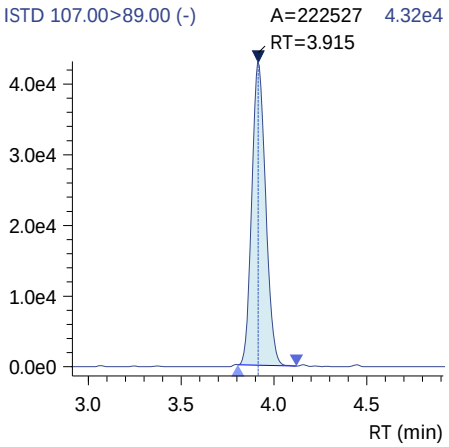
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/9/2022 1:20:08 PM

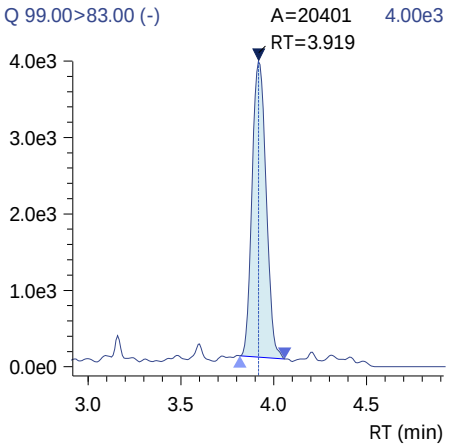
PERCHLORATE3

Sample ID: PERCHLORATE3
Date Acquired: 9/9/2022 12:01:01 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_015.lcd
Vial: 22 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.919	20401	219300	0.6872	ng/mL	38.76	26.81-49.79
Perchlorate 2	Auto	3.911	7907	219300	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.913	219300	219300	1.0000	ng/mL	----	

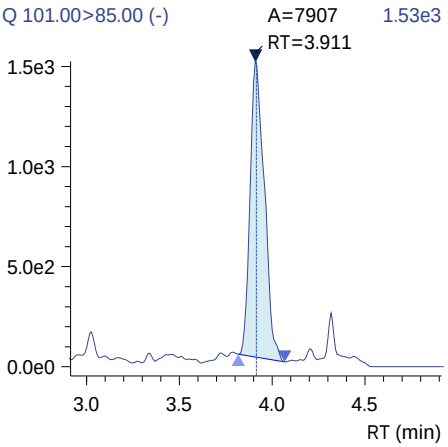
Perchlorate

Conc 0.6872



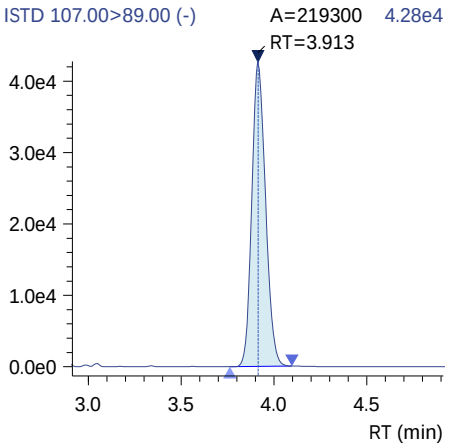
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/9/2022 1:20:08 PM

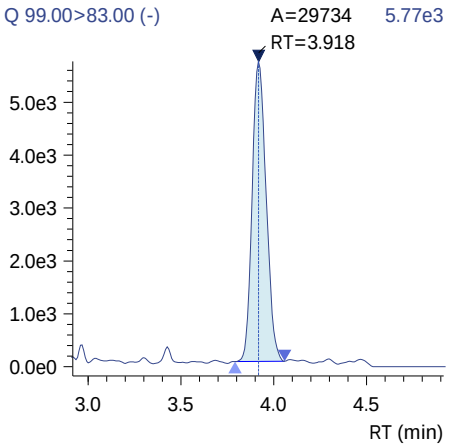
PERCHLORATE4

Sample ID: PERCHLORATE4
Date Acquired: 9/9/2022 12:09:26 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_016.lcd
Vial: 23 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.918	29734	225679	0.9732	ng/mL	35.80	26.81-49.79
Perchlorate 2	Auto	3.914	10645	225679	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.914	225679	225679	1.0000	ng/mL	----	

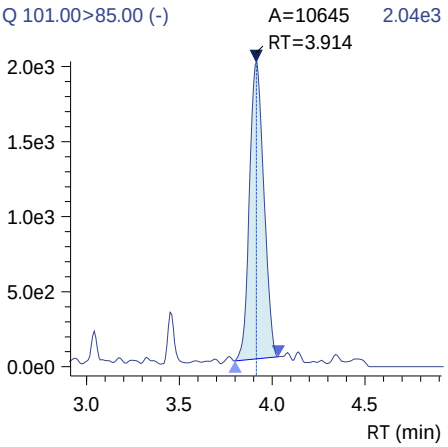
Perchlorate

Conc 0.9732



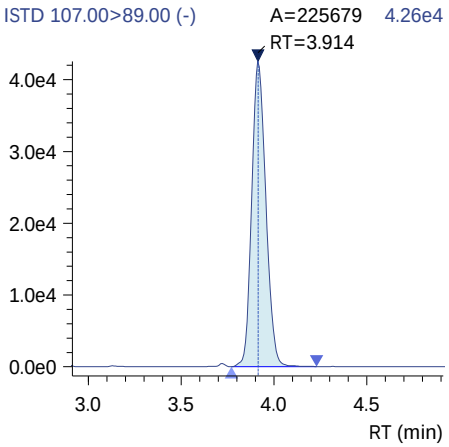
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/9/2022 1:20:08 PM

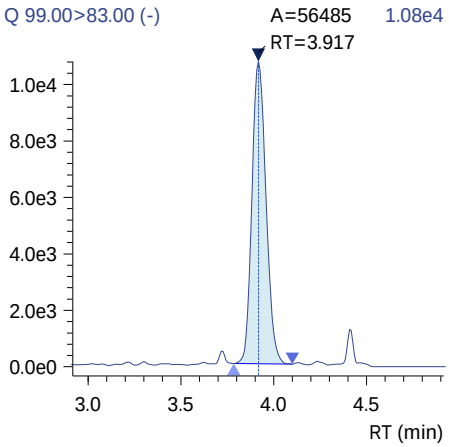
PERCHLORATE5

Sample ID: PERCHLORATE5
Date Acquired: 9/9/2022 12:17:50 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_017.lcd
Vial: 24 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.917	56485	213010	1.9588	ng/mL	39.28	26.81-49.79
Perchlorate 2	Auto	3.915	22186	213010	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.913	213010	213010	1.0000	ng/mL	----	

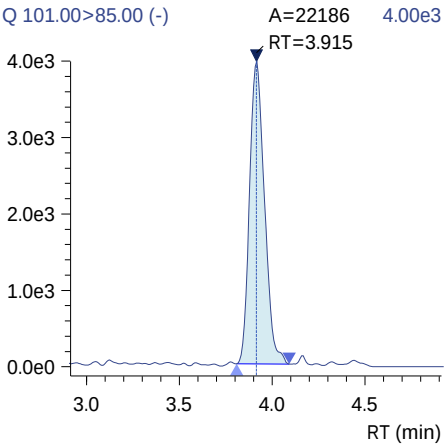
Perchlorate

Conc 1.9588



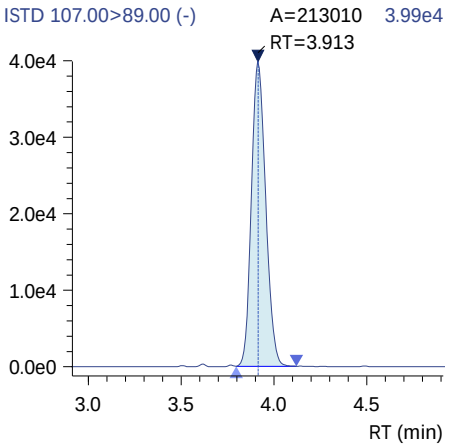
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/9/2022 1:20:08 PM

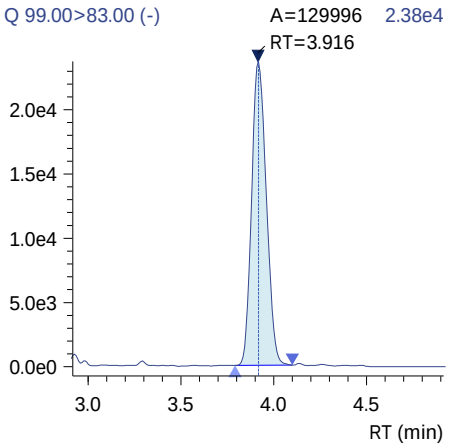
PERCHLORATE6

Sample ID: PERCHLORATE6
Date Acquired: 9/9/2022 12:26:13 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_018.lcd
Vial: 25 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	MI R1	3.916	129996	204200	4.7026	ng/mL	38.88	26.81-49.79
Perchlorate 2	M	3.911	50537	204200	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.914	204200	204200	1.0000	ng/mL	----	

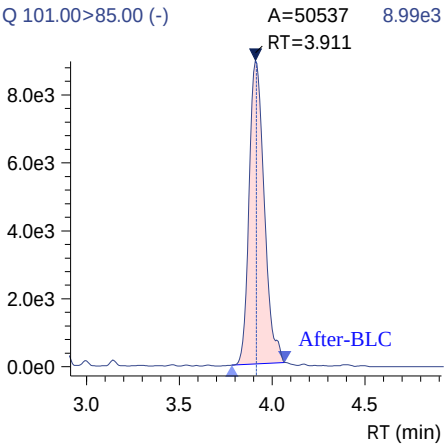
Perchlorate

Conc 4.7026



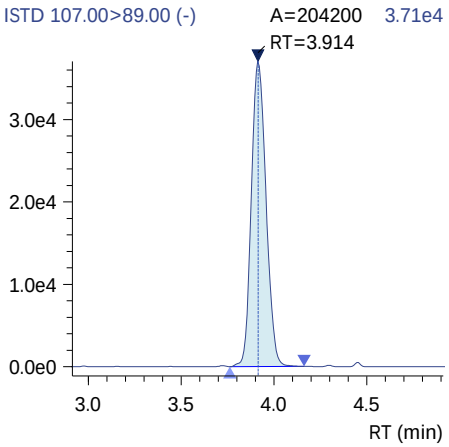
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/9/2022 1:21:18 PM

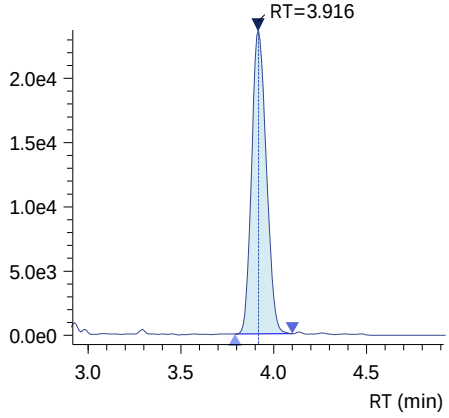
PERCHLORATE6

Sample ID: PERCHLORATE6
Date Acquired: 9/9/2022 12:26:13 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_018.lcd
Vial: 25 | Inj. Volume: 25.0000uL | Tray: 1

Perchlorate

Conc 4.7026

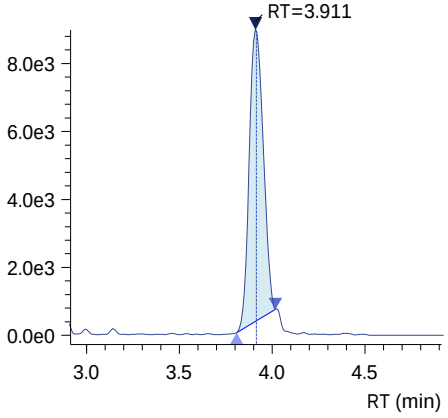
Q 99.00>83.00 (-) A=129996 2.38e4 RT=3.916



Perchlorate 2

Conc 0.0000

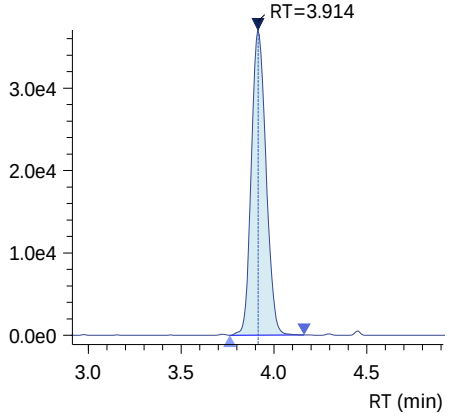
Q 101.00>85.00 (-) A=45115 8.99e3 RT=3.911



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=204200 3.71e4 RT=3.914



Insight Report

Printed at 9/9/2022 1:20:08 PM

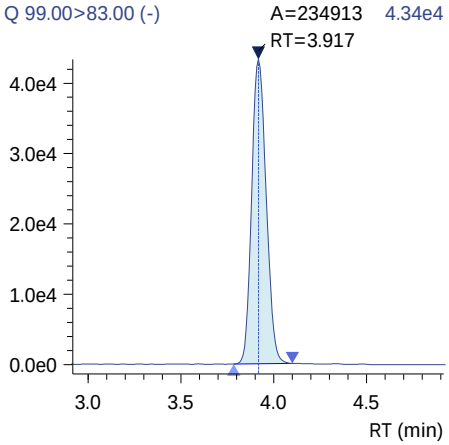
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 9/9/2022 12:34:38 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_019.lcd
Vial: 26 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.917	234913	173644	9.9933	ng/mL	38.30	26.81-49.79
Perchlorate 2	Auto	3.914	89967	173644	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.913	173644	173644	1.0000	ng/mL	----	

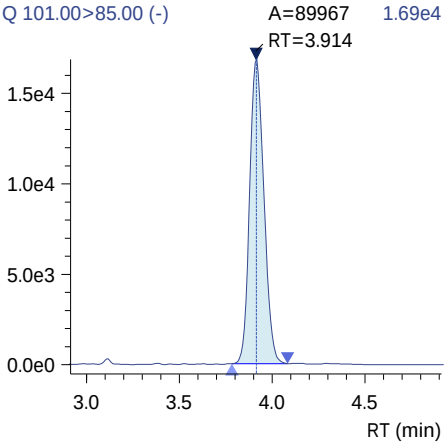
Perchlorate

Conc 9.9933



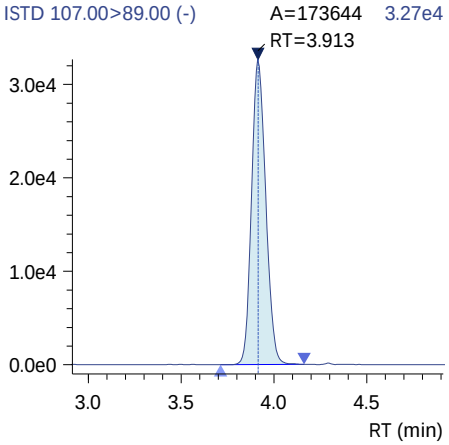
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/9/2022 1:20:08 PM

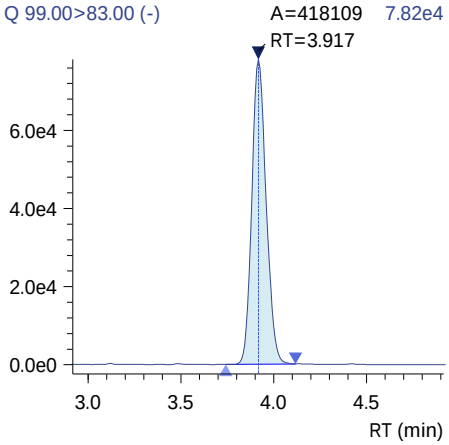
PERCHLORATE8

Sample ID: PERCHLORATE8
Date Acquired: 9/9/2022 12:43:02 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_020.lcd
Vial: 27 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.917	418109	159338	19.3835	ng/mL	37.90	26.81-49.79
Perchlorate 2	Auto	3.915	158442	159338	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.913	159338	159338	1.0000	ng/mL	----	

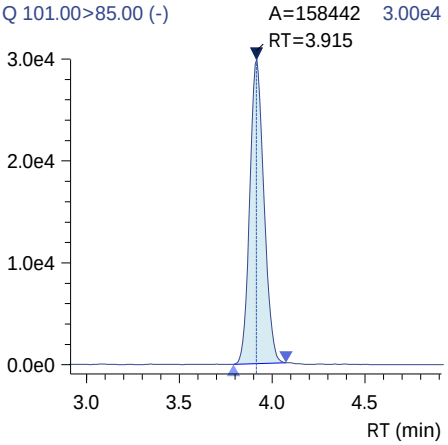
Perchlorate

Conc 19.3835



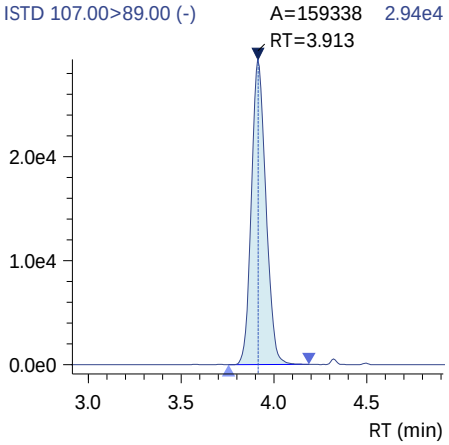
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/9/2022 1:20:08 PM

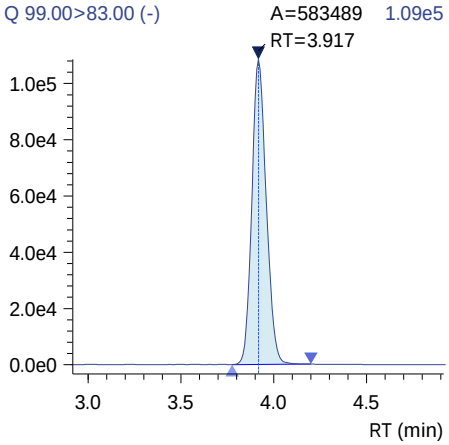
PERCHLORATE9

Sample ID: PERCHLORATE9
Date Acquired: 9/9/2022 12:51:25 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_021.lcd
Vial: 28 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.917	583489	149291	28.8709	ng/mL	38.38	26.81-49.79
Perchlorate 2	Auto	3.914	223954	149291	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.914	149291	149291	1.0000	ng/mL	----	

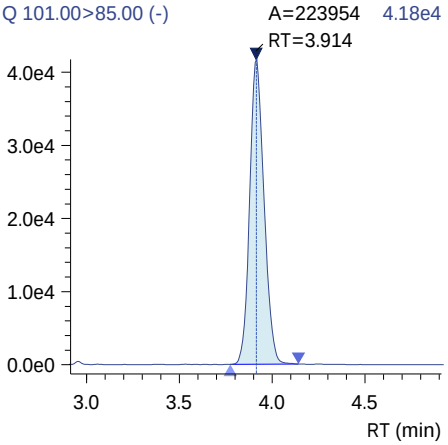
Perchlorate

Conc 28.8709



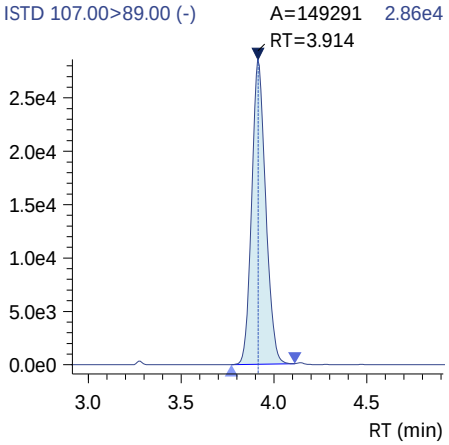
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/9/2022 1:20:08 PM

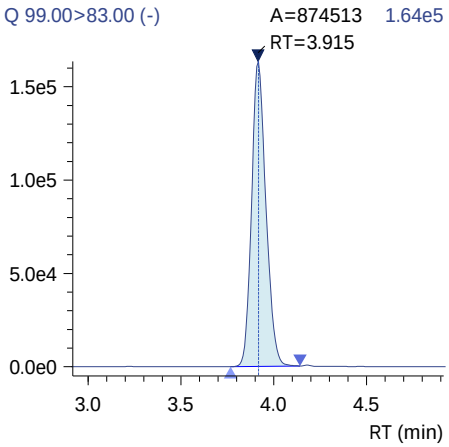
PERCHLORATE10

Sample ID: PERCHLORATE10
Date Acquired: 9/9/2022 12:59:50 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_022.lcd
Vial: 29 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.915	874513	137744	46.8981	ng/mL	38.21	26.81-49.79
Perchlorate 2	Auto	3.912	334169	137744	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.913	137744	137744	1.0000	ng/mL	----	

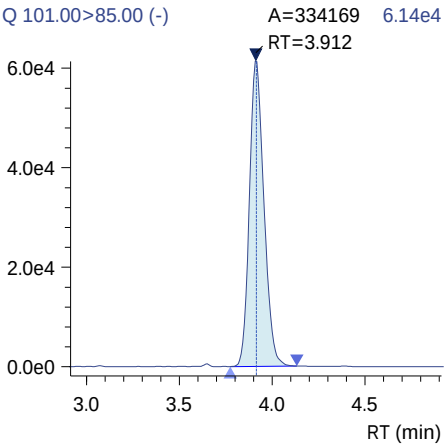
Perchlorate

Conc 46.8981



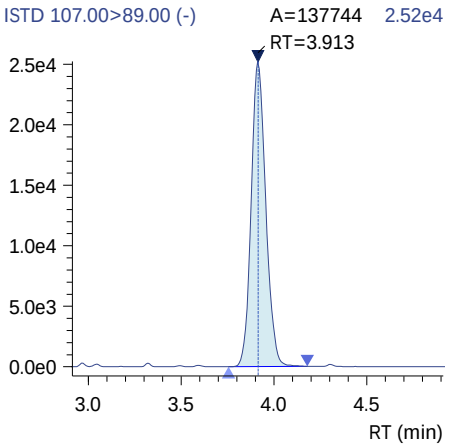
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/9/2022 1:20:08 PM

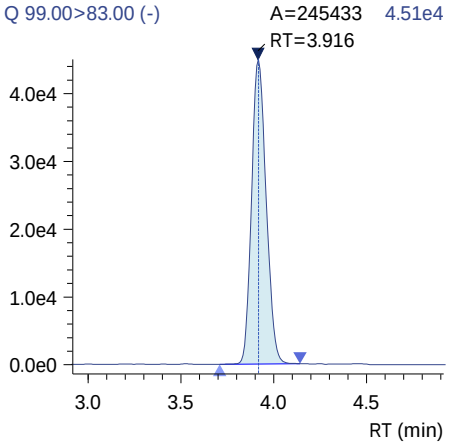
PERCHLORATEICV

Sample ID: PERCHLORATEICV
Date Acquired: 9/9/2022 1:08:14 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_023.lcd
Vial: 30 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.916	245433	169790	10.6778	ng/mL	38.49	26.81-49.79
Perchlorate 2	Auto	3.913	94465	169790	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.912	169790	169790	1.0000	ng/mL	----	

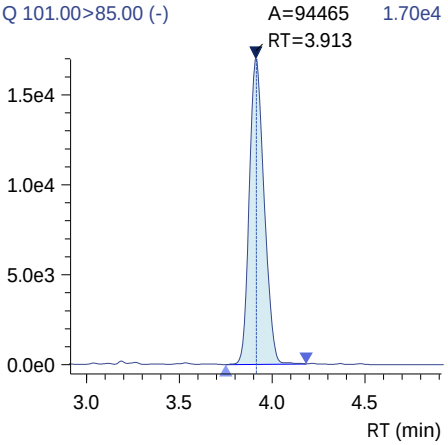
Perchlorate

Conc 10.6778



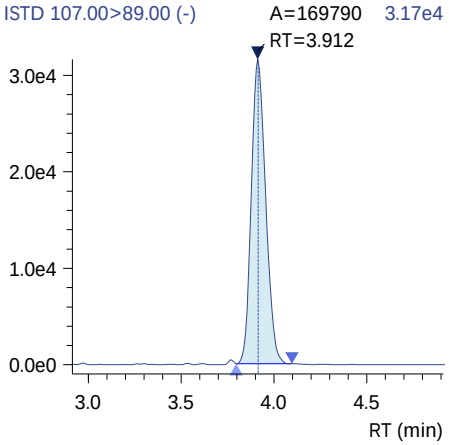
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Chromatograms and Selected Ion Monitoring

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 320, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

20220909

1st Review: GRivera
2nd Review: Kneir

Injection Log
LCMS01 -Shimadzu 8050

ICAL Date: 9/9/2022
Cal. Std. xp: 10/29/2022
ICAL ID: **EC2200013**

Mobile Phases **A:** 0.10% Formic Acid/Water 3100820-05 **B:** MeOH 218535

			File Name	Acquisition Method	Dilution	R	Comments	Date/Time
1	PERCHLORATE1		20220909_013	Perchlorate6850c.lcm	1x	☒	224623	9/9/2022 11:35
2	PERCHLORATE2		20220909_014	Perchlorate6850c.lcm	1x	☒	224624	9/9/2022 11:52
3	PERCHLORATE3		20220909_015	Perchlorate6850c.lcm	1x	☒	224625	9/9/2022 12:01
4	PERCHLORATE4		20220909_016	Perchlorate6850c.lcm	1x	☒	224626	9/9/2022 12:09
5	PERCHLORATE5		20220909_017	Perchlorate6850c.lcm	1x	☒	224628	9/9/2022 12:17
6	PERCHLORATE6		20220909_018	Perchlorate6850c.lcm	1x	☒	224629	9/9/2022 12:26
7	PERCHLORATE7		20220909_019	Perchlorate6850c.lcm	1x	☒	224631	9/9/2022 12:34
8	PERCHLORATE8		20220909_020	Perchlorate6850c.lcm	1x	☒	224632	9/9/2022 12:43
9	PERCHLORATE9		20220909_021	Perchlorate6850c.lcm	1x	☒	224634	9/9/2022 12:51
10	PERCHLORATE10		20220909_022	Perchlorate6850c.lcm	1x	☒	224636	9/9/2022 12:59
11	PERCHLORATEICV		20220909_023	Perchlorate6850c.lcm	1x	☒	224637	9/9/2022 13:08
12	IB		20220909_024	Perchlorate6850c.lcm	1x	☒		9/9/2022 13:16
13	LODV		20220909_025	Perchlorate6850c.lcm	1x	☒	224622	9/9/2022 13:25
14	ICS		20220909_026	Perchlorate6850c.lcm	1x	☒		9/9/2022 13:33
15	PERCHLORATE7		20220909_027	Perchlorate6850c.lcm	1x	☒	224631	9/9/2022 13:41
16	EQ2200387-01		20220909_028	Perchlorate6850c.lcm	1x	☒		9/9/2022 13:50
17	EQ2200387-02		20220909_029	Perchlorate6850c.lcm	1x	☒		9/9/2022 13:58
18	EQ2200387-03		20220909_030	Perchlorate6850c.lcm	1x	☒		9/9/2022 14:07
19	E2200861-001		20220909_031	Perchlorate6850c.lcm	1x	☒		9/9/2022 14:48
20	E2200861-002		20220909_032	Perchlorate6850c.lcm	1x	☒		9/9/2022 14:57
21	PERCHLORATE7		20220909_033	Perchlorate6850c.lcm	1x	☒	224631	9/9/2022 15:05
22	EQ2200385-01		20220909_034	Perchlorate6850c.lcm	1x	☒		9/9/2022 15:14
23	EQ2200385-02		20220909_035	Perchlorate6850c.lcm	1x	☒		9/9/2022 15:22
24	EQ2200385-03		20220909_036	Perchlorate6850c.lcm	1x	☒		9/9/2022 16:23
25	E2200851-001		20220909_037	Perchlorate6850c.lcm	50x	☒		9/9/2022 16:32
26	E2200851-002		20220909_038	Perchlorate6850c.lcm	100x	☒		9/9/2022 16:41
27	E2200851-003		20220909_039	Perchlorate6850c.lcm	10x	☒		9/9/2022 16:49
28	E2200851-004		20220909_040	Perchlorate6850c.lcm	10x	☒		9/9/2022 16:58
29	E2200851-005		20220909_041	Perchlorate6850c.lcm	500x	☒		9/9/2022 17:06
30	E2200851-006		20220909_042	Perchlorate6850c.lcm	500x	☒		9/9/2022 17:14
31	E2200851-007		20220909_043	Perchlorate6850c.lcm	1000x	☒		9/9/2022 17:23
32	PERCHLORATE7		20220909_044	Perchlorate6850c.lcm	1x	☒	224631	9/9/2022 17:31
33	E2200851-008		20220909_045	Perchlorate6850c.lcm	2000x	☒		9/9/2022 17:40
34	E2200851-009		20220909_046	Perchlorate6850c.lcm	50x	☒		9/9/2022 17:48
35	E2200851-010		20220909_047	Perchlorate6850c.lcm	10x	☒		9/9/2022 17:56
36	E2200851-011		20220909_048	Perchlorate6850c.lcm	10x	☒		9/9/2022 18:05
37	E2200851-012		20220909_049	Perchlorate6850c.lcm	2000x	☒		9/9/2022 18:13
38	E2200851-013		20220909_050	Perchlorate6850c.lcm	500x	☒		9/9/2022 18:21
39	E2200851-014		20220909_051	Perchlorate6850c.lcm	10x	☒		9/9/2022 18:30
40	E2200851-015		20220909_052	Perchlorate6850c.lcm	200x	☒		9/9/2022 18:38
41	E2200851-016		20220909_053	Perchlorate6850c.lcm	1x	☒	DNU-IR	9/9/2022 18:47
42	E2200851-017		20220909_054	Perchlorate6850c.lcm	50x	☒		9/9/2022 18:55
43	PERCHLORATE7		20220909_055	Perchlorate6850c.lcm	1x	☒	224631	9/9/2022 19:03
44	E2200851-018		20220909_056	Perchlorate6850c.lcm	1x	☒		9/9/2022 19:12
45	E2200851-019		20220909_057	Perchlorate6850c.lcm	10x	☒		9/9/2022 19:20
46	E2200851-020		20220909_058	Perchlorate6850c.lcm	500x	☒		9/9/2022 19:29
47	PERCHLORATE7		20220909_059	Perchlorate6850c.lcm	1x	☒	224631	9/9/2022 19:37
48	R2207855-003		20220909_060	Perchlorate6850c.lcm	1x	☒		9/9/2022 19:45
49	R2207855-011DNU-IS		20220909_061	Perchlorate6850c.lcm	1x	☒	DNU-IS out of range	9/9/2022 19:54
50	EQ2200387-04		20220909_062	Perchlorate6850c.lcm	1x	☒		9/9/2022 20:02
51	EQ2200387-05		20220909_063	Perchlorate6850c.lcm	1x	☒		9/9/2022 20:11
52	EQ2200387-06		20220909_064	Perchlorate6850c.lcm	1x	☒	MS over ICAL range	9/9/2022 20:19
53	EQ2200387-07		20220909_065	Perchlorate6850c.lcm	1x	☒	DMS over ICAL range	9/9/2022 20:27
54	E2200850-001		20220909_066	Perchlorate6850c.lcm	1x	☒	Reanalyze: carryover	9/9/2022 20:36
55	E2200850-002		20220909_067	Perchlorate6850c.lcm	1x	☒	Reanalyze: carryover	9/9/2022 20:44
56	E2200850-003		20220909_068	Perchlorate6850c.lcm	1x	☒	Reanalyze: carryover	9/9/2022 20:53
57	E2200850-004		20220909_069	Perchlorate6850c.lcm	1x	☒	Reanalyze: carryover	9/9/2022 21:01
58	PERCHLORATE7		20220909_070	Perchlorate6850c.lcm	1x	☒	224631	9/9/2022 21:09
59	E2200850-005		20220909_071	Perchlorate6850c.lcm	1x	☒	Reanalyze CCV failed	9/9/2022 21:18
60	E2200850-006		20220909_072	Perchlorate6850c.lcm	1x	☒	Reanalyze CCV failed	9/9/2022 21:26
61	E2200864-001		20220909_073	Perchlorate6850c.lcm	1x	☒	Reanalyze CCV failed	9/9/2022 21:34
62	E2200864-002		20220909_074	Perchlorate6850c.lcm	1x	☒	Reanalyze CCV failed	9/9/2022 21:43
63	E2200864-003		20220909_075	Perchlorate6850c.lcm	1x	☒	DNU-over ICAL range	9/9/2022 21:51
64	E2200864-004		20220909_076	Perchlorate6850c.lcm	1x	☒	DNU-over ICAL range	9/9/2022 22:00
65	E2200864-005		20220909_077	Perchlorate6850c.lcm	1x	☒	DNU-over ICAL range	9/9/2022 22:08
66	E2200864-006		20220909_078	Perchlorate6850c.lcm	1x	☒	DNU-over ICAL range	9/9/2022 22:16

20220909

1st Review: GRivera
2nd Review: Kneir

Injection Log
LCMS01 -Shimadzu 8050

ICAL Date: 9/9/2022
Cal. Std. xp: 10/29/2022
ICAL ID: **EC2200013**

Mobile Phases **A:** 0.10% Formic Acid/Water 3100820-05 **B:** MeOH 218535

			File Name	Acquisition Method	Dilution	R	Comments	Date/Time
67	PERCHLORATE7		20220909_079	Perchlorate6850c.lcm	1x	☒	224631-CCV failed high	9/9/2022 22:25
68	E2200851-021		20220909_080	Perchlorate6850c.lcm	1x	☒	DNU-over ICAL range	9/9/2022 22:33
69	E2200851-022		20220909_081	Perchlorate6850c.lcm	1x	☒	Reanalyze CCV failed	9/9/2022 22:41
70	E2200851-023		20220909_082	Perchlorate6850c.lcm	1x	☒	DNU-over ICAL range	9/9/2022 22:50
71	PERCHLORATE7		20220909_083	Perchlorate6850c.lcm	1x	☒	224631-CCV failed high	9/9/2022 22:58
72	E2200852-001		20220909_084	Perchlorate6850c.lcm	1x	☒	Reanalyze CCV failed	9/9/2022 23:07
73	E2200852-002		20220909_085	Perchlorate6850c.lcm	1x	☒	Reanalyze CCV failed	9/9/2022 23:15
74	E2200852-003		20220909_086	Perchlorate6850c.lcm	1x	☒	Reanalyze CCV failed	9/9/2022 23:24
75	E2200852-004		20220909_087	Perchlorate6850c.lcm	1x	☒	Reanalyze CCV failed	9/9/2022 23:32
76	E2200852-005		20220909_088	Perchlorate6850c.lcm	1x	☒	Reanalyze CCV failed	9/9/2022 23:40
77	E2200852-006		20220909_089	Perchlorate6850c.lcm	1x	☒	Reanalyze CCV failed	9/9/2022 23:49
78	E2200852-007		20220909_090	Perchlorate6850c.lcm	1x	☒	Reanalyze CCV failed	9/9/2022 23:57
79	PERCHLORATE7		20220909_091	Perchlorate6850c.lcm	1x	☒	224631	9/10/2022 0:06
80	E2200852-008		20220909_092	Perchlorate6850c.lcm	1000x	☒	DNU-over ICAL range	9/10/2022 0:14
81	E2200852-009		20220909_093	Perchlorate6850c.lcm	1000x	☒	DNU-over ICAL range	9/10/2022 0:22
82	E2200852-010		20220909_094	Perchlorate6850c.lcm	1000x	☒	Run a 500x	9/10/2022 0:31
83	E2200852-011		20220909_095	Perchlorate6850c.lcm	1000x	☒	DNU-over ICAL range	9/10/2022 0:39
84	E2200852-012		20220909_096	Perchlorate6850c.lcm	1000x	☒	DNU-over ICAL range	9/10/2022 0:47
85	E2200852-013		20220909_097	Perchlorate6850c.lcm	1000x	☒	DNU-over ICAL range	9/10/2022 0:56
86	E2200852-014		20220909_098	Perchlorate6850c.lcm	1000x	☒	DNU-over ICAL range	9/10/2022 1:04
87	E2200852-015		20220909_099	Perchlorate6850c.lcm	1x	☒	Reanalyze: carryover	9/10/2022 1:13
88	E2200852-016		20220909_100	Perchlorate6850c.lcm	1x	☒	DNU-over ICAL range	9/10/2022 1:21
89	PERCHLORATE7		20220909_101	Perchlorate6850c.lcm	1x	☒	224631	9/10/2022 1:29
90	E2200852-017		20220909_102	Perchlorate6850c.lcm	1x	☒	DNU-over ICAL range	9/10/2022 1:38
91	E2200852-019		20220909_103	Perchlorate6850c.lcm	1000x	☒	DNU-over ICAL range	9/10/2022 1:46
92	PERCHLORATE7		20220909_104	Perchlorate6850c.lcm	1x	☒	224631-CCV failed high	9/10/2022 1:55
93	IB		20220909_105	Perchlorate6850c.lcm	1x	☒		9/10/2022 2:03
94	IB		20220909_106	Perchlorate6850c.lcm	1x	☒		9/10/2022 2:12
95	null		20220909_107	Perchlorate6850c.lcm	1x	☒		9/10/2022 2:17
96	null		20220909_108	Perchlorate6850c.lcm	1x	☒		9/10/2022 2:22

20220912

1st Review: GRivera
2nd Review: Kneir

Injection Log
LCMS01 -Shimadzu 8050

ICAL Date: 9/9/2022
Cal. Std. xp: 10/29/2022
ICAL ID: **EC2200013**

Mobile Phases **A:** 0.10% Formic Acid/Water 3100820-05 **B:** MeOH 218535

			File Name	Acquisition Method	Dilution	R	Comments	Date/Time
1	null		20220912_001	Perchlorate6850c.lcm	1x	☒		9/12/2022 9:25
2	null		20220912_002	Perchlorate6850c.lcm	1x	☒		9/12/2022 9:31
3	IB		20220912_003	Perchlorate6850c.lcm	1x	☒		9/12/2022 9:36
4	IB		20220912_004	Perchlorate6850c.lcm	1x	☒		9/12/2022 11:06
5	LODV		20220912_005	Perchlorate6850c.lcm	1x	☒	224622	9/12/2022 13:12
6	ICS		20220912_006	Perchlorate6850c.lcm	1x	☒		9/12/2022 13:21
7	PERCHLORATE7		20220912_007	Perchlorate6850c.lcm	1x	☒	224631	9/12/2022 13:29
8	E2200851-016		20220912_008	Perchlorate6850c.lcm	1x	☒		9/12/2022 13:38
9	E2200851-022		20220912_009	Perchlorate6850c.lcm	1x	☒		9/12/2022 13:46
10	E2200852-001		20220912_010	Perchlorate6850c.lcm	1x	☒		9/12/2022 13:55
11	E2200852-004		20220912_011	Perchlorate6850c.lcm	1x	☒		9/12/2022 14:20
12	E2200852-006		20220912_012	Perchlorate6850c.lcm	1x	☒		9/12/2022 14:37
13	E2200852-007		20220912_013	Perchlorate6850c.lcm	1x	☒		9/12/2022 14:45
14	E2200851-021		20220912_014	Perchlorate6850c.lcm	100x	☒		9/12/2022 15:02
15	E2200851-023		20220912_015	Perchlorate6850c.lcm	200x	☒		9/12/2022 15:10
16	PERCHLORATE7		20220912_016	Perchlorate6850c.lcm	1x	☒	224631	9/12/2022 15:18
17	E2200852-002		20220912_017	Perchlorate6850c.lcm	1x	☒		9/12/2022 15:27
18	E2200852-015		20220912_018	Perchlorate6850c.lcm	1x	☒		9/12/2022 15:44
19	E2200852-005		20220912_019	Perchlorate6850c.lcm	1x	☒		9/12/2022 15:52
20	R2207855-011		20220912_020	Perchlorate6850c.lcm	1x	☒		9/12/2022 16:00
21	E2200852-003		20220912_021	Perchlorate6850c.lcm	1x	☒		9/12/2022 16:18
22	E2200850-001		20220912_022	Perchlorate6850c.lcm	1x	☒		9/12/2022 16:26
23	E2200850-002		20220912_023	Perchlorate6850c.lcm	1x	☒		9/12/2022 16:35
24	E2200850-003		20220912_024	Perchlorate6850c.lcm	1x	☒		9/12/2022 16:43
25	E2200850-004		20220912_025	Perchlorate6850c.lcm	1x	☒		9/12/2022 16:51
26	PERCHLORATE7		20220912_026	Perchlorate6850c.lcm	1x	☒	224631	9/12/2022 17:00
27	E2200850-005		20220912_027	Perchlorate6850c.lcm	1x	☒	Reanalyze: no ending CCV	9/12/2022 17:08
28	E2200850-006		20220912_028	Perchlorate6850c.lcm	1x	☒	Reanalyze: no ending CCV	9/12/2022 17:17
29	E2200864-001		20220912_029	Perchlorate6850c.lcm	1x	☒	Reanalyze: no ending CCV	9/12/2022 17:25
30	E2200864-002		20220912_030	Perchlorate6850c.lcm	1x	☒	Reanalyze: no ending CCV	9/12/2022 17:33
31	PERCHLORATE7		20220912_031	Perchlorate6850c.lcm	1x	☒	224631-CCV did not inject	9/12/2022 17:42

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: Perchlorates/HS22081514

Service Request: E2200851
Date Analyzed: 9/ 9/22

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20220909\20220909_027

Calibration Date: 9/9/22
Calibration ID: EC2200013
Analysis Lot: 776946
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.3	0.1354	0.1395	3.0	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: Perchlorates/HS22081514

Service Request: E2200851
Date Analyzed: 9/ 9/22

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20220909\20220909_033

Calibration Date: 9/9/22
Calibration ID: EC2200013
Analysis Lot: 776946
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.5	0.1354	0.1424	5.2	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: Perchlorates/HS22081514

Service Request: E2200851
Date Analyzed: 9/ 9/22

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20220909\20220909_044

Calibration Date: 9/9/22
Calibration ID: EC2200013
Analysis Lot: 776946
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.5	0.1354	0.1423	5.1	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: Perchlorates/HS22081514

Service Request: E2200851
Date Analyzed: 9/ 9/22

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20220909\20220909_055

Calibration Date: 9/9/22
Calibration ID: EC2200013
Analysis Lot: 776946
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.1	0.1354	0.1373	1.4	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	Perchlorates/HS22081514	**Date Analyzed:**	9/ 9/22

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method:	6850	**Calibration Date:**	9/9/22
File ID:	I:\LCMS01\DATA\20220909\20220909_059	**Calibration ID:**	EC2200013
		Analysis Lot:	776946
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.4	0.1354	0.1406	3.9	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: Perchlorates/HS22081514

Service Request: E2200851
Date Analyzed: 9/ 9/22

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20220909\20220909_070

Calibration Date: 9/9/22
Calibration ID: EC2200013
Analysis Lot: 776946
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.8	0.1354	0.1460	7.9	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: Perchlorates/HS22081514

Service Request: E2200851
Date Analyzed: 9/12/22

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20220912\20220912_007

Calibration Date: 9/9/22
Calibration ID: EC2200013
Analysis Lot: 777190
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.2	0.1354	0.1385	2.3	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: Perchlorates/HS22081514

Service Request: E2200851
Date Analyzed: 9/12/22

Continuing Calibration Verification Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
File ID: I:\LCMS01\DATA\20220912\20220912_016

Calibration Date: 9/9/22
Calibration ID: EC2200013
Analysis Lot: 777190
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Perchlorate	10.0	10.5	0.1354	0.1417	4.7	NA	± 15 %	Average RF

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	Perchlorates/HS22081514	**Date Analyzed:**	9/9/22 13:41

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20220909\20220909_027	**Lab Code:**	EQ2200397-01
Instrument ID:	E-LCMS-01	**Analysis Lot:**	776946
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	192,096	3.91
	Upper Limit ==>	288,144	5.91
	Lower Limit ==>	96,048	1.91
Associated Analyses			
Continuing Calibration Verification	EQ2200397-01	169,460	3.91
Method Blank	EQ2200387-01	196,404	3.91
Lab Control Sample	EQ2200387-02	211,011	3.91
Duplicate Lab Control Sample	EQ2200387-03	216,242	3.91

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	Perchlorates/HS22081514	**Date Analyzed:**	9/9/22 15:05

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20220909\20220909_033	**Lab Code:**	EQ2200397-02
Instrument ID:	E-LCMS-01	**Analysis Lot:**	776946
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	192,096	3.91
	Upper Limit ==>	288,144	5.91
	Lower Limit ==>	96,048	1.91
Associated Analyses			
Continuing Calibration Verification	EQ2200397-02	145,715	3.92
Method Blank	EQ2200385-01	196,136	3.92
Lab Control Sample	EQ2200385-02	191,147	3.92
Duplicate Lab Control Sample	EQ2200385-03	155,452	3.92
ICT2_082522	E2200851-001	115,792	3.91
ICT4_082522	E2200851-002	104,986	3.91
ICT7_082522	E2200851-003	105,570	3.91
ICT8_082522	E2200851-004	114,210	3.91
ICT11_082522	E2200851-005	104,181	3.91
ICT11_082522_a	E2200851-006	111,296	3.91
ICT12A_082522	E2200851-007	127,715	3.91

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	Perchlorates/HS22081514	**Date Analyzed:**	9/9/22 17:31

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20220909\20220909_044	**Lab Code:**	EQ2200397-03
Instrument ID:	E-LCMS-01	**Analysis Lot:**	776946
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	192,096	3.91
	Upper Limit ==>	288,144	5.91
	Lower Limit ==>	96,048	1.91
Associated Analyses			
Continuing Calibration Verification	EQ2200397-03	133,685	3.91
ICT12B_082522	E2200851-008	128,888	3.91
ICT12C_082522	E2200851-009	141,160	3.91
ICT12D_082522	E2200851-010	146,206	3.91
ICT12D_082522_a	E2200851-011	147,086	3.91
ICT12E_082522	E2200851-012	129,237	3.91
ICT13A_082522	E2200851-013	127,526	3.91
ICT13B_082522	E2200851-014	128,464	3.90
ICT13C_082522	E2200851-015	127,168	3.91
ICT13E_082522	E2200851-017	139,444	3.91

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	Perchlorates/HS22081514	**Date Analyzed:**	9/9/22 19:03

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20220909\20220909_055	**Lab Code:**	EQ2200397-04
Instrument ID:	E-LCMS-01	**Analysis Lot:**	776946
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	192,096	3.91
	Upper Limit ==>	288,144	5.91
	Lower Limit ==>	96,048	1.91
Associated Analyses			
Continuing Calibration Verification	EQ2200397-04	141,940	3.91
ICT13F_082522	E2200851-018	184,276	3.89
ICT14A_082522	E2200851-019	131,999	3.91
ICT14B_082522	E2200851-020	139,722	3.91

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	Perchlorates/HS22081514	**Date Analyzed:**	9/9/22 19:37

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20220909\20220909_059	**Lab Code:**	EQ2200397-05
Instrument ID:	E-LCMS-01	**Analysis Lot:**	776946
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	192,096	3.91
	Upper Limit ==>	288,144	5.91
	Lower Limit ==>	96,048	1.91
Associated Analyses			
Continuing Calibration Verification	EQ2200397-05	141,224	3.91
ICT14D_082522MS	EQ2200387-04	228,387	3.82
ICT14D_082522DMS	EQ2200387-05	223,163	3.82

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	Perchlorates/HS22081514	**Date Analyzed:**	9/9/22 21:09

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20220909\20220909_070	**Lab Code:**	EQ2200397-06
Instrument ID:	E-LCMS-01	**Analysis Lot:**	776946
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	192,096	3.91
	Upper Limit ==>	288,144	5.91
	Lower Limit ==>	96,048	1.91
Associated Analyses			
Continuing Calibration Verification	EQ2200397-06	140,446	3.91

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	Perchlorates/HS22081514	**Date Analyzed:**	9/12/22 13:29

Internal Standard Area and RT Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20220912\20220912_007	**Lab Code:**	EQ2200400-01
Instrument ID:	E-LCMS-01	**Analysis Lot:**	777190
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	192,096	3.91
	Upper Limit ==>	288,144	5.91
	Lower Limit ==>	96,048	1.91
Associated Analyses			
Continuing Calibration Verification	EQ2200400-01	185,641	3.94
ICT13D_082522	E2200851-016	271,026	3.88
ICT14D_082522	E2200851-022	266,052	3.84
ICT14C_082522	E2200851-021	142,688	3.93
ICT14E_082522	E2200851-023	154,800	3.94

Results flagged with an asterisk (*) indicate values outside control criteria.

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client:	ALS Environmental - US	**Service Request:**	E2200851
Project:	Perchlorates/HS22081514	**Date Analyzed:**	9/12/22 15:18

Internal Standard Area and RT Summary

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

File ID:	I:\LCMS01\DATA\20220912\20220912_016	**Lab Code:**	EQ2200400-02
Instrument ID:	E-LCMS-01	**Analysis Lot:**	777190
Analytical Method:	6850	**Signal ID:**	1

		Sodium Perchlorate-18O4	
		Area	**RT**
	ICAL Average ==>	192,096	3.91
	Upper Limit ==>	288,144	5.91
	Lower Limit ==>	96,048	1.91
Associated Analyses			
Continuing Calibration Verification	EQ2200400-02	174,661	3.94

Results flagged with an asterisk (*) indicate values outside control criteria.

Insight Report

Printed at 9/12/2022 2:09:13 PM

Method File: I:\LCMS01\DATA\20220909\20220909.lcm
Project File: I:\LCMS01\DATA\20220909\20220909.damlp

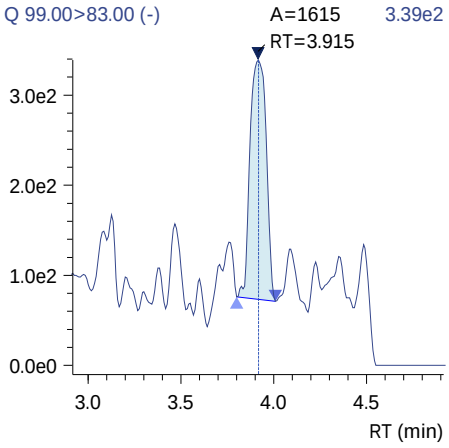
LODV

Sample ID: LODV
Date Acquired: 9/9/2022 1:25:01 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_025.lcd
Vial: 33 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	MI R1	3.915	1615	217828	0.0548	ng/mL	40.87	27.04-50.23
Perchlorate 2	M	3.896	660	217828	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.915	217828	217828	1.0000	ng/mL	----	

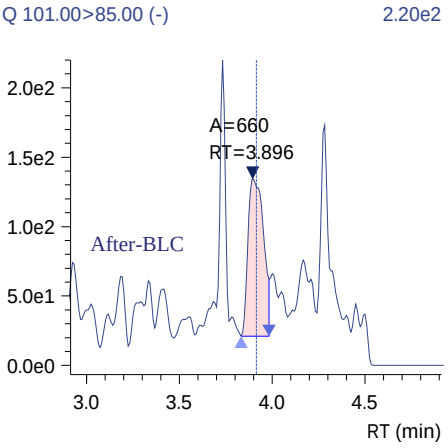
Perchlorate

Conc 0.0548



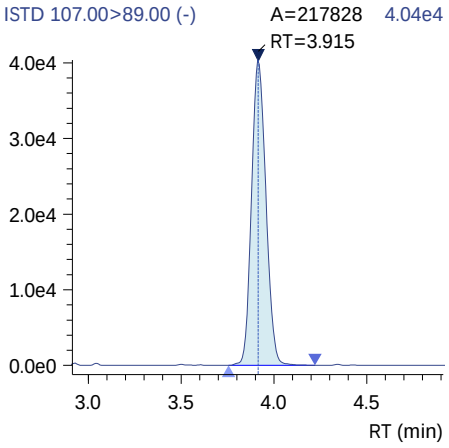
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:12:00 PM

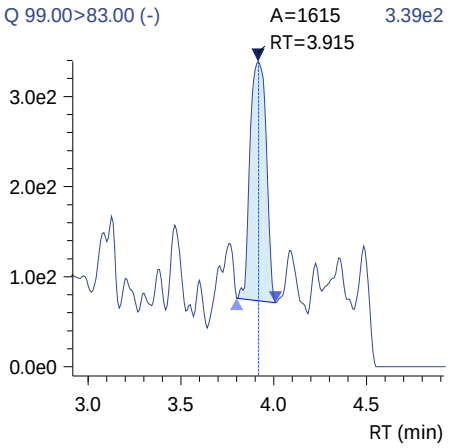
Method File: I:\LCMS01\DATA\20220909\20220909.lcm
Project File: I:\LCMS01\DATA\20220909\20220909.damlp

LODV

Sample ID: LODV
Date Acquired: 9/9/2022 1:25:01 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_025.lcd
Vial: 33 | Inj. Volume: 25.0000uL | Tray: 1

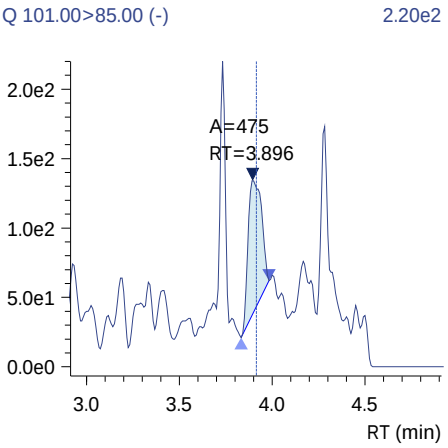
Perchlorate

Conc 0.0548



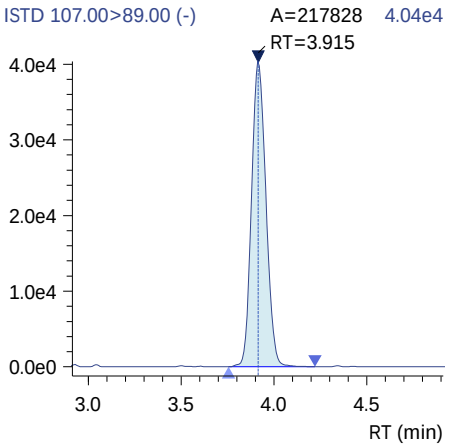
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:09:13 PM

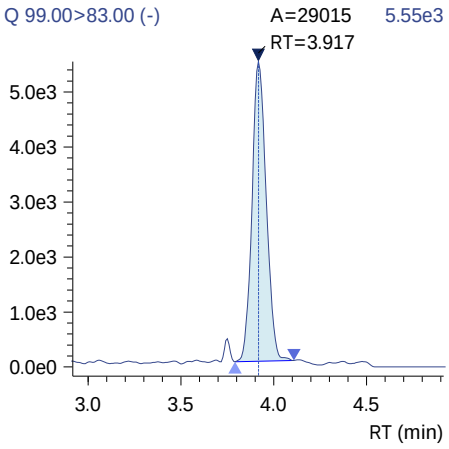
ICS

Sample ID: ICS
Date Acquired: 9/9/2022 1:33:26 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_026.lcd
Vial: 32 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.917	29015	212499	1.0086	ng/mL	37.51	27.04-50.23
Perchlorate 2	Auto	3.915	10884	212499	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.915	212499	212499	1.0000	ng/mL	----	

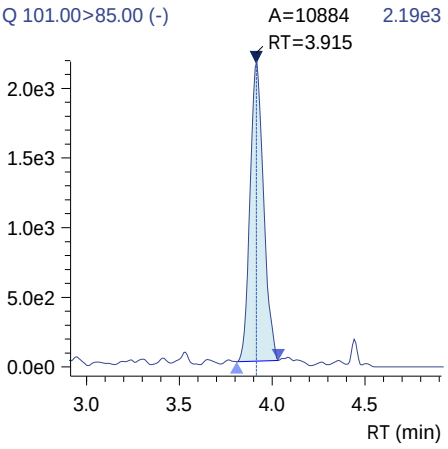
Perchlorate

Conc 1.0086



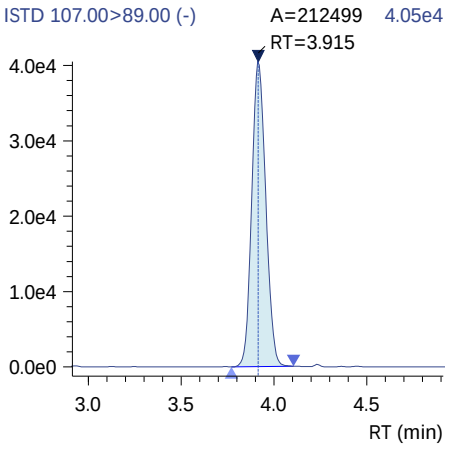
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

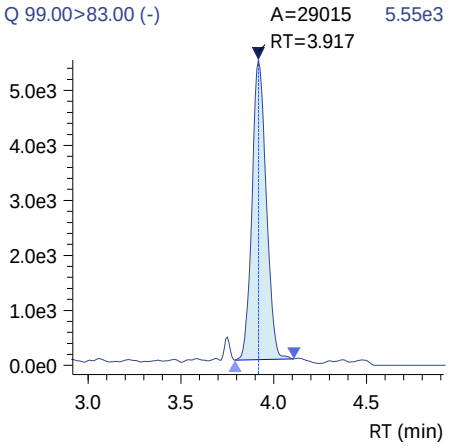
Printed at 9/12/2022 2:12:00 PM

ICS

Sample ID: ICS
Date Acquired: 9/9/2022 1:33:26 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_026.lcd
Vial: 32 | Inj. Volume: 25.0000uL | Tray: 1

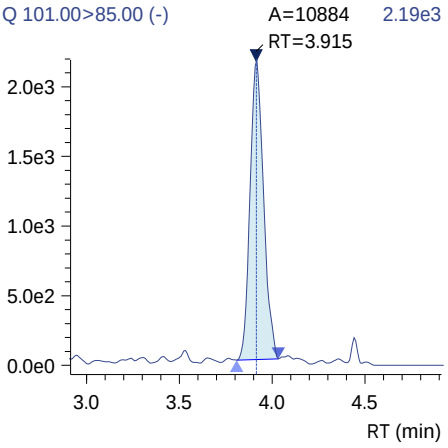
Perchlorate

Conc 1.0086



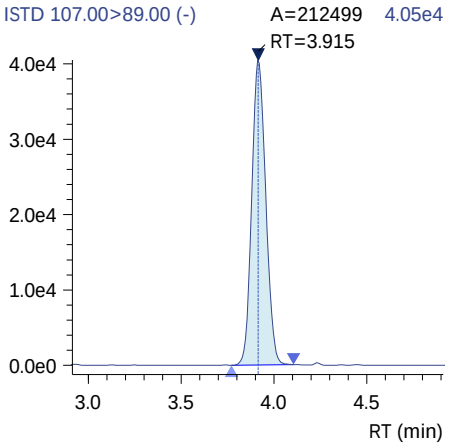
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:09:13 PM

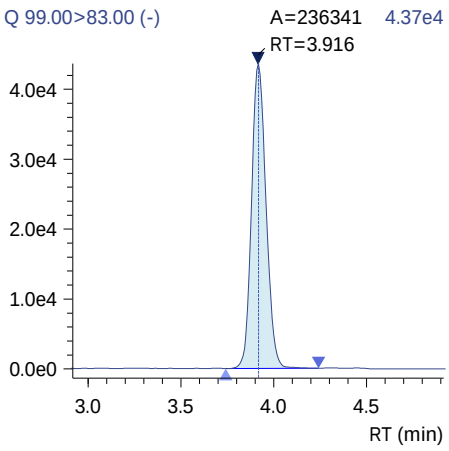
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 9/9/2022 1:41:51 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_027.lcd
Vial: 26 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.916	236341	169460	10.3023	ng/mL	37.22	27.04-50.23
Perchlorate 2	Auto	3.915	87961	169460	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.913	169460	169460	1.0000	ng/mL	----	

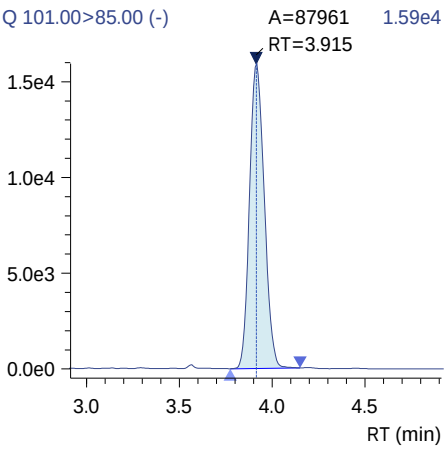
Perchlorate

Conc 10.3023



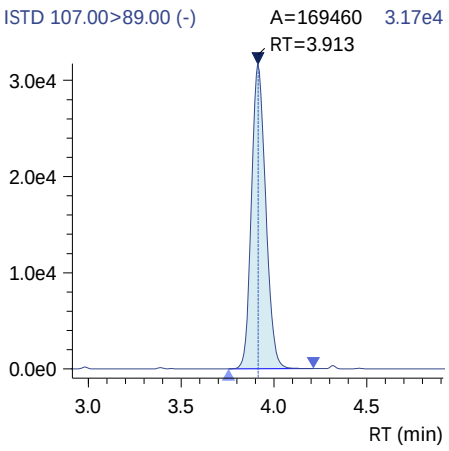
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

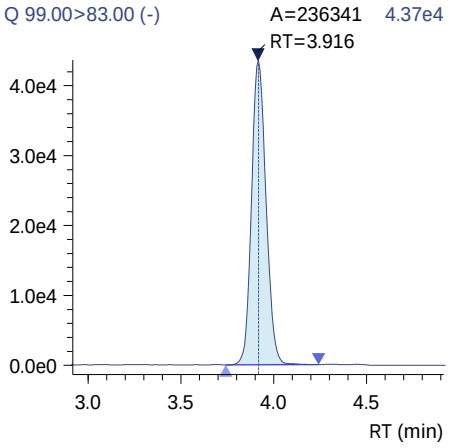
Printed at 9/12/2022 2:12:00 PM

PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 9/9/2022 1:41:51 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_027.lcd
Vial: 26 | Inj. Volume: 25.0000uL | Tray: 1

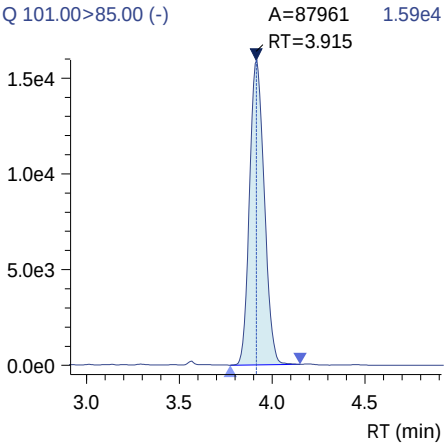
Perchlorate

Conc 10.3023



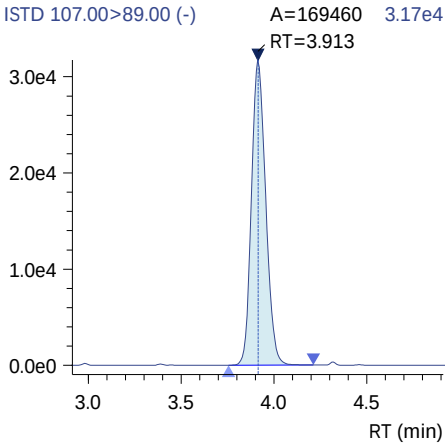
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:09:13 PM

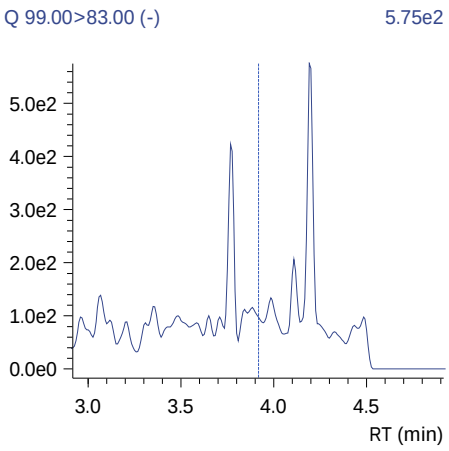
EQ2200387-01

Sample ID: EQ2200387-01
Date Acquired: 9/9/2022 1:50:12 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_028.lcd
Vial: 24 | Inj. Volume: 25.0000uL | Tray: 6

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	196404	----	ng/mL	0.00	27.04-50.23
Perchlorate 2	ND(W/B)	----	----	196404	----	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.912	196404	196404	1.0000	ng/mL	----	

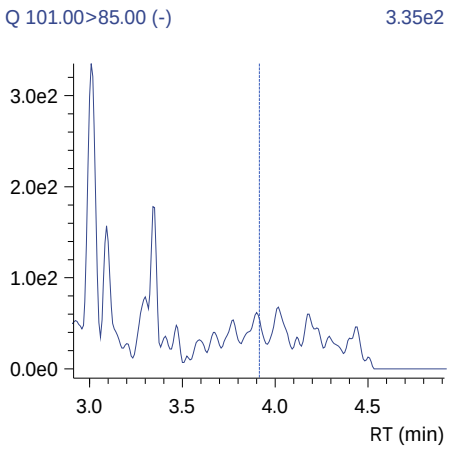
Perchlorate

Conc ----



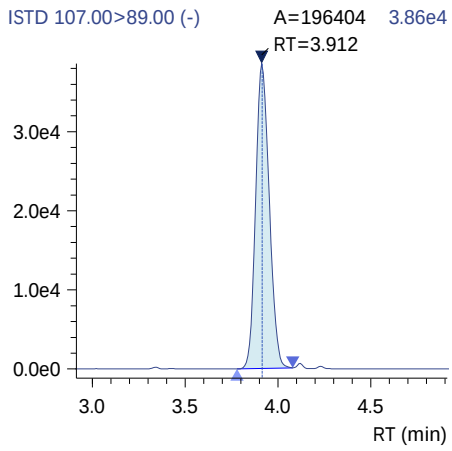
Perchlorate 2

Conc ----



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:12:00 PM

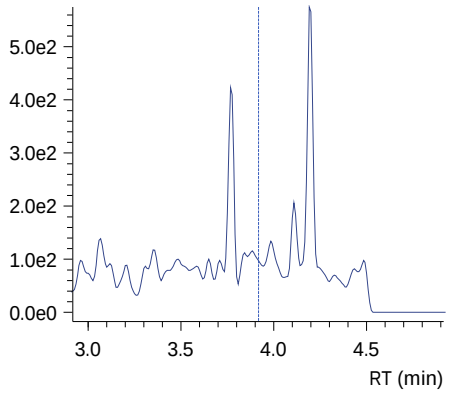
EQ2200387-01

Sample ID: EQ2200387-01
Date Acquired: 9/9/2022 1:50:12 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_028.lcd
Vial: 24 | Inj. Volume: 25.0000uL | Tray: 6

Perchlorate

Conc ----

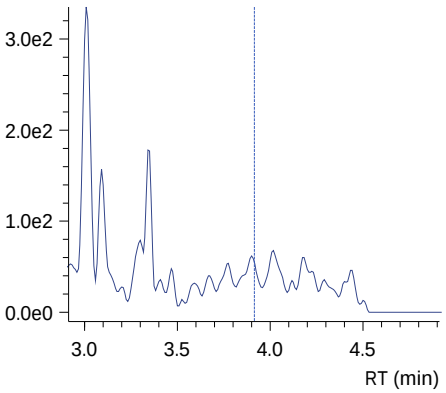
Q 99.00>83.00 (-) 5.75e2



Perchlorate 2

Conc ----

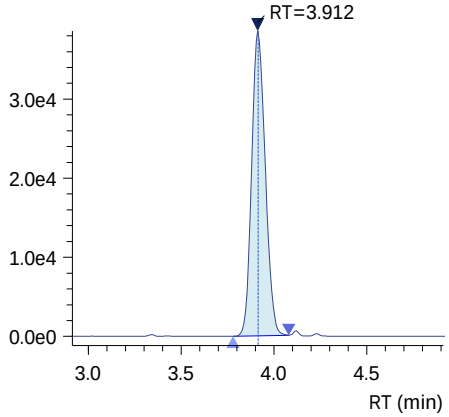
Q 101.00>85.00 (-) 3.35e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=196404 3.86e4



Insight Report

Printed at 9/12/2022 2:09:13 PM

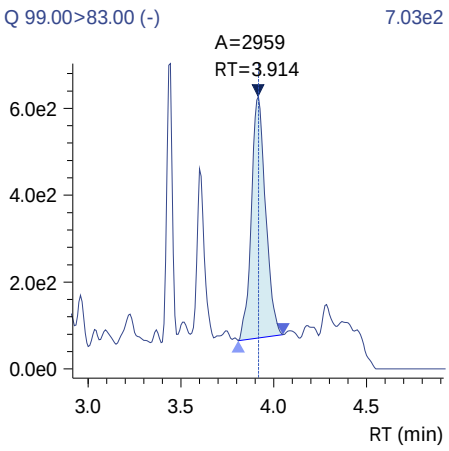
EQ2200387-02

Sample ID: EQ2200387-02
Date Acquired: 9/9/2022 1:58:39 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_029.lcd
Vial: 25 | Inj. Volume: 25.0000uL | Tray: 6

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.914	2959	211011	0.1036	ng/mL	44.34	27.04-50.23
Perchlorate 2	Auto	3.915	1312	211011	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.914	211011	211011	1.0000	ng/mL	----	

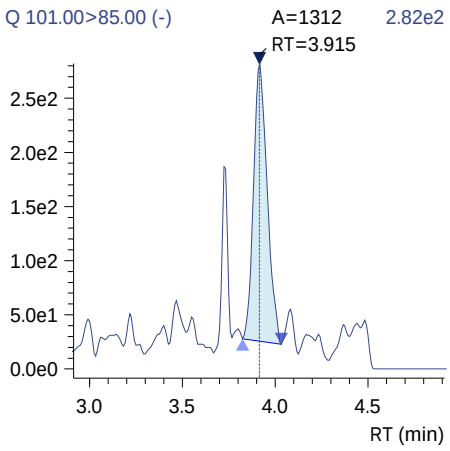
Perchlorate

Conc 0.1036



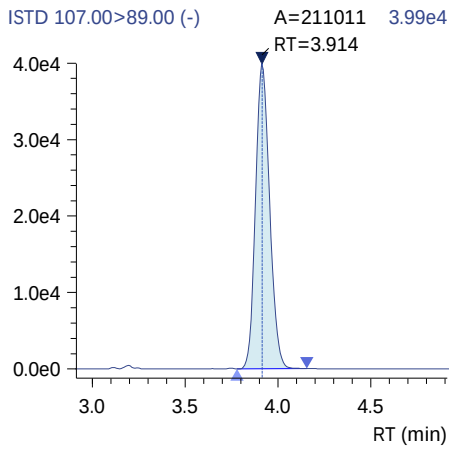
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

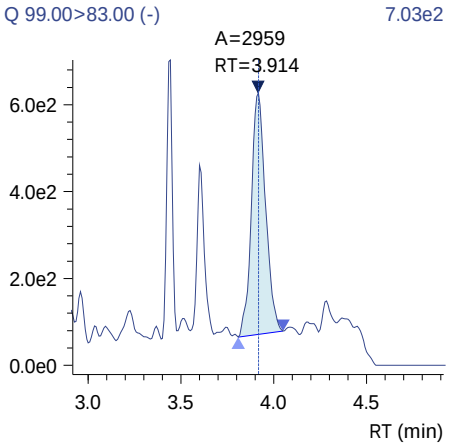
Printed at 9/12/2022 2:12:00 PM

EQ2200387-02

Sample ID: EQ2200387-02
Date Acquired: 9/9/2022 1:58:39 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_029.lcd
Vial: 25 | Inj. Volume: 25.0000uL | Tray: 6

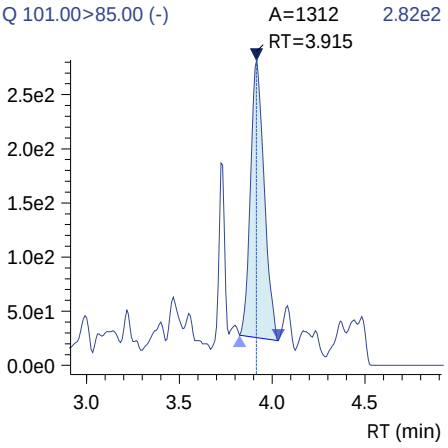
Perchlorate

Conc 0.1036



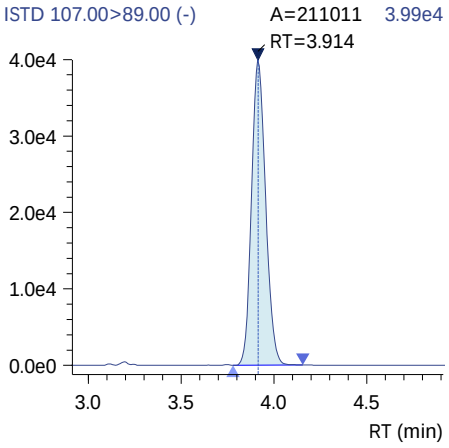
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:09:13 PM

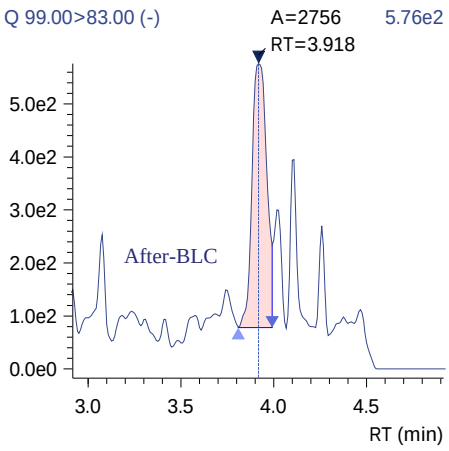
EQ2200387-03

Sample ID: EQ2200387-03
Date Acquired: 9/9/2022 2:07:02 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_030.lcd
Vial: 26 | Inj. Volume: 25.0000uL | Tray: 6

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	M	3.918	2756	216242	0.0941	ng/mL	33.89	27.04-50.23
Perchlorate 2	Auto	3.918	934	216242	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.914	216242	216242	1.0000	ng/mL	----	

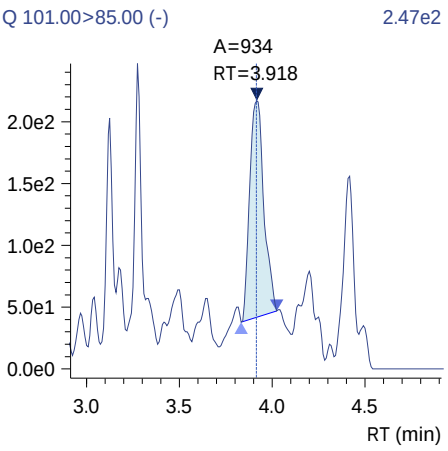
Perchlorate

Conc 0.0941



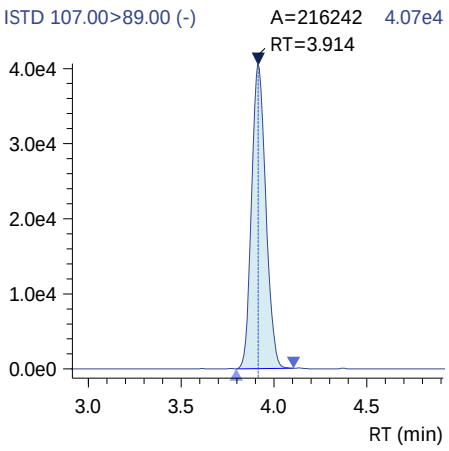
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

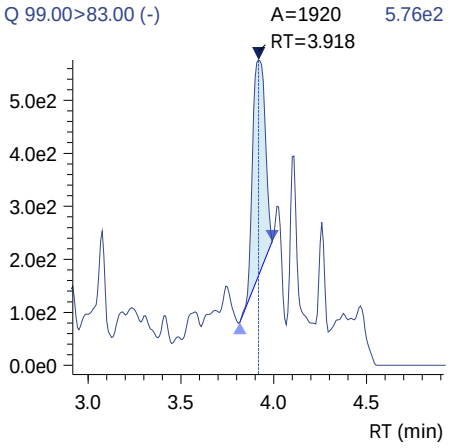
Printed at 9/12/2022 2:12:00 PM

EQ2200387-03

Sample ID: EQ2200387-03
Date Acquired: 9/9/2022 2:07:02 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_030.lcd
Vial: 26 | Inj. Volume: 25.0000uL | Tray: 6

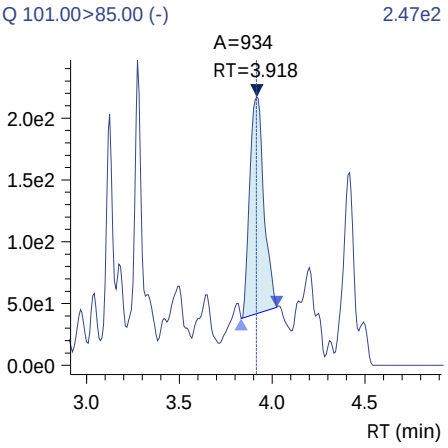
Perchlorate

Conc 0.0656



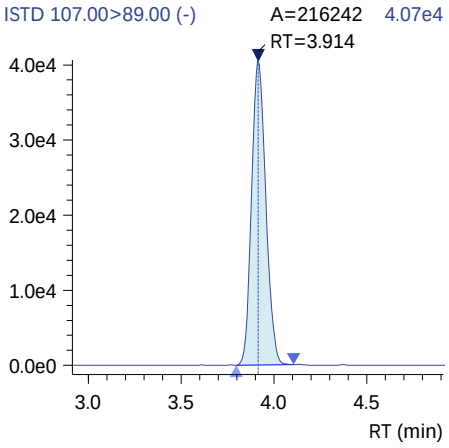
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:09:13 PM

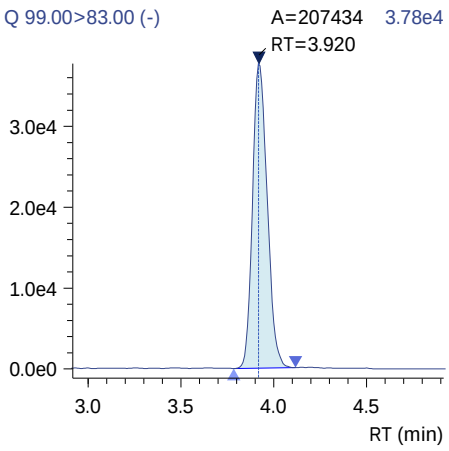
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 9/9/2022 3:05:45 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_033.lcd
Vial: 26 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.920	207434	145715	10.5157	ng/mL	38.56	27.04-50.23
Perchlorate 2	Auto	3.920	79990	145715	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.918	145715	145715	1.0000	ng/mL	----	

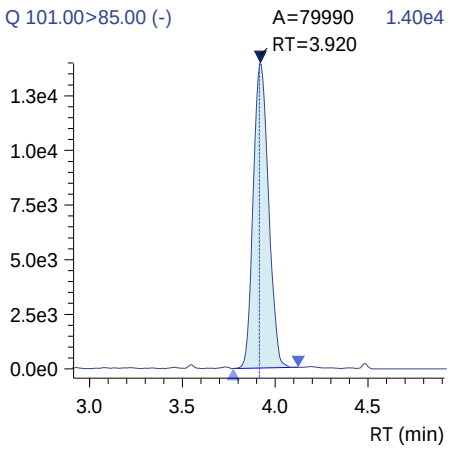
Perchlorate

Conc 10.5157



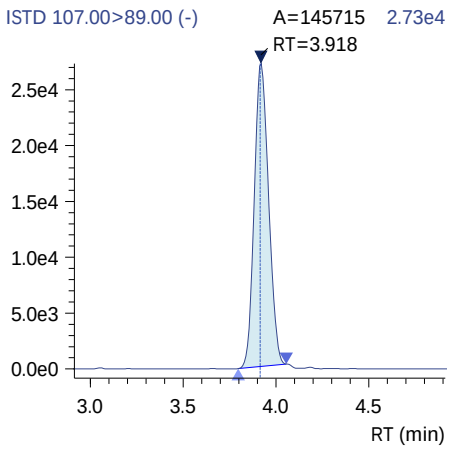
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

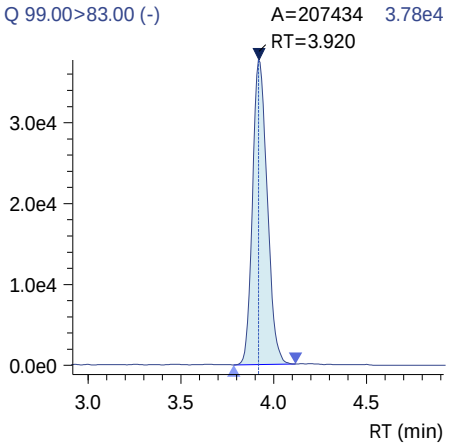
Printed at 9/12/2022 2:12:00 PM

PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 9/9/2022 3:05:45 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_033.lcd
Vial: 26 | Inj. Volume: 25.0000uL | Tray: 1

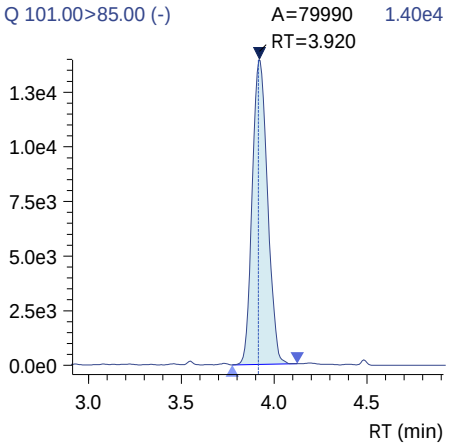
Perchlorate

Conc 10.5157



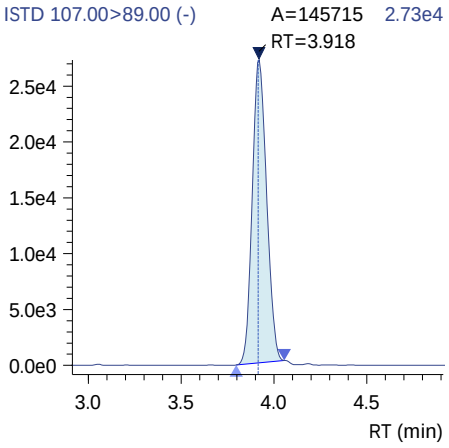
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:09:13 PM

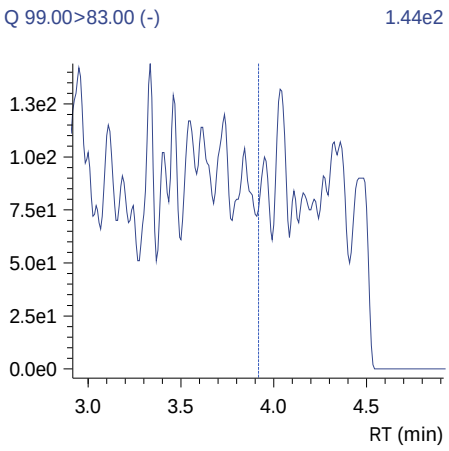
EQ2200385-01

Sample ID: EQ2200385-01
Date Acquired: 9/9/2022 3:14:09 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_034.lcd
Vial: 1 | Inj. Volume: 25.0000uL | Tray: 6

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	ND(W/B)	----	----	196136	----	ng/mL	0.00	27.04-50.23
Perchlorate 2	ND(W/B)	----	----	196136	----	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.919	196136	196136	1.0000	ng/mL	----	

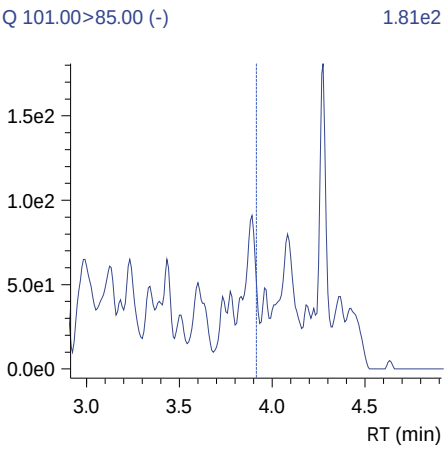
Perchlorate

Conc ----



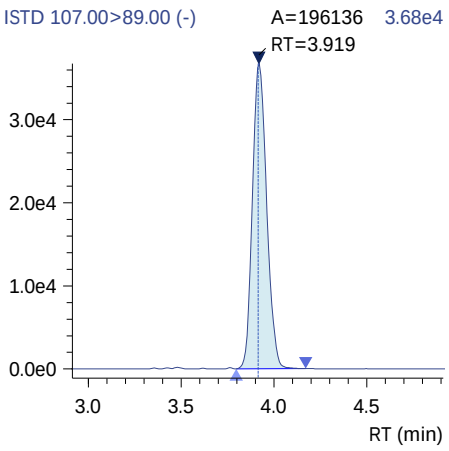
Perchlorate 2

Conc ----



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:12:00 PM

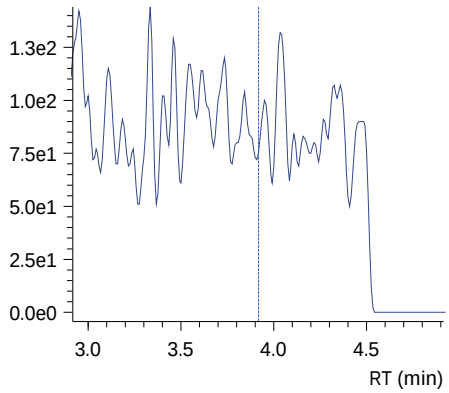
EQ2200385-01

Sample ID: EQ2200385-01
Date Acquired: 9/9/2022 3:14:09 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_034.lcd
Vial: 1 | Inj. Volume: 25.0000uL | Tray: 6

Perchlorate

Conc ----

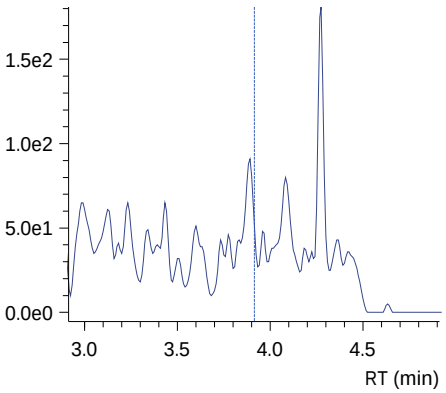
Q 99.00>83.00 (-) 1.44e2



Perchlorate 2

Conc ----

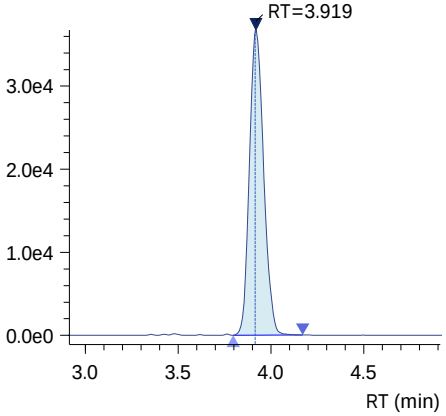
Q 101.00>85.00 (-) 1.81e2



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=196136 3.68e4



Insight Report

Printed at 9/12/2022 2:09:13 PM

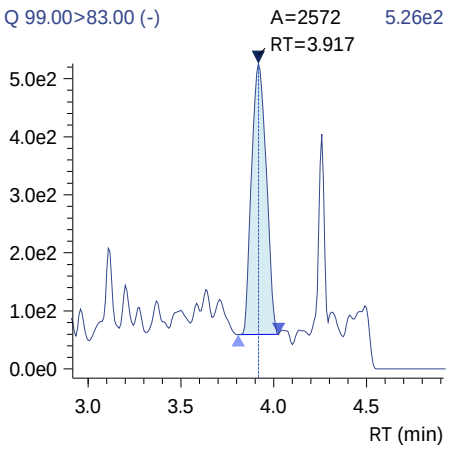
EQ2200385-02

Sample ID: EQ2200385-02
Date Acquired: 9/9/2022 3:22:35 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_035.lcd
Vial: 2 | Inj. Volume: 25.0000uL | Tray: 6

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.917	2572	191147	0.0994	ng/mL	33.36	27.04-50.23
Perchlorate 2	Auto	3.915	858	191147	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.920	191147	191147	1.0000	ng/mL	----	

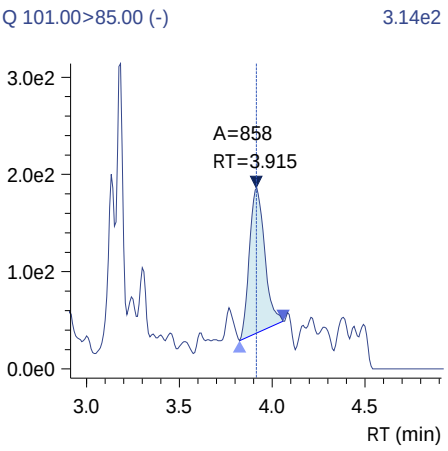
Perchlorate

Conc 0.0994



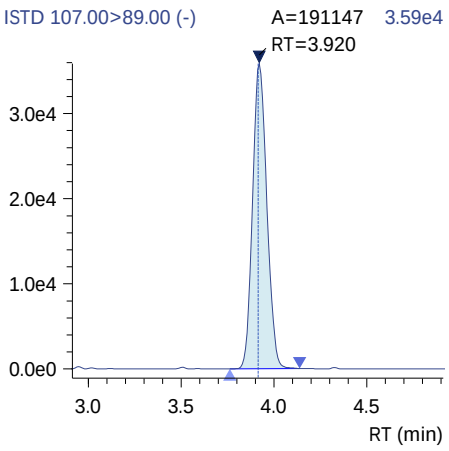
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

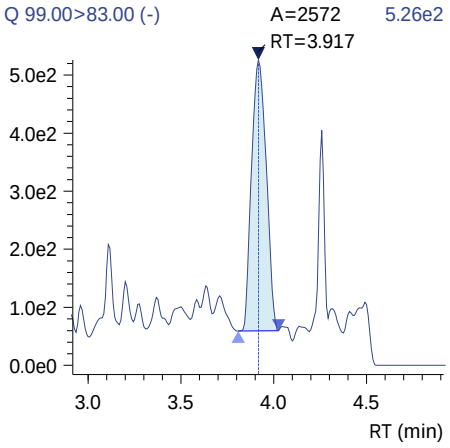
Printed at 9/12/2022 2:12:00 PM

EQ2200385-02

Sample ID: EQ2200385-02
Date Acquired: 9/9/2022 3:22:35 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_035.lcd
Vial: 2 | Inj. Volume: 25.0000uL | Tray: 6

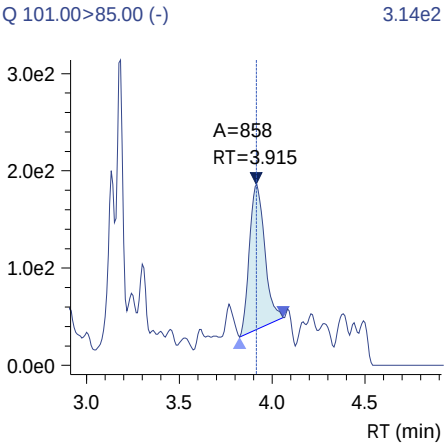
Perchlorate

Conc 0.0994



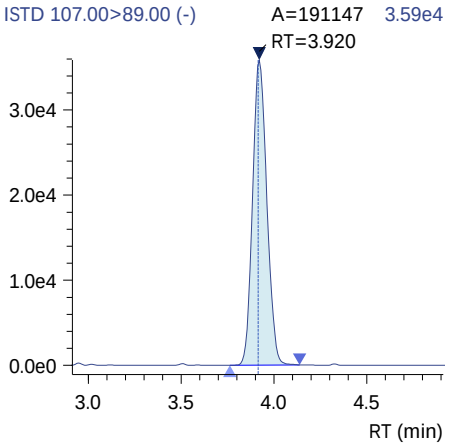
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:09:13 PM

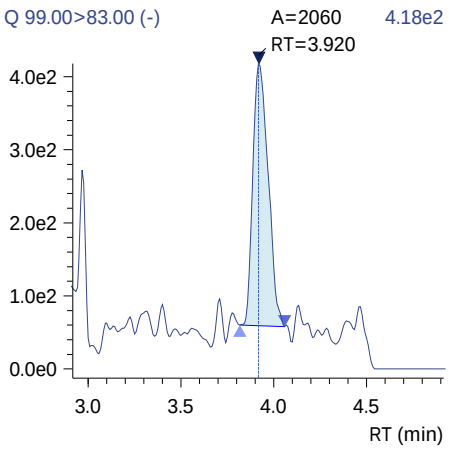
EQ2200385-03

Sample ID: EQ2200385-03
Date Acquired: 9/9/2022 4:23:16 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_036.lcd
Vial: 3 | Inj. Volume: 25.0000uL | Tray: 6

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.920	2060	155452	0.0979	ng/mL	40.29	27.04-50.23
Perchlorate 2	Auto	3.922	830	155452	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.917	155452	155452	1.0000	ng/mL	----	

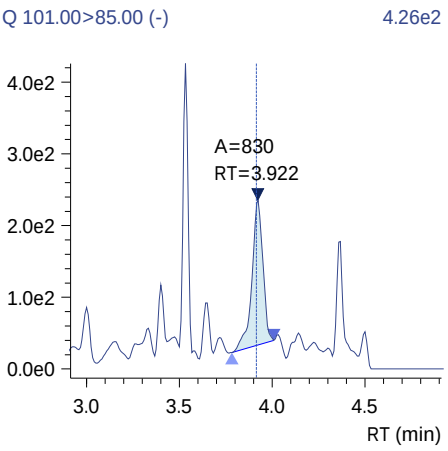
Perchlorate

Conc 0.0979



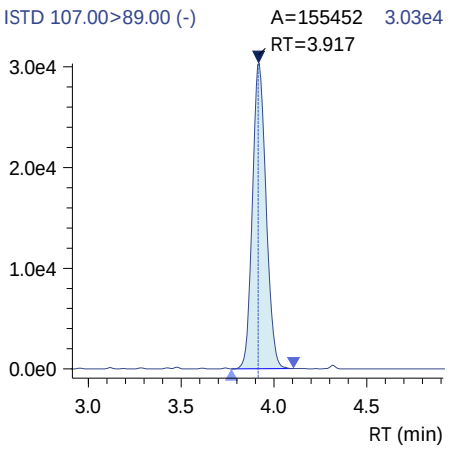
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

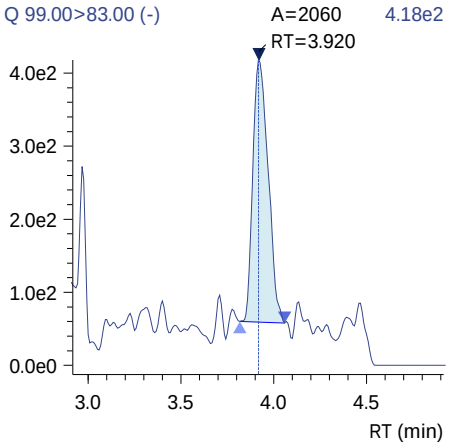
Printed at 9/12/2022 2:12:00 PM

EQ2200385-03

Sample ID: EQ2200385-03
Date Acquired: 9/9/2022 4:23:16 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_036.lcd
Vial: 3 | Inj. Volume: 25.0000uL | Tray: 6

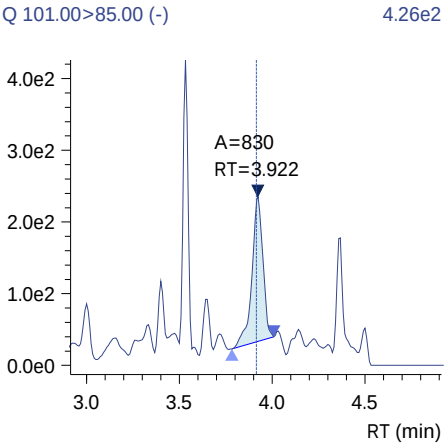
Perchlorate

Conc 0.0979



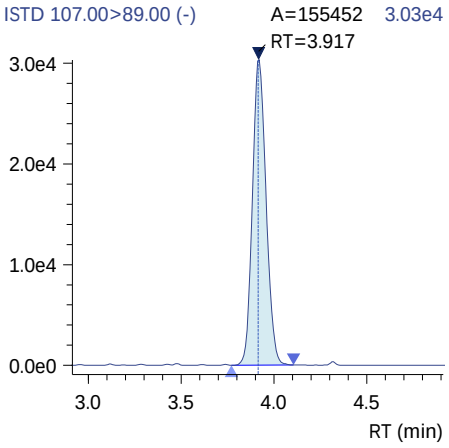
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:09:13 PM

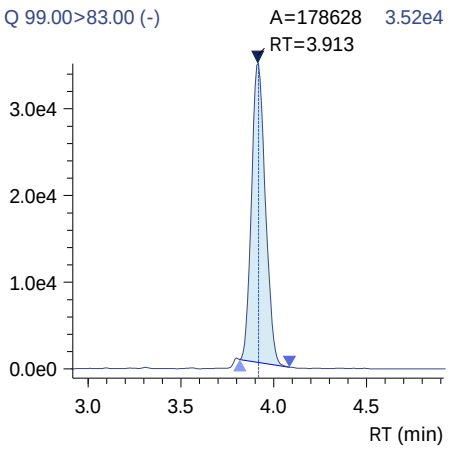
E2200851-001x50

Sample ID: E2200851-001x50
Date Acquired: 9/9/2022 4:32:49 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_037.lcd
Vial: 4 | Inj. Volume: 25.0000uL | Tray: 6

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.913	178628	115792	11.3955	ng/mL	40.56	27.04-50.23
Perchlorate 2	Auto	3.914	72452	115792	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.910	115792	115792	1.0000	ng/mL	----	

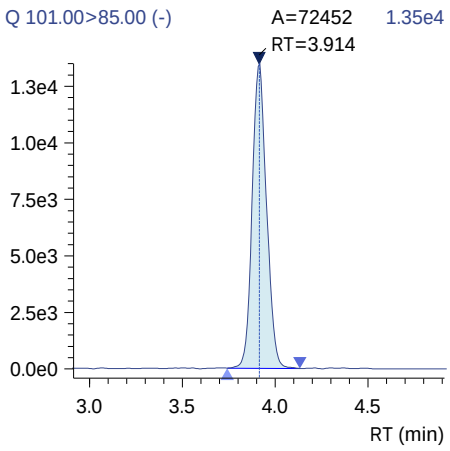
Perchlorate

Conc 11.3955



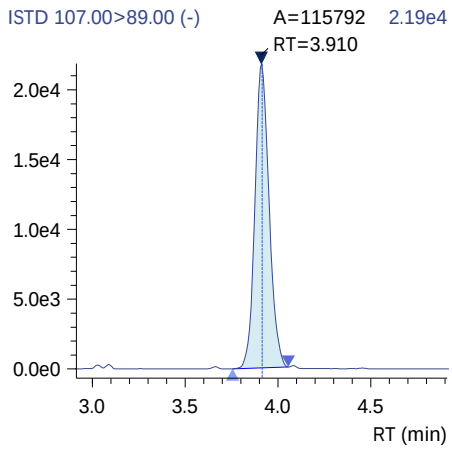
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

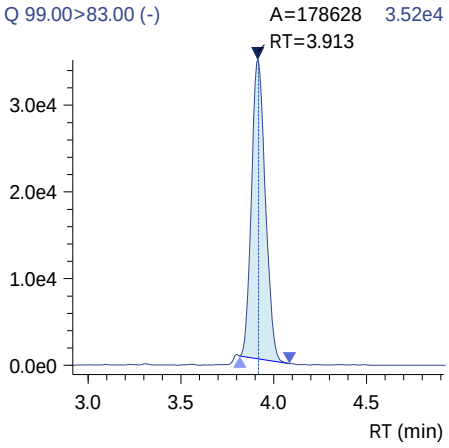
Printed at 9/12/2022 2:12:00 PM

E2200851-001x50

Sample ID: E2200851-001x50
Date Acquired: 9/9/2022 4:32:49 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_037.lcd
Vial: 4 | Inj. Volume: 25.0000uL | Tray: 6

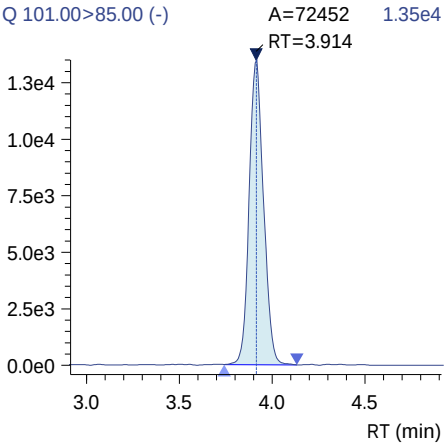
Perchlorate

Conc 11.3955



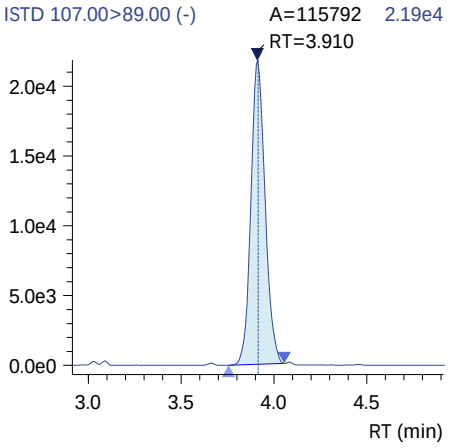
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:09:13 PM

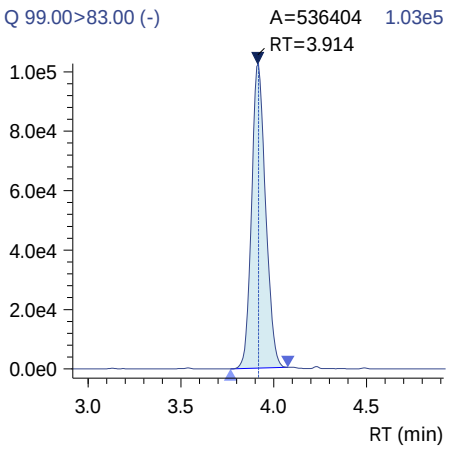
E2200851-002x100

Sample ID: E2200851-002x100
Date Acquired: 9/9/2022 4:41:12 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_038.lcd
Vial: 5 | Inj. Volume: 25.0000uL | Tray: 6

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.914	536404	104986	37.7418	ng/mL	38.26	27.04-50.23
Perchlorate 2	Auto	3.912	205205	104986	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.912	104986	104986	1.0000	ng/mL	----	

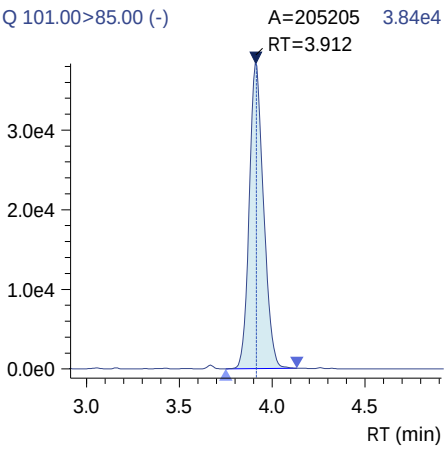
Perchlorate

Conc 37.7418



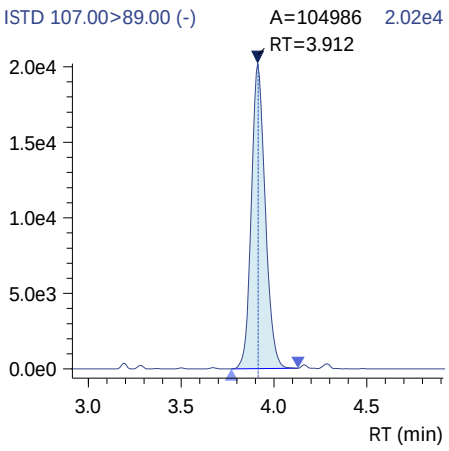
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

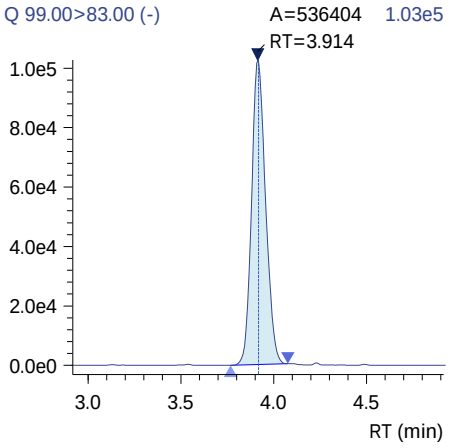
Printed at 9/12/2022 2:12:00 PM

E2200851-002x100

Sample ID: E2200851-002x100
Date Acquired: 9/9/2022 4:41:12 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_038.lcd
Vial: 5 | Inj. Volume: 25.0000uL | Tray: 6

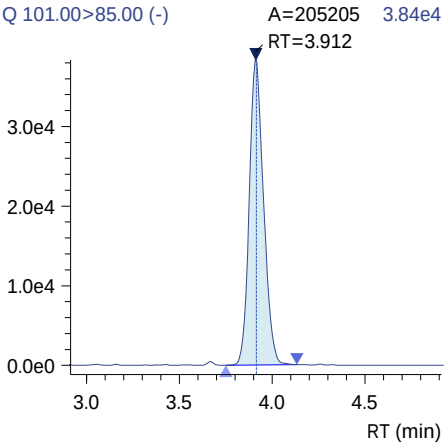
Perchlorate

Conc 37.7418



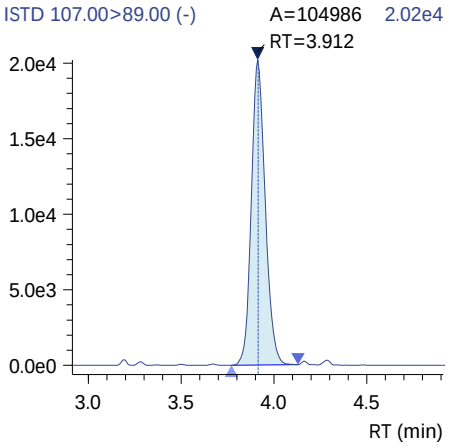
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:09:13 PM

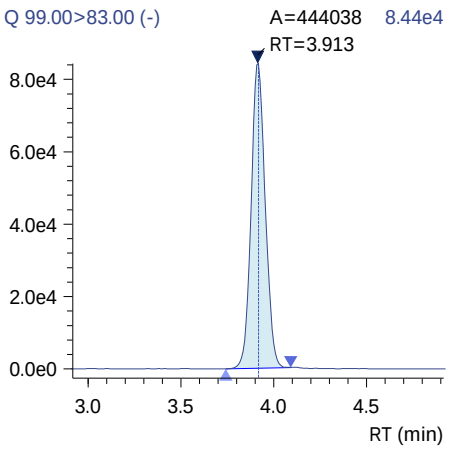
E2200851-003x10

Sample ID: E2200851-003x10
Date Acquired: 9/9/2022 4:49:38 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_039.lcd
Vial: 6 | Inj. Volume: 25.0000uL | Tray: 6

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.913	444038	105570	31.0700	ng/mL	39.47	27.04-50.23
Perchlorate 2	Auto	3.910	175277	105570	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.910	105570	105570	1.0000	ng/mL	----	

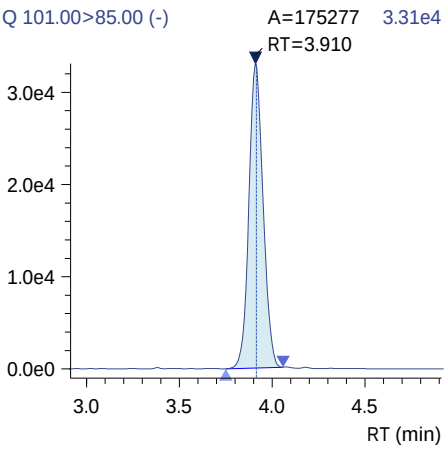
Perchlorate

Conc 31.0700



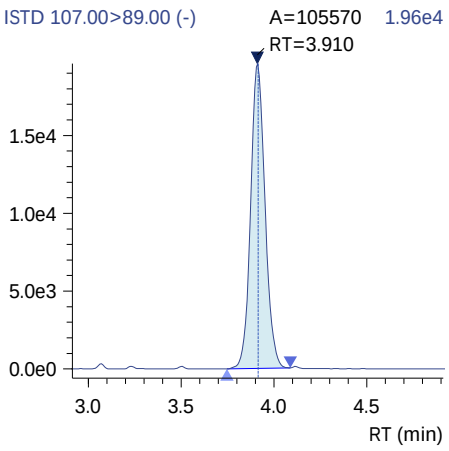
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:12:00 PM

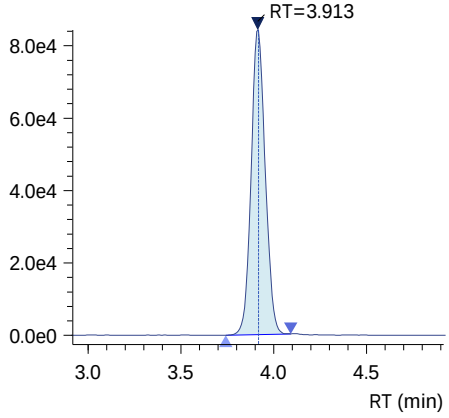
E2200851-003x10

Sample ID: E2200851-003x10
Date Acquired: 9/9/2022 4:49:38 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_039.lcd
Vial: 6 | Inj. Volume: 25.0000uL | Tray: 6

Perchlorate

Conc 31.0700

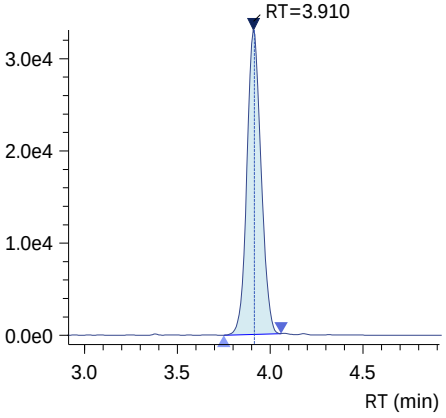
Q 99.00>83.00 (-) A=444038 8.44e4 RT=3.913



Perchlorate 2

Conc 0.0000

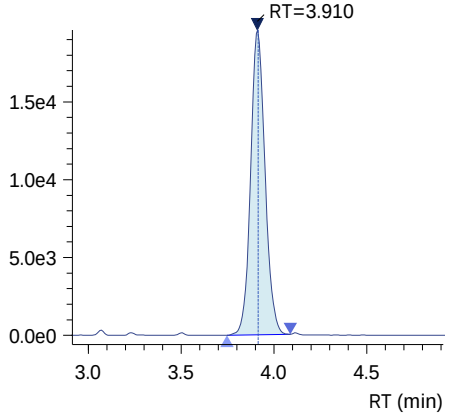
Q 101.00>85.00 (-) A=175277 3.31e4 RT=3.910



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=105570 1.96e4 RT=3.910



Insight Report

Printed at 9/12/2022 2:09:13 PM

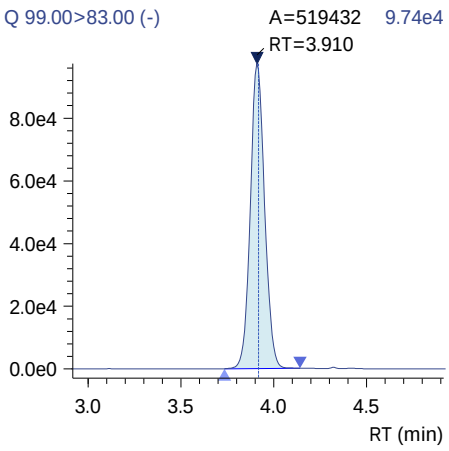
E2200851-004x10

Sample ID: E2200851-004x10
Date Acquired: 9/9/2022 4:58:01 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_040.lcd
Vial: 7 | Inj. Volume: 25.0000uL | Tray: 6

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.910	519432	114210	33.5959	ng/mL	38.45	27.04-50.23
Perchlorate 2	Auto	3.908	199696	114210	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.907	114210	114210	1.0000	ng/mL	----	

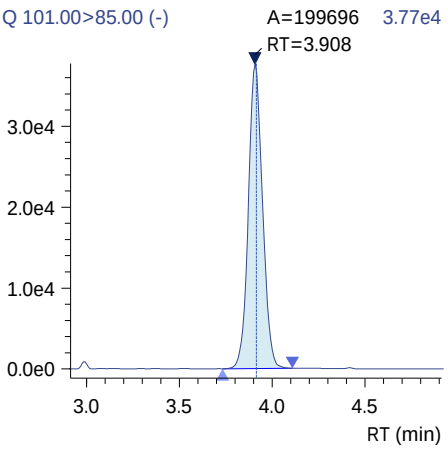
Perchlorate

Conc 33.5959



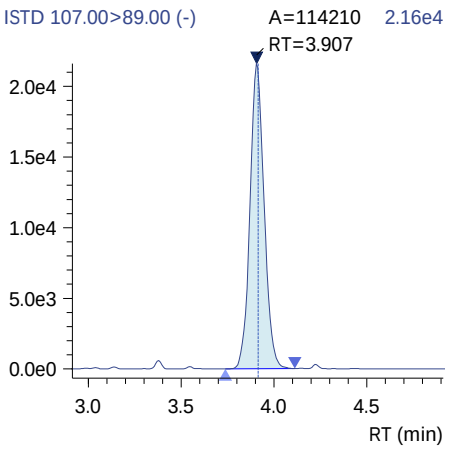
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

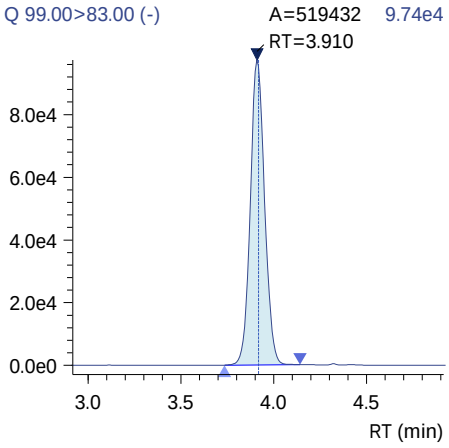
Printed at 9/12/2022 2:12:00 PM

E2200851-004x10

Sample ID: E2200851-004x10
Date Acquired: 9/9/2022 4:58:01 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_040.lcd
Vial: 7 | Inj. Volume: 25.0000uL | Tray: 6

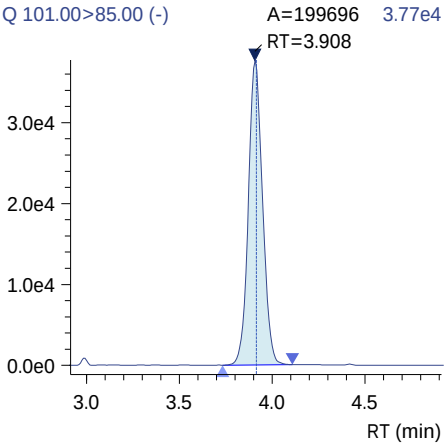
Perchlorate

Conc 33.5959



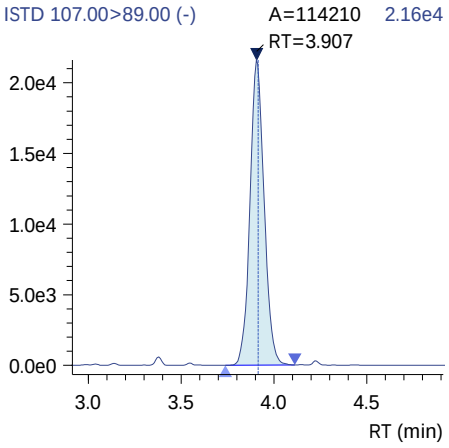
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:09:13 PM

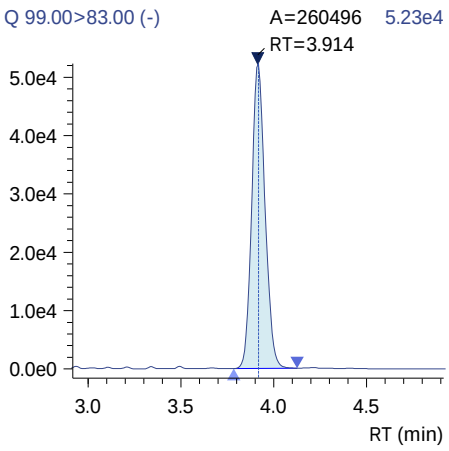
E2200851-005x500

Sample ID: E2200851-005x500
Date Acquired: 9/9/2022 5:06:26 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_041.lcd
Vial: 8 | Inj. Volume: 25.0000uL | Tray: 6

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.914	260496	104181	18.4703	ng/mL	37.97	27.04-50.23
Perchlorate 2	Auto	3.912	98897	104181	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.913	104181	104181	1.0000	ng/mL	----	

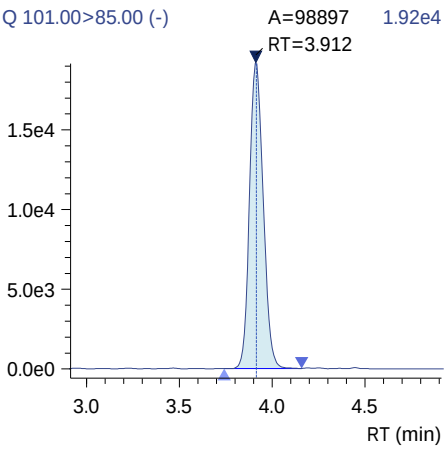
Perchlorate

Conc 18.4703



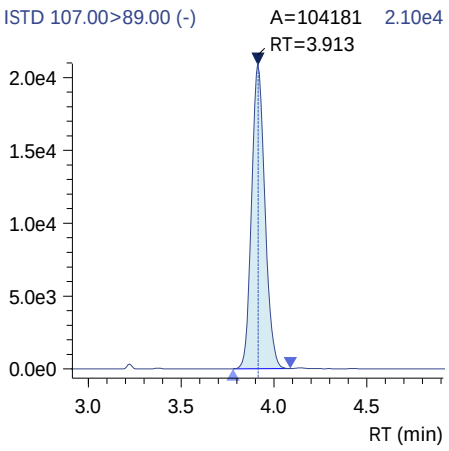
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

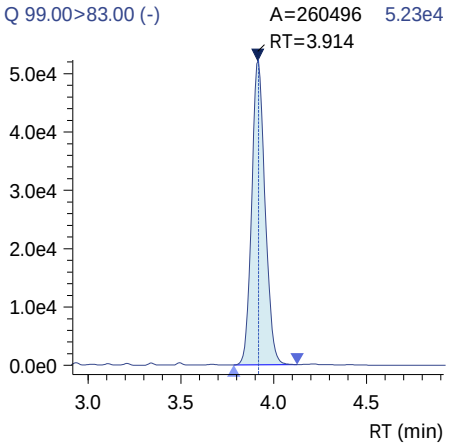
Printed at 9/12/2022 2:12:00 PM

E2200851-005x500

Sample ID: E2200851-005x500
Date Acquired: 9/9/2022 5:06:26 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_041.lcd
Vial: 8 | Inj. Volume: 25.0000uL | Tray: 6

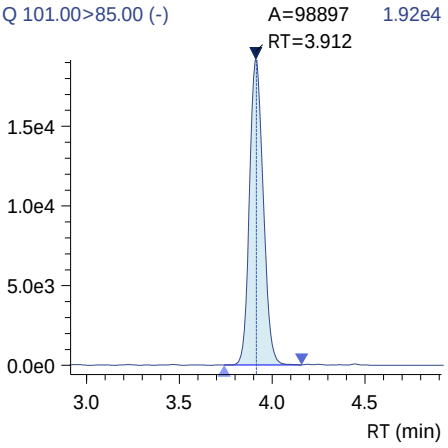
Perchlorate

Conc 18.4703



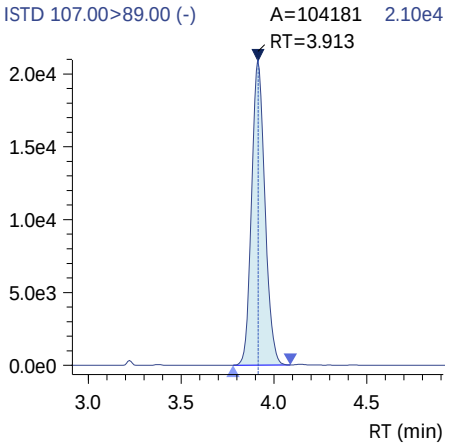
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:09:13 PM

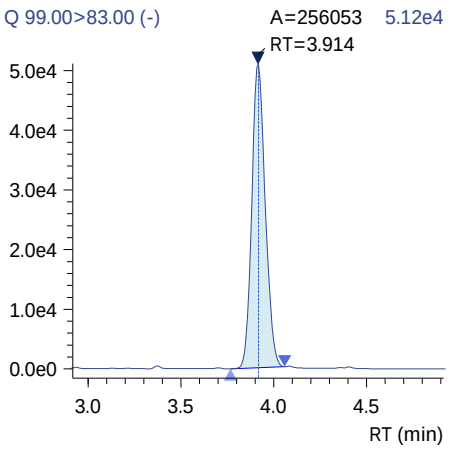
E2200851-006x500

Sample ID: E2200851-006x500
Date Acquired: 9/9/2022 5:14:52 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_042.lcd
Vial: 9 | Inj. Volume: 25.0000uL | Tray: 6

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.914	256053	111296	16.9946	ng/mL	37.68	27.04-50.23
Perchlorate 2	Auto	3.911	96483	111296	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.913	111296	111296	1.0000	ng/mL	----	

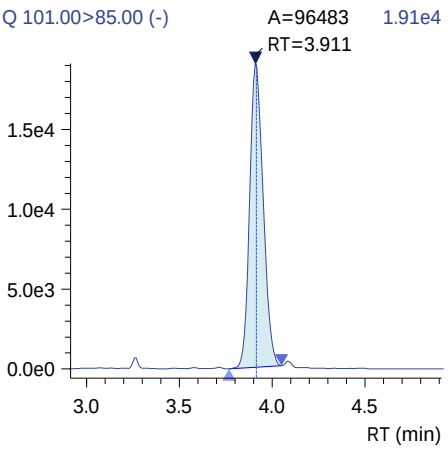
Perchlorate

Conc 16.9946



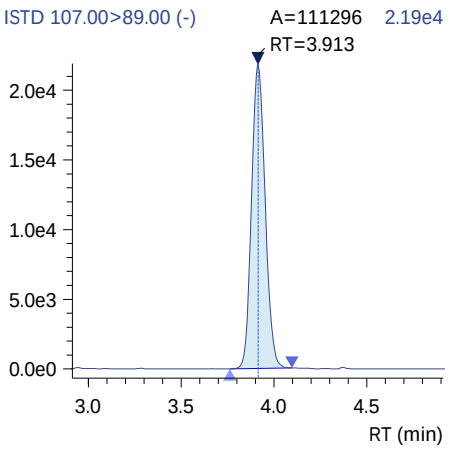
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:12:00 PM

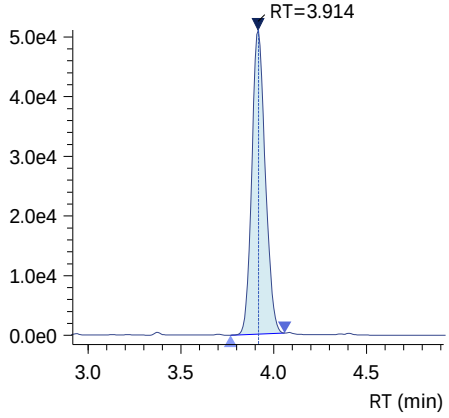
E2200851-006x500

Sample ID: E2200851-006x500
Date Acquired: 9/9/2022 5:14:52 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_042.lcd
Vial: 9 | Inj. Volume: 25.0000uL | Tray: 6

Perchlorate

Conc 16.9946

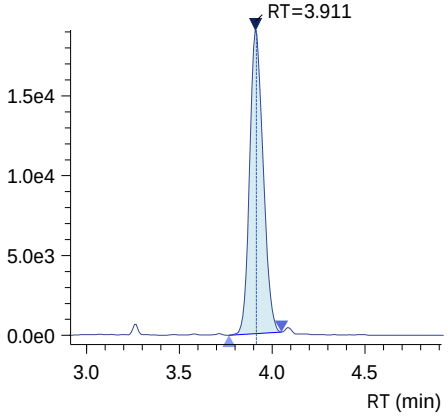
Q 99.00>83.00 (-) A=256053 5.12e4 RT=3.914



Perchlorate 2

Conc 0.0000

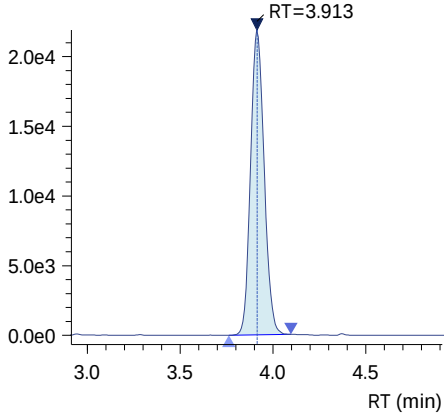
Q 101.00>85.00 (-) A=96483 1.91e4 RT=3.911



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=111296 2.19e4 RT=3.913



Insight Report

Printed at 9/12/2022 2:09:13 PM

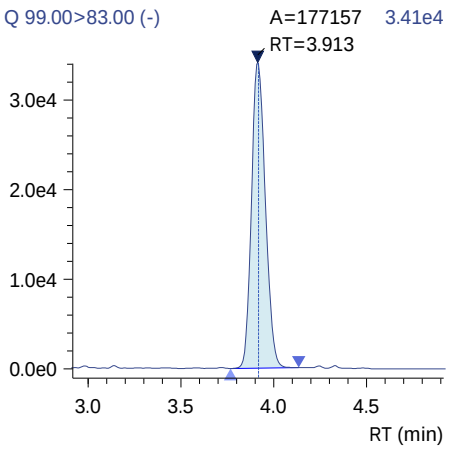
E2200851-007x1000

Sample ID: E2200851-007x1000
Date Acquired: 9/9/2022 5:23:13 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_043.lcd
Vial: 10 | Inj. Volume: 25.0000uL | Tray: 6

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.913	177157	127715	10.2466	ng/mL	39.47	27.04-50.23
Perchlorate 2	Auto	3.913	69921	127715	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.911	127715	127715	1.0000	ng/mL	----	

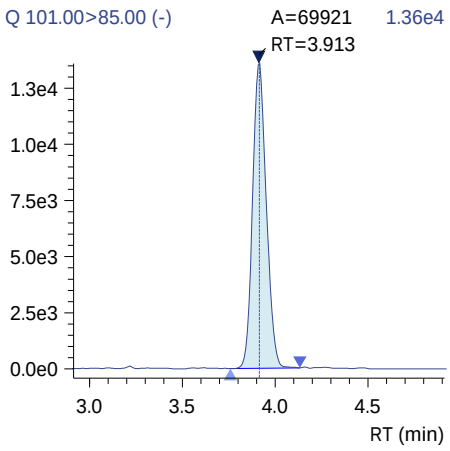
Perchlorate

Conc 10.2466



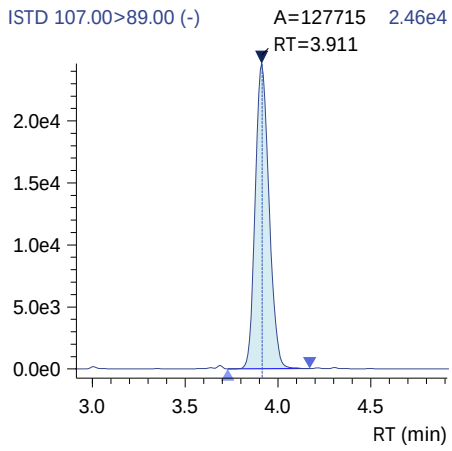
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

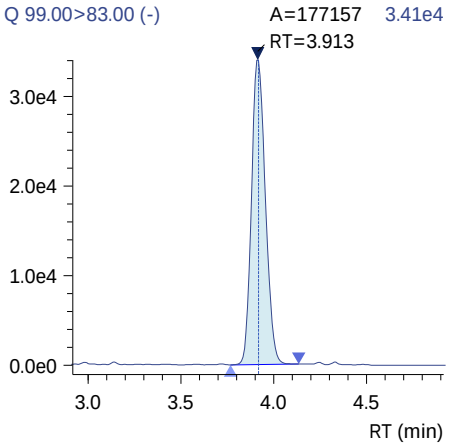
Printed at 9/12/2022 2:12:00 PM

E2200851-007x1000

Sample ID: E2200851-007x1000
Date Acquired: 9/9/2022 5:23:13 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_043.lcd
Vial: 10 | Inj. Volume: 25.0000uL | Tray: 6

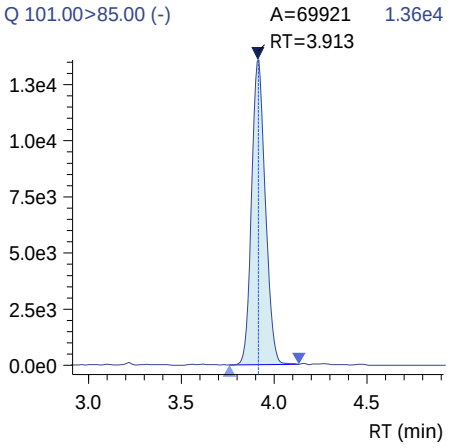
Perchlorate

Conc 10.2466



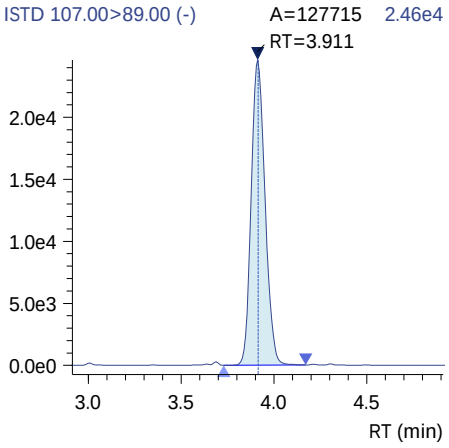
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:09:13 PM

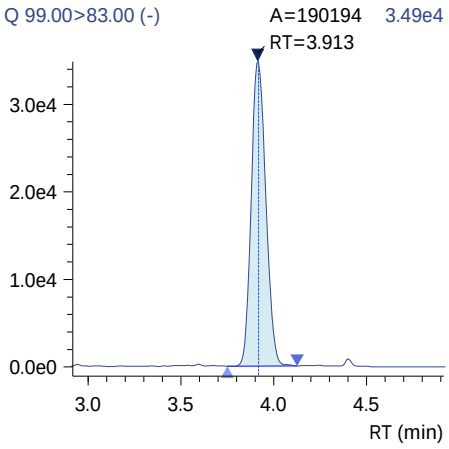
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 9/9/2022 5:31:39 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_044.lcd
Vial: 26 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.913	190194	133685	10.5093	ng/mL	39.10	27.04-50.23
Perchlorate 2	Auto	3.915	74356	133685	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.913	133685	133685	1.0000	ng/mL	----	

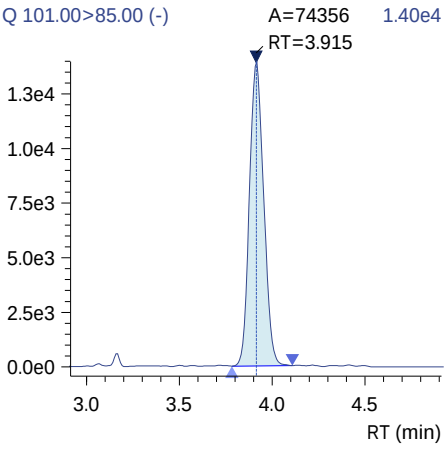
Perchlorate

Conc 10.5093



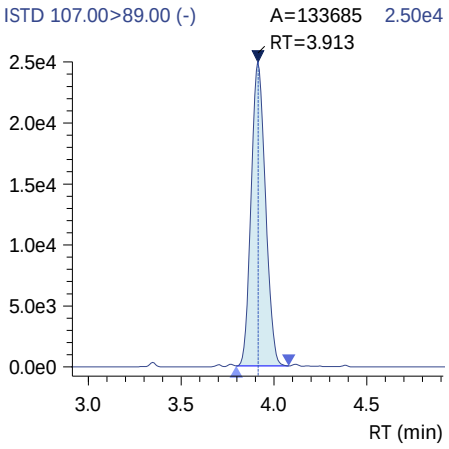
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

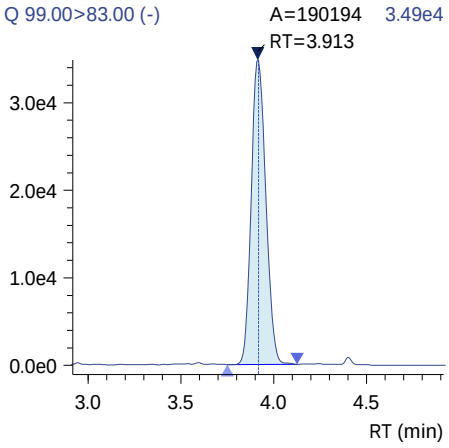
Printed at 9/12/2022 2:12:00 PM

PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 9/9/2022 5:31:39 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_044.lcd
Vial: 26 | Inj. Volume: 25.0000uL | Tray: 1

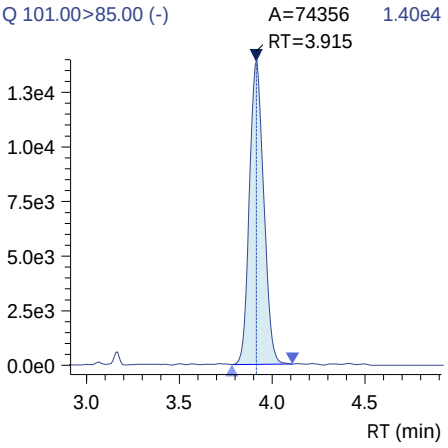
Perchlorate

Conc 10.5093



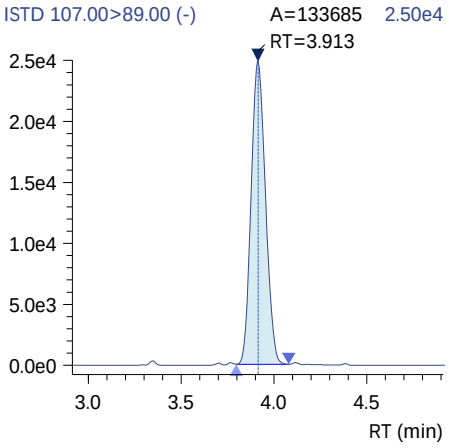
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:09:13 PM

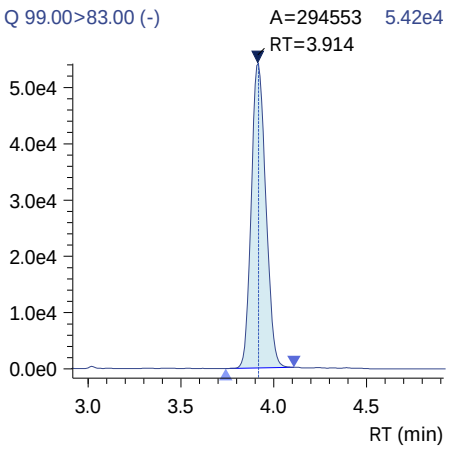
E2200851-008x2000

Sample ID: E2200851-008x2000
Date Acquired: 9/9/2022 5:40:03 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_045.lcd
Vial: 11 | Inj. Volume: 25.0000uL | Tray: 6

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.914	294553	128888	16.8816	ng/mL	37.79	27.04-50.23
Perchlorate 2	Auto	3.911	111300	128888	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.914	128888	128888	1.0000	ng/mL	----	

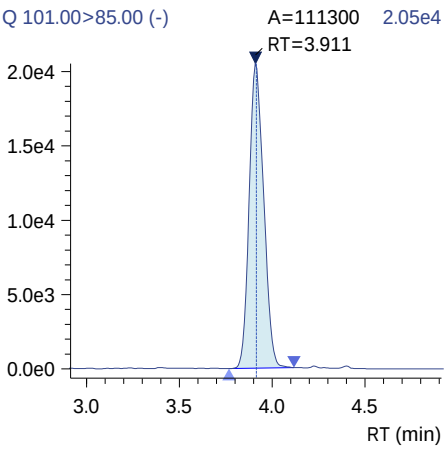
Perchlorate

Conc 16.8816



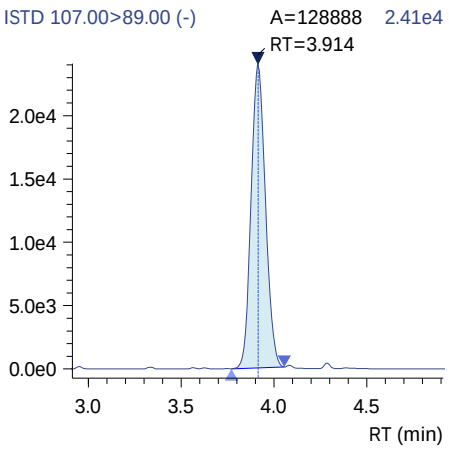
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

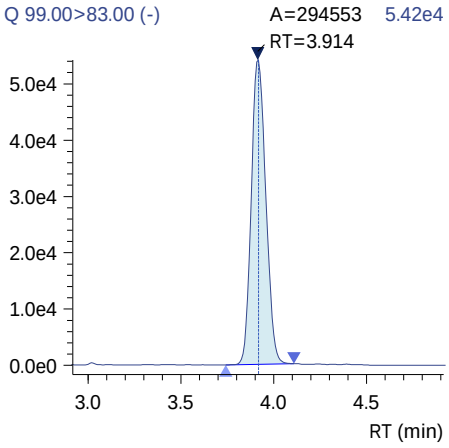
Printed at 9/12/2022 2:12:00 PM

E2200851-008x2000

Sample ID: E2200851-008x2000
Date Acquired: 9/9/2022 5:40:03 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_045.lcd
Vial: 11 | Inj. Volume: 25.0000uL | Tray: 6

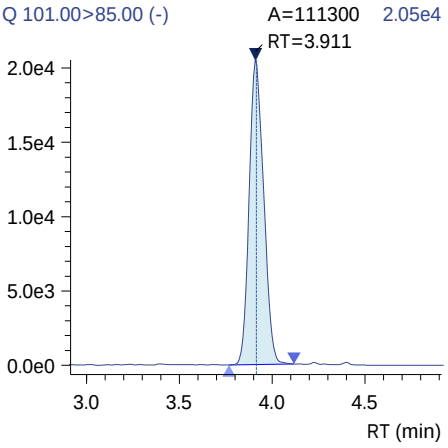
Perchlorate

Conc 16.8816



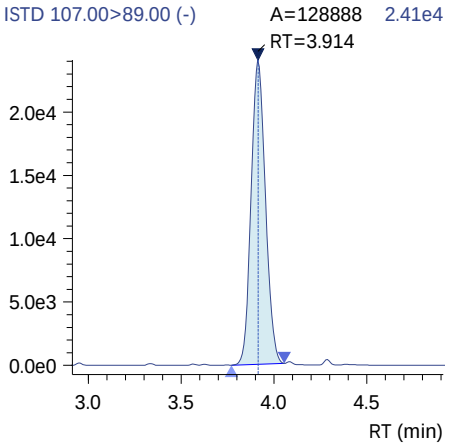
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:09:13 PM

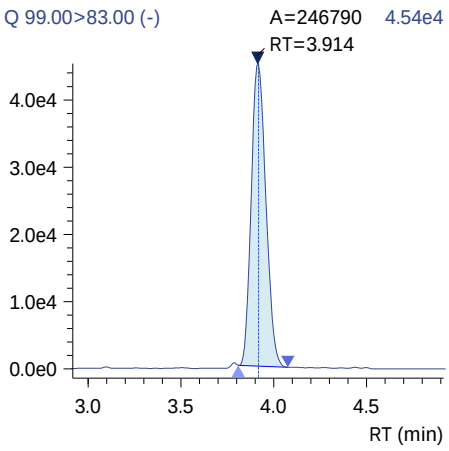
E2200851-009x50

Sample ID: E2200851-009x50
Date Acquired: 9/9/2022 5:48:26 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_046.lcd
Vial: 12 | Inj. Volume: 25.0000uL | Tray: 6

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.914	246790	141160	12.9145	ng/mL	38.71	27.04-50.23
Perchlorate 2	Auto	3.913	95541	141160	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.912	141160	141160	1.0000	ng/mL	----	

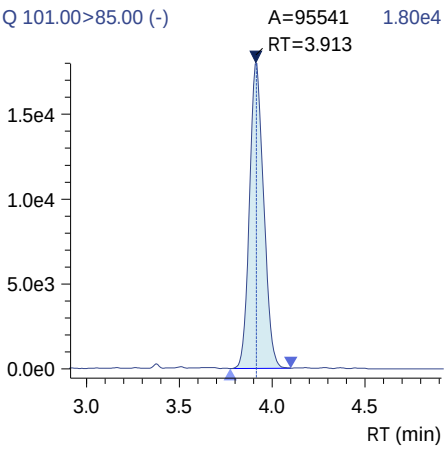
Perchlorate

Conc 12.9145



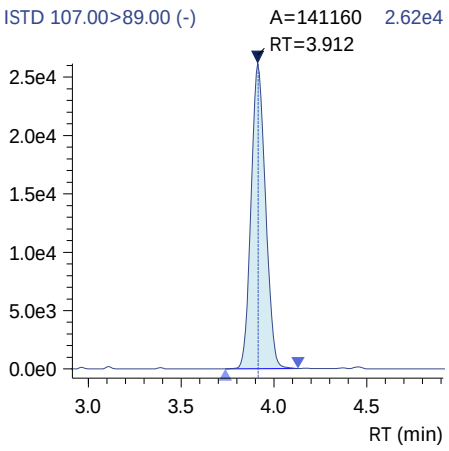
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

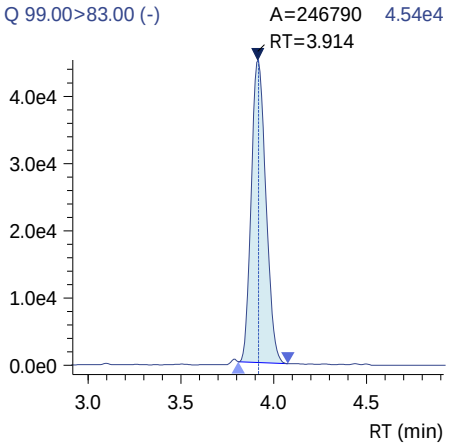
Printed at 9/12/2022 2:12:00 PM

E2200851-009x50

Sample ID: E2200851-009x50
Date Acquired: 9/9/2022 5:48:26 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_046.lcd
Vial: 12 | Inj. Volume: 25.0000uL | Tray: 6

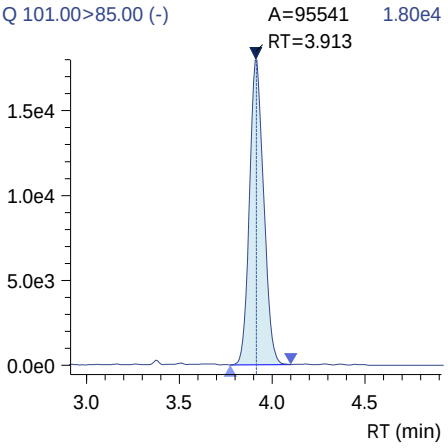
Perchlorate

Conc 12.9145



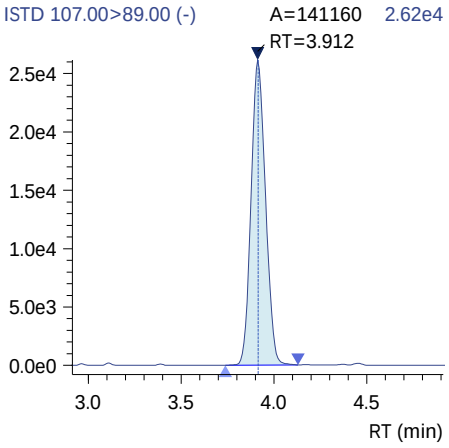
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:09:13 PM

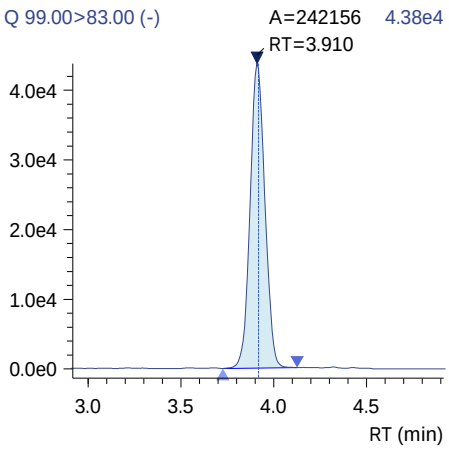
E2200851-010x10

Sample ID: E2200851-010x10
Date Acquired: 9/9/2022 5:56:48 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_047.lcd
Vial: 13 | Inj. Volume: 25.0000uL | Tray: 6

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.910	242156	146206	12.2347	ng/mL	38.34	27.04-50.23
Perchlorate 2	Auto	3.906	92843	146206	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.907	146206	146206	1.0000	ng/mL	----	

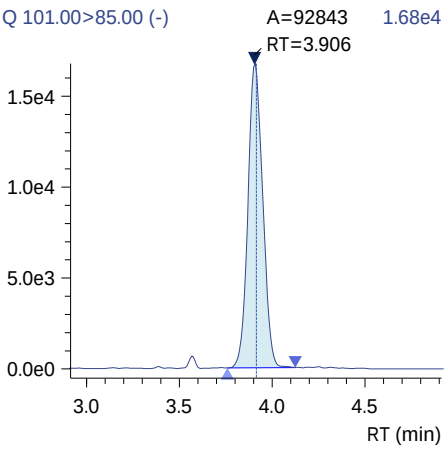
Perchlorate

Conc 12.2347



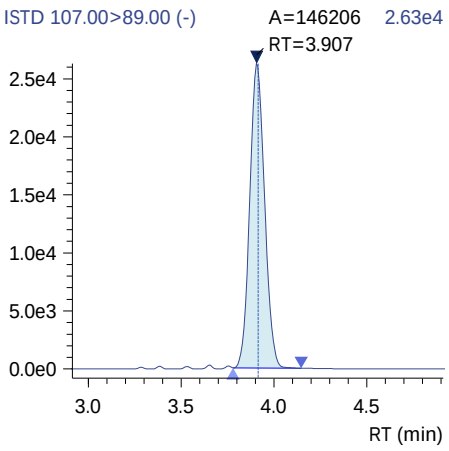
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:12:00 PM

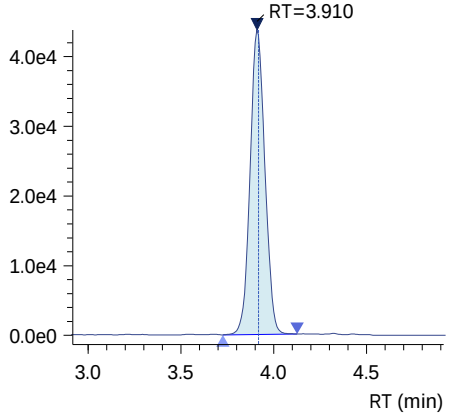
E2200851-010x10

Sample ID: E2200851-010x10
Date Acquired: 9/9/2022 5:56:48 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_047.lcd
Vial: 13 | Inj. Volume: 25.0000uL | Tray: 6

Perchlorate

Conc 12.2347

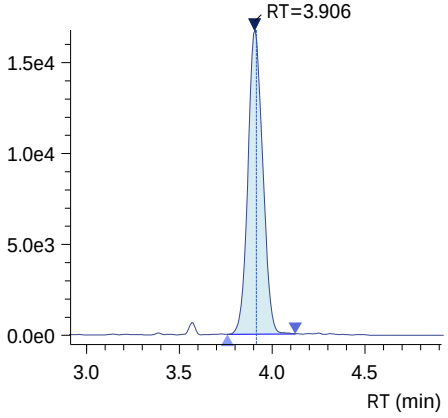
Q 99.00>83.00 (-) A=242156 4.38e4 RT=3.910



Perchlorate 2

Conc 0.0000

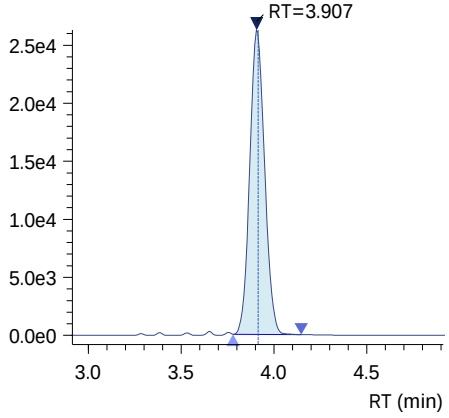
Q 101.00>85.00 (-) A=92843 1.68e4 RT=3.906



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=146206 2.63e4 RT=3.907



Insight Report

Printed at 9/12/2022 2:09:13 PM

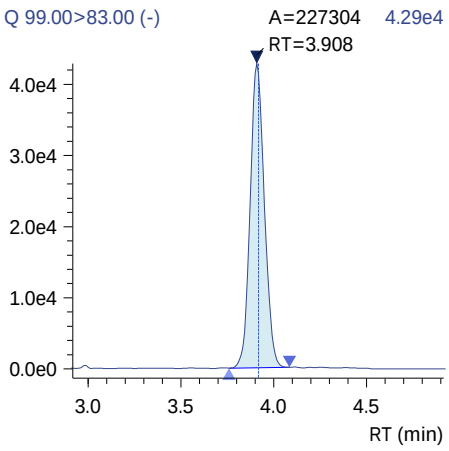
E2200851-011x10

Sample ID: E2200851-011x10
Date Acquired: 9/9/2022 6:05:13 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_048.lcd
Vial: 14 | Inj. Volume: 25.0000uL | Tray: 6

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.908	227304	147086	11.4156	ng/mL	39.15	27.04-50.23
Perchlorate 2	Auto	3.904	88985	147086	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.906	147086	147086	1.0000	ng/mL	----	

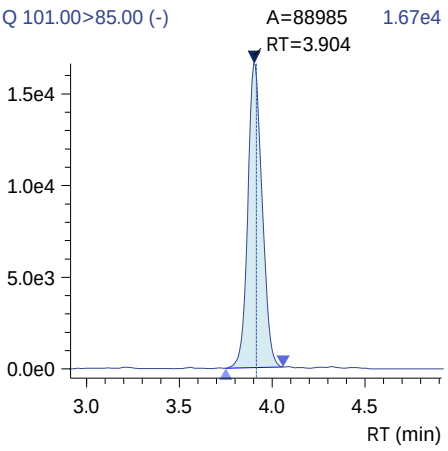
Perchlorate

Conc 11.4156



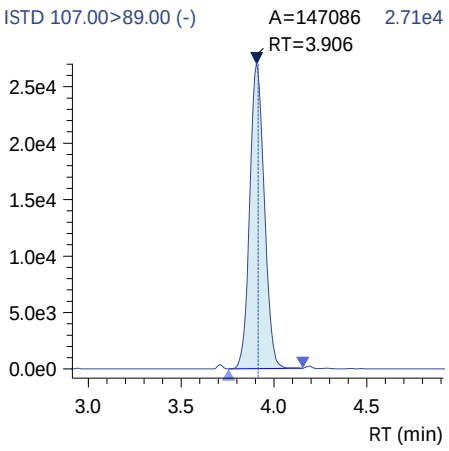
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

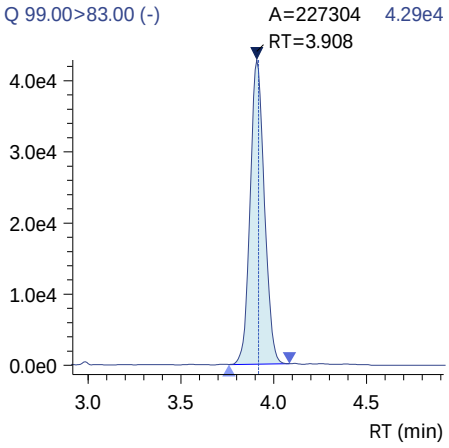
Printed at 9/12/2022 2:12:00 PM

E2200851-011x10

Sample ID: E2200851-011x10
Date Acquired: 9/9/2022 6:05:13 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_048.lcd
Vial: 14 | Inj. Volume: 25.0000uL | Tray: 6

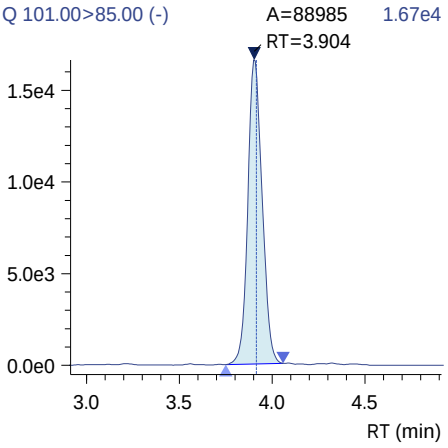
Perchlorate

Conc 11.4156



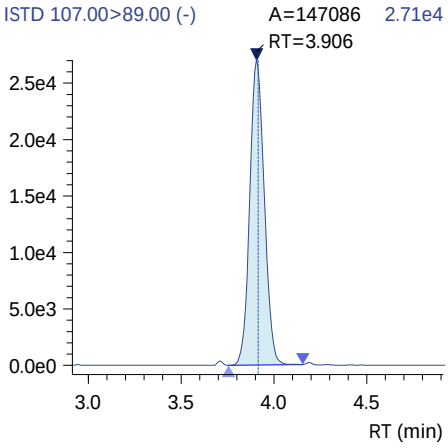
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:09:13 PM

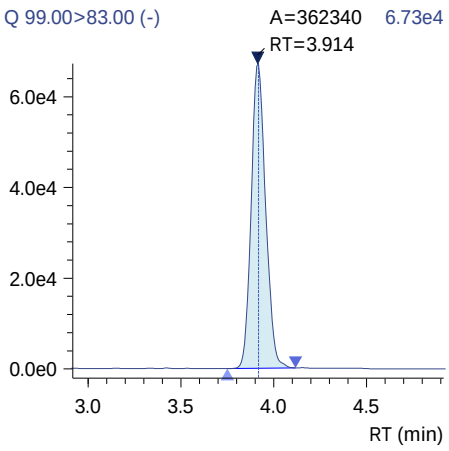
E2200851-012x2000

Sample ID: E2200851-012x2000
Date Acquired: 9/9/2022 6:13:36 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_049.lcd
Vial: 15 | Inj. Volume: 25.0000uL | Tray: 6

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.914	362340	129237	20.7105	ng/mL	38.34	27.04-50.23
Perchlorate 2	Auto	3.910	138918	129237	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.911	129237	129237	1.0000	ng/mL	----	

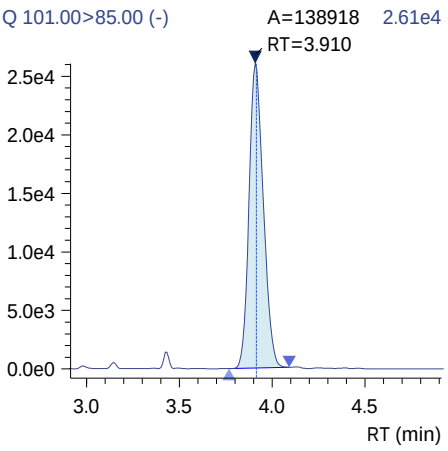
Perchlorate

Conc 20.7105



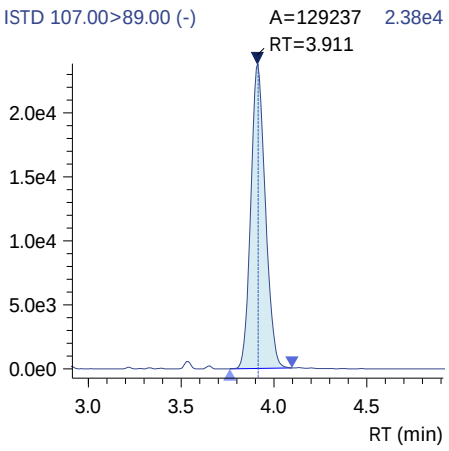
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

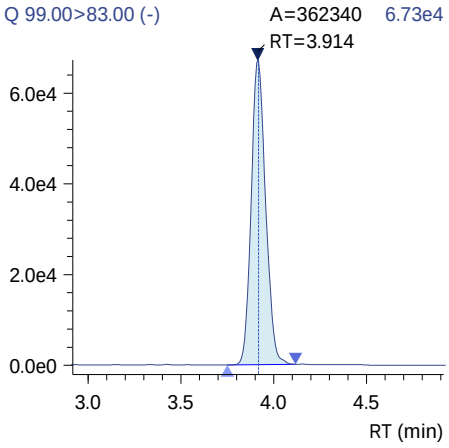
Printed at 9/12/2022 2:12:00 PM

E2200851-012x2000

Sample ID: E2200851-012x2000
Date Acquired: 9/9/2022 6:13:36 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_049.lcd
Vial: 15 | Inj. Volume: 25.0000uL | Tray: 6

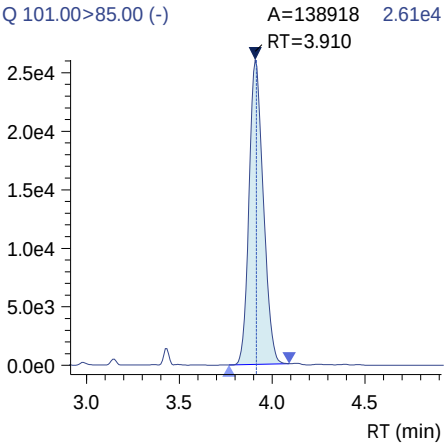
Perchlorate

Conc 20.7105



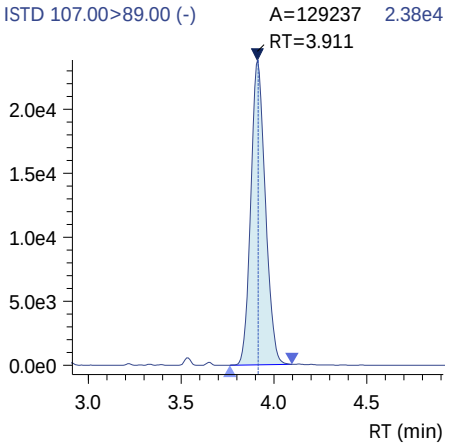
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:09:13 PM

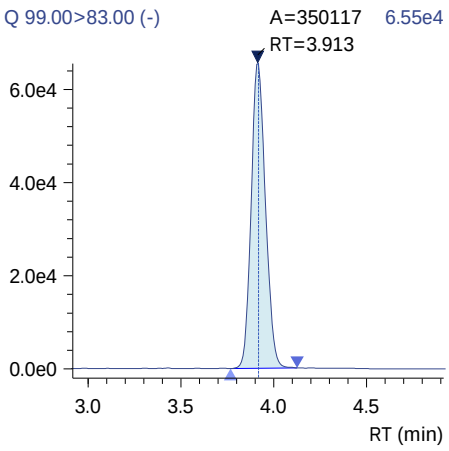
E2200851-013x500

Sample ID: E2200851-013x500
Date Acquired: 9/9/2022 6:21:58 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_050.lcd
Vial: 16 | Inj. Volume: 25.0000uL | Tray: 6

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.913	350117	127526	20.2804	ng/mL	39.63	27.04-50.23
Perchlorate 2	Auto	3.911	138761	127526	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.912	127526	127526	1.0000	ng/mL	----	

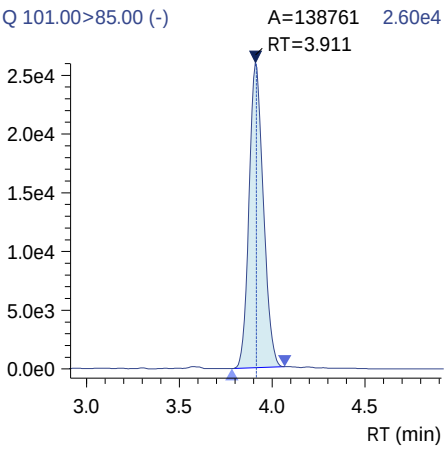
Perchlorate

Conc 20.2804



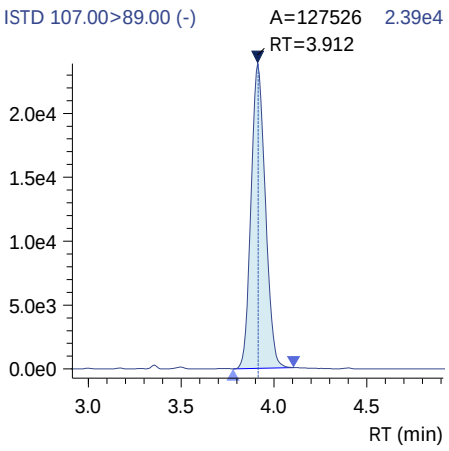
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

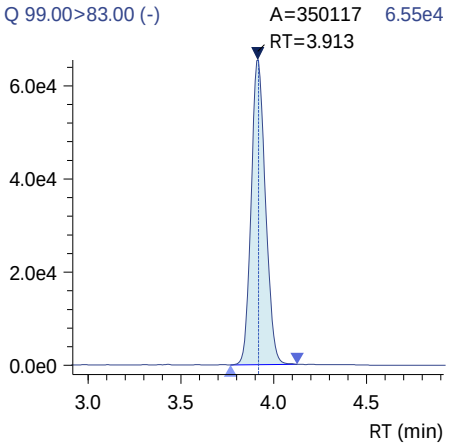
Printed at 9/12/2022 2:12:00 PM

E2200851-013x500

Sample ID: E2200851-013x500
Date Acquired: 9/9/2022 6:21:58 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_050.lcd
Vial: 16 | Inj. Volume: 25.0000uL | Tray: 6

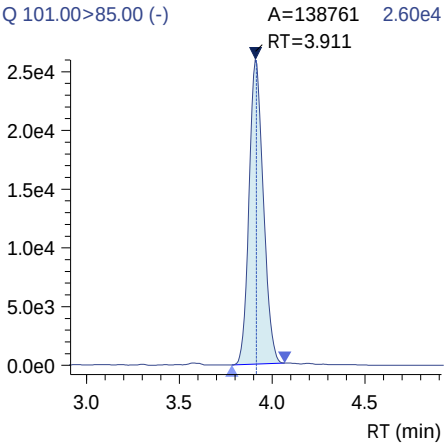
Perchlorate

Conc 20.2804



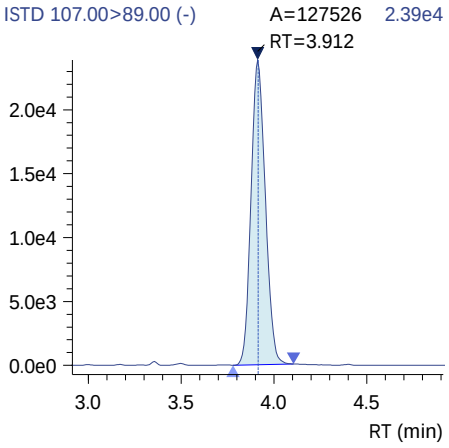
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:09:13 PM

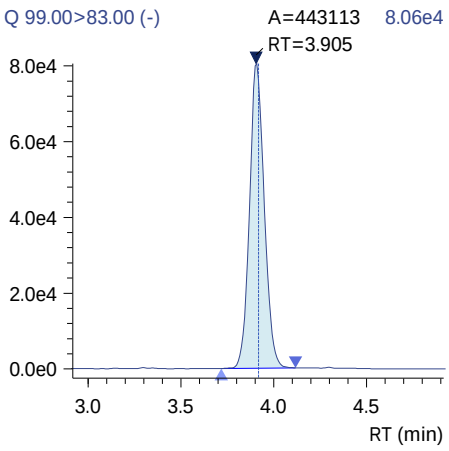
E2200851-014x10

Sample ID: E2200851-014x10
Date Acquired: 9/9/2022 6:30:22 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_051.lcd
Vial: 17 | Inj. Volume: 25.0000uL | Tray: 6

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.905	443113	128464	25.4797	ng/mL	38.39	27.04-50.23
Perchlorate 2	Auto	3.903	170129	128464	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.903	128464	128464	1.0000	ng/mL	----	

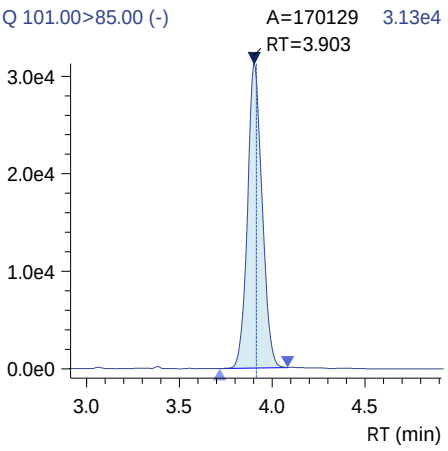
Perchlorate

Conc 25.4797



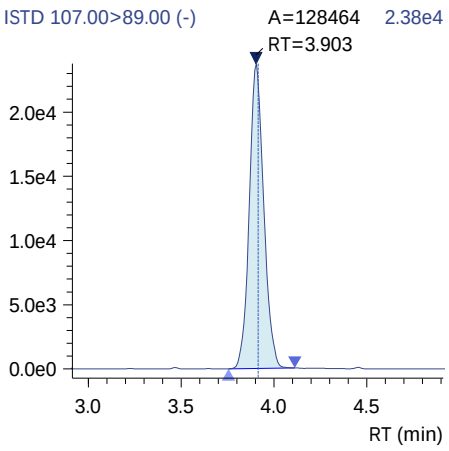
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

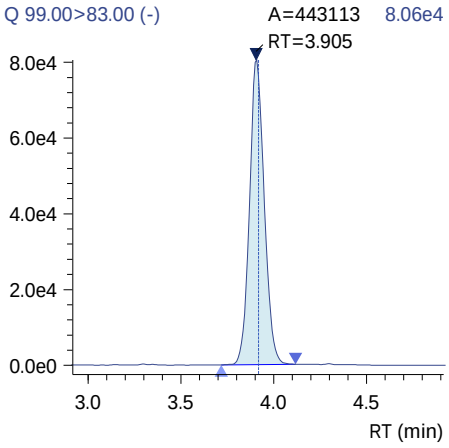
Printed at 9/12/2022 2:12:00 PM

E2200851-014x10

Sample ID: E2200851-014x10
Date Acquired: 9/9/2022 6:30:22 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_051.lcd
Vial: 17 | Inj. Volume: 25.0000uL | Tray: 6

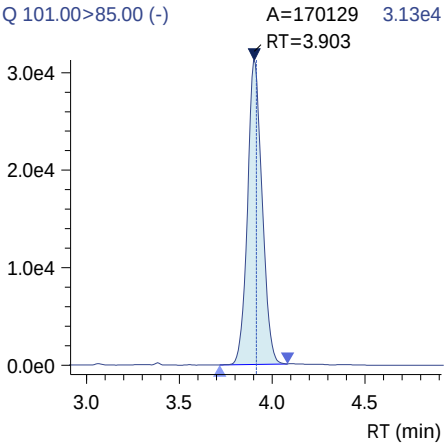
Perchlorate

Conc 25.4797



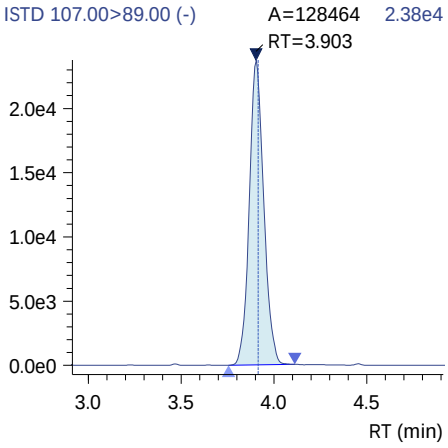
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:09:13 PM

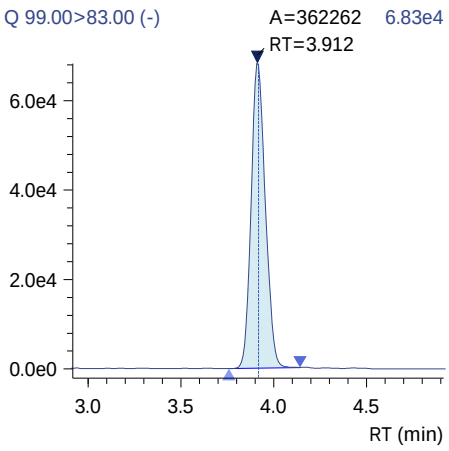
E2200851-015x200

Sample ID: E2200851-015x200
Date Acquired: 9/9/2022 6:38:44 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_052.lcd
Vial: 18 | Inj. Volume: 25.0000uL | Tray: 6

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.912	362262	127168	21.0429	ng/mL	38.87	27.04-50.23
Perchlorate 2	Auto	3.910	140825	127168	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.907	127168	127168	1.0000	ng/mL	----	

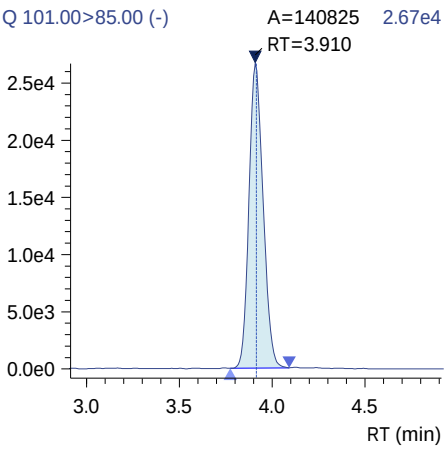
Perchlorate

Conc 21.0429



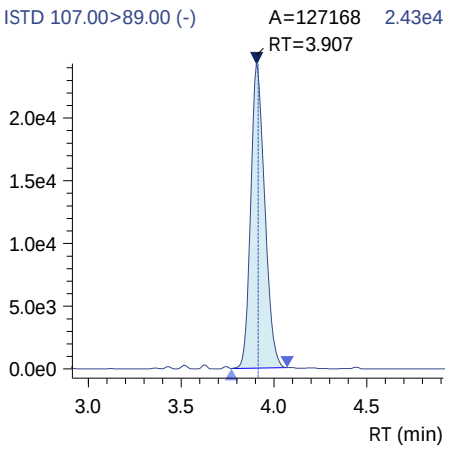
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

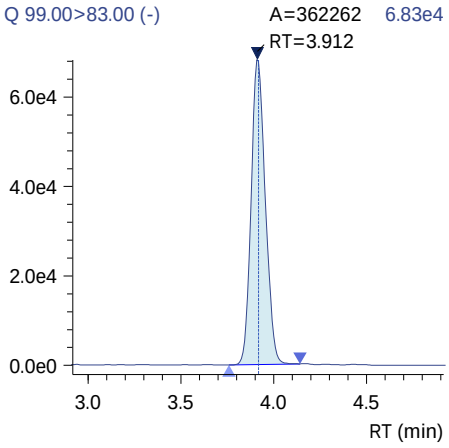
Printed at 9/12/2022 2:12:00 PM

E2200851-015x200

Sample ID: E2200851-015x200
Date Acquired: 9/9/2022 6:38:44 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_052.lcd
Vial: 18 | Inj. Volume: 25.0000uL | Tray: 6

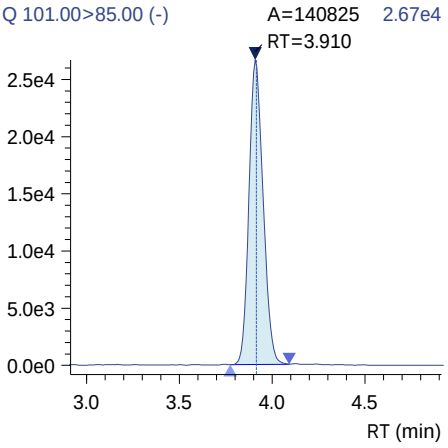
Perchlorate

Conc 21.0429



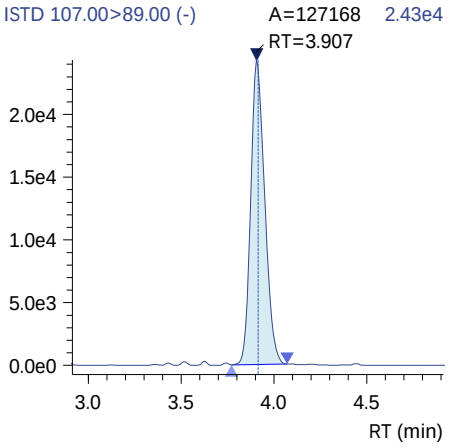
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:09:13 PM

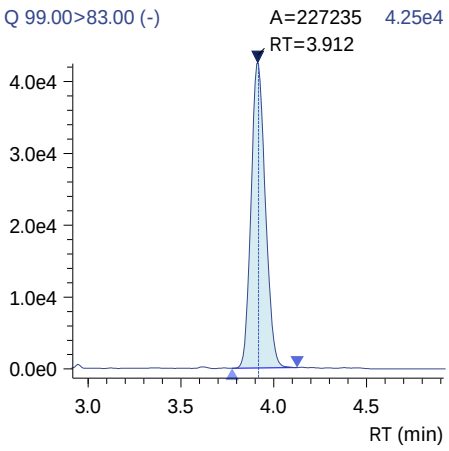
E2200851-017x50

Sample ID: E2200851-017x50
Date Acquired: 9/9/2022 6:55:32 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_054.lcd
Vial: 20 | Inj. Volume: 25.0000uL | Tray: 6

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.912	227235	139444	12.0375	ng/mL	36.72	27.04-50.23
Perchlorate 2	Auto	3.910	83434	139444	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.909	139444	139444	1.0000	ng/mL	----	

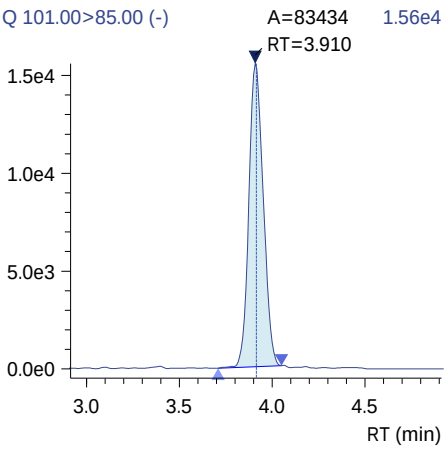
Perchlorate

Conc 12.0375



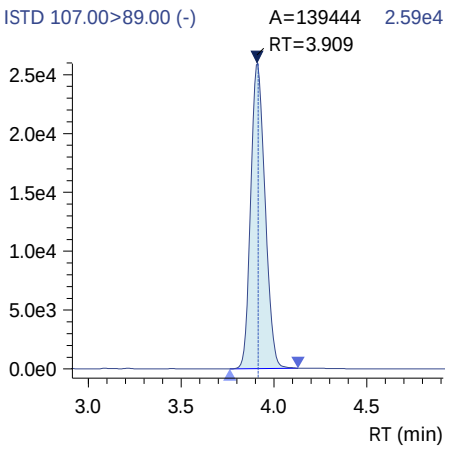
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

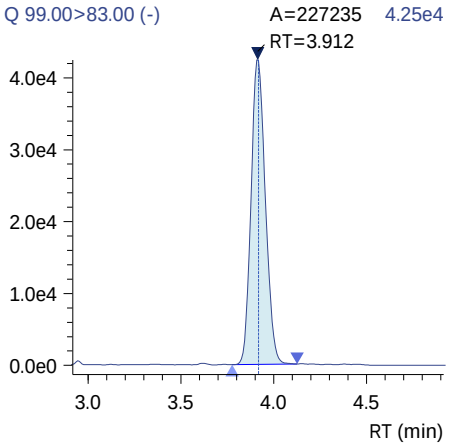
Printed at 9/12/2022 2:12:00 PM

E2200851-017x50

Sample ID: E2200851-017x50
Date Acquired: 9/9/2022 6:55:32 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_054.lcd
Vial: 20 | Inj. Volume: 25.0000uL | Tray: 6

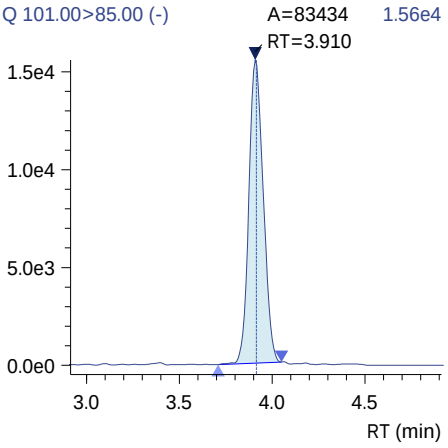
Perchlorate

Conc 12.0375



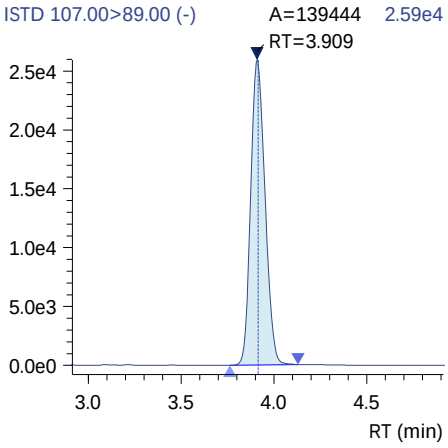
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:09:13 PM

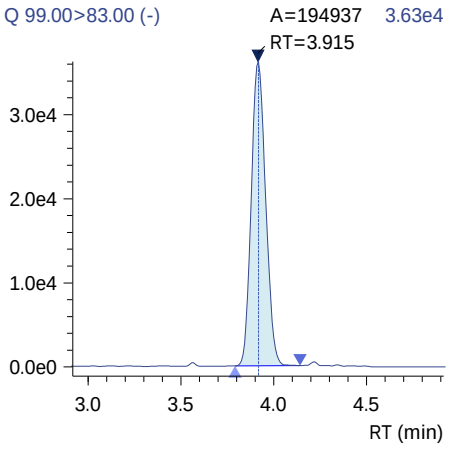
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 9/9/2022 7:03:58 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_055.lcd
Vial: 26 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.915	194937	141940	10.1450	ng/mL	38.90	27.04-50.23
Perchlorate 2	Auto	3.910	75828	141940	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.911	141940	141940	1.0000	ng/mL	----	

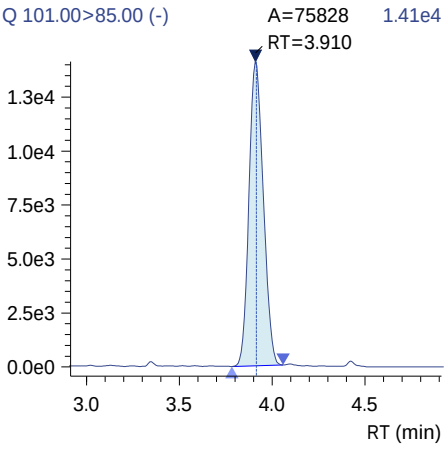
Perchlorate

Conc 10.1450



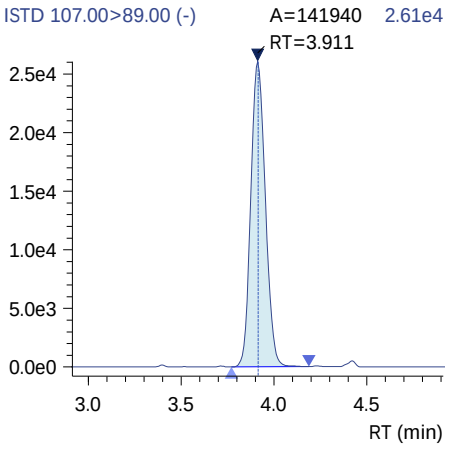
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

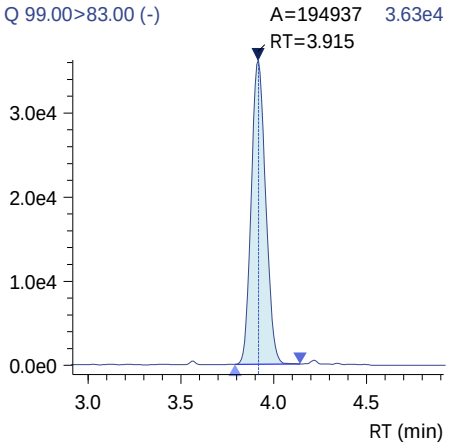
Printed at 9/12/2022 2:12:00 PM

PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 9/9/2022 7:03:58 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_055.lcd
Vial: 26 | Inj. Volume: 25.0000uL | Tray: 1

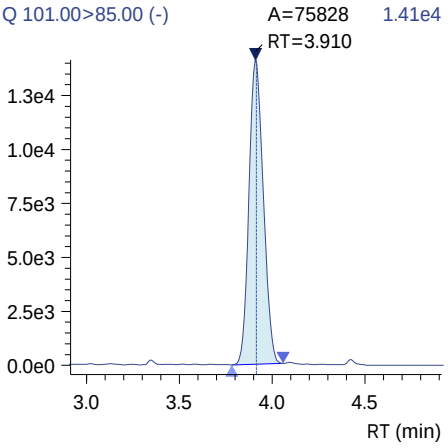
Perchlorate

Conc 10.1450



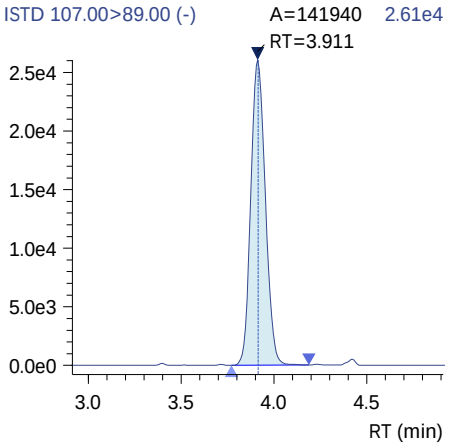
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:09:13 PM

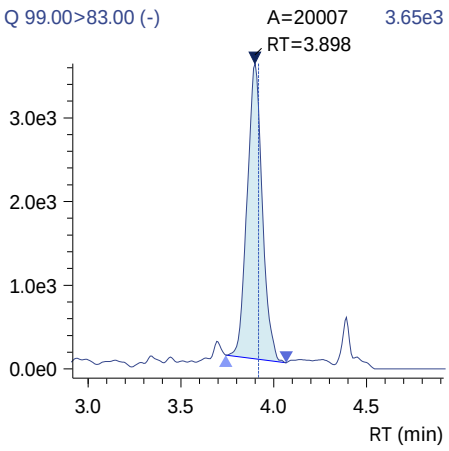
E2200851-018

Sample ID: E2200851-018
Date Acquired: 9/9/2022 7:12:19 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_056.lcd
Vial: 21 | Inj. Volume: 25.0000uL | Tray: 6

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.898	20007	184276	0.8020	ng/mL	42.01	27.04-50.23
Perchlorate 2	Auto	3.892	8404	184276	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.894	184276	184276	1.0000	ng/mL	----	

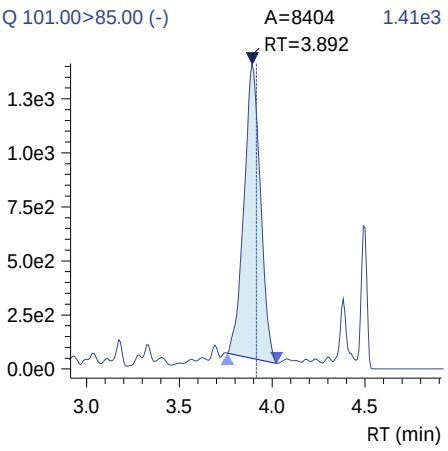
Perchlorate

Conc 0.8020



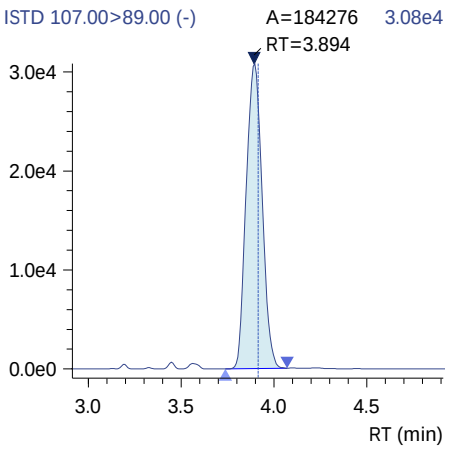
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

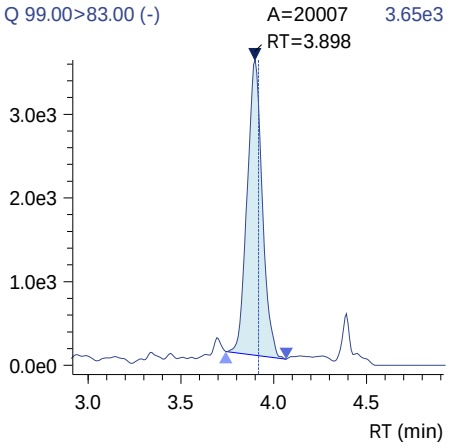
Printed at 9/12/2022 2:12:00 PM

E2200851-018

Sample ID: E2200851-018
Date Acquired: 9/9/2022 7:12:19 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_056.lcd
Vial: 21 | Inj. Volume: 25.0000uL | Tray: 6

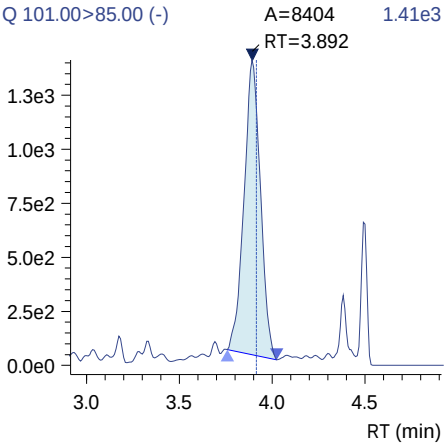
Perchlorate

Conc 0.8020



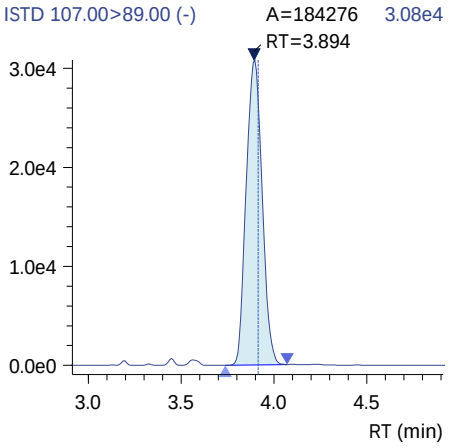
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:09:13 PM

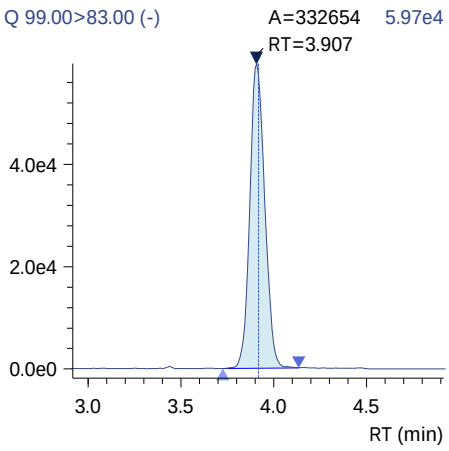
E2200851-019x10

Sample ID: E2200851-019x10
Date Acquired: 9/9/2022 7:20:42 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_057.lcd
Vial: 22 | Inj. Volume: 25.0000uL | Tray: 6

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.907	332654	131999	18.6159	ng/mL	38.89	27.04-50.23
Perchlorate 2	Auto	3.905	129380	131999	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.905	131999	131999	1.0000	ng/mL	----	

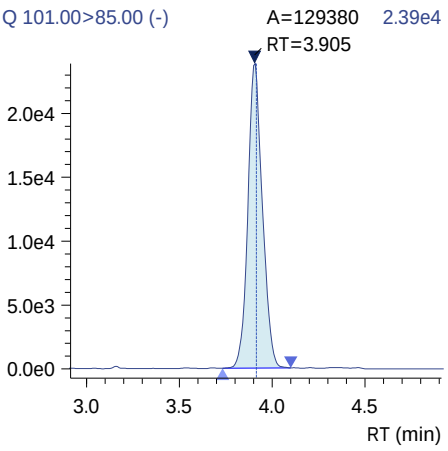
Perchlorate

Conc 18.6159



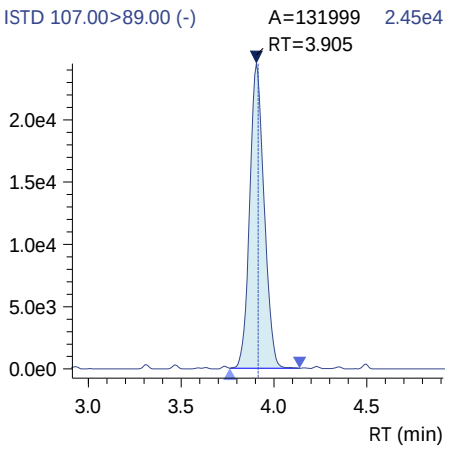
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:12:00 PM

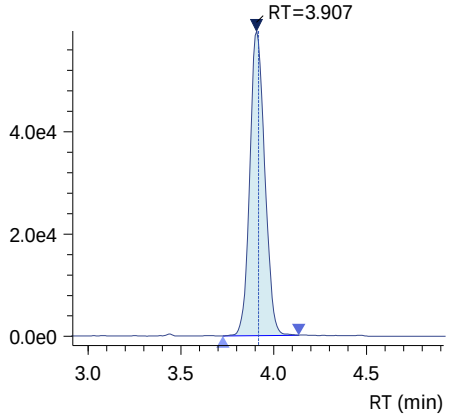
E2200851-019x10

Sample ID: E2200851-019x10
Date Acquired: 9/9/2022 7:20:42 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_057.lcd
Vial: 22 | Inj. Volume: 25.0000uL | Tray: 6

Perchlorate

Conc 18.6159

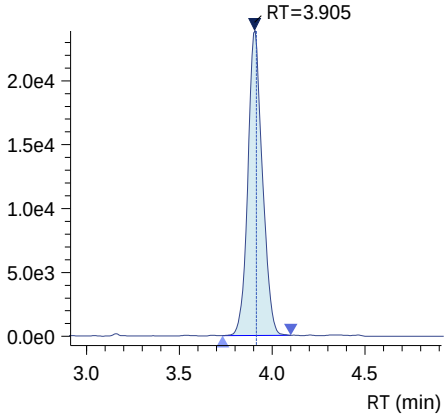
Q 99.00>83.00 (-) A=332654 5.97e4



Perchlorate 2

Conc 0.0000

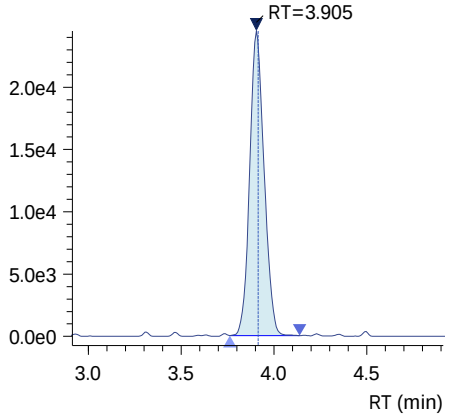
Q 101.00>85.00 (-) A=129380 2.39e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=131999 2.45e4



Insight Report

Printed at 9/12/2022 2:09:13 PM

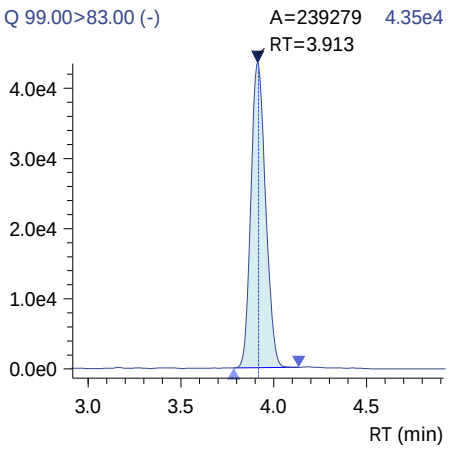
E2200851-020x500

Sample ID: E2200851-020x500
Date Acquired: 9/9/2022 7:29:03 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_058.lcd
Vial: 23 | Inj. Volume: 25.0000uL | Tray: 6

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.913	239279	139722	12.6503	ng/mL	37.44	27.04-50.23
Perchlorate 2	Auto	3.910	89593	139722	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.910	139722	139722	1.0000	ng/mL	----	

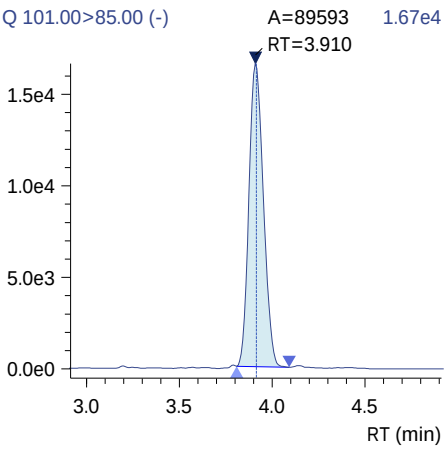
Perchlorate

Conc 12.6503



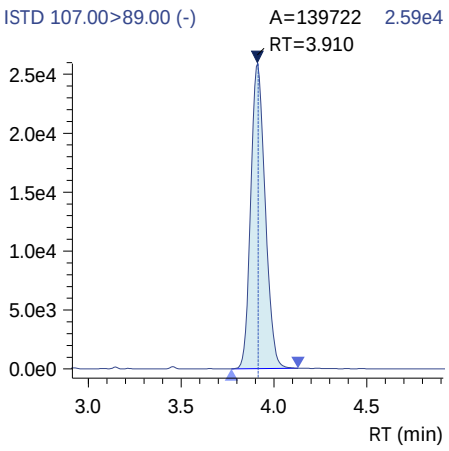
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:12:00 PM

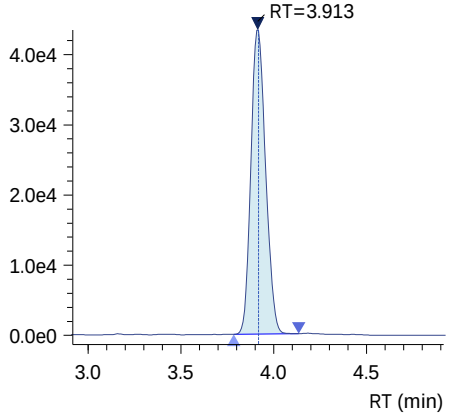
E2200851-020x500

Sample ID: E2200851-020x500
Date Acquired: 9/9/2022 7:29:03 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_058.lcd
Vial: 23 | Inj. Volume: 25.0000uL | Tray: 6

Perchlorate

Conc 12.6503

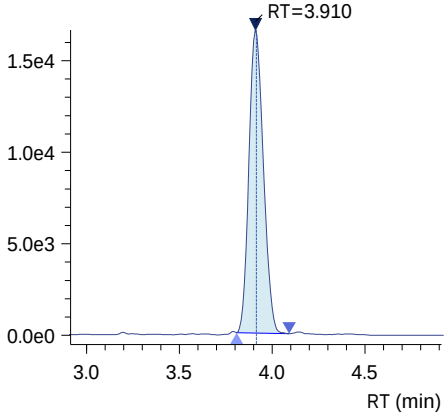
Q 99.00>83.00 (-) A=239279 4.35e4 RT=3.913



Perchlorate 2

Conc 0.0000

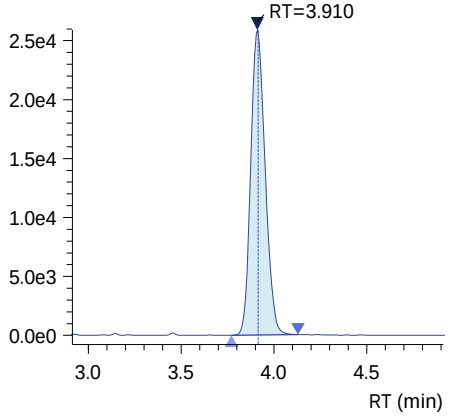
Q 101.00>85.00 (-) A=89593 1.67e4 RT=3.910



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=139722 2.59e4 RT=3.910



Insight Report

Printed at 9/12/2022 2:09:13 PM

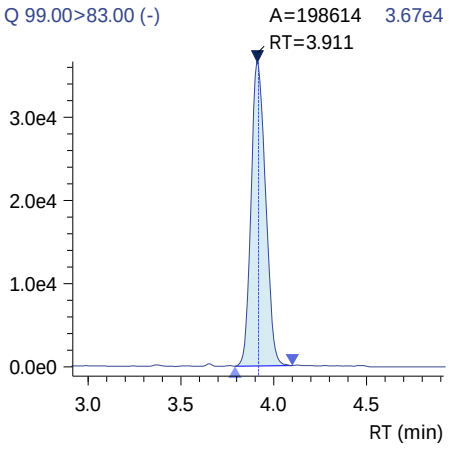
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 9/9/2022 7:37:25 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_059.lcd
Vial: 26 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.911	198614	141224	10.3887	ng/mL	37.45	27.04-50.23
Perchlorate 2	Auto	3.907	74384	141224	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.910	141224	141224	1.0000	ng/mL	----	

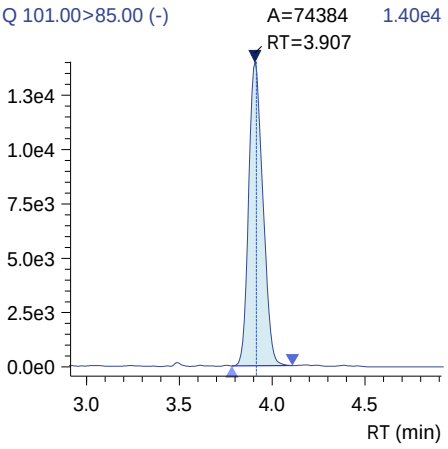
Perchlorate

Conc 10.3887



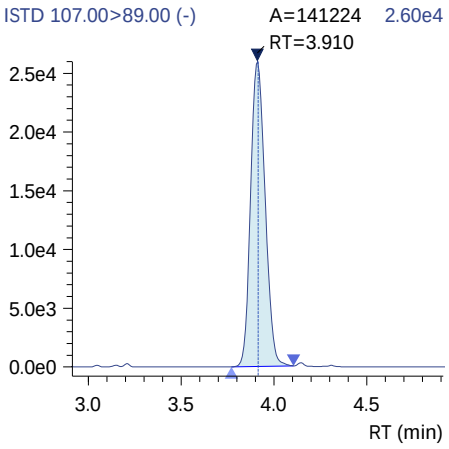
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:12:00 PM

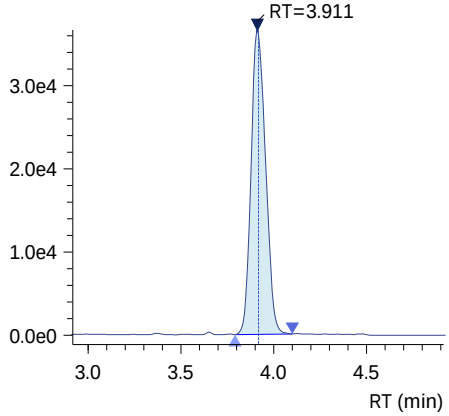
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 9/9/2022 7:37:25 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_059.lcd
Vial: 26 | Inj. Volume: 25.0000uL | Tray: 1

Perchlorate

Conc 10.3887

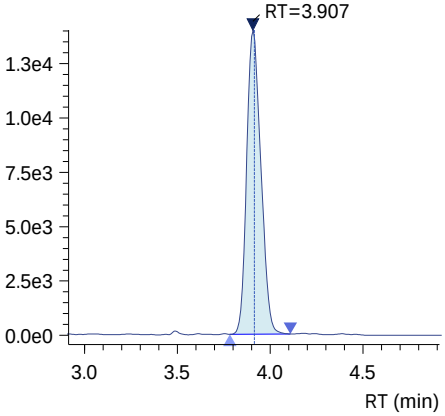
Q 99.00>83.00 (-) A=198614 3.67e4 RT=3.911



Perchlorate 2

Conc 0.0000

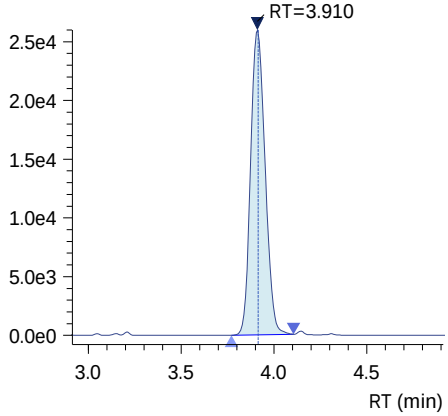
Q 101.00>85.00 (-) A=74384 1.40e4 RT=3.907



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=141224 2.60e4 RT=3.910



Insight Report

Printed at 9/12/2022 2:09:13 PM

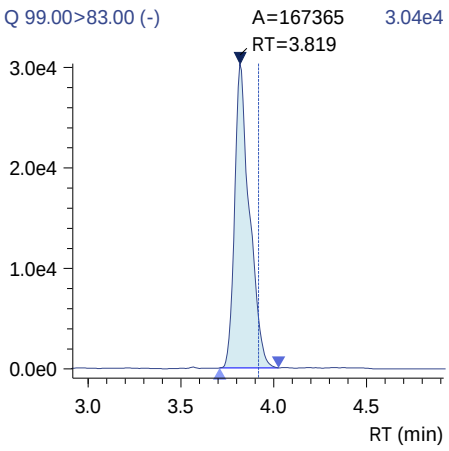
EQ2200387-04

Sample ID: EQ2200387-04
Date Acquired: 9/9/2022 8:02:37 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_062.lcd
Vial: 27 | Inj. Volume: 25.0000uL | Tray: 6

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.819	167365	228387	5.4132	ng/mL	38.93	27.04-50.23
Perchlorate 2	Auto	3.816	65152	228387	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.817	228387	228387	1.0000	ng/mL	----	

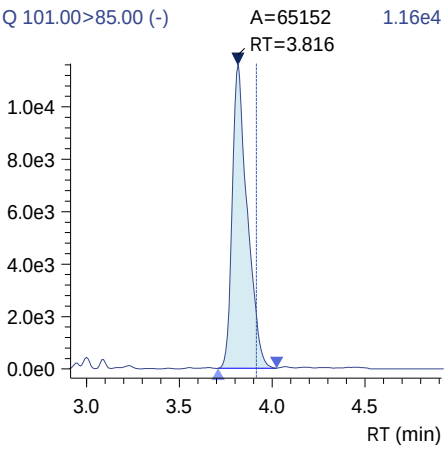
Perchlorate

Conc 5.4132



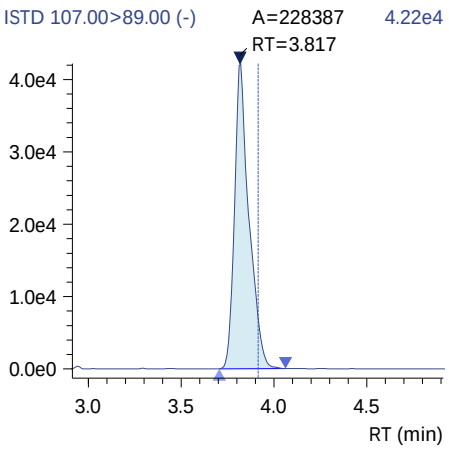
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

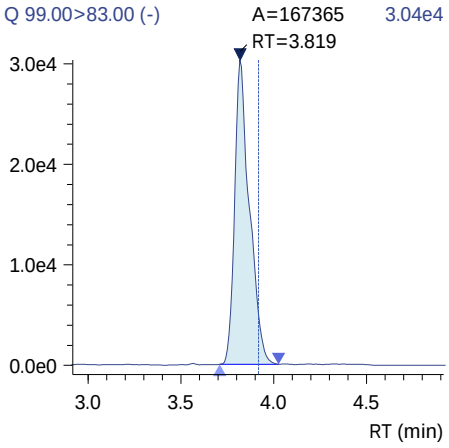
Printed at 9/12/2022 2:12:00 PM

EQ2200387-04

Sample ID: EQ2200387-04
Date Acquired: 9/9/2022 8:02:37 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_062.lcd
Vial: 27 | Inj. Volume: 25.0000uL | Tray: 6

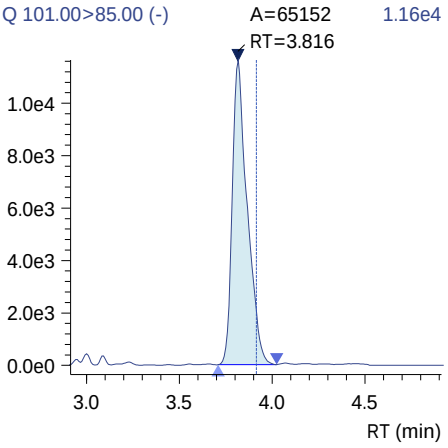
Perchlorate

Conc 5.4132



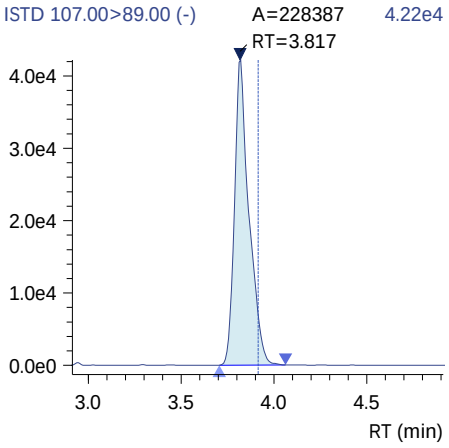
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:09:13 PM

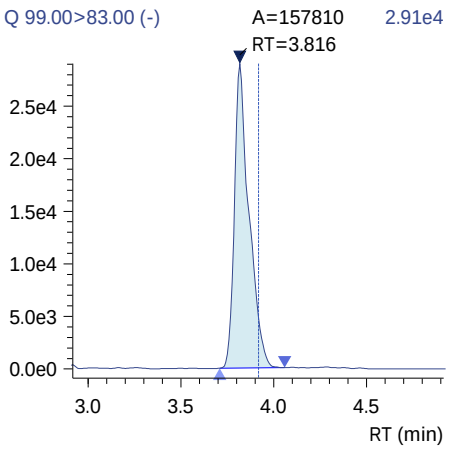
EQ2200387-05

Sample ID: EQ2200387-05
Date Acquired: 9/9/2022 8:11:01 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_063.lcd
Vial: 28 | Inj. Volume: 25.0000uL | Tray: 6

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.816	157810	223163	5.2236	ng/mL	38.91	27.04-50.23
Perchlorate 2	Auto	3.815	61407	223163	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.816	223163	223163	1.0000	ng/mL	----	

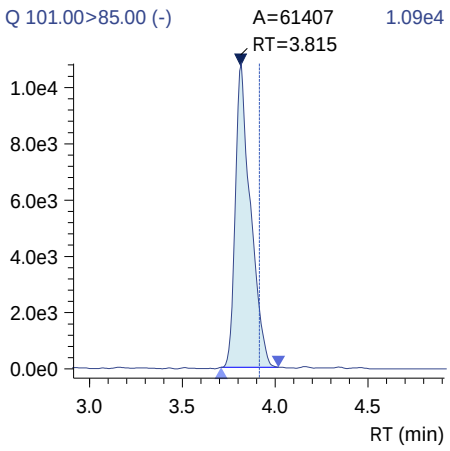
Perchlorate

Conc 5.2236



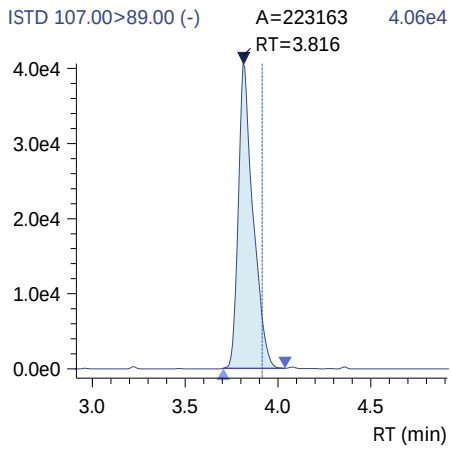
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:12:00 PM

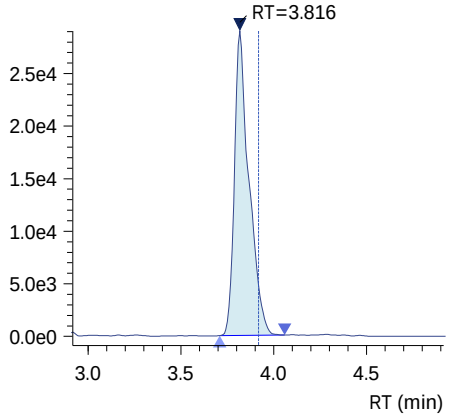
EQ2200387-05

Sample ID: EQ2200387-05
Date Acquired: 9/9/2022 8:11:01 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_063.lcd
Vial: 28 | Inj. Volume: 25.0000uL | Tray: 6

Perchlorate

Conc 5.2236

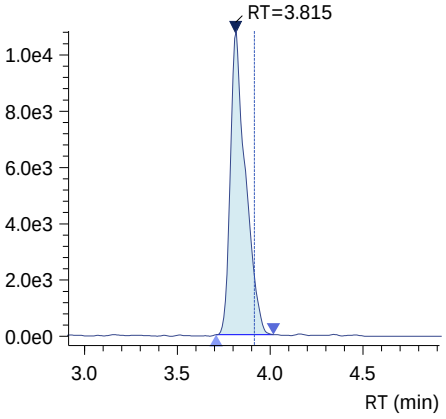
Q 99.00>83.00 (-) A=157810 2.91e4 RT=3.816



Perchlorate 2

Conc 0.0000

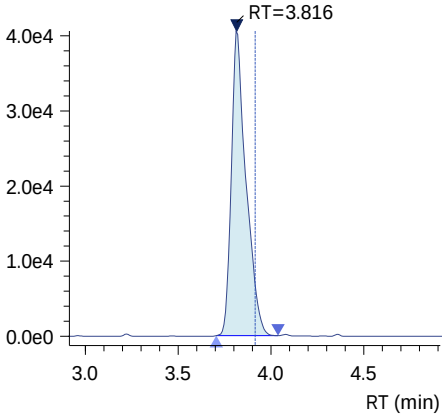
Q 101.00>85.00 (-) A=61407 1.09e4 RT=3.815



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=223163 4.06e4 RT=3.816



Insight Report

Printed at 9/12/2022 2:09:13 PM

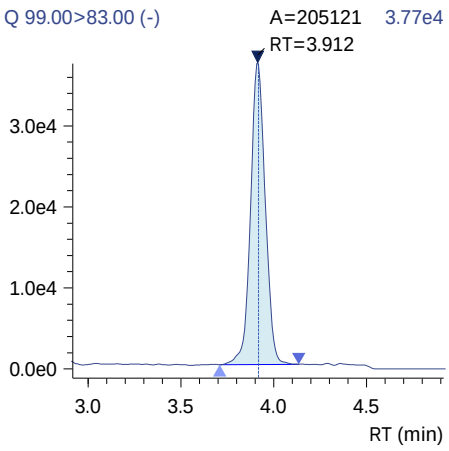
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 9/9/2022 9:09:50 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_070.lcd
Vial: 26 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.912	205121	140446	10.7885	ng/mL	38.72	27.04-50.23
Perchlorate 2	Auto	3.909	79425	140446	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.909	140446	140446	1.0000	ng/mL	----	

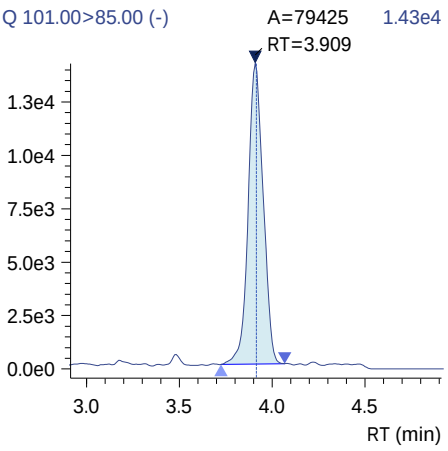
Perchlorate

Conc 10.7885



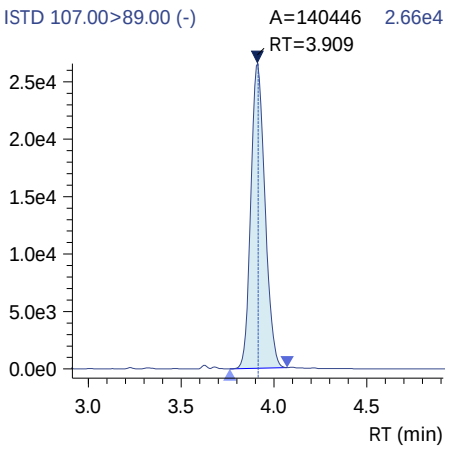
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/12/2022 2:12:00 PM

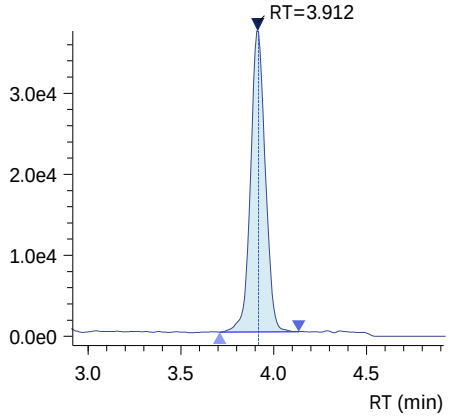
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 9/9/2022 9:09:50 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220909\20220909_070.lcd
Vial: 26 | Inj. Volume: 25.0000uL | Tray: 1

Perchlorate

Conc 10.7885

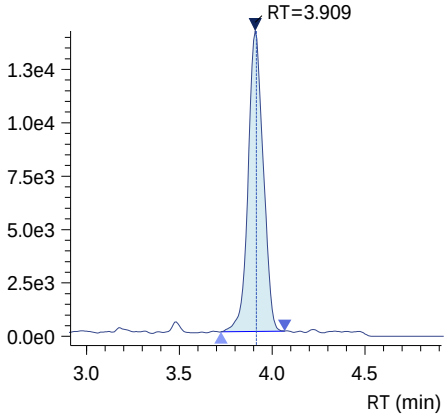
Q 99.00>83.00 (-) A=205121 3.77e4 RT=3.912



Perchlorate 2

Conc 0.0000

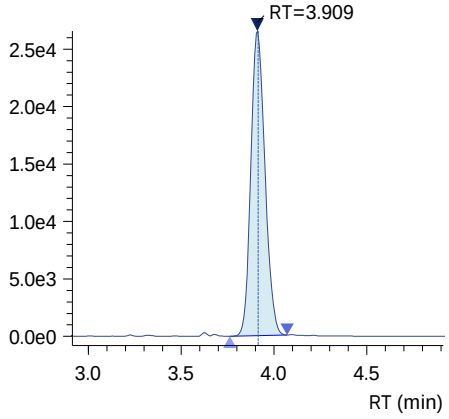
Q 101.00>85.00 (-) A=79425 1.43e4 RT=3.909



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=140446 2.66e4 RT=3.909



Insight Report

Printed at 9/13/2022 9:43:09 AM

Method File: I:\LCMS01\DATA\20220912\20220909.lcm
Project File: I:\LCMS01\DATA\20220912\20220912.damlp

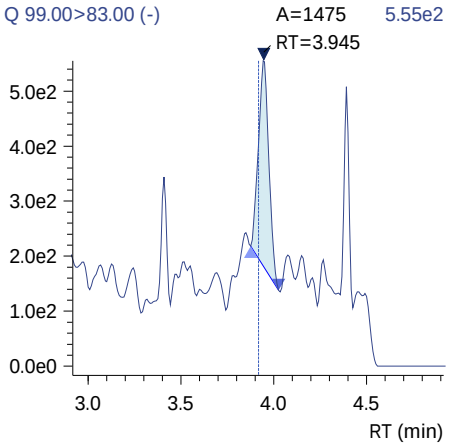
LODV

Sample ID: LODV
Date Acquired: 9/12/2022 1:12:58 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220912\20220912_005.lcd
Vial: 33 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.945	1475	220256	0.0495	ng/mL	43.80	26.0-48.29
Perchlorate 2	Auto	3.928	646	220256	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.937	220256	220256	1.0000	ng/mL	----	

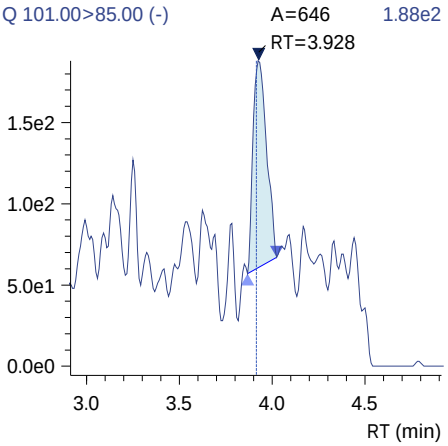
Perchlorate

Conc 0.0495



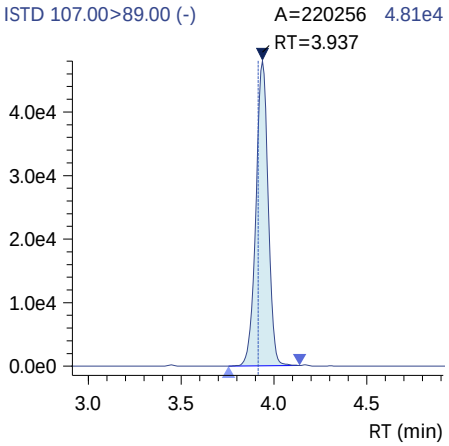
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/13/2022 9:45:17 AM

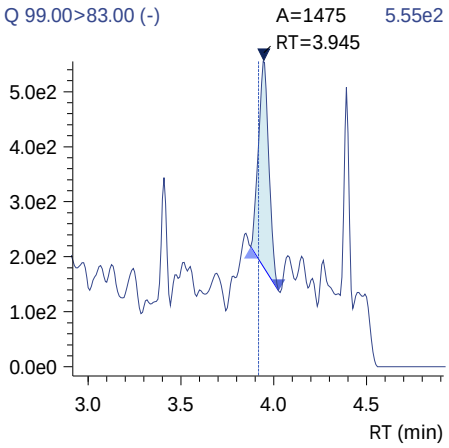
Method File: I:\LCMS01\DATA\20220912\20220909.lcm
Project File: I:\LCMS01\DATA\20220912\20220912.damlp

LODV

Sample ID: LODV
Date Acquired: 9/12/2022 1:12:58 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220912\20220912_005.lcd
Vial: 33 | Inj. Volume: 25.0000uL | Tray: 1

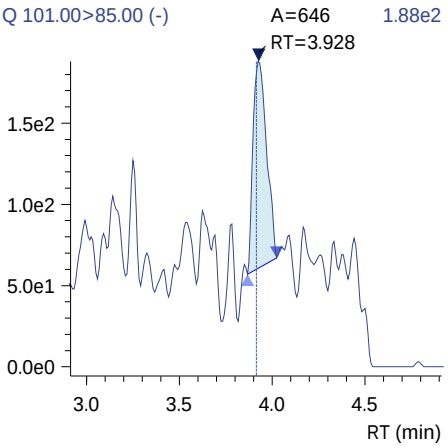
Perchlorate

Conc 0.0495



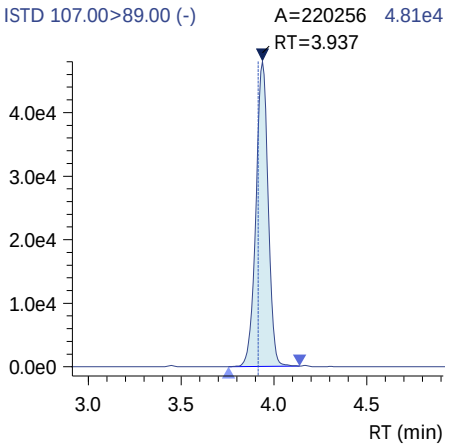
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/13/2022 9:43:09 AM

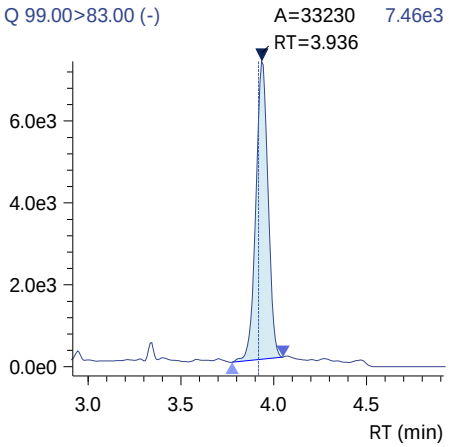
ICS

Sample ID: ICS
Date Acquired: 9/12/2022 1:21:23 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220912\20220912_006.lcd
Vial: 32 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.936	33230	236087	1.0397	ng/mL	38.21	26.0-48.29
Perchlorate 2	Auto	3.935	12698	236087	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.935	236087	236087	1.0000	ng/mL	----	

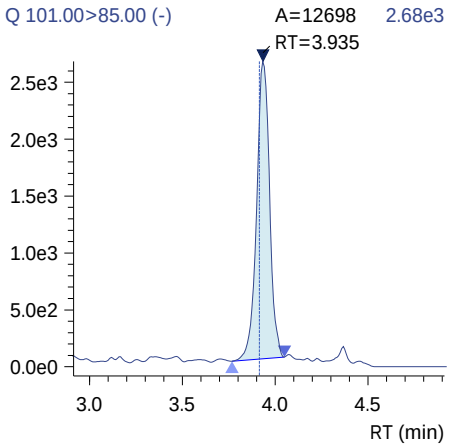
Perchlorate

Conc 1.0397



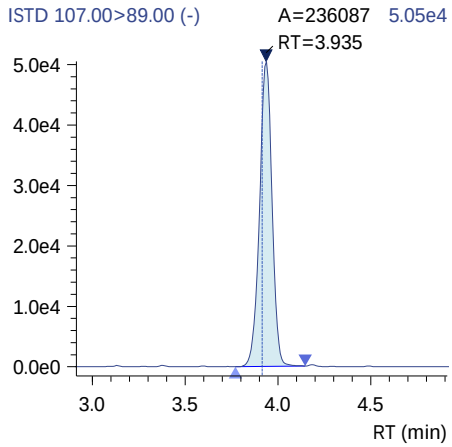
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

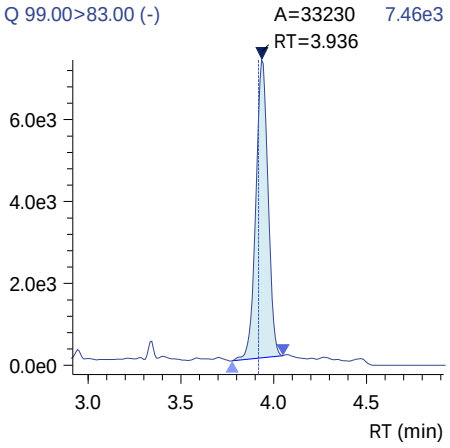
Printed at 9/13/2022 9:45:17 AM

ICS

Sample ID: ICS
Date Acquired: 9/12/2022 1:21:23 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220912\20220912_006.lcd
Vial: 32 | Inj. Volume: 25.0000uL | Tray: 1

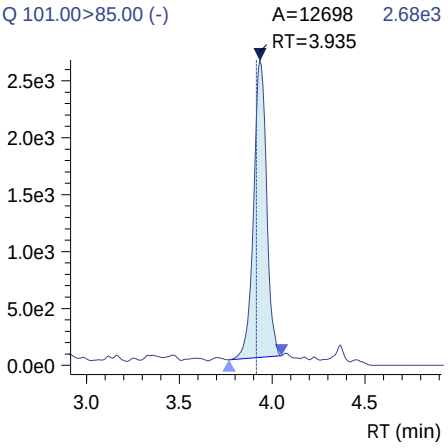
Perchlorate

Conc 1.0397



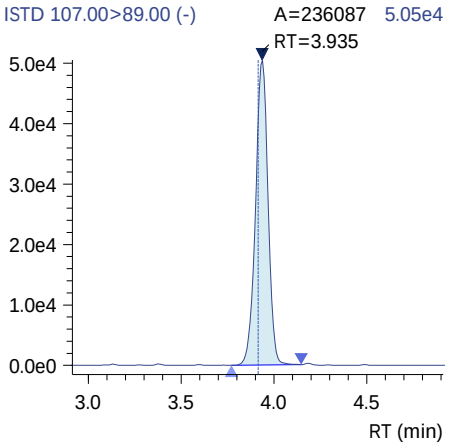
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/13/2022 9:43:09 AM

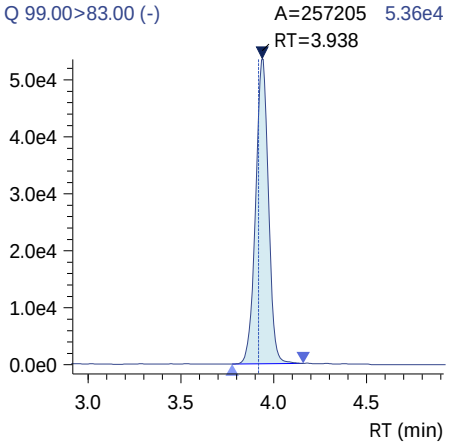
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 9/12/2022 1:29:47 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220912\20220912_007.lcd
Vial: 26 | Inj. Volume: 25.0000uL | Tray: 1

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.938	257205	185641	10.2345	ng/mL	36.43	26.0-48.29
Perchlorate 2	Auto	3.934	93700	185641	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.935	185641	185641	1.0000	ng/mL	----	

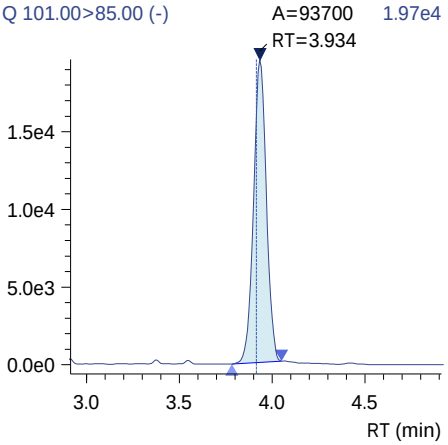
Perchlorate

Conc 10.2345



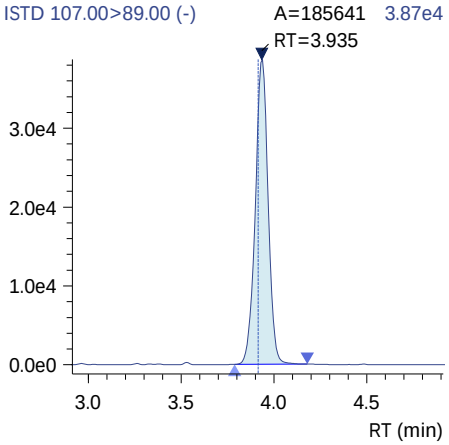
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/13/2022 9:45:17 AM

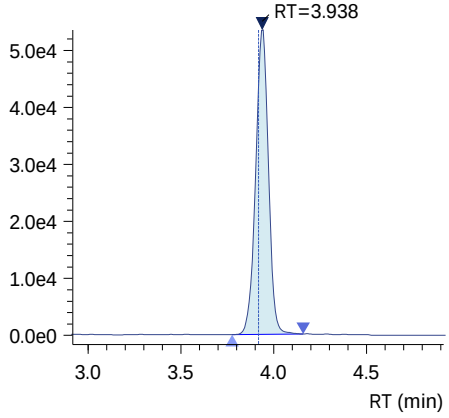
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 9/12/2022 1:29:47 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220912\20220912_007.lcd
Vial: 26 | Inj. Volume: 25.0000uL | Tray: 1

Perchlorate

Conc 10.2345

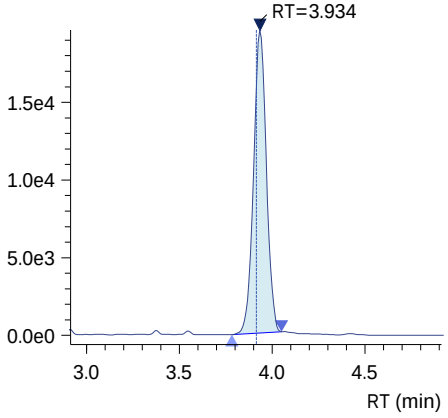
Q 99.00>83.00 (-) A=257205 5.36e4 RT=3.938



Perchlorate 2

Conc 0.0000

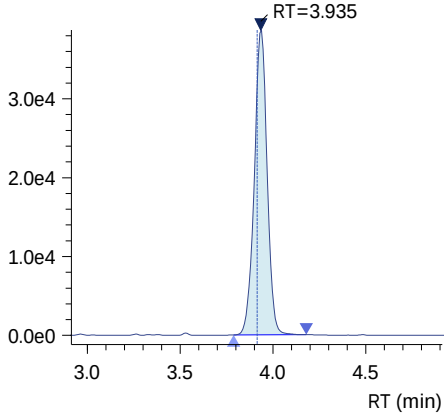
Q 101.00>85.00 (-) A=93700 1.97e4 RT=3.934



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=185641 3.87e4 RT=3.935



Insight Report

Printed at 9/13/2022 9:43:09 AM

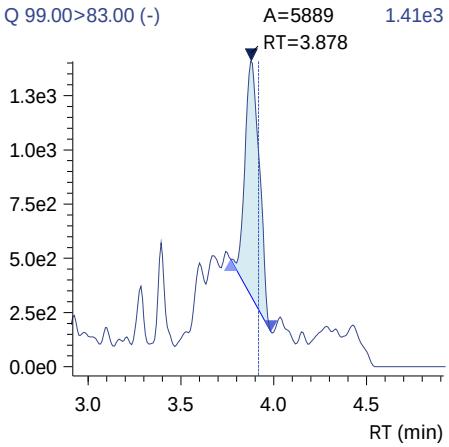
E2200851-016

Sample ID: E2200851-016
Date Acquired: 9/12/2022 1:38:11 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220912\20220912_008.lcd
Vial: 19 | Inj. Volume: 25.0000uL | Tray: 6

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.878	5889	271026	0.1605	ng/mL	43.83	26.0-48.29
Perchlorate 2	Auto	3.892	2581	271026	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.876	271026	271026	1.0000	ng/mL	----	

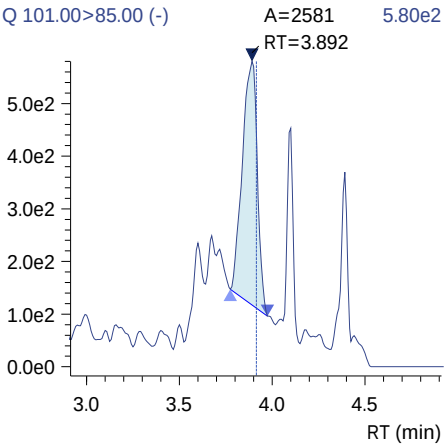
Perchlorate

Conc 0.1605



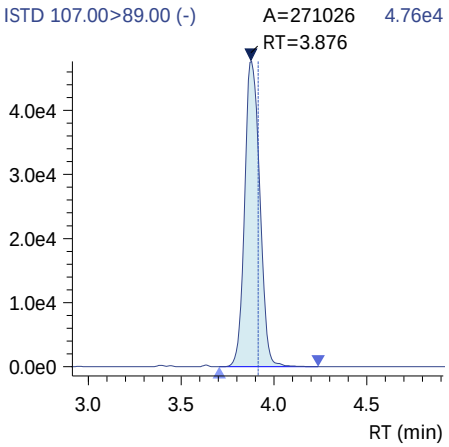
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

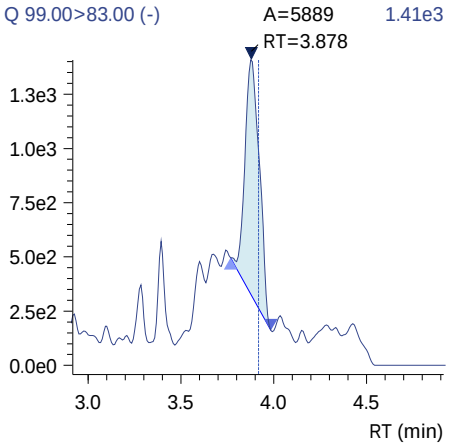
Printed at 9/13/2022 9:45:17 AM

E2200851-016

Sample ID: E2200851-016
Date Acquired: 9/12/2022 1:38:11 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220912\20220912_008.lcd
Vial: 19 | Inj. Volume: 25.0000uL | Tray: 6

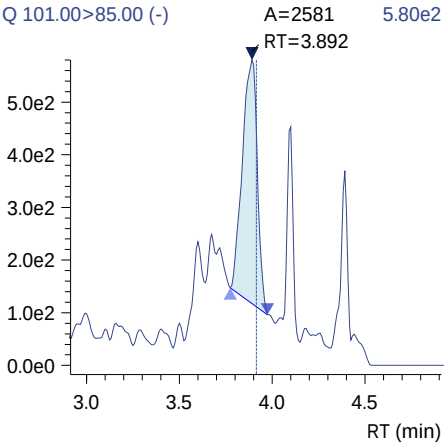
Perchlorate

Conc 0.1605



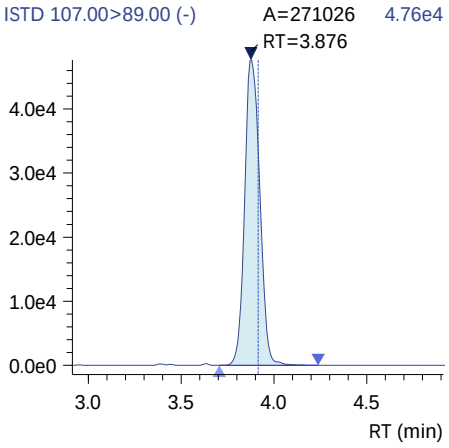
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/13/2022 9:43:09 AM

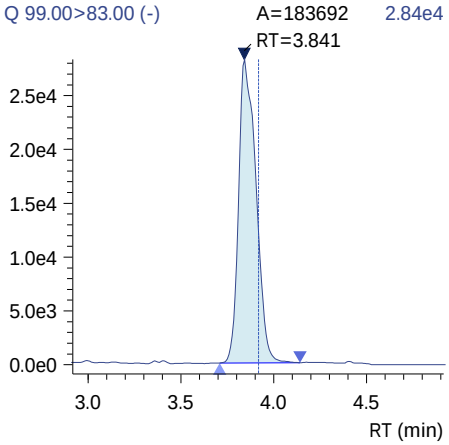
E2200851-022

Sample ID: E2200851-022
Date Acquired: 9/12/2022 1:46:35 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220912\20220912_009.lcd
Vial: 38 | Inj. Volume: 25.0000uL | Tray: 6

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.841	183692	266052	5.1002	ng/mL	38.31	26.0-48.29
Perchlorate 2	Auto	3.840	70369	266052	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.840	266052	266052	1.0000	ng/mL	----	

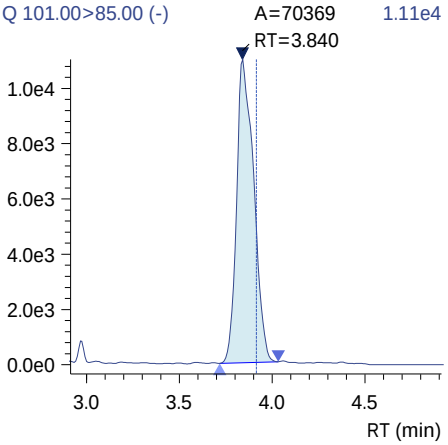
Perchlorate

Conc 5.1002



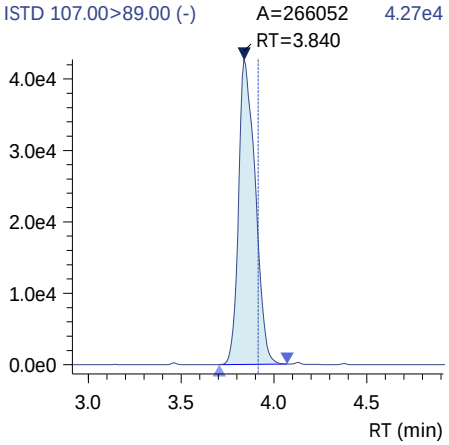
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/13/2022 9:45:17 AM

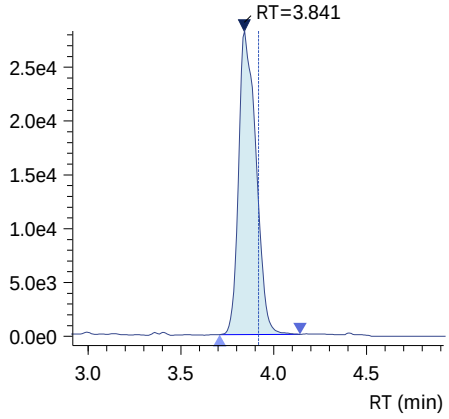
E2200851-022

Sample ID: E2200851-022
Date Acquired: 9/12/2022 1:46:35 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220912\20220912_009.lcd
Vial: 38 | Inj. Volume: 25.0000uL | Tray: 6

Perchlorate

Conc 5.1002

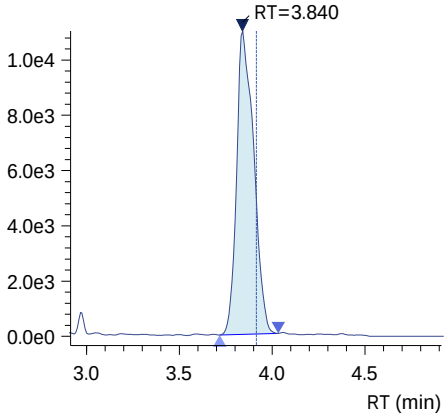
Q 99.00>83.00 (-) A=183692 2.84e4



Perchlorate 2

Conc 0.0000

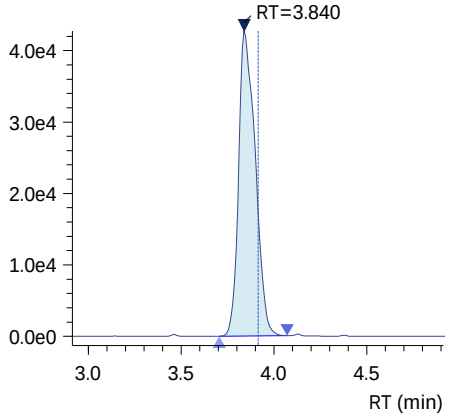
Q 101.00>85.00 (-) A=70369 1.11e4



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=266052 4.27e4



Insight Report

Printed at 9/13/2022 9:43:09 AM

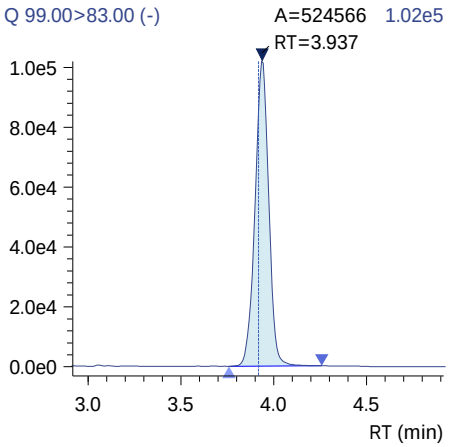
E2200851-021x100

Sample ID: E2200851-021x100
Date Acquired: 9/12/2022 3:02:05 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220912\20220912_014.lcd
Vial: 37 | Inj. Volume: 25.0000uL | Tray: 6

Name	Mode ID	Found RT	Area	ISTD Area	Conc.	Unit	Ref 1 Actual Ratio	Comment 1
Perchlorate	Auto	3.937	524566	142688	27.1565	ng/mL	36.07	26.0-48.29
Perchlorate 2	Auto	3.935	189232	142688	0.0000	ng/mL	----	
Sodium Perchlorate-18O4_IS	Auto	3.934	142688	142688	1.0000	ng/mL	----	

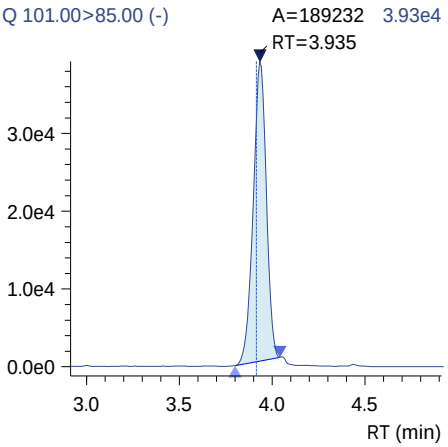
Perchlorate

Conc 27.1565



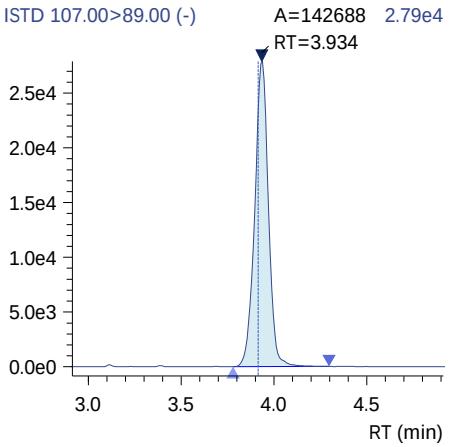
Perchlorate 2

Conc 0.0000



Sodium Perchlorate-18O4_IS

Conc 1.0000



Insight Report

Printed at 9/13/2022 9:45:17 AM

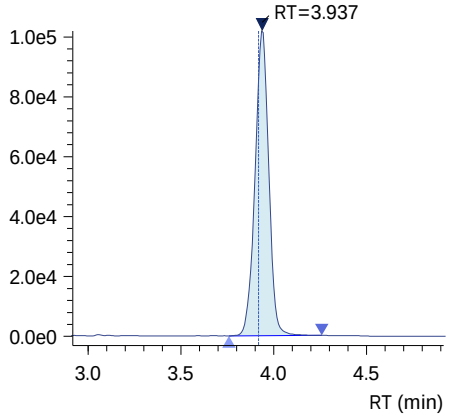
E2200851-021x100

Sample ID: E2200851-021x100
Date Acquired: 9/12/2022 3:02:05 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220912\20220912_014.lcd
Vial: 37 | Inj. Volume: 25.0000uL | Tray: 6

Perchlorate

Conc 27.1565

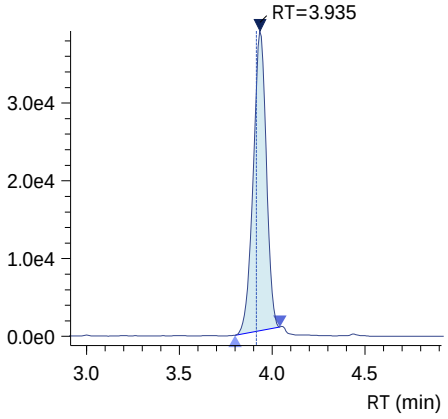
Q 99.00>83.00 (-) A=524566 1.02e5 RT=3.937



Perchlorate 2

Conc 0.0000

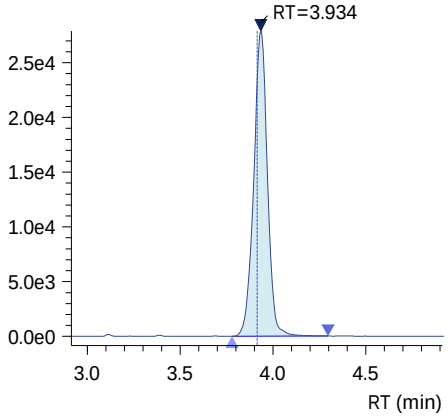
Q 101.00>85.00 (-) A=189232 3.93e4 RT=3.935



Sodium Perchlorate-18O4_IS

Conc 1.0000

ISTD 107.00>89.00 (-) A=142688 2.79e4 RT=3.934



Insight Report

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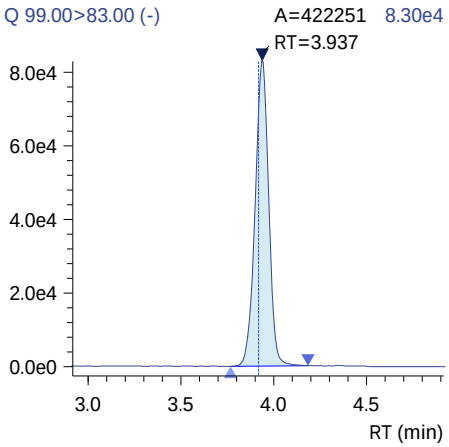
Perchlorate

Conc 20.1494



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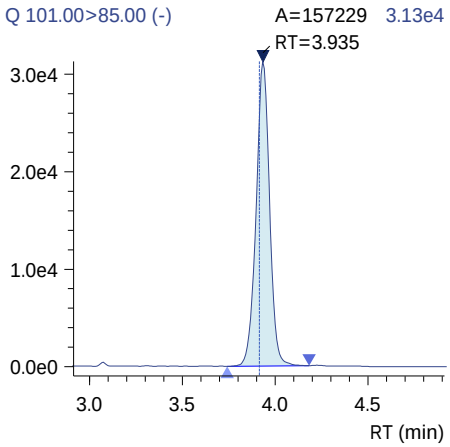

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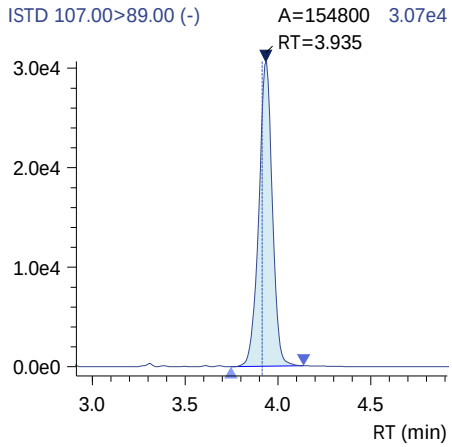

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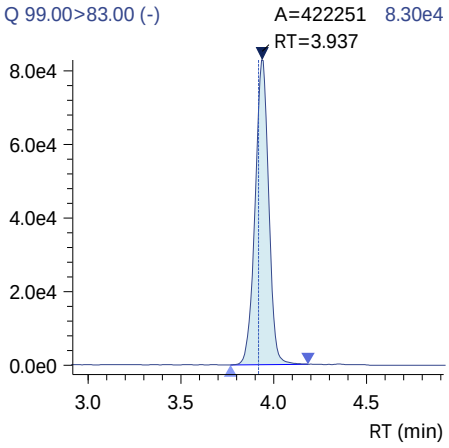
Perchlorate

Conc 20.1494



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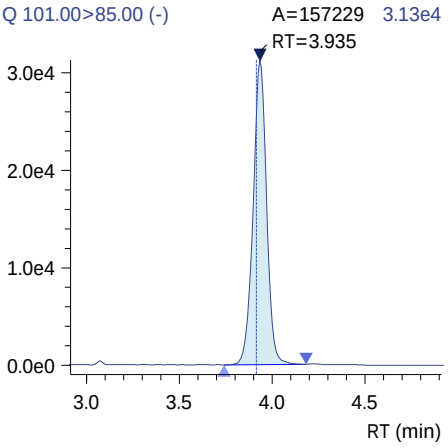

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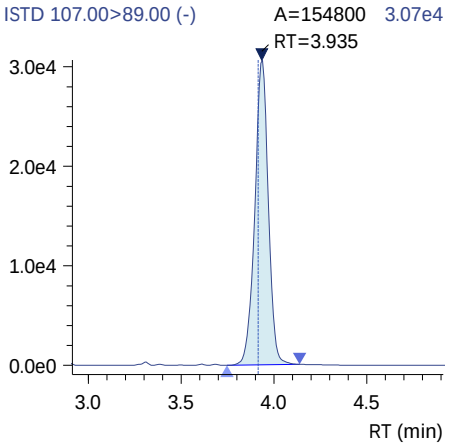

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Printed at 9/13/2022 9:43:09 AM

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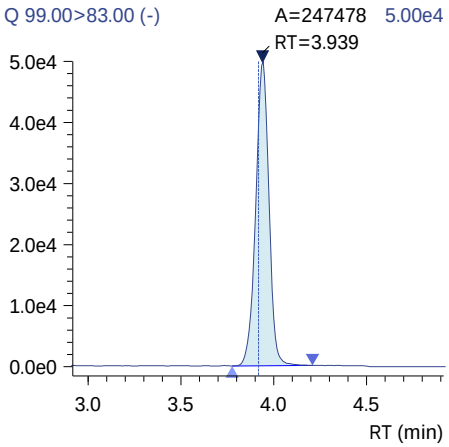
Sodium Perchlorate-18O4_IS	Auto	3.936	174661	174661	1.0000	ng/mL	----	

Perchlorate

Conc 10.4665



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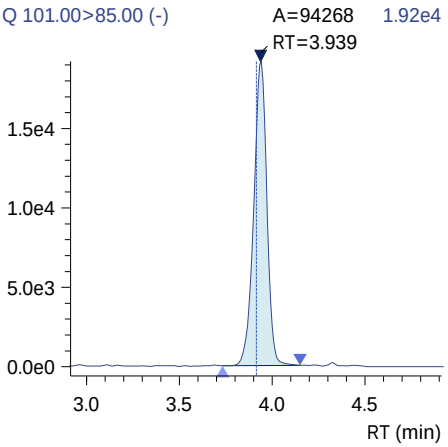

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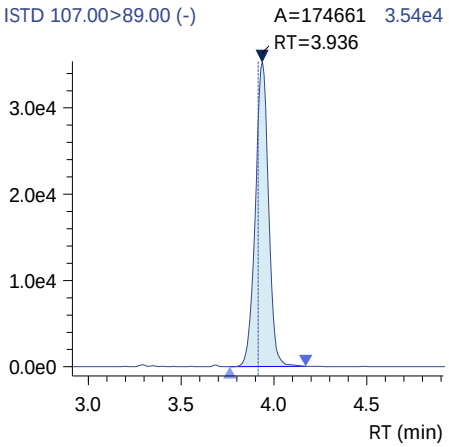

Insight Report

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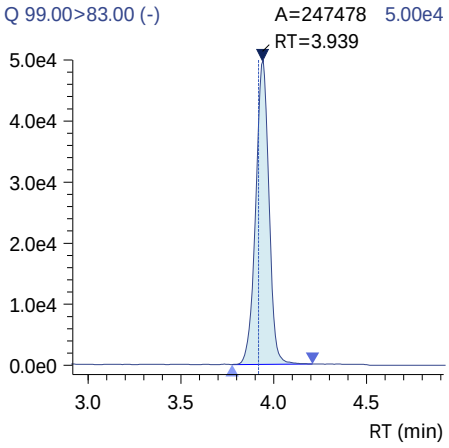
PERCHLORATE7

Sample ID: PERCHLORATE7
Date Acquired: 9/12/2022 3:18:51 PM
Acquired by: System Administrator
Data File: I:\LCMS01\DATA\20220912\20220912_016.lcd
Vial: 26 | Inj. Volume: 25.0000uL | Tray: 1

Perchlorate

Conc 10.4665



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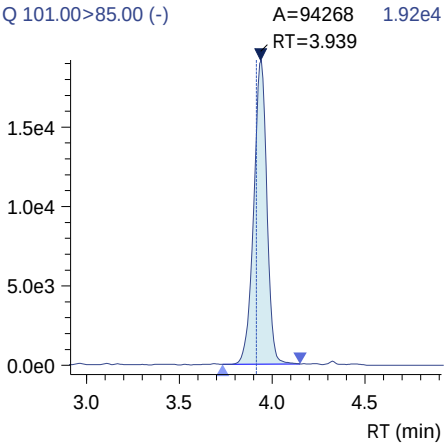

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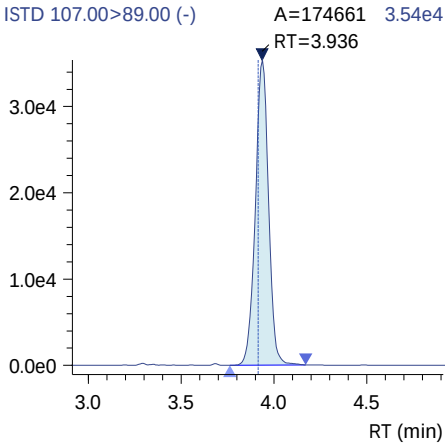

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 536
CONWAY, AR 72058

17 January 2023

DAIN-ISE

Ms. April Palmie
Texas Commission on Environmental Quality
Superfund Section, MC-136
12100 Park 35 Circle, Bldg D
Austin, TX 78753

Re: Final 2022 Update of the Comprehensive Land Use Control (LUC) Management Plan, Longhorn Army Ammunition Plant, Karnack, Texas, 17 January 2023

Dear Ms. Palmie,

In accordance with the Comprehensive LUC Management Plan, the Plan has been revised to reflect the addition of the pending LUCs for LHAAP-18/24, LHAAP-29, and LHAAP-47. The 12 December 2022 draft final document was approved by EPA and TCEQ and is resubmitted as Final with the approval signatures.

An electronic copy of the above referenced document has been added to the project portal's "Documents" folder. An electronic copy of this letter and download instructions for the electronic file have been sent via email. Hard copies of the changed pages will be distributed for incorporation into the complete hard copy record. The Army will update the Administrative Record with this transmittal letter, the complete LUC Management Plan with the changed pages incorporated, and the final signed Revision Log.

The document was revised by Bhate Environmental Associates, Inc. (Bhate), on behalf of the Army as part of Bhate's Performance Based Remediation contract for the facility. I ask that Kim Nemmers, Bhate's Project Manager, be copied on any communications related to the project.

The point of contact for this action is the undersigned. I may be contacted at 571-302-3232, or by email at rose.m.zeiler.ctr@army.mil.

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Electronic Copies furnished:
B. Follin, USEPA Region 6, Dallas, TX
P. Bruckwicki, USFWS, Caddo Lake NWR, TX
C. Montoya, USACE, Tulsa District, OK
A. Williams, USACE, Tulsa District, OK
L. Sierocinski, USAEC, San Antonio, TX
K. Nemmers, Bhate, Lakewood, CO
P. Srivastav, APTIM, Houston, TX

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 536
CONWAY, AR 72058

17 January 2023

DAIN-ISE

Mr. Brian Follin
U.S. Environmental Protection Agency
1201 Elm Street, Suite 500
Dallas, TX 75270-2002

Re: Final 2022 Update of the Comprehensive Land Use Control (LUC) Management Plan, Longhorn Army Ammunition Plant, Karnack, Texas, 17 January 2023

Dear Mr. Follin,

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Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Electronic Copies furnished:
A. Palmie, TCEQ, Austin, TX
P. Bruckwicki, USFWS, Caddo Lake NWR, TX
C. Montoya, USACE, Tulsa District, OK
A. Williams, USACE, Tulsa District, OK
L. Sierocinski, USAEC, San Antonio, TX
K. Nemmers, Bhate, Lakewood, CO
P. Srivastav, APTIM, Houston, TX

COMPREHENSIVE LAND USE CONTROL (LUC) MANAGEMENT PLAN

Former Longhorn Army Ammunition Plant (LHAAP)
Karnack, Texas

Date: January 17, 2023

COMPREHENSIVE LUC & NOTIFICATION MANAGEMENT PLAN REVISION LOG

Fiscal Year	Date	Reason for Revision	Approved*		
			Army	EPA	TCEQ
Original	9-13-07	N/A			
2008		None Required			
2009		None Required			
2010		None Required			
2011		None Required			
2012	2-4-13	Add LHAAP-06,-07,-08,-35/36,-35B (37)/67, -46, -49, -50,-51,-55,-35A (58),-59,-60,-66,-68, Pistol Range, LHAAP-001-R-01 and LHAAP-003-R-01			
2013	10-1-13	None Required			
2014	12-17-14	Add LHAAP-02, -03, -19, -56, -65, -68, -69 and Notices for LHAAP-46, and -67			
2015	9-14-15	Add Notices for LHAAP-35B(37), -50 and -35A(58) (LHAAP-02, -03, -56, -59, -60, -65, -68, and -69 are contained within the LHAAP-58 LUC boundary)			

Fiscal Year	Date	Reason for Revision	Approved*		
			Army	EPA	TCEQ
2016	10-20-16	None Required			
2017	10-30-17	Add LUCs for LHAAP-16			
2018	9-5-18	Add LUCs and Notices for LHAAP-001-R-01 and LHAAP-003-R-01			
2019	10-3-19	Add LHAAP-04 and LHAAP-17 and Notices for LHAAP-001-R-01 and LHAAP-003-R-01			
2020	9-17-20	None Required			
2021	9-16-21	Add Notices for LHAAP-04 and LHAAP-16 Add LUCs for LHAAP-18/24 (Pending) Add LUCs for LHAAP-29 (Pending)			
2022	12-27-22	Add LHAAP-18/24, LHAAP-29, and LHAAP-47	Robert Miller 1/11/2023	BRIAN FOLLIN Digitally signed by BRIAN FOLLIN Date: 2022.12.27 10:26:16 -06'00'	April Palmie Digitally signed by April Palmie Date: 2022.12.27 16:55:34 -06'00'

* Approval by all three parties required during the first quarter of each fiscal year.

TABLE OF CONTENTS

Revision Log……..……ii
LUC & Notification Management Plan…..... 1

List of Sites

LHAAP-02 Vacuum Truck Overnight Parking (LHAAP-02)
Nonresidential Land Use site included within the groundwater use restriction
LUC boundary for LHAAP-35A(58) - see LHAAP-35A(58)
LHAAP-03 Former Waste Collection Pad Building 722-P Paint Shop (LHAAP-03)
Nonresidential Land Use site included within the groundwater use restriction
LUC boundary for LHAAP-35A(58)- see LHAAP-35A(58)
LHAAP-04 Former Pilot Wastewater Treatment Plant (LHAAP-04)
4-1 LUCs from Draft Final Remedial Design
4-2 Notice of Land Use Controls and Nonresidential Land Use at LHAAP-04 Filed in Public Records of Harrison County, Texas (including survey plat)
4-3 Land Use Control Inspection and Maintenance Checklist
4-4 Annual Land Use Control Compliance Certification Form
4-5 Land Use Control Stakeholder Notice Letters and Attachments
LHAAP-06 Building 54F Solvent (LHAAP-06)
Notice of Nonresidential Land Use for LHAAP-06 Filed in Public Records of Harrison County, Texas (including survey plat)
LHAAP-07 Building 50G Drum Processing (LHAAP-07)
Notice of Nonresidential Land Use for LHAAP-07 Filed in Public Records of Harrison County, Texas (including survey plat)
LHAAP-08 Former Sewage Treatment Plant (LHAAP-08)
Notice of Nonresidential Land Use for LHAAP-08 Filed in Public Records of Harrison County, Texas (including survey plat)

LHAAP-12 Landfill 12 (LHAAP-12)
12-1 LUC Inspection and Maintenance Log
12-2 LUCs from Final Remedial Design Addendum
12-3 Notice of Land Use Controls and Nonresidential Land Use at LHAAP-12 Filed in Public Records of Harrison County, Texas (including survey plat)
12-4 Land Use Control Compliance Inspection Form
LHAAP-16 Old Landfill (LHAAP-16)
16-1 LUCs from Draft-Final Remedial Design
16-2 Notice of Land Use Controls and Nonresidential Land Use at LHAAP-16 Filed in Public Records of Harrison County, Texas (including survey plat)
16-3 Land Use Control Inspection and Maintenance Checklist
16-4 Annual Land Use Control Compliance Certification Form
16-5 Land Use Control Stakeholder Notice Letters and Attachments
LHAAP-17 Burning Ground No. 2/ Flashing Area (LHAAP-17)
17-1 RAO Inspection and Maintenance Checklist
17-2 LUCs from Draft Final Remedial Design
17-3 Notice of Land Use Controls and Nonresidential Land Use at LHAAP-17 Filed in Public Records of Harrison County, Texas (including survey plat) (Pending)
17-4 Land Use Control Compliance Inspection Form
LHAAP-18/24 Burning Ground No. 3 (LHAAP-18/24)
18/24-1 Draft Land Use Control Inspection and Maintenance Log (Pending)
18/24-2 LUCs from Remedial Design (Pending)
18/24-3 Notice of Land Use Controls and Nonresidential Land Use at LHAAP-18/24 Filed in Public Records of Harrison County, Texas (including survey plat) (Pending)
18/24-4 Draft Land Use Control Compliance Inspection Form (Pending)

LHAAP-19 Construction Materials Landfill (LHAAP-19)
Notice of Nonresidential Land Use at LHAAP-19, Filed in the Public Records of Harrison County, Texas (including survey plat)
LHAAP-29 Former Trinitrotoluene Production Area, Group 2 (LHAAP-29)
29-1 Draft Land Use Control Inspection and Maintenance Log (Pending)
29-2 LUCs from Remedial Design (Pending)
29-3 Notice of Land Use Controls and Nonresidential Land Use at LHAAP-29 Filed in Public Records of Harrison County, Texas (including survey plat) (Pending)
47-4 Draft Land Use Control Compliance Inspection Form (Pending)
LHAAP-35/36 Sumps and Waste Rack Sumps (LHAAP-35/36)
Notice of Nonresidential Land Use at Sumps/Waste Rack Sump locations (LHAAP-35/36) Filed in Public Records of Harrison County, Texas (including survey plat)
LHAAP-37 Chemical Laboratory (LHAAP-35B (37))
37-1 LUCs from Final Remedial Design
37-2 Notice of Land Use Controls and Nonresidential Land Use at LHAAP-35B (37) Filed in Public Records of Harrison County, Texas (including survey plat)
37-3 Land Use Control Compliance Inspection Form
LHAAP-46 Plant 2 Area (LHAAP-46)
46-1 LUCs from Final Remedial Design
46-2 Notice of Land Use Controls and Nonresidential Land Use at LHAAP-46 Filed in Public Records of Harrison County, Texas (including survey plat)
46-3 Land Use Control Compliance Inspection Form
LHAAP-47 Plant 3 Area, Solid Rocket Motor Fuel Production (LHAAP-47)
47-1 Draft Land Use Control Inspection and Maintenance Log (Pending)
47-2 LUCs from Remedial Design (Pending)
47-3 Notice of Land Use Controls and Nonresidential Land Use at LHAAP-47 Filed in Public Records of Harrison County, Texas (including survey plat) (Pending)

47-4 Draft Land Use Control Compliance Inspection Form (Pending)
LHAAP-49 Former Acid Storage Area (LHAAP-49)
Notice of Nonresidential Land Use for LHAAP-49 Filed in Public Records of Harrison County, Texas (including survey plat)
LHAAP-50 Sump Water Storage Tank (LHAAP-50)
50-1 LUCs from Final Remedial Design
50-2 Notice of Land Use Controls and Nonresidential Land Use at LHAAP-50 Filed in Public Records of Harrison County, Texas (including survey plat)
50-3 Land Use Control Compliance Inspection Form
LHAAP-51 Building 60-B Photo Lab (LHAAP-51)
Notice of Nonresidential Land Use at LHAAP-51 Filed in Public Records of Harrison County, Texas (including survey plat)
LHAAP-55 Septic Tanks (LHAAP-55)
Notice of Nonresidential Land Use at Septic Tank locations Filed in Public Records of Harrison County, Texas (including survey plat)
LHAAP-56 Grease Rack (LHAAP-56)
Nonresidential Land Use site included within the groundwater use restriction LUC boundary for LHAAP-35A(58)- see LHAAP-35A(58)
LHAAP-58 Shops Area (LHAAP-35A (58))
58-1 LUCs from Final Remedial Design
58-2 Notice of Land Use Controls and Nonresidential Land Use at LHAAP-35A (58) Filed in Public Records of Harrison County, Texas (including survey plat)
58-3 Land Use Control Compliance Inspection Form
LHAAP-59 Former Pesticide Storage Building 725 (LHAAP-59)
Notice of Nonresidential Land Use for LHAAP-59 Filed in Public Records of Harrison County, Texas (including survey plat)
Site included within the groundwater use restriction LUC boundary for LHAAP-35A(58)- see LHAAP-35A(58)

LHAAP-60 Former Storage Building 411 & 714 (LHAAP-60)
Notice of Nonresidential Land Use at LHAAP-60 Filed in Public Records of Harrison County, Texas (including survey plat)
Building 714 included within the groundwater use restriction LUC boundary for LHAAP-35A(58)- see LHAAP-35A(58)
LHAAP-64 Transformer Storage (LHAAP-64)
Notice of Nonresidential Land Use at LHAAP-64 Filed in Public Records of Harrison County, Texas (including survey plat)
LHAAP-65 Flammable Materials Storehouse Building 209 (LHAAP-65)
Nonresidential Land Use site included within the groundwater use restriction LUC boundary for LHAAP-35A(58)- see LHAAP-35A(58)
LHAAP-66 405-L Transformer Yard (LHAAP-66)
Notice of Nonresidential Land Use at LHAAP-66 Filed in Public Records of Harrison County, Texas (including survey plat)
LHAAP-67 Aboveground Storage Tank Farm (LHAAP-67)
67-1 LUCs from Final Remedial Design
67-2 Notice of Land Use Controls and Nonresidential Land Use at LHAAP-67 Filed in Public Records of Harrison County, Texas (including survey plat)
67-3 Land Use Control Compliance Inspection Form
LHAAP-68 Transformer Storage (LHAAP-68)
Notice of Nonresidential Land Use at LHAAP-68 Filed in Public Records of Harrison County, Texas (including survey plat)
Site included within the groundwater use restriction LUC boundary for LHAAP-35A(58)- see LHAAP-35A(58)
LHAAP-69 Service Station Underground Storage Tank (LHAAP-69)
Nonresidential Land Use site included within the groundwater use restriction LUC boundary for LHAAP-35A(58)- see LHAAP-35A(58)

Pistol Range
Notice of Nonresidential Land Use at Pistol Range Filed in Public Records of Harrison County, Texas (including survey plat)
LHAAP-001-R-01/LHAAP-003-R-01 **South Test Area (LHAAP-001-R-01) and Ground Signal Test Area (LHAAP-003-R-01)**
MMRP-1 Long Term Management Inspection and Maintenance Checklist
MMRP-2 LUCs from Final Remedial Design
MMRP-3 Notice of Land Use Controls and Nonresidential Land Use at LHAAP-001-R-01 and LHAAP-003-R-01 Filed in Public Records of Harrison County, Texas (including survey plat)
MMRP-4 Land Use Control Compliance Inspection Form

Table 1 Summary of Land Use Controls and Notifications

Figure 1 Sites with Land Use Controls

Figure 2 Sites with Nonresidential Use Notifications

List of Appendices

Appendix A GSA Transfer Letters

Comprehensive Land Use Control (LUC) & Notification Management Plan, Former Longhorn Army Ammunition Plant (LHAAP), Texas

The purpose of this management plan is to ensure that all site-specific LUCs are compiled into one comprehensive location for both pre-transfer and post-transfer use. Additionally, all nonresidential use notifications required under 30 TAC §335.560(b) are included. This management plan shall be accessible to the property owner, regulators, local government, and the public and will accompany LHAAP's Administrative Record. This plan will be updated as LUC and notification requirements for additional environmental sites are identified; the revision number, date, reason for revision, and author will be documented in the Revision Log. As a document control measure, an annual approval by the three FFA parties, Army, EPA and TCEQ within the first quarter of the fiscal year will confirm the effective date. This approval is required whether or not a revision took place.

Land Use Controls

Land use controls (LUCs) include any type of physical, legal, or administrative mechanism that restricts the use of, or limits access to, real property. LUCs may be a component of an interim or final remedy selected under CERCLA and used to protect human health, the environment, and/or the integrity of an engineered remedy. The LUC performance objectives are established in the site-specific Record of Decision (ROD). The specific LUCs and implementation details are outlined in the corresponding site-specific Remedial Design (RD), a primary document of the Federal Facilities Agreement.

The land use control area is depicted on Figure 1, the site-specific performance objectives and LUCs are presented in Table 1, and the site-specific section contains a LUC Inspection and Maintenance Log, a copy of an approved LUC Remedial Design, Notice of Land Use Controls (including a survey plat) filed in Harrison County public records, and LUC compliance inspection form. Upon USEPA and TCEQ approval of each LUC RD, the LUC requirements will be effective immediately and this management plan will be updated. Once property is transferred, the plan will be amended to include a copy of the transfer letter describing specific LUC obligations assigned to the transferee.

LUCs will remain in place until applicable or relevant and appropriate requirements (ARARs) as established in accordance with the NCP (40 CFR 300) are met; or in the case of a landfill remedy, it will remain in place for perpetuity unless otherwise removed by the U.S. Army per agreement with the USEPA and TCEQ. The continued effectiveness of the selected remedy, including LUCs, will be evaluated with the CERCLA 121(c) five-year review process.

Notifications

The future anticipated use of LHAAP is industrial/refuge and is, therefore, consistent with a nonresidential/industrial reuse under the Risk Reduction Rules. As required by 30 TAC §335.560(b) and in accordance with 30 TAC §335.566, a notification must be filed in the Harrison County records stating that the land is considered suitable for future non-residential use. Limited monitoring will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of the sites is consistent with the non-residential use. The non-residential use notification will remain in place until it is demonstrated that the levels of COCs in soil and groundwater allow for unlimited use and unrestricted exposure.

Table 1 –Summary of Land Use Controls and Notifications

Site Name	Transfer Documents		Decision Documents		Land Use Controls					Notifications
IRP MMRP* LHAAP-	GSA Transfer To USFWS	ECP/ ECOP	ROD	DD	Groundwater Use Restriction	Nonresidential Land Use Restriction	Intrusive Activities Prohibition	MEC Warning	Landfill Cap Maintenance	Nonresidential Use Notification
2					**					**
3					**					**
4			2016		√	√				√
6				2008						√
7				2008						√
8	2015	VI		2008						√
12	2014	V	2007		√	Cap Only	Cap Only		√	√
16			2016		√	√	Cap Only		√	√
17			2016		√	√				√
18/24			2019		√	√				√
19		VII		2014		Cap Only	Cap Only			√
29			2019		√	√				√
35/36	2015	VI		2010						√
37			2010		√					√
46			2010		√					√
47			2022		√	√				√
49	2015	VI	2010							√
50			2010		√					√
51				2008						√
55	2015	VI		2008						√
56				2014	**					**
58			2010		√					√
59				2008	**					√
60				2008	**					√

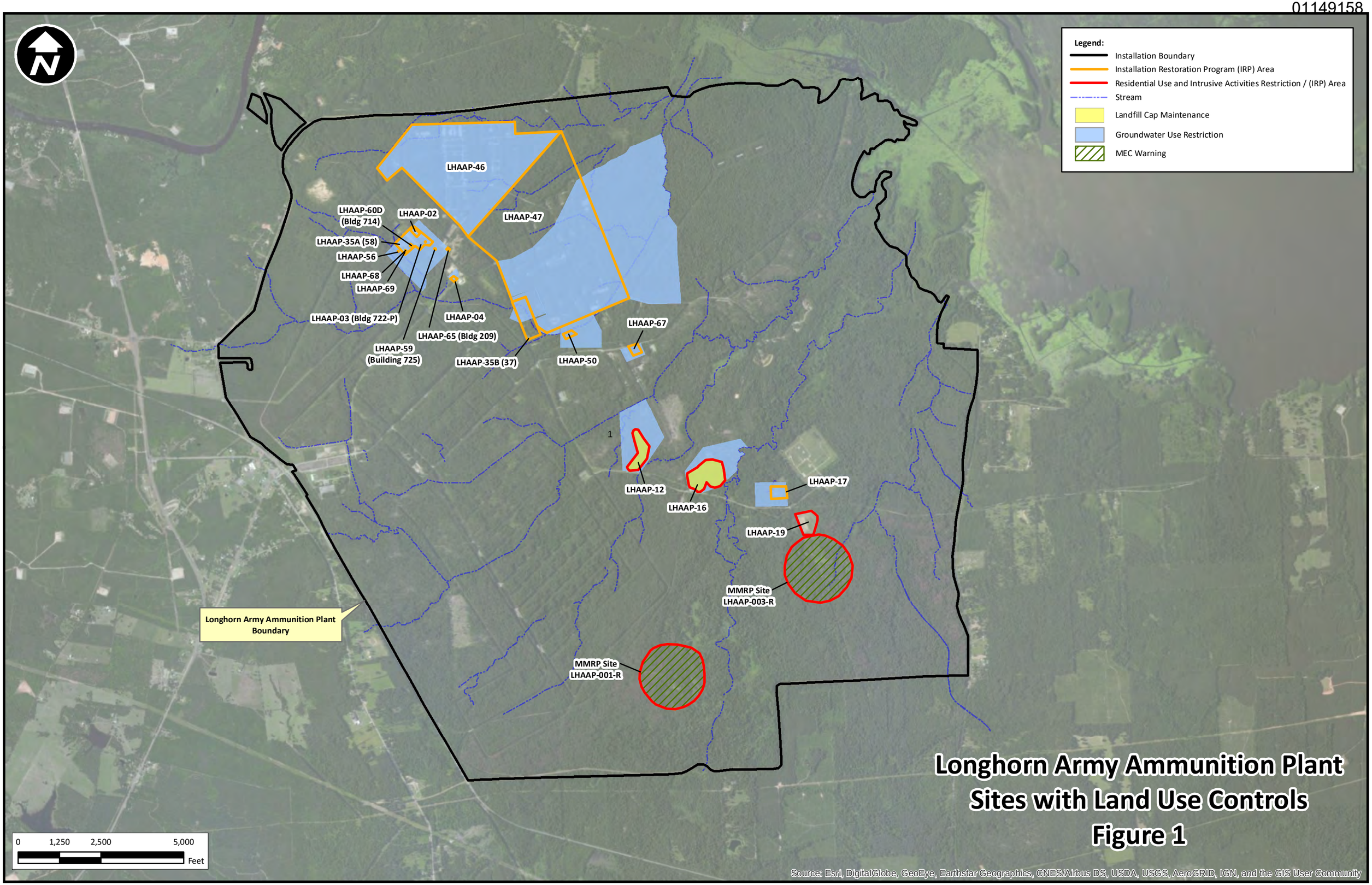
Date January 17, 2023

Site Name	Transfer Documents		Decision Documents		Land Use Controls					Notifications
IRP MMRP* LHAAP-	GSA Transfer To USFWS	ECP/ ECOP	ROD	DD	Groundwater Use Restriction	Nonresidential Land Use Restriction	Intrusive Activities Prohibition	MEC Warning	Landfill Cap Maintenance	Nonresidential Use Notification
64				2008						√
65				2014	**					**
66				2008						√
67			2010							√
68				2008	**					√
69				2014	**					**
Pistol Range		VII	2010							√
001-R-01/003-R-01		VII	2016			√	√	√		√

Pending- not final

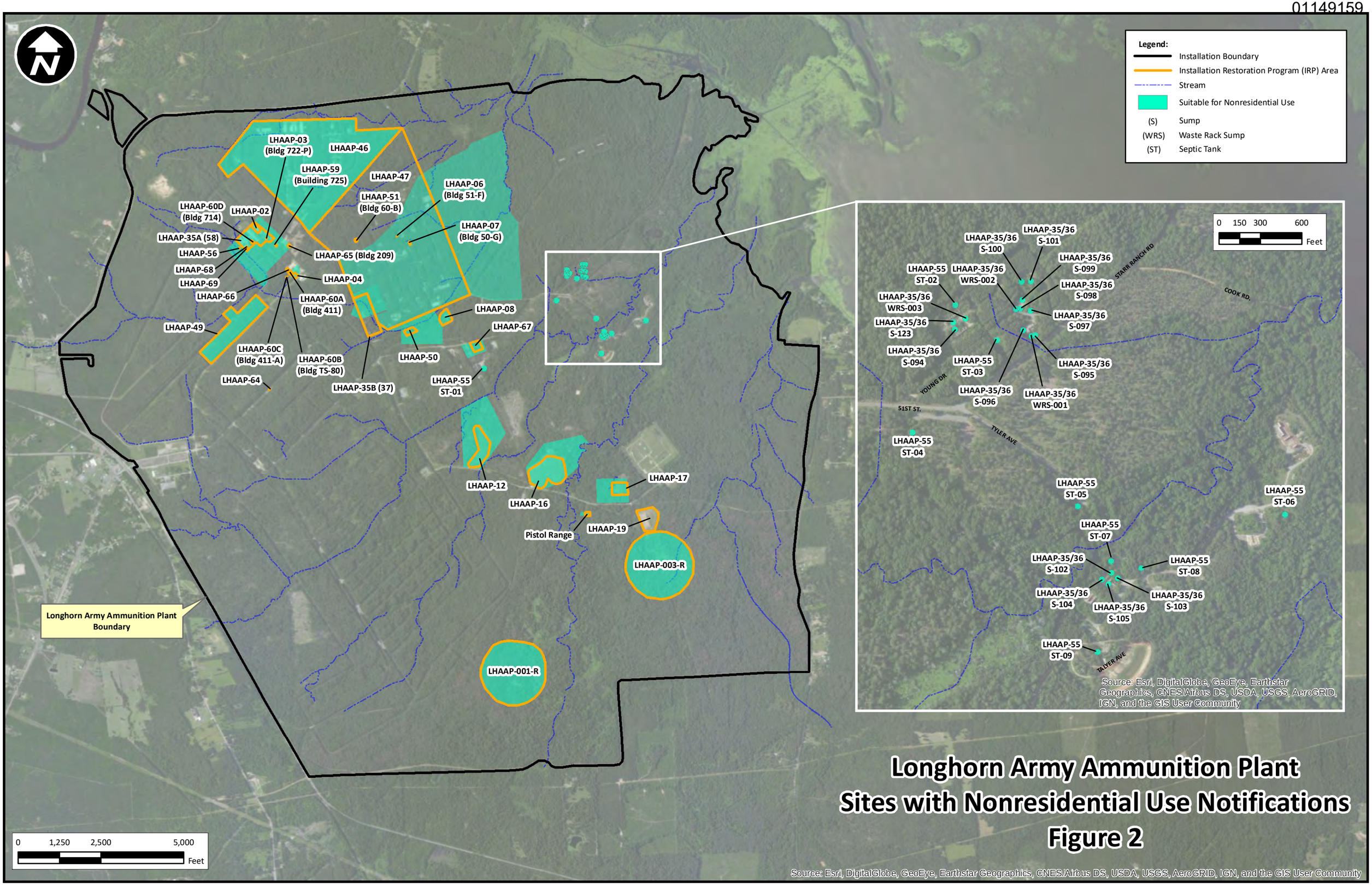
** Nonresidential Land Use site included within the groundwater use restriction LUC boundary for LHAAP-35A(58)-see LHAAP-35A(58)

FIGURES



Longhorn Army Ammunition Plant
Sites with Land Use Controls
Figure 1

01149159



Longhorn Army Ammunition Plant
Sites with Nonresidential Use Notifications
Figure 2

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

LHAAP – 04, 4-1
LUCs FROM DRAFT FINAL REMEDIAL DESIGN

Date December 17, 2021

Draft Final
Remedial Design and Remedial Action Work Plan, LHAAP-04 Former Pilot Wastewater Treatment Plant

Longhorn Army Ammunition Plant
Karnack, Texas

Prepared for U.S. Army Corps of Engineers, Tulsa District
Contracting Division
2488 East 81st Street
Tulsa, Oklahoma 74137-4290

Prepared by

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Prepared by

APTIM

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Houston, Texas 77042

Contract No. W9128F-13-D-0012
Task Order No. W9128BV17F0150
Project No. 501032
Rev 0
April 2019

Table of Contents

List of Tables iii
List of Figures iii
List of Appendices iii
Acronyms and Abbreviations v

1.0 Introduction 1-1
1.1 Organization of Work Plan 1-1
1.2 Site Description 1-2
1.3 Selected Remedy 1-3
1.4 Remedial Action Objectives 1-4
2.0 Site Characteristics 2-1
2.1 Geology and Hydrogeology 2-1
2.2 Nature and Extent of Contamination 2-2
2.2.1 2017 Monitoring Well Installation and Sampling 2-2
2.2.2 Supplemental Groundwater Investigation 2-2
2.3 Current and Future Land Use 2-3
2.4 Current and Future Surface Water Use 2-4
2.5 Current and Future Groundwater Use 2-4
3.0 In-Situ BioRemediation Remedial Design 3-1
3.1 Substrate Injection Strategies 3-1
3.2 Radius of Influence and Injection Point Spacing 3-2
3.3 Substrate Selection 3-2
3.4 Substrate Loading and Injection 3-3
3.5 Performance Monitoring 3-3
3.6 Long-Term Monitoring 3-3
3.7 Remedy Evaluation and Follow-up Injections 3-4
4.0 Land Use Controls Remedial Design/Plan 4-1
4.1 LUC Implementation 4-1
4.2 Maintenance and Monitoring Requirements 4-3
4.3 LUC Inspection and Monitoring 4-4
4.3.1 Notice of Planned Property Conveyances 4-4
4.3.2 Opportunity to Review Text of Intended Land Use Controls 4-4
4.3.3 Notification Should Action(s) which Interfere with Land Use Control Effectiveness be Discovered Subsequent to Conveyance 4-5
4.3.4 Land Use Control Enforcement 4-5
4.3.5 Modification or Termination of Land Use Controls 4-5
5.0 In-Situ Bioremediation Work Plan 5-1
5.1 ISB Injection Plan 5-1
5.2 Pre-Mobilization Activities 5-1
5.2.1 Permitting 5-1
5.2.2 Notification 5-1
5.2.3 Utility Clearance 5-1
5.3 Site Activities 5-2
5.3.1 Baseline Sampling 5-2
5.3.2 Injection Activities 5-2
5.3.3 Post Injection Activities 5-3

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Draft Final • Rev 0 • April 2019

Table of Contents (continued)

5.4 DPT Drilling 5-3
5.5 ISB Injection 5-3
5.5.1 Preparation 5-3
5.5.1.1 Location Preparation 5-3
5.5.1.2 Amendment Preparation 5-4
5.5.2 In Situ Injections 5-4
5.5.2.1 Injection System 5-4
5.5.2.2 Monitoring During Injections 5-5
5.5.3 Remediation Derived Waste Management 5-5
6.0 Post-Remedial Monitoring and Reporting 6-1
6.1 Monitoring Network 6-1
6.2 Groundwater Sampling 6-1
6.2.1 Baseline Sampling 6-1
6.2.2 Evaluation of Injection Effectiveness 6-2
6.2.3 Performance Monitoring Year 1 and Year 2 6-2
6.2.4 Long-Term Monitoring Years 3 through 5 6-2
6.2.5 Long-Term Monitoring Beyond Year 5 6-2
6.3 Response Action Completion Report 6-2
6.4 Annual RA-O Reports 6-2
6.4.1 Remedy Evaluation 6-3
6.5 Follow-up Injection Criteria 6-3
7.0 Schedule 7-1
8.0 Operation and Maintenance Procedures 8-1
8.1 Maintenance of the Current or Future Groundwater Monitoring System 8-1
9.0 References 9-1

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Draft Final • Rev 0 • April 2019

List of Tables

Table 2-1 Monitoring Well Completion Summary
Table 5-1 Injection Locations and Amendment Volumes
Table 6-1 Proposed Monitoring Network Locations and Analyses
Table 7-1 Schedule of Major Site Activities

List of Figures

Figure 1-1 LHAAP Location Map
Figure 1-2 LHAAP Site Location Map
Figure 2-1a Potentiometric Map (January 2018)
Figure 2-1b Potentiometric Map (January 2019)
Figure 2-2 Site Vicinity Map
Figure 2-3 Perchlorate Concentrations in Shallow Groundwater at LHAAP-04
Figure 3-1 Proposed Injection Locations at LHAAP-04
Figure 4-1 Preliminary LUC Boundary
Figure 5-1 Injection Plan
Figure 5-2 ISB DPT Injection System
Figure 6-1 Performance and LTM Monitoring Network

List of Appendices

Appendix A Boring Logs and Monitoring Well Construction Forms for Newly Installed Monitoring Wells
Appendix B ISB Design Calculation Sheets
Appendix C Product Specification and Safety Data Sheets
Appendix D Daily ISB Injection Log
Appendix E LUC Inspection and Maintenance Checklist and Compliance Certification

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Draft Final • Rev 0 • April 2019

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Draft Final • Rev 0 • April 2019

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Acronyms and Abbreviations

µg/L	micrograms per liter
APTIM	Aptim Federal Services, LLC
Bhate	Bhate Environmental Associates, Inc.
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
COC	constituent of concern
DAP	diammonium phosphate
DNAPL	dense non-aqueous phase liquid
DO	dissolved oxygen
DPT	direct-push technology
ECP	Environmental Condition of Property
EDS-ER™	Electron Donor Solution – Extended Release
EPA	see USEPA
EVO	emulsified vegetable oil
ft bgs	feet below ground surface
GPS	global positioning system
GWTP	groundwater treatment plant
ISB	in situ bioremediation
IWWP	Installation-Wide Work Plan
Jacobs	Jacobs Engineering Group, Inc.
LHAAP	Longhorn Army Ammunition Plant
LOE	lines of evidence
LTM	long-term monitoring
LUC	land use controls
MATOC	Multiple Award Task Order Contract
MCL	maximum contaminant level
MEGA	Multiple Environmental Government Acquisition
MMRP	Military Munitions Response Program
MOA	Memorandum of Agreement
mV	millivolts
NCP	National Contingency Plan
O&M	operation and maintenance
O_2	oxygen
ORP	oxidation-reduction potential

Acronyms and Abbreviations (continued)

PCL	Protective Concentration Level
psi	pounds per square inch
RA	remedial action
RACR	Response Action Completion Report
RA-O	Remedial Action-Operation
RAOs	remedial action objectives
RAWP	Remedial Action Work Plan
RCRA	Resource Conservation and Recovery Act
RD	remedial design
ROD	Record of Decision
ROI	radius of influence
Shaw	Shaw Environmental, Inc.
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
TOC	total organic carbon
TRRP	Texas Risk Reduction Program
U.S. Army	U.S. Department of the Army
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Draft Final • Rev 0 • April 2019

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Draft Final • Rev 0 • April 2019

4.0 LAND USE CONTROLS REMEDIAL DESIGN/PLAN

This section describes the LUC RD for LHAAP-04. In accordance with the Final ROD (AECOM 2016), the LUC RD will be finalized as the land use component of the RD.

Per the Final ROD (AECOM 2016), LUCs' performance objectives are to:

- Prohibit the use of groundwater (except for environmental testing and monitoring) as a potable water source
- Restrict land use to nonresidential
- Maintain the integrity of any current or future remedial or monitoring systems

The implementation, maintenance, and inspection requirements associated with each of the performance objectives that comprise this LUC RD are described below. The proposed actions to be taken to implement the LUC objectives during the RA phase are described in **Section 6.0**. The implementation activities, as well as ongoing maintenance, monitoring and reporting requirements will be presented in the Remedial Action Completion Report (RACR), as the final LUC RD. Upon regulatory review and concurrence with the final LUC RD, it will be included as part of the Comprehensive LUC Management Plan.

For portions of the Site subject to LUCs that are not owned by the Army, the Army will monitor and report on the implementation, maintenance, and enforcement of LUCs, and coordinate with federal, state, and local governments and owners and occupants of properties subject to LUCs. The Army remains responsibility for ensuring that the remedy remains protective of human health and the environment.

4.1 LUC Implementation

The actions required to implement the LUCs for LHAAP-04 are described below. The first of these, the initial notice of LUCs, was completed on June 26, 2017. The June 26, 2017, Notice letters that were sent to relevant government officials (U.S. Army 2017) included a preliminary LUC boundary shown on **Figure 4-1**. The following actions will be undertaken to implement the LUCs for LHAAP-04:

- Finalize the boundary for the LUCs as a part of the RA.
  - Revise the boundary, if necessary, based on perchlorate results from the baseline groundwater sampling. The final boundary of the groundwater LUCs (prevent the use of groundwater contaminated above cleanup levels as a potable water source and prohibit access to the contaminated groundwater except for environmental monitoring and testing only); the remedial or monitoring system

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Draft Final • Rev 0 • April 2019

LUCs (maintain the integrity of any current or future remedial or monitoring systems); and, the nonresidential land use LUC (restrict land use to nonresidential) will be reviewed during RA activities after an evaluation of the baseline data has been completed and revised if necessary.

  - Survey the LUC Boundaries. The boundaries will be finalized after concurrence by USEPA and TCEQ, and the LUC boundaries will be surveyed by a State-licensed surveyor. A legal description of the surveyed areas will be appended to the survey plat.

- Record the LUCs in Harrison County. The LUC plat, legal description and LUC restriction language will be recorded in the Harrison County Courthouse in accordance with TAC Title 30, §335.566.
- Notify the Texas Department of Licensing and Regulation of the groundwater LUCs. The Texas Department of Licensing and Regulation will be notified of the groundwater restrictions, which include the prohibition of water well installation for any purpose other than environmental monitoring and testing without prior approval from the Army, the USEPA, and the TCEQ. The survey plat, legal boundary and description of the groundwater restriction LUCs, in conjunction with a locator map, will be provided in hard and electronic copy.
- Provide notice of the LUCs with the revised LUC boundary.
  - Prepare the notice of the groundwater and soil (surface and subsurface) contamination and any land use restrictions referenced in the ROD. The notice will consist of a brief description of the contaminants in groundwater and soil, a written description of the LUCs and a figure depicting the revised LUC boundary.
  - Transmit the notice to federal, state, and local governments involved at this site and the owners and occupants of the properties subject to those use restrictions and LUCs within 90 days of RACR acceptance by the regulators. The notices will be sent to federal, state and local officials including: both U.S. Senators, U.S. Congressman (Texas District 1), State Senator (District 1), State Representative (District 9), Harrison County Judge, Harrison County Commissioner Precinct 1, City of Uncertain Mayor, Leigh Water Supply Corporation Board Members, Caddo Lake Water Supply Corporation Board of Directors, and the Caddo Lake National Wildlife Refuge Manager.

4.2 Maintenance and Monitoring Requirements

The LUCs will be maintained in place as follows:

- The LUCs restricting the use of groundwater to environmental monitoring and testing only and the LUC restricting land use to nonresidential will remain in place until the levels of COCs (i.e., including all hazardous substances, pollutants, and contaminants found at the Site at cleanup levels as listed in Table 2-3 of the ROD) in surface and subsurface soil and groundwater allow for unlimited use and unrestricted exposure.
- The LUC to maintain the integrity of any current or future remedial or monitoring systems will remain in place until groundwater cleanup levels of COCs (i.e., including all hazardous substances, pollutants and contaminants found at the Site at cleanup levels as listed in Table 2-3 of the ROD) are met.

Remedial or Monitoring System LUCs include physical components that require repair and maintenance. These are described in **Section 8.0**. The RAO and Extraction System Inspection and Maintenance Checklists is provided in **Appendix E**.

The administrative maintenance required to ensure the LUCs remain in place and effective until the cleanup levels of the COCs are at levels that allow unrestricted use and unlimited exposure are:

- Annual field inspections of the site to confirm that no violations of the LUCs have occurred. Documentation of the inspection will be included in the Inspection and Maintenance Checklist (see **Appendix E**).
- Annual certifications that no LUC-restricted activities have been authorized and that site conditions and use are consistent with the LUCs. The Certification Form is presented in **Appendix E**.
- Periodic transmittal of a LUC Notice to federal, state, and local authorities and to owners and occupants of LHAAP-04. The notice will include the groundwater and soil (surface and subsurface) contamination and any land use restrictions referenced in the ROD, a written description of the LUCs and a figure depicting the LUC boundaries. The transmittal will coincide with each Five-Year Review and will be documented in the report.
- The final LUC RD appendix of the RACR will be added to the Comprehensive LUC Management Plan and the plan will be provided to the owner or occupant of LHAAP-04.

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Draft Final • Rev 0 • April 2019

The U.S. Army will address LUC problems within its control that are likely to impact remedy integrity and shall address problems as soon as practicable.

4.3 LUC Inspection and Monitoring

Beginning with finalization of this RD/RAWP and approval of the Inspection form and the Annual Certification Form, the U.S. Army will undertake inspections and certify continued compliance with the LUC objectives. The U.S. Army, or the transferee after transfer, will retain the LUC Inspection and Certification documents in the project files for incorporation into the five-year review reports, and these documents will be made available to USEPA and TCEQ upon request. In addition, should any violations be found during the certification, the U.S. Army will provide to USEPA and TCEQ, along with the document, a separate written explanation indicating the specific violations found and what efforts or measures have or will be taken to correct those violations. The need to continue inspections and certifications will be revisited at five-year reviews.

4.3.1 Notice of Planned Property Conveyances

Upon transfer of Army-owned property, the Army will provide written notice to the transferee of the LHAAP-04 groundwater contamination and any land use restrictions. Within 15 days of transfer, the U.S. Army will provide written notice to USEPA and TCEQ of the division of implementation, maintenance, and enforcement responsibilities unless the information has already been provided in the LUC RD. The notice will describe the mechanism by which the LUC will continue to be implemented, maintained, inspected, reported, and enforced. Upon transfer, such responsibilities may shift to the transferee via appropriate provisions placed in the Environmental Condition of Property (ECP) or other environmental document for transfer. Although the U.S. Army may transfer responsibility for various implementation actions, the U.S. Army will also retain ultimate responsibility for the remedy integrity. This means that the U.S. Army is responsible for addressing substantive violations of the LUC performance objectives that would undermine the U.S. Army's CERCLA remedy. The U.S. Army also will be responsible for incorporating RD information and outlining the transferee's LUC obligations into property transfer documentation. In the event property is transferred out of Federal control, the LUCs relating to property and groundwater restrictions shall be recorded in the deed and shall be enforceable by the United States and the state of Texas.

4.3.2 Opportunity to Review Text of Intended Land Use Controls

The U.S. Army will provide a copy of the groundwater and land use restriction notification to TCEQ for review and approval prior to its recordation in Harrison County. USEPA will also receive a copy for review. The U.S. Army will produce an ECP or other environmental document for transfer of LHAAP-04, but before executing transfer, the U.S. Army will provide USEPA and TCEQ with a copy of the ECP or other environmental document for transfer so

that they may have reasonable opportunity, before transfer, to review all LUC-related provisions.

4.3.3 Notification Should Action(s) which Interfere with Land Use Control Effectiveness be Discovered Subsequent to Conveyance

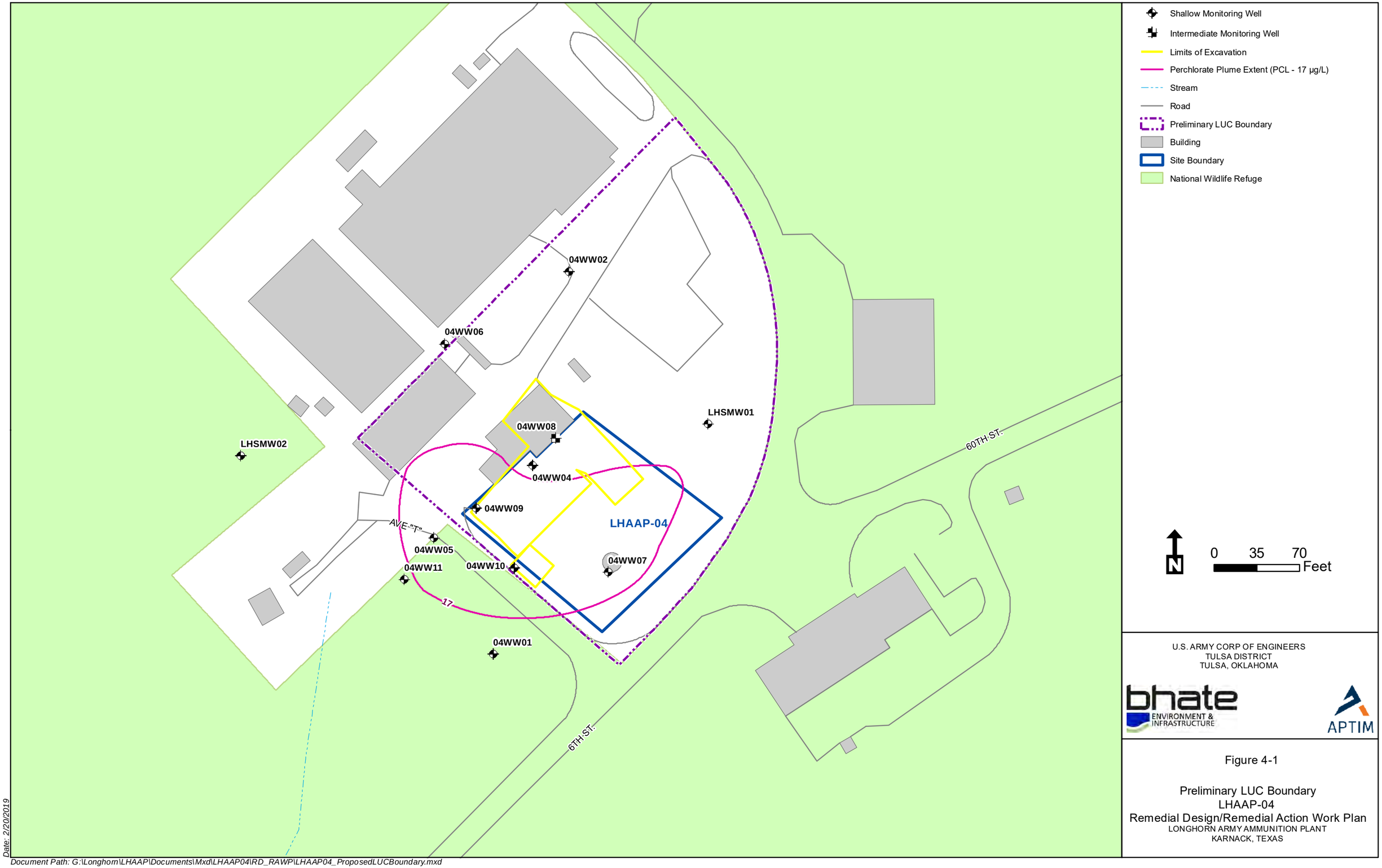
Should the U.S. Army discover after conveyance of the site any activity on the property inconsistent with the LUC performance objectives, the U.S. Army shall notify USEPA and TCEQ within 72 hours of such discovery. Consistent with **Section 4.3.5** below, the U.S. Army will then work with USEPA, TCEQ and the transferee to correct the problem(s) discovered. This reporting requirement does not preclude the U.S. Army from taking immediate action pursuant to its CERCLA authorities to prevent any perceived risk(s) to human health or the environment.

4.3.4 Land Use Control Enforcement

Should the LUC remedy reflected in this RD fail, the U.S. Army will coordinate with USEPA and TCEQ to ensure that appropriate actions are taken to reestablish its protectiveness. These actions are taken to reestablish its protectiveness. These actions may range from informal resolutions with the USFWS or its lessee, to the institution of judicial action against non-federal third parties. Alternatively, should the circumstances warrant such, the U.S. Army could choose to exercise its response authorities under CERCLA. Should the U.S. Army become aware that any future owner or user of the property has violated any LUC requirement over which a local agency may have independent jurisdiction, the U.S. Army may notify those agencies of such violation(s) and work cooperatively with them to re-achieve owner/user compliance with the LUC.

4.3.5 Modification or Termination of Land Use Controls

The LUCs shall remain in effect until such time as the U.S. Army and USEPA agree that the concentrations of perchlorate in groundwater have met cleanup levels and allow unrestricted use. When this occurs, the LUC will be terminated as needed. The decision to terminate the LUC will be documented consistent with the NCP process for post-ROD changes, potentially including an Explanation of Significant Difference or a Remedial Action Completion Report. If the property has been transferred and a determination by the U.S. Army and USEPA has been made to terminate the LUC, the U.S. Army shall provide to the owner of the property an appropriate release for recordation pertaining to the site and will also timely advise other local stakeholders of the action.



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

bhate ENVIRONMENT & INFRASTRUCTURE

APTIM

Figure 4-1

Preliminary LUC Boundary
LHAAP-04
Remedial Design/Remedial Action Work Plan
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 2/20/2019

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP04\RD_RAWP\LHAAP04_ProposedLUCBoundary.mxd

LHAAP – 04, 4-2

NOTICE OF LAND USE CONTROLS AND NONRESIDENTIAL LAND USE AT LHAAP-04 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

Date December 17, 2021

2021-000003203

*** DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT***

NOTICE

8 Pages

FILED AND RECORDED-OPR	CLERKS NOTES
On: 03/22/2021 03:29 PM Document Number: 2021-000003203 Receipt No: 2103298 Amount: $ 50.00 By: Emily Najera, Deputy Elizabeth James, County Clerk Harrison County, Texas	

STATE OF TEXAS

COUNTY OF HARRISON

I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Elizabeth James

Elizabeth James, Harrison County Clerk

Record and Return To:

WILLIAM FOSS
2500 CITY WEST BLVD., SUITE 1700

HOUSTON, TX 77042

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF LAND USE CONTROLS AT LHAAP-04

KNOW ALL MEN BY THESE PRESENTS THAT:

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

I

The U.S. Army, Department of Defense, has performed remedial activities at the land described herein. The remediation site is a former pilot wastewater treatment plant, located in the central portion of the Former Longhorn Army Ammunition Plant (LHAAP) and is designated as LHAAP-04. LHAAP was placed on the National Priorities List (NPL) in August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA) and the TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Remedial activities at LHAAP-04 were performed in accordance with the FFA requirements.

Wastewater treatment operations began at LHAAP-04 in 1984. The demolition of the former pilot wastewater treatment facility structures, tanks, and piping, and the disposal of the associated wastes were completed in the summer of 1997 as part of the Resource Conservation and Recovery Act closure of the plant. The final remedy for soil was conducted in 2009 as a Non-Time-Critical Removal Action under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) program. The soil was removed to non-residential levels. The Site was not remediated to levels suitable for unrestricted use. The U.S. Department of the Army issued the Final Record of Decision (ROD) for LHAAP-04 in October 2016, and the ROD was signed by the Army on December 15, 2016, and the U.S. Environmental Protection Agency on March 30, 2017. The Texas Commission on Environmental Quality (TCEQ) issued a letter concurring with the ROD on February 7, 2017. The final remedy selected in the ROD included in-situ bioremediation for perchlorate concentrations in groundwater, long-term monitoring of groundwater, and Land Use Controls (LUCs). The LUCs at LHAAP-04 will ensure protection of human health by restricting groundwater use to environmental monitoring and testing only, requiring only non-residential

use of the site, and maintaining groundwater monitoring systems until levels of contaminants of concern (COCs) allow for unlimited use and unrestricted exposure.

Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E (Room 103. first floor) 12100 Park 35 Circle, Austin, Texas 78753, (512) 239-2900, Monday through Friday 8:00 am to 5:00 pm, or the Administrative Record available at the Marshall Public Library, 300 South Alamo Boulevard, Marshall, Texas 75670, (930) 935-4465, Monday through Friday 9:30AM – 5:30PM.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public on the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-04 site covers an area of approximately 0.44 acres, more or less, located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in **Exhibit A.** The LUC boundary, which includes the LHAAP-04 site, encompasses a 1.885 acre tract, more or less, as described in **Exhibit A**. The LUC Boundary is also presented in the attached **Figure 1.**

Future use of the parcel is intended as a national wildlife refuge, consistent with non-residential use. For the purposes of this certification, residential land use includes, but is not limited to, single family to multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of education purpose for children/young adults in grades kindergarten through 12. The U.S. Department of the Army has undertaken careful environmental study of the LHAAP-04 site and concluded that the LUCs set forth below are required to ensure protection of human health and the environment:

- Groundwater Use Restriction. The groundwater use restriction boundary consists of the 1.885-acre tract, more or less. Groundwater underlying this land is contaminated with perchlorate. A prohibition of groundwater use (except for monitoring and testing) as a potable source will remain in place until the levels of COCs in soil and groundwater allow for unlimited use and unrestricted exposure.

- Non-Residential Use Restriction. The non-residential use restriction boundary is coincident with the boundary for Groundwater Use Restriction and consists of the 1.885-acre tract, more or less. The site is restricted to nonresidential use until it is demonstrated that surface and subsurface soil and groundwater COCs are at levels that allow for unlimited use and unrestricted exposure.

- Maintain Integrity of Monitoring Systems. The integrity of any current or future remedial or monitoring systems will remain in place until the cleanup levels of COCs in groundwater are met.

III

The owner of this site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIN-ISE-LO (H. Procter)
Program Manager/Analyst
Office of the Deputy Chief of Staff, (DAIN-ISE)
Environmental Division, BRAC Field Branch
600 Army Pentagon
Washington, D.C. 22310-0600

Or

Mr. Thomas A. Lineer
Chief
Office of the Deputy Chief of Staff, (DAIN-ISE)
Environmental Division, BRAC Field Branch
600 Army Pentagon
Washington, D.C. 22310-0600

Rose M. Zeiler
Longhorn AP Site Manager

EXECUTED this the 25th day of Feb., 2021.

BEFORE ME, on this 25th day of Feb 2021, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 25th day of February 2021.

STATE OF ARKANSAS NOTARY PUBLIC
KAREN DAVIS
MY COMMISSION # 12382216
EXPIRES: May 20, 2021
Logan County

Notary Public in and for the State of Arkansas,
County of Logan

Exhibit A

Survey and Legal Plat

G. W. LEWIS SURVEY, A–426
HARRISON COUNTY, TEXAS

Legal Description

All that certain 1.885 acre tract of land contained within Longhorn Army Ammunition Plant, Harrison County, Texas, said 1.885 acre tract more particularly described as follows:

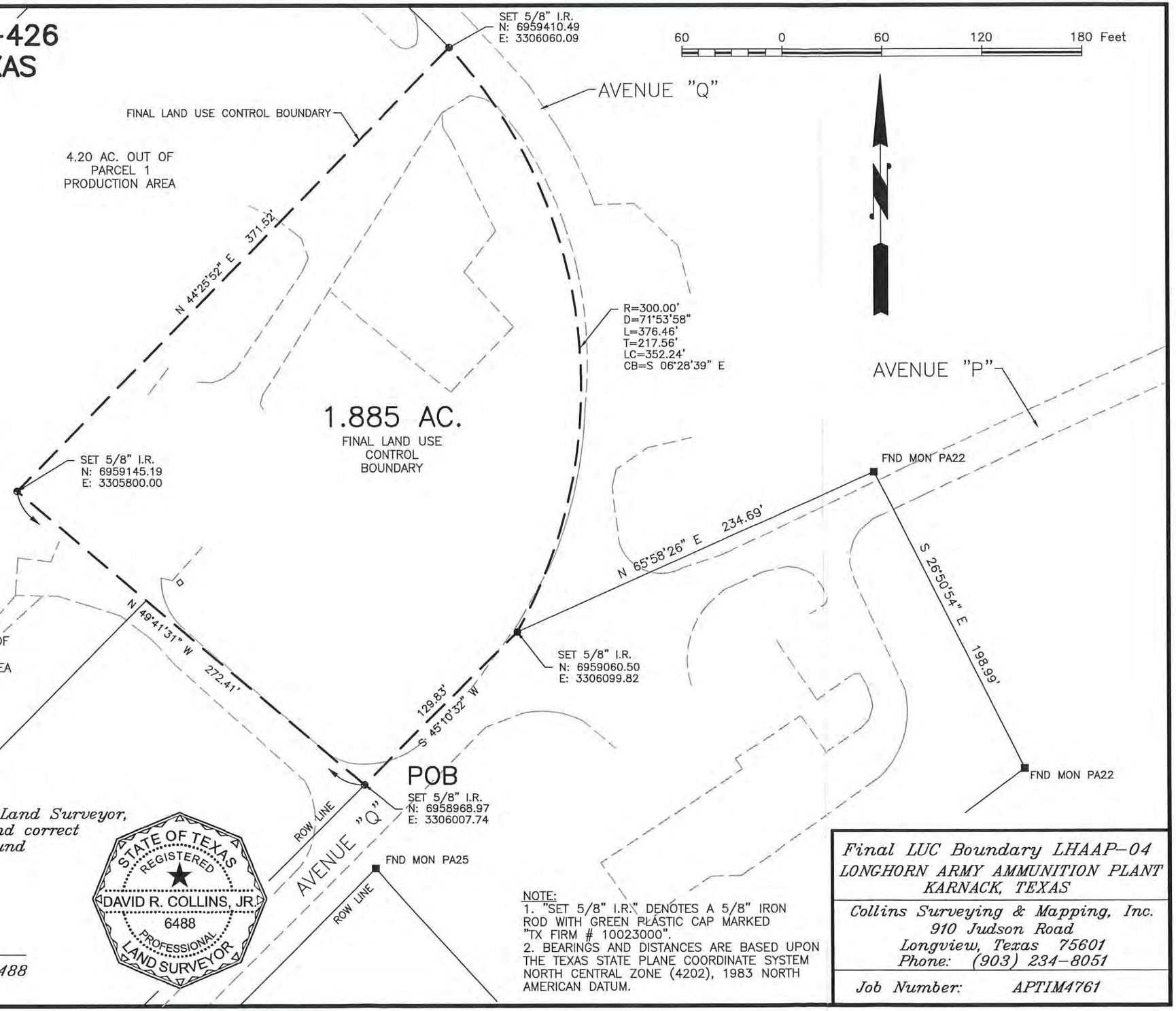
BEGINNING at a 5/8" iron rod set in the northwest right of way line of Avenue "Q" for the southeast corner of this tract with the coordinates of N: 6958968.97, E: 3306007.74;

THENCE: N 49°41'31" W with the southwest line of this tract 272.41 feet to a 5/8" iron rod set for the southwest corner of this tract with the coordinates of N: 6959145.19, E: 3305800.00;

THENCE: N 44°25'52" E with the northwest line of this tract 371.52 feet to a 5/8" iron rod set in the southwest right of way line of said Avenue "Q" for the northwest corner of this tract with the coordinates of N: 6959410.49, E: 3306060.09;

THENCE: in a southweasterly direction with said right of way line and along a cureve to the right having a radius of 300.00 feet, an arc length of 376.46 feet, and a chord bearing and destance of S 06°28'39" 352.24 feet to a 5/8" iron rod set for the end of said curve with the coordinates of N: 6959060.50, E: 3306099.82, from which a monument found in the northwest right of way line of Avenue "P" bears N 65°58'26" E 234.69 feet;

THENCE: S 45°10'32" W with said northwest right of line Avenue "Q" 129.83 feet to th e POINT OF BEGINNING, containing 1.885 acres of land, more or less.



I, David R. Collins, Jr., Reg. Professional Land Surveyor, do hereby certify that this Plat is true and correct according to a survey made upon the ground JANUARY 6, 2021.

STATE OF TEXAS
REGISTERED
DAVID R. COLLINS, JR.
6488
PROFESSIONAL
LAND SURVEYOR

David R. Collins, Jr. *R.P.L.S. #6488*
Firm License #10023000

NOTE:
1. "SET 5/8" I.R." DENOTES A 5/8" IRON ROD WITH GREEN PLASTIC CAP MARKED "TX FIRM # 10023000".
2. BEARINGS AND DISTANCES ARE BASED UPON THE TEXAS STATE PLANE COORDINATE SYSTEM NORTH CENTRAL ZONE (4202), 1983 NORTH AMERICAN DATUM.

Final LUC Boundary LHAAP–04
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Collins Surveying & Mapping, Inc.
910 Judson Road
Longview, Texas 75601
Phone: (903) 234–8051

Job Number: APTIM4761

Figure 1

Final LUC Boundary

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

bhate APTIM

Figure 1

LHAAP-04
Final LUC Boundary Map

Remedial Action Completion Report

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 1/11/2021

Document Path: F:\Projects\Longhorn\LHAAP\Documents\Mxd\LHAAP04\RACR\LHAAP04_FinalLUCBoundary.mxd

LHAAP – 04, 4-3

LAND USE CONTROL INSPECTION AND MAINTENANCE CHECKLIST

Date December 17, 2021

LUC Inspection and Maintenance Checklist

General Information	
Project Name	LUC Inspection and Maintenance, LHAAP-04 Longhorn Army Ammunition Plant, Karnack, TX
Contractor	
Inspector's Name	
Inspector's Title	
Inspector's Signature	
Inspector's Contact Number	
Inspection Date	
Type of Inspection	☐ Quarterly ☐ Semiannual ☐ Annual ☐ Prior to forecast rain ☐ After a rain event ☐ Other ----------

A. Groundwater Monitoring Wells						
A.1	Are the installed groundwater monitoring wells in poor condition?					
A.2	Is the well cleared of vegetation and accessible?					
A.3	Any other relevant observations?					
A.4	Are there any significant cracks present?					
A.5	Are there any damaged areas?					

LHAAP – 04, 4-4
ANNUAL LAND USE CONTROL COMPLIANCE CERTIFICATION FORM

Date December 17, 2021

Annual Land Use Control Compliance Certification Form

In accordance with the Remedial Design dated _____ for LHAAP-04 an inspection of the site was conducted by _____ [indicate transferee] on _____.

The land use control mechanisms are:

- Groundwater restrictions - The groundwater underlying LHAAP-04 within the LUC boundary shall not be accessed or used for any purpose (except for environmental monitoring and testing) without the prior written approval of U.S. Army, the USEPA and the TCEQ. The LUC to prohibiting groundwater use shall be implemented and shall remain in place at the site until the levels of contaminants of concern (COCs) in soil and groundwater allow for unlimited use and unrestricted exposure.;
- Land use restrictions - restrict land use within the LUC boundary to nonresidential;
- Integrity of remedial and monitoring systems - maintain the integrity of any current or future remedial or monitoring systems until cleanup goals are met.

No unauthorized activities or uses have occurred. Compliance with land use controls and restrictions is as follows:

- No use of groundwater (other than environmental testing and monitoring), installation of new groundwater wells, or tampering with existing monitoring wells;
- No land use other than nonresidential; and
- No activities that would compromise the integrity of the remedial or monitoring systems.

I, the undersigned, do document that the inspection was conducted as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief.

Date: _____

Name/Title: _____

Signature: _____

Annual compliance certification forms shall be completed no later than March 1 of each year for the previous calendar year, retained in the file and provided to Army, EPA and TCEQ upon request.

LHAAP – 04, 4-5
LAND USE CONTROL STAKEHOLDER NOTICE LETTERS AND ATTACHMENTS

Date December 17, 2021

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

February 23, 2021

DAIN-ODB-LO

Hon. Chad L. Sims
Harrison County Judge
#1 Peter Whetstone Square, Room 314
Marshall, Texas 75670

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Judge Sims,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

The point of contact for this action is the undersigned. I may be contacted at 479-635-0110, or by email at rose.m.zeiler.civ@mail.mil

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Attachments:
LHAAP-04 Land Use Controls for Soil and Groundwater Contamination
LHAAP-04 Site Location Map
LHAAP-04 Final Land Use Control Boundary Map
LHAAP-16 Land Use Controls for Soil and Groundwater Contamination
LHAAP-16 Site Location Map
LHAAP-16 Final Land Use Control Boundary Map

Copies furnished:
A. Palmie, TCEQ, Austin, TX
L. Poulos, USEPA, Dallas, TX
K. Nemmers, Bhate, Lakewood, CO (Administrative Record)

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

February 23, 2021

DAIN-ODB-LO

Mr. Thomas Speir
Chairman, Harrison County Historical Commission
200 West Houston Street
Marshall, Texas 75670

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Mr. Speir,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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Sincerely,

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Longhorn AAP Site Manager

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L. Poulos, USEPA, Dallas, TX
K. Nemmers, Bhate, Lakewood, CO (Administrative Record)

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

February 23, 2021

DAIN-ODB-LO

Mr. William D. Hatfield
Harrison County Commissioner, Precinct 1
Waskom Sub-Courthouse
165 West Texas Avenue
Waskom, Texas 75692

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Commissioner Hatfield,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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Sincerely,

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Longhorn AAP Site Manager

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L. Poulos, USEPA, Dallas, TX
K. Nemmers, Bhate, Lakewood, CO (Administrative Record)

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

February 23, 2021

DAIN-ODB-LO

Hon. Judye Patterson
Mayor, City of Uncertain, Texas
P.O. Box 277
Uncertain, Texas 75661

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Mayor Patterson,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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Sincerely,

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Longhorn AAP Site Manager

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

February 23, 2021

DAIN-ODB-LO

Mr. Eric Duerkop
Manager, Caddo Lake National Wildlife Refuge
15600 Highway 134
Karnack, Texas 75661

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Mr. Duerkop,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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Longhorn AAP Site Manager

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

February 23, 2021

DAIN-ODB-LO

Mr. Terry Britt
President, Caddo Lake Water Supply Corporation
P.O. Box 136
Uncertain, Texas 75661

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Mr. Britt,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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Longhorn AAP Site Manager

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

February 23, 2021

DAIN-ODB-LO

Mr. Carl Shelton
President, Leigh Water Supply Corporation
342 Byrd Circle
Karnack, Texas 75661

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Mr. Shelton,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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Longhorn AAP Site Manager

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L. Poulos, USEPA, Dallas, TX
K. Nemmers, Bhate, Lakewood, CO (Administrative Record)

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

February 23, 2021

DAIN-ODB-LO

Rep. Chris Paddie
Texas House of Representatives, District 9
102 West Houston Street
Marshall, Texas 75670

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Representative Paddie,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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Longhorn AAP Site Manager

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

February 23, 2021

DAIN-ODB-LO

Sen. Bryan Hughes
Texas State Senate, District 1
201 West Houston Street, Suite 106
Marshall, Texas 75670

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Senator Hughes,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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

February 23, 2021

DAIN-ODB-LO

Texas Department of Licensing and Regulation
Water Well Drillers and Pump Installers Program
P.O. Box 12157
Austin, Texas 78711

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

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Longhorn AAP Site Manager

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

February 23, 2021

DAIN-ODB-LO

Rep. Louis Gohmert
United States House of Representatives
Texas 1st Congressional District
102 West Houston Street
Marshall, Texas 75670

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Representative Gohmert,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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

February 23, 2021

DAIN-ODB-LO

Sen. John Cornyn
United States Senate
Regions Bank Building
100 East Ferguson Street, Suite 1004
Tyler, Texas 75702

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Senator Cornyn,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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

February 23, 2021

DAIN-ODB-LO

Sen. Ted Cruz
United States Senate
305 South Broadway, Suite 501
Tyler, Texas 75702

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Senator Cruz,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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A. Palmie, TCEQ, Austin, TX
L. Poulos, USEPA, Dallas, TX
K. Nemmers, Bhate, Lakewood, CO (Administrative Record)

The following attachments were included with the letters:

LHAAP-04 Land Use Controls for Soil and Groundwater Contamination

LHAAP-04 Site Location Map

LHAAP-04 Final Land Use Control Boundary Map

Date December 17, 2021

Land Use Controls for Soil and Groundwater Contamination

LHAAP-04 Former Pilot Wastewater Treatment Plant
Longhorn Army Ammunition Plant, Karnack, Texas

The Longhorn Army Ammunition Plant (LHAAP) is an inactive government-owned, formerly contractor-operated and maintained Department of Defense facility located in central east Texas in the northeast corner of Harrison County. LHAAP is approximately 14 miles northeast of Marshall, Texas. The facility is approximately 40 miles west of Shreveport, Louisiana. The installation occupies approximately 1,100 of its former 8,416 acres between State Highway 43 at Karnack, Texas and the southwestern shore of Caddo Lake. The installation can be accessed by State Highways 43 and 134.

LHAAP was placed on the National Priorities List (NPL) on August 9, 1990. Activities to remediate contamination began in 1990. After its listing on the NPL, the U.S. Army, the USEPA, and the Texas Water Commission (currently known as the Texas Commission of Environmental Quality [TCEQ]) entered into a CERCLA Section 120 Federal Facilities Agreement (FFA) for remedial activities at LHAAP. The FFA became effective December 30, 1991. LHAAP operated until 1997 when it was placed on inactive status and classified by the U.S. Army Armament, Munitions, and Chemical Command as excess property.

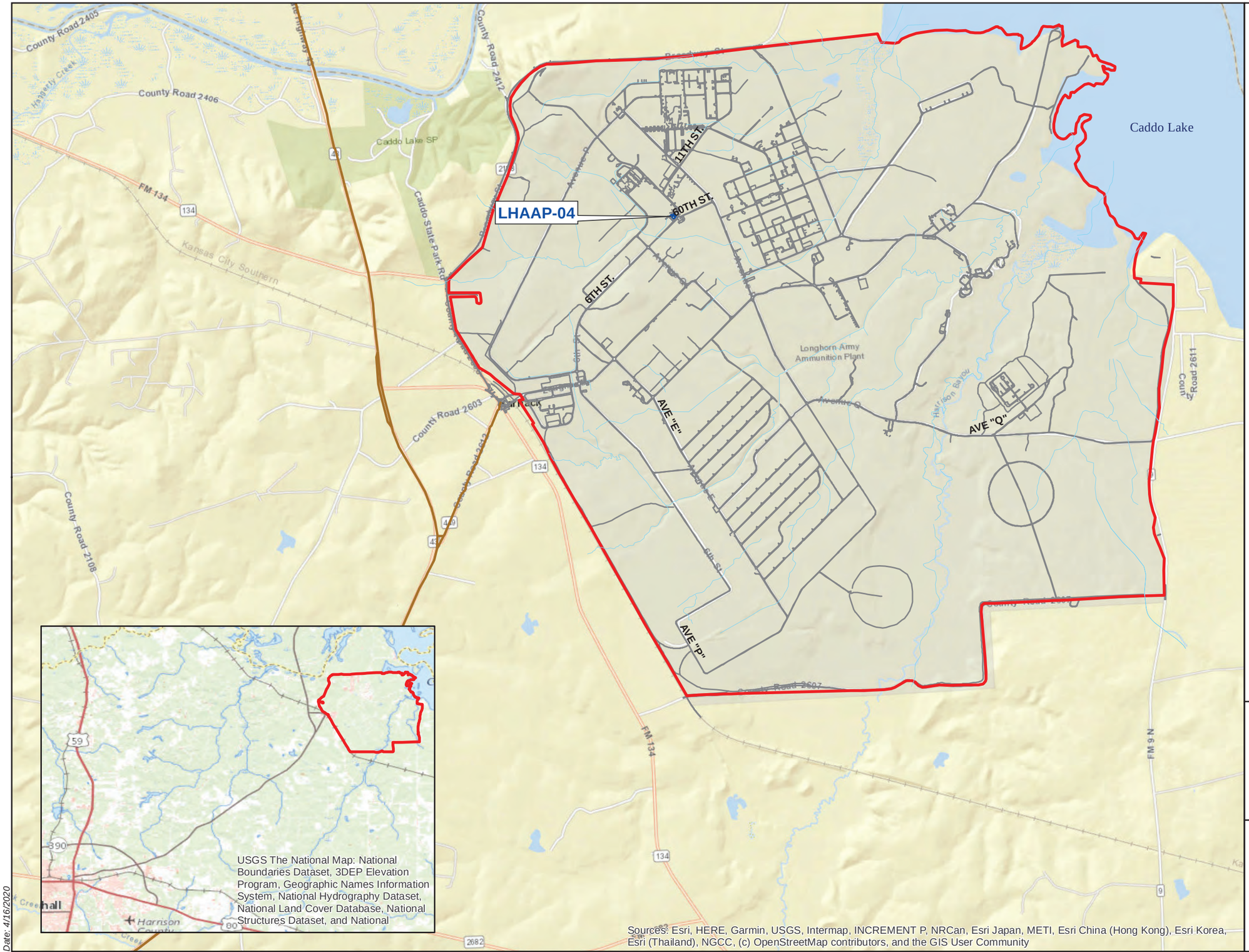
The site addressed in this Final Notice of Land Use Controls is LHAAP-04, which is shown on the attached figures (Figures 1-2 and 1-3 from the Response Action Completion Report) and discussed below. Land Use Controls (LUCs) are applied at LHAAP-04 as part of the remedy in accordance with the LHAAP-04 Record of Decision (ROD) finalized March 30, 2017. The LUCs are necessary because contaminants are present in groundwater at levels that do not support unlimited use and unrestricted exposure. The Final LUC boundary shown is the same as the preliminary boundary that was provided in the Initial Notice of LUCs provided on June 26, 2017.

Contaminants of Concern (COCs)
The only COC identified in the ROD for groundwater at LHAAP-04 was perchlorate, which was found at concentrations exceeding the TCEQ Protective Concentration Levels in the shallow zone.

Land Use Controls

- A LUC prohibiting groundwater use (except for environmental monitoring and testing) shall be implemented and shall remain in place at the site until the levels of COCs in soil and groundwater allow for unlimited use and unrestricted exposure.
- A LUC restricting land use to nonresidential shall be implemented and shall remain in place at the site until the levels of COCs in surface and subsurface soil, and groundwater allow for unlimited use and unrestricted exposure.
- A LUC to maintain the integrity of any current or future remedial or monitoring systems shall remain in place until groundwater cleanup levels of COCs are met.

Further information may be found in the Administrative Record at the Marshall Public Library, at www.longhornaap.com or by contacting Rose M. Zeiler (479-635-0110 or rose.m.zeiler.civ@mail.mil).



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

bhate APTIM

Figure 1-2

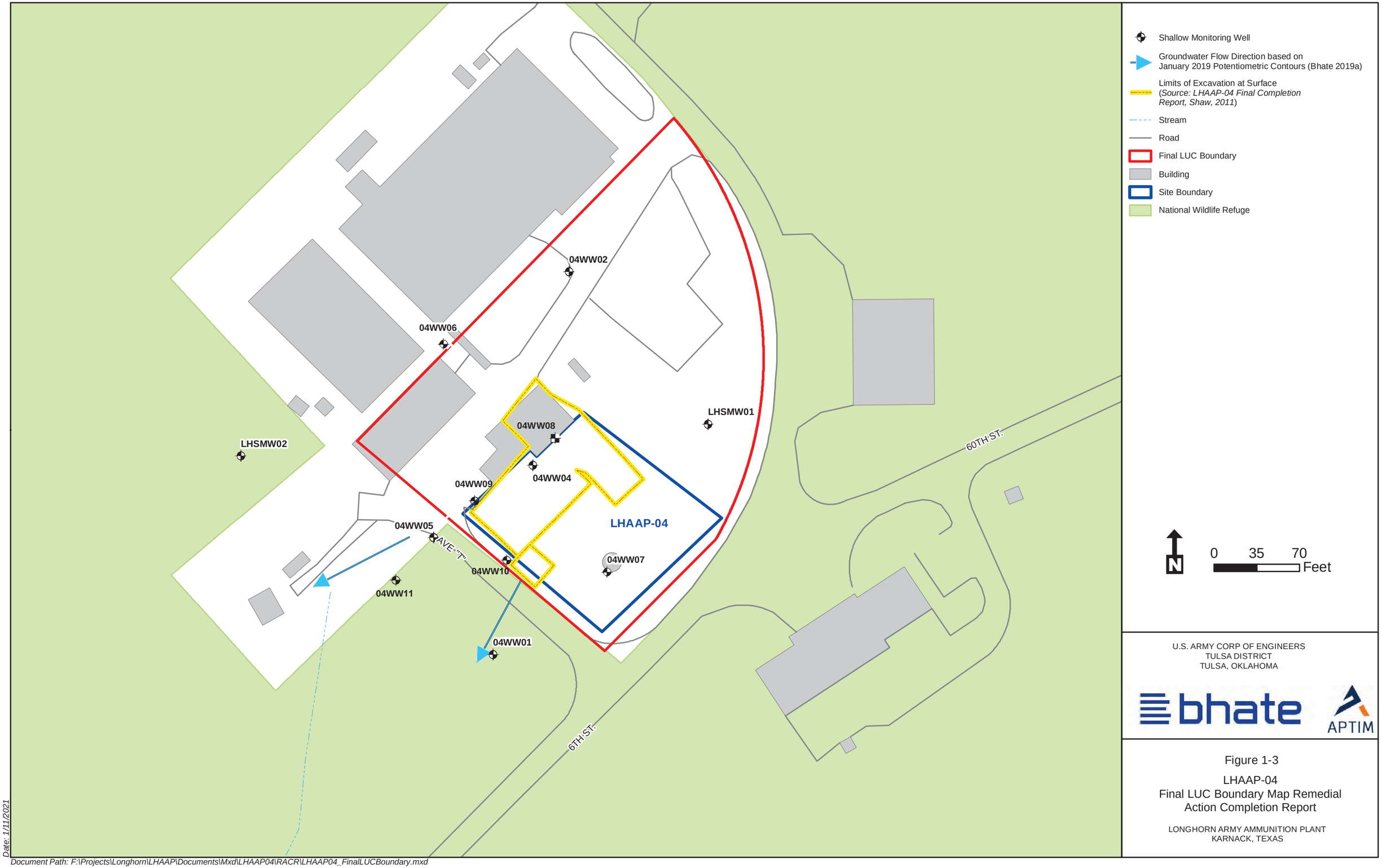
Site Location Map

LHAAP-04
Remedial Action Completion Report

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 4/16/2020

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP04\RACR\Fig1-2_LHAAP_SiteLocationMap.mxd



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

bhate APTIM

Figure 1-3

LHAAP-04
Final LUC Boundary Map Remedial Action Completion Report

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 1/11/2021

Document Path: F:\Projects\Longhorn\LHAAP\Documents\Mxd\LHAAP04\RACR\LHAAP04_FinalLUCBoundary.mxd

LHAAP - 06

NOTICE OF NONRESIDENTIAL LAND USE FOR LHAAP-06 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

2010-000005555

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

7 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 04/27/2010 04:08 PM **Document Number:** 2010-000005555 **Receipt No:** 1006195 **Amount:** $ 36.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW E & I
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

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

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. The site, LHAAP-06, is the area of a demolished building location known as Building 51-F located within the Plant 3 production area of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-06 is not itself considered an NPL site. Environmental activities at LHAAP-06 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, that no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-06 (Building 51-F) was a collection point for waste acids and solvents. Its three-sided shed contained a rack that held a single 55-gallon drum set on a 50-square foot pie-shaped concrete pad. Beginning in 1985, the drum was used to collect waste acids and solvents from bench-scale manufacture of the explosive cyclotetramethylenetetranitramine. Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to

5:00 p.m. or the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-06 parcel is 119 square foot, more or less, or 0.00273 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the LHAAP-06 site and USEPA and TCEQ concluded that no further investigation or action is required for LHAAP-06. Contaminants in soil samples from LHAAP-06 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of LHAAP-06 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of LHAAP-06 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951
Or
Assistant Chief of Staff for Installation Management
ATTN: DAIM-BDO (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 10th day of March, 2010.

BEFORE ME, on this the 10 th day of March, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 10 day of March, 2010.

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

ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 3-17-2011

FIELD NOTES DESCRIPTION OF
"LHAAP-06" TRACT
(REMAINS OF DEMOLISHED BUILDING 51-F)
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP-06" being defined by the four external corners of the three concrete walls remaining at demolished Building 51-F (wall defining the West edge of said building is either gone or never existed) in the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract "LHAAP-06" being more particularly described as follows :

Surveyor's Note: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999861727, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "X-11" (N=6960733.698 feet E=3304750.367 feet) and "HORSE" (N=6960008.269 feet E=3309591.340 feet). Said traverse indicates a surface distance of 4895.70 feet between said monuments. The computed land area is based on surface distances. As used herein, the abbreviation E.C.C.W. indicates External Corner of Concrete Wall,

Commencing at monument "HORSE" referenced above,

THENCE N 59deg52'55"W 597.03' to an E.C.C.W. found for the S.E.C. of this tract and this POINT OF BEGINNING,

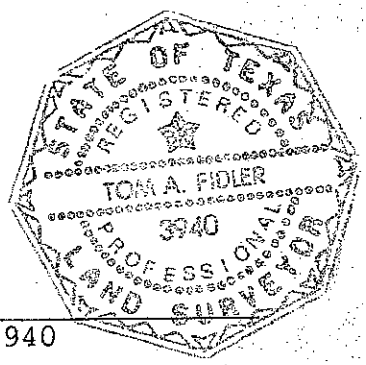
THENCE S 67deg37'19"W 10.93' along the S.B.L. of this tract to an E.C.C.W. found for this tract's S.W.C. ,

THENCE N 22deg14'24"W 10.92' along the W.B.L. of this tract to an E.C.C.W. found for this tract's N.W.C. ,

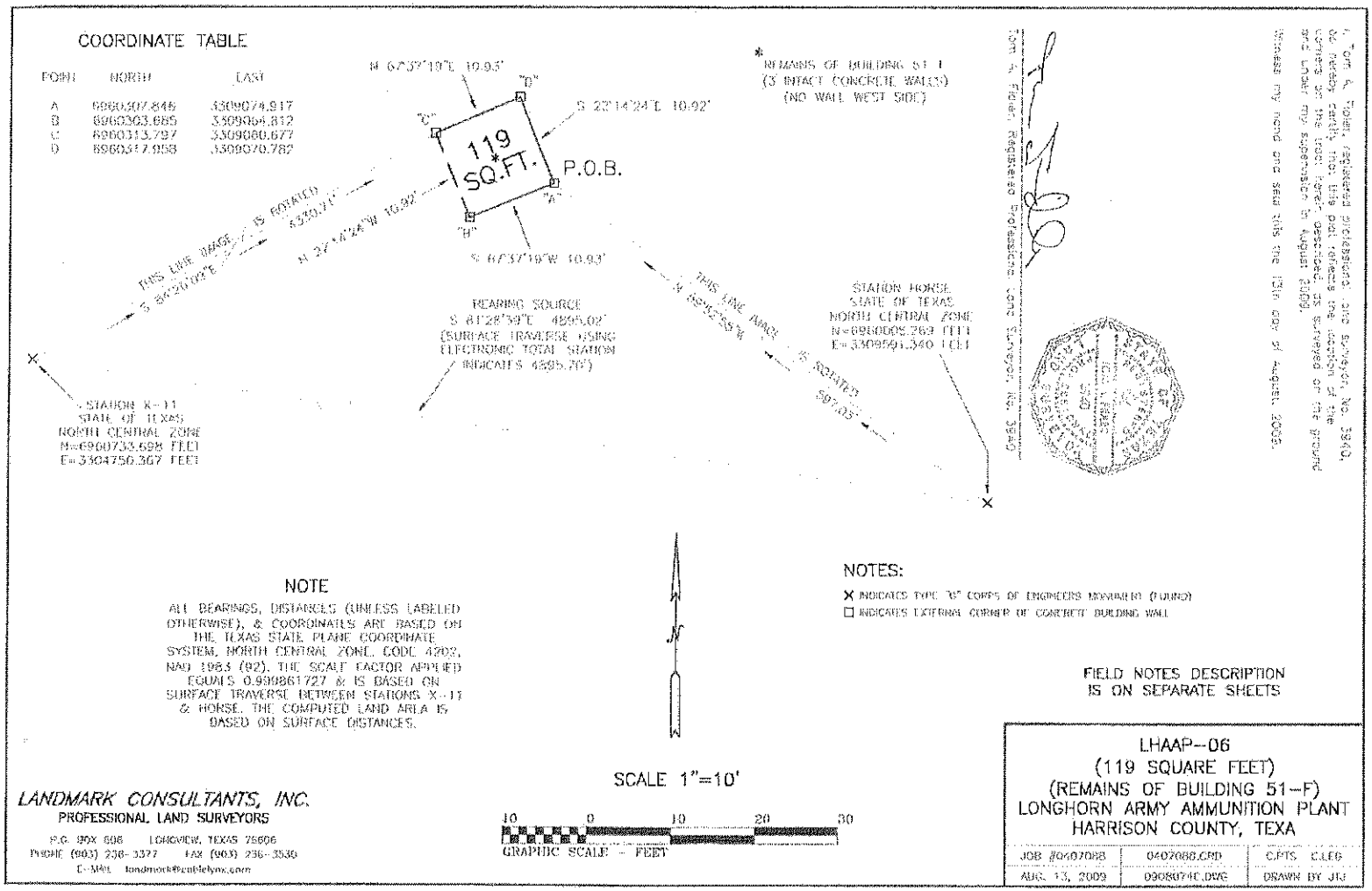
THENCE N 67deg37'19"E 10.93' along the N.B.L. of this tract to an E.C.C.W. found for this tract's N.E.C. ,

THENCE S 22deg14'24"E 10.92' along the E.B.L. of this tract to this POINT OF BEGINNING. This tract contains 119 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940


COORDINATE TABLE
POINT NORTH EAST
A 6960507.846 3309074.917
B 6960303.685 3309066.812
C 6960313.797 3309060.677
D 6960517.958 3309070.782
N 67°37'19"E 10.93'
"D"
"C"
S 22°14'24"E 10.92'
119 SQ.FT.
P.O.B.
"A"
"B"
S 67°37'19"W 10.93'
N 22°14'24"W 10.92'
THIS LINE IMAGE IS ROTATED S 89°20'02"E 6530.71'
REMAINS OF BUILDING 51-F (3 INTACT CONCRETE WALLS) (NO WALL WEST SIDE)
BEARING SOURCE S 81°28'39"E 4895.02' (SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 4895.70')
THIS LINE IMAGE IS ROTATED N 89°20'02"W 5970.03'
STATION X-11 STATE OF TEXAS NORTH CENTRAL ZONE N=6960733.698 FEET E=3304756.367 FEET
STATION HORSE STATE OF TEXAS NORTH CENTRAL ZONE N=6958005.269 FEET E=3309591.340 FEET
I, Jon A. Yowell, registered professional land surveyor, do hereby certify that this plat represents the location of the corners set this date, based on a survey made by me or under my supervision in August 2009.
Witness my hand and seal this 13th day of August, 2009.
Jon A. Yowell, Registered Professional Land Surveyor No. 5360
STATE OF TEXAS
JON A. YOWELL
5360
REGISTERED
LAND SURVEYOR
NOTE
ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999861727 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS X-11 & HORSE. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.
N
NOTES:
X INDICATES TYPE "B" CORPS OF ENGINEERS MONUMENT (FOUND)
□ INDICATES EXTERNAL CORNER OF CONCRETE BUILDING WALL
FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS
SCALE 1"=10'
10 0 10 20 30
GRAPHIC SCALE - FEET
LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 238-3377 FAX (903) 236-3536
E-MAIL landmark@cableone.com
LHAAP--06
(119 SQUARE FEET)
(REMAINS OF BUILDING 51--F)
LONGHORN army AMMUNITION PLANT
HARRISON COUNTY, TEXA
JOB #0407088 0407088.CRD CPTS. CLED
AUG. 13, 2009 0908074C.DWG DRAWN BY JAJ

LHAAP-07

NOTICE OF NONRESIDENTIAL LAND USE FOR LHAAP-07 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

2010-000005556

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

7 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 04/27/2010 04:08 PM **Document Number:** 2010-000005556 **Receipt No:** 1006195 **Amount:** $ 36.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW E & I
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

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

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. The site, LHAAP-07, is the area of a demolished building location known as Building 50-G located within the Plant 3 production area of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-07 is not itself considered an NPL site. Environmental activities at LHAAP-07 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ as the lead regulatory agency that no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-07 (Building 50-G) was the former drum processing building which consisted of a wooden frame building 30 feet by 100 feet in size set on a concrete pad located within the boundary of LHAAP-47. Beginning in 1985, Building 50-G had a separate bay (20 by 30 feet in size) used as a washdown area for empty drums and casting equipment used in ammunition production. The washdown area was an above-grade concrete vault where empty drums were rinsed with hot water and spent sulfuric acid neutralized with limestone. The wastes handled included solvents, oils, and organic liquids. The site ceased operation in 1995. Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd,

Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-07 parcel is 3,078 square foot, more or less, or 0.07066 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the LHAAP-07 site and USEPA and TCEQ concluded that no further investigation or action is required for LHAAP-07. Contaminants in soil samples from LHAAP-07 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of LHAAP-07 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of LHAAP-07 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951
or
Assistant Chief of Staff for Installation Management
ATTN: DAIM-BDO (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 10 th day of March, 2010.

BEFORE ME, on this the 10 th day of March, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 10 day of March, 2010.

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

NOTARY PUBLIC STATE OF TEXAS
ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 3-17-2011

FIELD NOTES DESCRIPTION OF
"LHAAP-07" TRACT
(REMAINS OF DEMOLISHED BUILDING 50-G)
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP-07" being defined by the four external corners of the concrete foundation stem wall of demolished Building 50-G in the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract "LHAAP-07" being more particularly described as follows:

Surveyor's Note: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999861727, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "X-11" (N=6960733.698 feet E=3304750.367 feet) and "HORSE" (N=6960008.269 feet E=3309591.340 feet). Said traverse indicates a surface distance of 4895.70 feet between said monuments. The computed land area is based on surface distances. As used herein, the abbreviation E.C.C.F.S.W. indicates External Corner of Concrete Foundation Stem Wall,

Commencing at monument "HORSE" referenced above,

THENCE N 87deg11'48"W 103.14' to an E.C.C.F.S.W. found for the S.E.C. of this tract and this POINT OF BEGINNING,

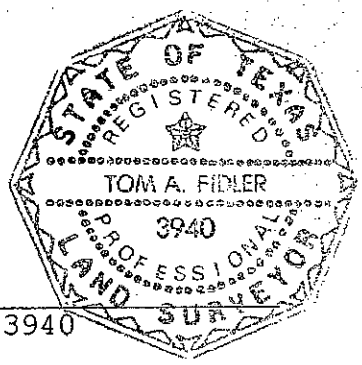
THENCE S 69deg02'55"W 30.36' along the S.B.L. of this tract to an E.C.C.F.S.W. found for this tract's S.W.C. ,

THENCE N 21deg59'26"W 101.90' along the W.B.L. of this tract to an E.C.C.F.S.W. found for this tract's N.W.C. , and being S 82deg14'17"E 4714.65' from monument "X-11" referenced above,

THENCE N 71deg43'04"E 30.53' along the N.B.L. of this tract to an E.C.C.F.S.W. found for this tract's N.E.C. ,

THENCE S 21deg55'35"E 100.48' along the E.B.L. of this tract to this POINT OF BEGINNING. This tract contains 3,078 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

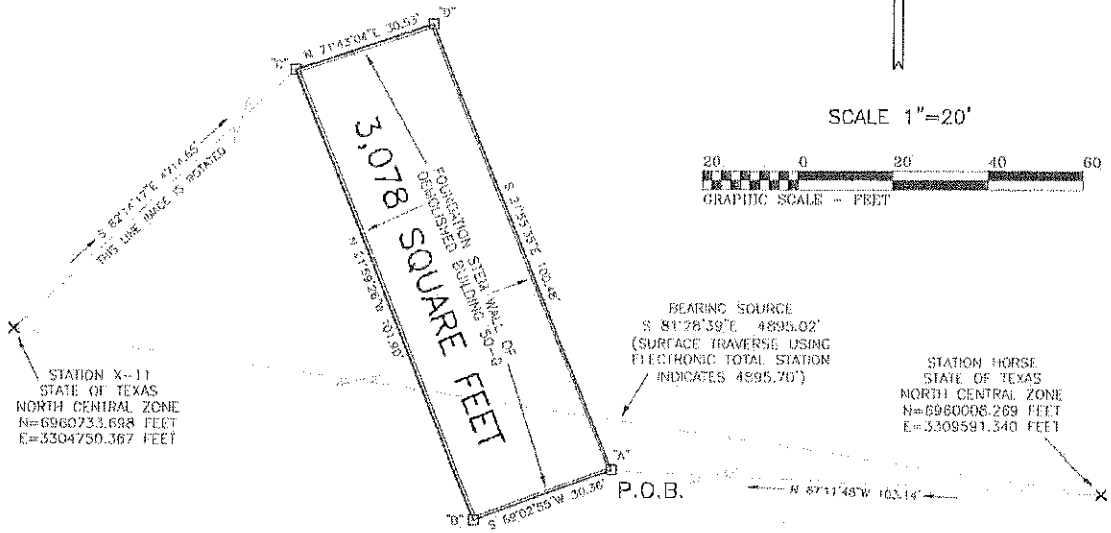
NOTES:

X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)

□ INDICATES EXTERNAL CORNER OF FOUNDATION STEM WALL

COORDINATE TABLE

POINT	NORTH	EAST
A	6960013.313	3309488.323
B	6960002.458	3309459.972
C	6960096.944	3309421.815
D	6960106.521	3309450.803



SCALE 1"=20'

20 0 20 40 60

GRAPHIC SCALE - FEET

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August, 2009.

Witness my hand and seal this the 13th day of August, 2009.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEET

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999861727 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS X-11 & HORSE. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cableone.com

LHAAP-07
(3,078 SQUARE FEET)
(REMAINS OF BUILDING 50-G)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	B.PTS B.LCG
AUG. 13, 2009	0908074B.DWG	DRAWN BY JTJ

LHAAP-08

NOTICE OF NONRESIDENTIAL LAND USE FOR LHAAP-08 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

2011-000003377

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

NOTICE

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 03/24/2011 03:52 PM **Document Number:** 2011-000003377 **Receipt No:** 1103745 **Amount:** $ 32.00 **By:** Lauren Boyd, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT OF HARRISON, TEXAS CDU

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox, Harrison County Clerk

Record and Return To:

AARON WILLIAMS EC-ER
1645 SOUTH 101ST EAST AVENUE

TULSA, OK 74128

STATE OF TEXAS HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

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

I

The U.S. Army, Department of Defense, has performed a remedial investigation of the land described herein. The site, LHAAP-08, the former Sewage Treatment Plant, operated from 1942 to 1997. LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-08 is not itself considered an NPL site. Environmental activities at LHAAP-08 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ as the lead regulatory agency that no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-08 included stabilization ponds, Dunbar filters, sludge drying beds, and an Imhoff tank. The plant received storm water, boiler blow down, laundry waste, vehicle wash rack waste, and effluent from film development at the X-ray facility. Treated effluent was discharged into Goose Prairie Creek and Caddo Lake. Soil and groundwater investigations in 2000, 2001, and 2005 included sampling for explosives compounds, metals, semivolatile organic compounds, volatile organic compounds, dioxins and furans, pesticides and PCBs. Soil results included detections of low levels of metals, perchlorate and dioxin. Low levels of metals, dioxin and furan compounds and perchlorate were detected in groundwater. An assessment of risk to exposure to soil and groundwater at LHAAP-08, based on the

nonresidential use scenario, indicated that potential human health risks are within the acceptable range established by EPA. Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-08 parcel is a 2.974 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the LHAAP-08 site and USEPA and TCEQ concluded that no further investigation or action is required for LHAAP-08. Contaminants in soil samples from LHAAP-08 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of LHAAP-08 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of LHAAP-08 is consistent with the non-residential use scenario evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multifamily residences; child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through
12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

Assistant Chief of Staff for Installation Management
ATTN: DAIM-BDO (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 25 th day of January, ~~2010~~ 2011.

BEFORE ME, on this the 25 th day of Jan 2011, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 25 day of January.

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

NOTARY PUBLIC STATE OF TEXAS
ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 3-17-2011

FIELD NOTES DESCRIPTION OF
"LHAAP–08" TRACT
(PROPOSED INDUSTRIAL USE NOTIFICATION AREA)
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP–08" being 2.974 acre of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract "LHAAP–08" being more particularly described as follows :

Surveyor's Note: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998636625, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "IGNATIUS–1" (N=6957090.304 feet E=3311081.788 feet) and "IGNATIUS–2" (N=6955582.752 feet E=3311851.704 feet). Said traverse indicates a surface distance of 1693.005 feet between said monuments. The computed land area is based on surface distances. As used herein, the abbreviation I.R.O.P.C. indicates 1/2" iron rebar with orange plastic cap engraved "Fidler" & "RPLS 3940", and the abbreviation C.N.I.B.C. indicates concrete nail in bottle cap.

Commencing at monument "IGNATIUS–1" referenced above,

THENCE N 52deg56'26"W 814.32' to an I.R.O.P.C. set for the Southmost corner of this tract and this POINT OF BEGINNING,

THENCE N 28deg08'32"W 374.05' along the S.W. B.L. of this tract to an I.R.O.P.C. set for this tract's Westmost corner,

THENCE N 62deg03'14"E 348.01' along the N.W. B.L. of this tract to a C.N.I.B.C. set (in the asphalt pavement of South Houston Road) for this tract's Northmost corner,

THENCE S 27deg43'38"E 328.00' along the N.E. B.L. of this tract to a C.N.I.B.C. set (in the asphalt pavement of South Houston Road) for the North end of a curve,

THENCE along a curve to the right (having a radius of 48.04' and an arc length of 75.57', being subtended by a chord of S 17deg20'14"W 68.02') to a C.N.I.B.C. set (in the asphalt pavement of South Houston Road) for the South end of said curve,

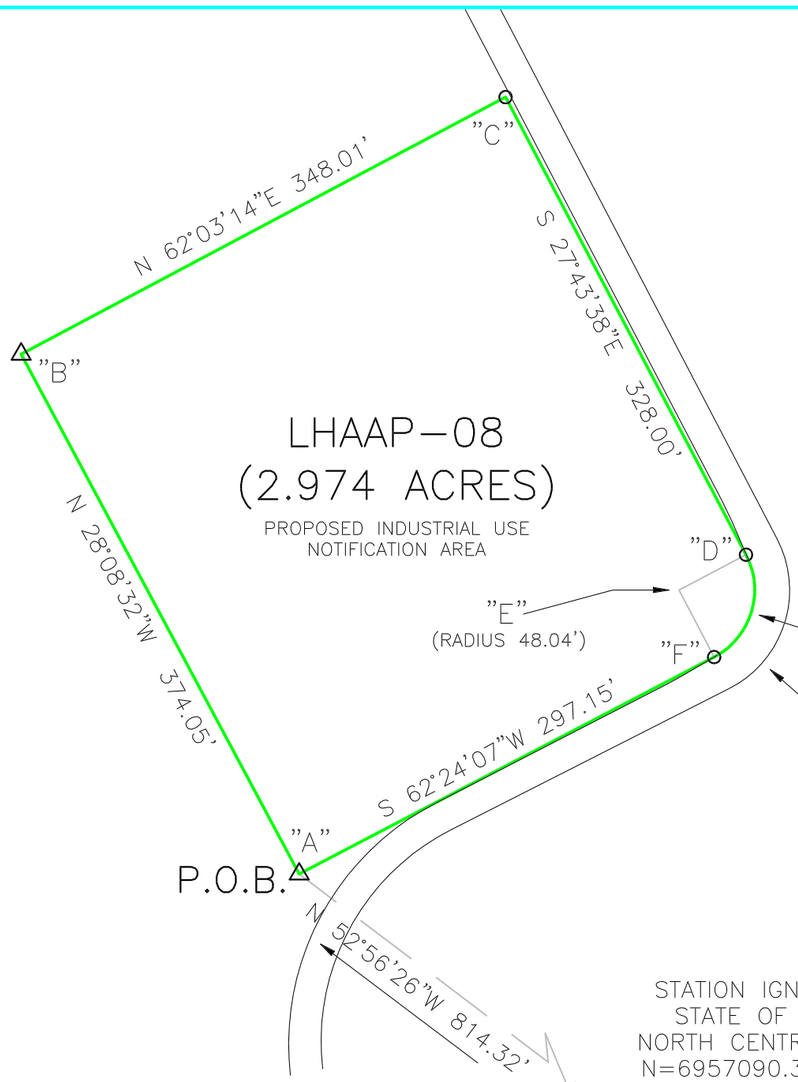
THENCE S 62deg24'07"W 297.15' along the S.E. B.L. of this tract to this POINT OF BEGINNING, containing 2.974 acres, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

Tom A. Fidler

Tom A. Fidler, R.P.L.S. Number 3940

01149227



ARC 75.57' RADIUS 48.04'
CHORD S 17°20'14"W 68.02'

SOUTH HOUSTON ROAD
(ASPHALT; ATYPICAL WIDTH
AREAS NOT SHOWN)

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998636625 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS IGNATIUS–1 & IGNATIUS–2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

STATION IGNATIUS–1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957090.304 FEET
E=3311081.788 FEET

BEARING SOURCE
S 27°03'13.2"E 1692.774'
(SURFACE TRAVERSE USING
ELECTRONIC TOTAL STATION
INDICATES 1693.005')

STATION IGNATIUS–2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6955582.752 FEET
E=3311851.704 FEET

N

SCALE 1"=100'

100 0 100 200 300
GRAPHIC SCALE – FEET

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in July 2008.

Witness my hand and seal this the 29th day of July, 2008

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

NOTES:

- X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- O INDICATES CONCRETE NAIL IN BOTTLE CAP (SET IN ASPHALT)
- △ INDICATES 1/2" IRON REBAR WITH ORANGE PLASTIC CAP ENGRAVED "FIDLER" & "RPLS 3940" (SET)
- ——— INDICATES BOUNDARY OF PROPOSED INDUSTRIAL USE NOTIFICATION AREA

COORDINATE TABLE

POINT	NORTH	EAST
A	6957581.048	3310431.952
B	6957910.879	3310255.527
C	6958073.970	3310562.954
D	6957783.633	3310715.561
E	6957761.282	3310673.037
F	6957718.708	3310695.292

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236–3377 FAX (903) 236–3530
E–MAIL landmark@cablelynx.com

LHAAP–8
(2.974 ACRES)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	0605063F.DWG
07/29/2008	0605063.CRD	DRAWN BY JTJ

LHAAP-12, 12-1

LUC INSPECTION AND MAINTENANCE LOG

September 14, 2015

LUC Inspection and Maintenance Log – LHAAP 12

Date	Inspected by:	Inspection / Maintenance Activities					Corrective action or repairs required?	Repairs / Action Taken
		Protect landfill cover integrity				Prevent human exposure to groundwater		
		Vegetative Cover maintained: i.e. grass mowed	Fence and signage maintained	Observance of landfill cover degradation –e.g. desiccation cracks, erosion, or gullying	Continued compliance verified for no digging or disturbance of landfill cover or contents	Verified no withdrawal or use of groundwater (other than environmental testing)		

LHAAP-12, 12-2

LUCs FROM FINAL REMEDIAL DESIGN ADDENDUM

September 14, 2015

FINAL

REMEDIAL DESIGN ADDENDUM
LANDFILL 12 (LHAAP-12)
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

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

Prepared by
Shaw Environmental, Inc.
3010 Briarpark Drive, Suite 400
Houston, Texas 77042

Contract Number DACA56-94-D-0020
Task Order No. 0109

June 2007

Table of Contents

List of Figures i
List of Appendices i
Acronyms and Abbreviations ii

1.0 Purpose 1-1
2.0 Description of the Site 2-1
3.0 Remedy Performance Objectives 3-1
4.0 Land Use Controls for the Site 4-1
5.0 Monitored Natural Attenuation 5-1
6.0 Remedy Implementation Actions 6-1
6.1 Land Use Control Implementation Actions 6-1
6.1.1 Comprehensive Base-wide Land Use Control Management Plan 6-1
6.1.2 Site Inspections and Reporting 6-2
6.1.3 Notice of Planned Property Conveyances 6-2
6.1.4 Opportunity to Review Text of Intended Land Use Controls 6-2
6.1.5 Notification Should Action(s) Which Interfere with Land Use Control Effectiveness Be Discovered Subsequent to Conveyance 6-2
6.1.6 Land Use Control Enforcement 6-2
6.1.7 Modification or Termination of Land Use Controls 6-3
6.2 Monitored Natural Attenuation Implementation Actions 6-3
6.3 CERCLA Five-Year Reviews 6-4
7.0 Points of Contact 7-1
8.0 Source Documents 8-1

List of Figures

Figure 1 Site Location Map, LHAAP-12
Figure 2 LHAAP-12 Land Use Control & Maintenance Map

List of Appendices

Appendix A Groundwater Monitoring Plan
Appendix B Sample Annual Land Use Control Compliance Inspection Documentation

4.0 Land Use Controls for the Site

The LUCs to be implemented by the Army or its representatives for LHAAP-12 include:

- Maintenance of the integrity of the landfill cap, including, at a minimum, repairs to desiccation cracks, erosion, or gullying upon observance.
- Maintenance of a vegetative cover on the landfill cap including regular mowing.
- Maintenance of fence line and signage around landfill cap.
- Prohibition of any activities that would affect the integrity of cap.
- Prohibition of any activities that would cause exposure to the contaminated groundwater.

Although groundwater monitoring is not a LUC, it was included as a component of the remedy for LHAAP-12 identified in the 2006 ROD to evaluate the effectiveness of the landfill cap (Shaw, 2006b). The groundwater monitoring plan is included in **Appendix A**.

6.0 Remedy Implementation Actions

6.1 Land Use Control Implementation Actions

Until LHAAP-12 is transferred, the Army or its representatives will be responsible for LUC implementation, maintenance, inspection, reporting and enforcement. The Army shall address LUC problems within its control that are likely to impact remedy integrity and shall address problems as soon as practicable. If periodic LUC inspections and maintenance are required to address site-specific risks, the Army will be responsible for making the results available to the appropriate regulators.

As a condition of property transfer, the Army may require the transferee to assume responsibility for various implementation actions, as indicated below. Although the Army may transfer responsibility for various implementation actions, the Army shall retain its responsibility for remedy integrity. This means that the Army is responsible for addressing substantive violations of performance objectives that would undermine the Army's CERCLA remedy. The Army also will be responsible for: 1) incorporating RD information and outlining the transferee's LUC obligations into property transfer documentation; 2) recording survey plat and notice of restrictions for both the landfill cap and cover system boundary at the Harrison County Courthouse; 3) recording groundwater use restriction and survey plat at the Harrison County Courthouse; and 4) notifying Texas Department of Licensing and Regulation of the groundwater restriction which includes the prohibition of water well installation for any purpose other than environmental monitoring and testing without prior approval from the Army, the USEPA, and the TCEQ.

The following LUC implementation actions shall be undertaken by the Army in order to ensure that the aforementioned LUC performance objectives for LHAAP 12 are met and maintained:

6.1.1 Comprehensive Base-wide Land Use Control Management Plan

Within 30 days of receiving USEPA and TCEQ approval of this RD Addendum, the Army will develop a Comprehensive Base-wide LUC Management Plan which shall initially consist of this document and a survey plat showing the locations where the LHAAP-12 LUCs are applied. The purpose of this Comprehensive Base-wide LUC Management Plan is to ensure the all site-specific LUCs are compiled into one comprehensive location for both pre-transfer use by the installation and for post-transfer use by the transferee. This document is also accessible to regulators, the local government and the public. The Army will locate the Comprehensive Base-wide LUC Management Plan in the City of Marshall Public Library to accompany LHAAP's Administrative Record.

As LUC RD documents for additional environmental sites are approved by USEPA and TCEQ, the Army shall likewise add those documents and survey plats to the Comprehensive Base-wide LUC Management Plan as well as update the previous copy of the plan placed in the City of Marshall Public Library.

6.1.2 Site Inspections and Reporting

Beginning with finalization of this RD Addendum, the Army will undertake annual physical inspections and reporting to confirm continued compliance with all LUC objectives. The Army will provide USEPA and TCEQ with an annual LUC Compliance Inspection document consistent with the form attached hereto as **Appendix B**. In addition, should any deficiency(ies) be found during the annual inspection, the Army will provide to USEPA and TCEQ along with the document, a separate written explanation indicating the specific deficiency(ies) found and what efforts or measures have or will be taken to correct those deficiencies. Upon transfer, such responsibilities may shift to the transferee via appropriate provisions placed in the Environmental Condition of Property (ECOP). The need to continue annual inspections will be revisited at five year reviews.

6.1.3 Notice of Planned Property Conveyances

Planned conveyance of LHAAP-12 acreage is to U.S. Fish and Wildlife Service for incorporation into the Caddo Lake National Wildlife Refuge. The Army shall provide notice to USEPA and TCEQ of such intended conveyance. The notice shall describe the mechanism by which LUCs will continue to be implemented, maintained, inspected, reported, and enforced.

6.1.4 Opportunity to Review Text of Intended Land Use Controls

The Army will produce an ECOP for LHAAP-12, but before executing the letter of transfer, the Army will provide USEPA and TCEQ with a draft copy of that ECOP so that they may have reasonable opportunity, before document execution, to review all LUC-related provisions.

6.1.5 Notification Should Action(s) Which Interfere with Land Use Control Effectiveness Be Discovered Subsequent to Conveyance

Should the Army discover after conveyance of the site any activity on the property inconsistent with the LUC performance objectives, the Army shall notify USEPA and TCEQ within 72 hours of such discovery. Consistent with **Section 6.1.6** below, the Army will then work with USEPA, TCEQ and the transferee to correct the problem(s) discovered. This reporting requirement does not preclude the Army from taking immediate action pursuant to its CERCLA authorities to prevent any perceived risk(s) to human health or the environment.

6.1.6 Land Use Control Enforcement

Should the LUC remedy reflected in this LUC RD fail, the Army will coordinate with USEPA and TCEQ to ensure that appropriate actions are taken to reestablish its protectiveness. These

actions may range from informal resolutions with the owner or violator, to the institution of judicial action under the auspices of Texas property law or CERCLA. Alternatively, should the circumstances warrant such, the Army could choose to exercise its response authorities under CERCLA, and then seek cost recovery after the fact from the person(s) or entity(ies) who violated a given LUC. Should the Army become aware that any future owner or user of the property has violated any LUC requirement over which a local agency may have independent jurisdiction, the Army will notify these agencies of such violation(s) and work cooperatively with them to re-achieve owner/user compliance with the LUCs.

6.1.7 Modification or Termination of Land Use Controls

The Army shall not, without USEPA concurrence, make a significant modification to, or terminate a LUC, or make a land use change inconsistent with the LUC objectives and use assumptions of the selected remedy. Likewise, the Army shall seek prior USEPA concurrence before commencing actions that may impact remedy integrity. In the case of an emergency action, the Army shall obtain prior USEPA concurrence as appropriate to the exigencies of the situation.

The LUCs shall remain in effect until such time as the Army and USEPA agree that the concentrations of hazardous substances have been reduced to levels that allow for unlimited exposure and unrestricted use. When this occurs, the LUCs will be terminated as needed. The decision to terminate LUCs will be documented consistent with the NCP process for post-ROD changes, potentially including an explanation of significant differences or a remedial action completion report. If the property has been transferred and a determination by the Army and USEPA has been made to terminate one or more of the LUCs, the Army shall provide to the owner of the property an appropriate release for recordation pertaining to the site and will also timely advise other local stakeholders of the action.

6.2 Monitored Natural Attenuation Implementation Actions

Implementation actions include development of a groundwater monitoring plan, monitoring, and reporting. Groundwater monitoring will be conducted to monitor the effectiveness of MNA in reducing contaminant concentrations over time. Monitoring will also be conducted to evaluate plume migration and ensure that TCE-contaminated groundwater does not impact nearby surface water at unacceptable levels. The Groundwater Monitoring Plan, attached as **Appendix A**, describes the wells, their locations, analytical parameters, and the frequency of the monitoring.

Annual reports will be prepared to document the monitoring program. The first year annual report will include a review of the first four quarters of data which include natural attenuation parameters and provide an evaluation for the evidence of MNA as a remedial method. The TCEQ provides guidance for MNA as a remedial action in *Monitored Natural Attenuation*

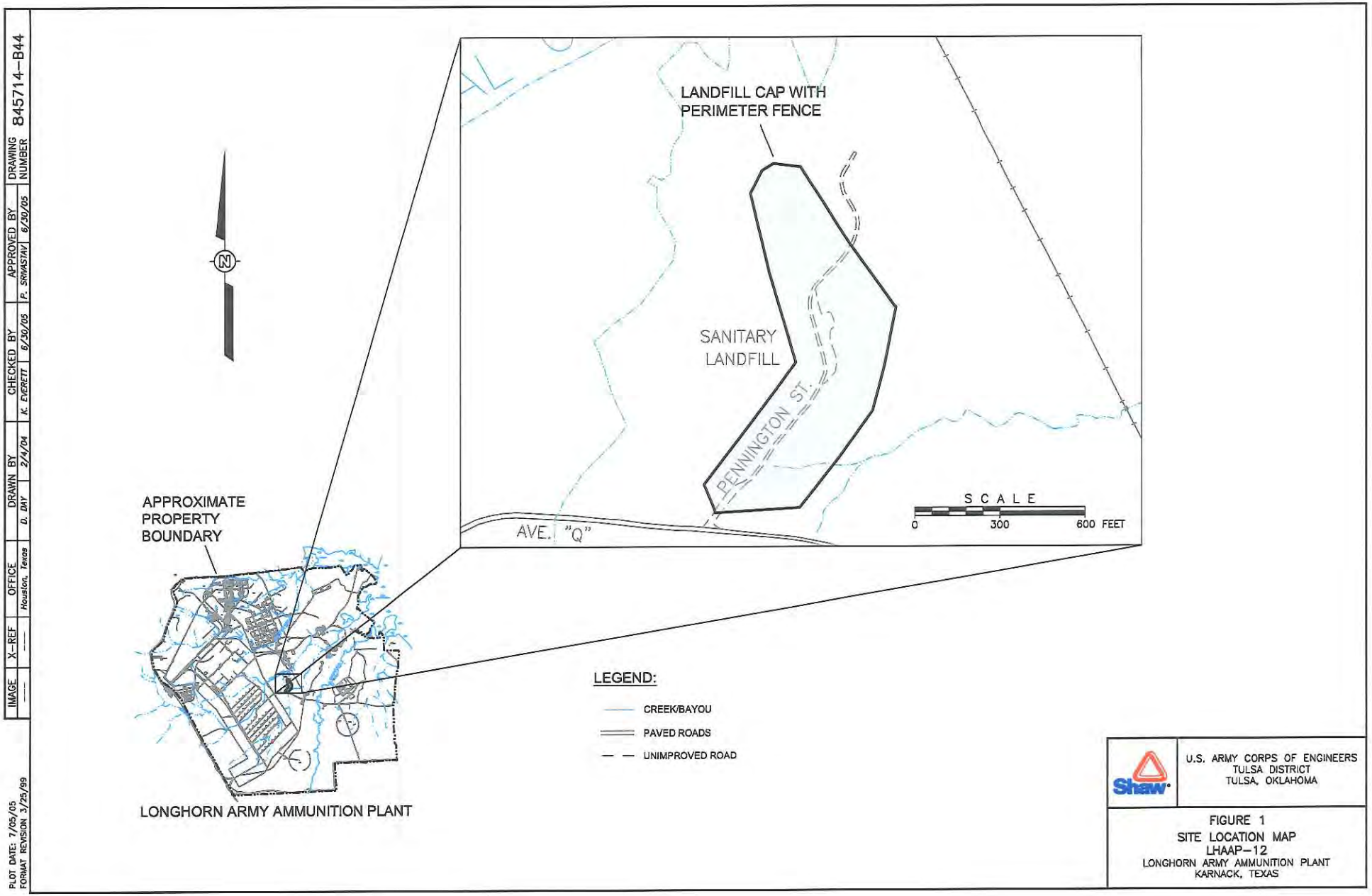
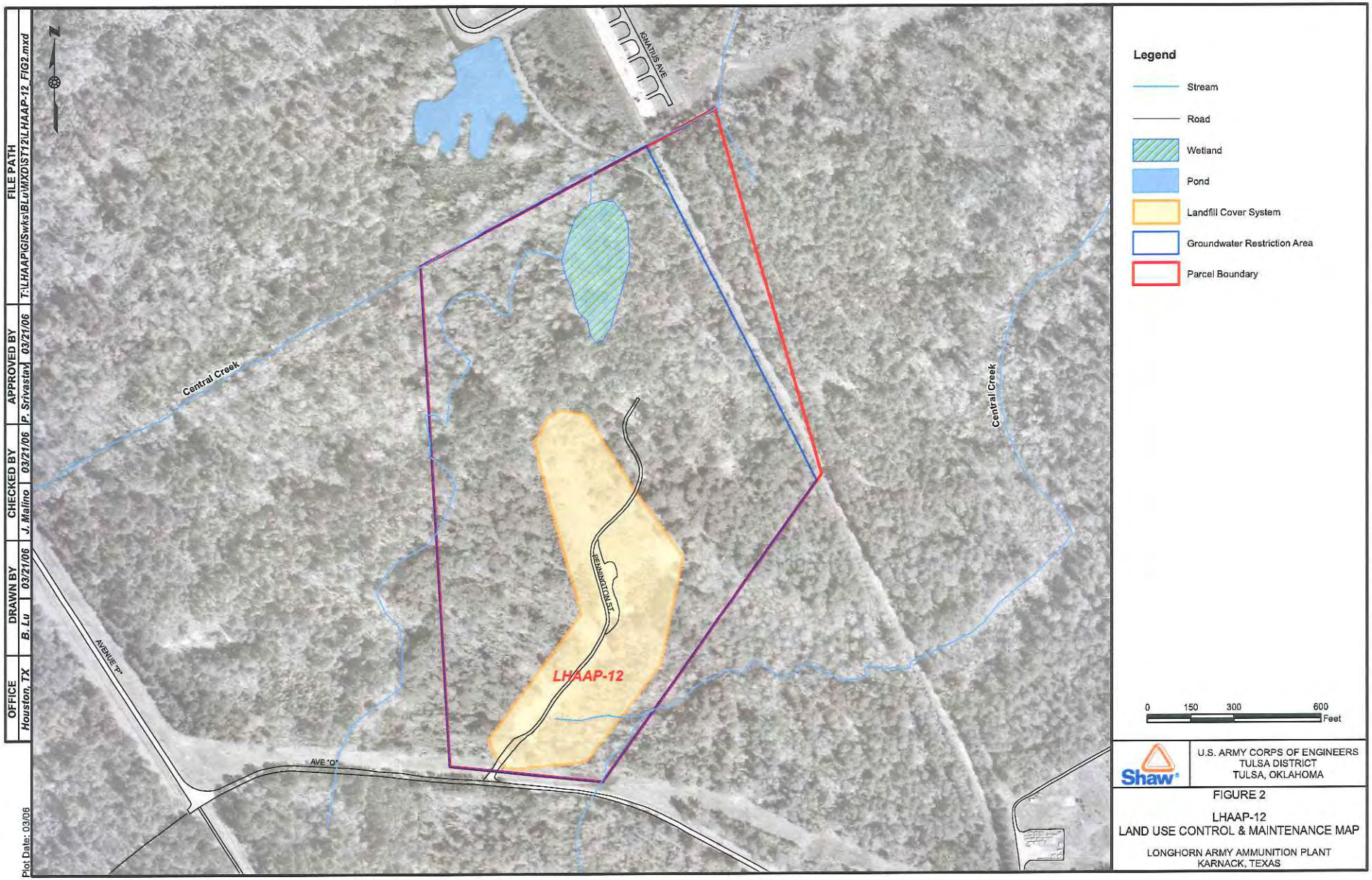


IMAGE	X-REF	OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
		Houston, Texas	D. DAY 2/14/04	K. EVERETT 6/30/05	P. SRIVASTAV 6/30/05	845714-B44

PLOT DATE: 7/05/05
FORMAT REVISION 3/25/99

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

FIGURE 1
SITE LOCATION MAP
LHAAP-12
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS


Legend
Stream
Road
Wetland
Pond
Landfill Cover System
Groundwater Restriction Area
Parcel Boundary
Central Creek
Central Creek
IGNATIUS AVE
REMINGTON ST
AVENUE "P"
AVE "O"
LHAAP-12
0 150 300 600
Feet
Shaw
U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA
FIGURE 2
LHAAP-12
LAND USE CONTROL & MAINTENANCE MAP
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS
OFFICE Houston, TX
DRAWN BY B. Lu 03/21/06
CHECKED BY J. Malino 03/21/06
APPROVED BY P. Srivastav 03/21/06
FILE PATH T:\LHAAP\GIS\wrks\BLu\MXD\ST12\LHAAP-12_FIG2.mxd
Plot Date: 03/06

Appendix B

Sample Annual Land Use Control Compliance Inspection Documentation

Sample Annual Land Use Control Compliance Inspection Documentation

In accordance with the Remedial Design Addendum dated _____ for LHAAP-12, an inspection of site was conducted by _____ [indicate transferee] on_____.

A summary of land use control mechanisms is as follows:

- Land use and restriction covenants included in ECOP – [Indicate whether the ECOP is on file with the notice of transfer]
- Groundwater restriction – [Indicate whether groundwater restrictions are still required at LHAAP-12]

A summary of compliance with land use and restriction covenants is as follows:

- No use of groundwater, installation of new groundwater wells, or tampering with existing wells at LHAAP-12
- No reuse activity at LHAAP-12 that would adversely affect the integrity of the landfill cap
- The fence and posted signs are properly maintained at LHAAP-12
- The vegetative cover is properly maintained over the landfill
- Landfill cap is properly maintained with no evidence of erosion, cracking, settlement, or other damage to engineered components

I, the undersigned, do document that the inspection was performed as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief.

Date: _____

Name/Title _____

Signature: _____

Completed annual compliance inspection forms, with relevant annual compliance certification forms, shall be sent no later than March 1 of each year for the previous calendar year.

U.S. Department of the Army
TCEQ
USEPA Region 6

LHAAP-12, 12-3

NOTICE OF LAND USE CONTROLS AND NONRESIDENTIAL LAND USE AT LHAAP-12 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

Doc 7009064 Bk OR Vol 3640 Pg 1
FILED FOR RECORD
07 JUN 13 AM 10: 09
PATSY COX
CO CLERK, HARRISON CO
BY DEPUTY

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF LAND USE CONTROLS AT LHAAP-12

KNOW ALL MEN BY THESE PRESENTS THAT:

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

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. The remediation site is a capped landfill located on the Former Longhorn Army Ammunition Plant (LHAAP) and is designated as LHAAP-12. The site is included in TCEQ Notice of Registration No. 30990 as Unit Number 001. LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Remedial activities at LHAAP-12 were performed in accordance with the FFA requirements.

The landfill was used intermittently for the disposal of industrial solid waste, possibly containing small quantities of hazardous constituents generated at LHAAP. A Record of Decision (ROD) for LHAAP-12 was signed by USEPA in 1995 establishing the construction of a cap as an interim remedial action for the site to mitigate potential risks posed by the burial of landfill waste. Construction of the landfill cap was completed in 1998. The final remedy consists of land use controls (LUCs) in conjunction with monitored natural attenuation as documented in the Final ROD signed by USEPA on July 24, 2006. The site was not remediated to levels suitable for unrestricted use. LUCs at LHAAP-12 are required to ensure the integrity of the landfill cap and cover system and prevent human exposure to contaminated groundwater. Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at the

Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-12 parcel is a 50.541 acre tract, more or less, located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A. Within the LHAAP-12 parcel are designated LUC boundaries including a 9.429 acre tract, more or less, and a 45.939 acre tract, more or less, as described in Exhibit A. The LUC boundaries are also presented in the attached Figure 1.

Future use of the parcel is intended as a national wildlife refuge consistent with non-residential use. The United States Department of the Army has undertaken careful environmental study of the LHAAP-12 site and concluded that the LUCs set forth below are required to ensure protection of human health and the environment.

(1) **Landfill Restriction**. A closed non-hazardous landfill (LHAAP-12) of approximately 7 acres is located within the 9.429 acre tract. The landfill restriction boundary consists of the 7-acre capped landfill and an area extending to the surrounding fence. LUCs have been established to protect the integrity of the remedy. No activity shall be conducted or permitted that would damage the integrity of the landfill cover (i.e. digging or disturbing the existing cover or contents of the landfill). The LUCs will remain in place for perpetuity unless otherwise removed by the U.S. Army per agreement with the USEPA and TCEQ.

(2) **Residential Use Restriction**. The residential use restriction boundary consists of the 9.429 acre-tract, more or less, and includes the 7-acre capped landfill and an area extending to the surrounding fence. This tract shall be used solely for the purpose of a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

(3) **Groundwater Restriction**. The groundwater use restriction boundary consists of the 45.939 acre tract, more or less, and extends beyond the landfill

Doc 7009064 Bk OR Vol 3640 Pg 3

boundary. Groundwater underlying this land is contaminated with trichloroethene (TCE) and other volatile organic compounds and shall not be accessed or used for any purpose without the prior written approval of U.S. Army, the USEPA and the TCEQ. A LUC restricting the use of groundwater has been established for the protection of human health. The U.S. Army will notify the Texas Department of Licensing and Regulation of the groundwater restriction which includes prohibition of water well installation for any purpose other than environmental monitoring and testing without prior approval by the U.S. Army, the USEPA and the TCEQ. The LUC will remain in place until applicable or relevant and appropriate requirements (ARARs) as established in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (40 Code of Federal Regulation 300) are met. Due to the potential for TCE-contaminated groundwater to migrate, monitored natural attenuation will be implemented to assure that TCE-contaminated groundwater will not migrate to nearby surface water at levels that may present an unacceptable risk to human health and the environment. The monitoring and reporting associated with this remedy will continue until ARARs are achieved.

The owner of the site is the Department of the Army, and its address where more specific information may be obtained from is as follows:

ATTN: DAIM-BD-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 13th day of June, 2007.

BEFORE ME, on this the 13th day of June, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 13 day of June, 2007.

LYNDA G. HAYS
Notary Public State of Texas
COMM. EXP. 5-02-2010

Lynda G. Hays
Notary Public in and for the State of Texas,
County of Harrison

Doc Bk Vol Pg
7009064 OR 3640 4

EXHIBIT A

Doc	Bk	Vol	Pg
7009064	OR	3640	5

NOTE

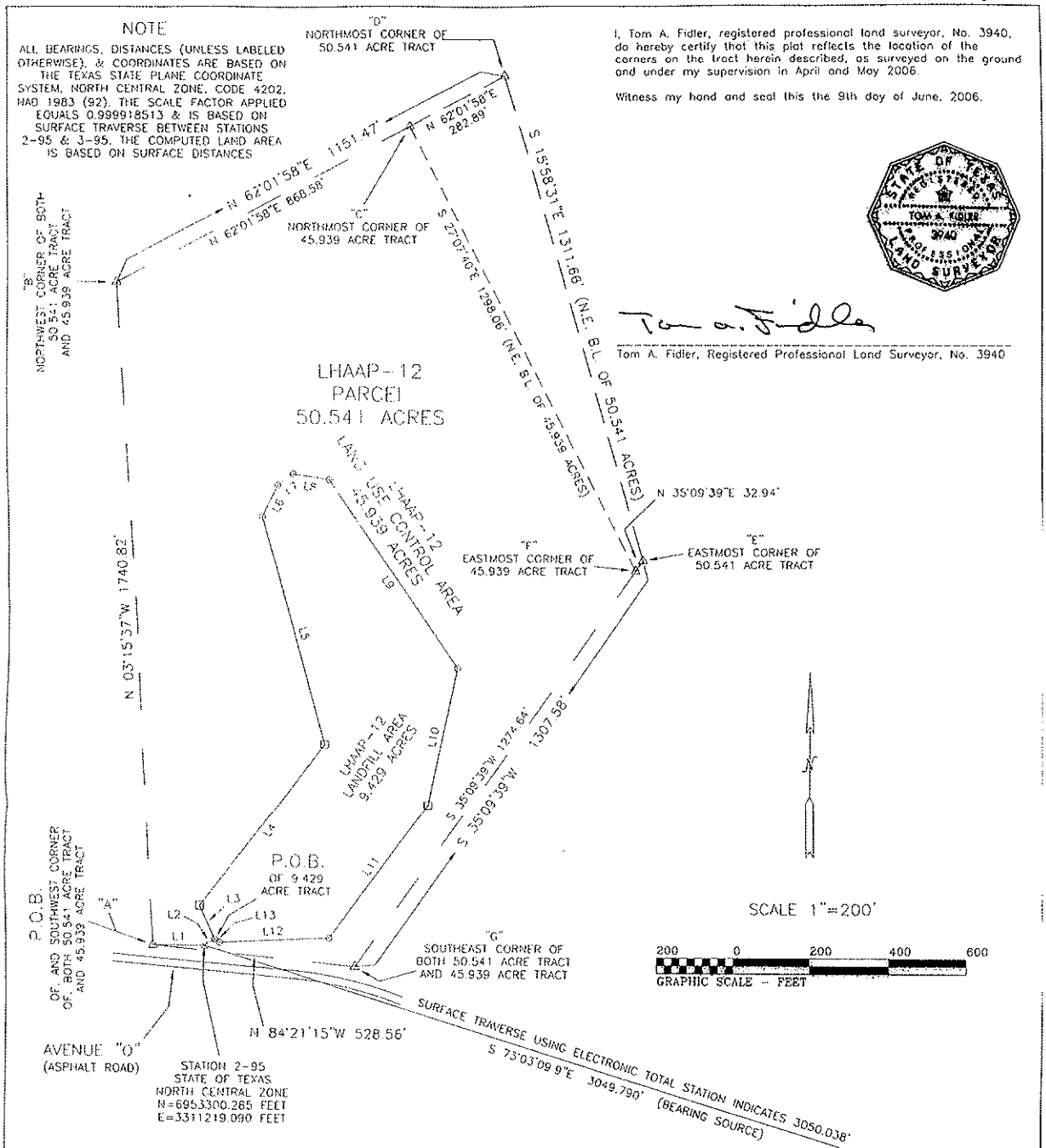
ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999918513 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS 2-95 & 3-95. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in April and May 2006.

Witness my hand and seal this the 9th day of June, 2006.

STATE OF TEXAS REGISTERED TOM A. FIDLER 3940 PROFESSIONAL LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940



LINE TABLE

COURSE	BEARING	DISTANCE
L1	S 89°52'35"W	132.09'
L2	N 58°35'33"E	31.72'
L3	N 23°52'43"W	96.81'
L4	N 37°07'57"E	537.87'
L5	N 15°28'17"W	618.92'
L6	N 26°16'28"E	90.81'
L7	N 54°00'30"E	50.67'
L8	S 81°02'29"E	96.24'
L9	S 34°25'01"E	596.16'
L10	S 12°11'35"W	370.18'
L11	S 36°09'00"W	434.64'
L12	S 87°15'04"W	286.47'
L13	N 57°18'20"W	15.33'

COORDINATE TABLE

POINT	NORTH	EAST
A	6953300.000	3311087.000
B	6955038.000	3310988.000
C	6955445.333	3311755.144
D	6955578.000	3312005.000
E	6954317.000	3312366.000
F	6954290.070	3312347.030
G	6953248.000	3311613.000

NOTES:

- O INDICATES 12" DIAMETER WOODEN FENCE CORNER POST (FOUND)
- □ INDICATES 10" DIAMETER WOODEN FENCE CORNER POST (FOUND)
- × INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- △ INDICATES 1/2" IRON REBAR WITH ORANGE PLASTIC CAP ENGRAVED "FIDLER" & "RPLS 3940" (SET IN CONCRETE)
- ——— INDICATES BARBED WIRE FENCE AND PERIMETER OF 9.429 ACRE TRACT
- — — — INDICATES PERIMETER OF 50.541 ACRE TRACT ONLY
- — — — — INDICATES PERIMETER OF 45.939 ACRE TRACT ONLY
- ——— ——— INDICATES PERIMETER OF BOTH 50.541 ACRE TRACT AND 45.939 ACRE TRACT

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

SHEET 1 OF 4

50.541 ACRES
45.939 ACRES
9.429 ACRES
LONGHORN army AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	0605063A.DWG
06/09/2006	0605063.CRD	DRAWN BY JTJ

Doc Bk Vol Pg
7009064 OR 3640 6

FIELD NOTES DESCRIPTION OF
"LHAAP-12 PARCEL"
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The hereinafter described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP-12 Parcel" being 50.541 acres of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract "LHAAP-12 Parcel" being more particularly described as follows:

Surveyor's Note: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999918513, and is based on surface traverse (using electronic total station) between type "G" Corps of Engineers monuments "2-95"(N=6953300.285 feet & E=3311219.090 feet) and "3-95"(N=6952411.298 feet & E=3314136.438 feet). Said traverse indicates a surface distance of 3050.038 feet between said monuments. The computed land area is based on surface distances. As used herein, the abbreviation I.R.O.P.C. indicates 1/2" iron rebar with orange plastic cap engraved "Fidler" & "RPLS 3940".

Commencing at the monument "2-95" referenced above,

THENCE S 89deg52'35"W 132.09' to an I.R.O.P.C. set in concrete for the S.W.C. of this tract and this POINT OF BEGINNING,

THENCE N 03deg15'37"W 1740.82' along the W.B.L. of this tract to an I.R.O.P.C. set in concrete for this tract's Northwest corner,

THENCE N 62deg01'58"E 1151.47' along the N.W. B.L. of this tract to an I.R.O.P.C. set in concrete for this tract's Northmost corner,

THENCE S 15deg58'31"E 1311.66' along the N.E. B.L. of this tract to an I.R.O.P.C. set in concrete for this tract's Eastmost corner,

THENCE S 35deg09'39"W 1307.58' along the S.E. B.L. of this tract to an I.R.O.P.C. set in concrete for this tract's Southeast corner,

THENCE N 84deg21'15"W 528.56' along the S.B.L. of this tract to this POINT OF BEGINNING, containing 50.541 acres, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

Tom A. Fidler, R.P.L.S. Number 3940

Doc Bk Vol Pg
7009064 OR 3640 7

FIELD NOTES DESCRIPTION OF
"LHAAP-12 LAND USE CONTROL AREA"
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The hereinafter described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP-12 Land Use Control Area" being 45.939 acres of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said "LHAAP-12 Land Use Control Area" being more particularly described as follows:

Surveyor's Note: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999918513, and is based on surface traverse (using electronic total station) between type "G" Corps of Engineers monuments "2-95"(N=6953300.285 feet & E=3311219.090 feet) and "3-95"(N=6952411.298 feet & E=3314136.438 feet). Said traverse indicates a surface distance of 3050.038 feet between said monuments. The computed land area is based on surface distances. As used herein, the abbreviation I.R.O.P.C. indicates 1/2" iron rebar with orange plastic cap engraved "Fidler" & "RPLS 3940".

Commencing at the monument "2-95" referenced above,

THENCE S 89deg52'35"W 132.09' to an I.R.O.P.C. set in concrete for the S.W.C. of this tract and this POINT OF BEGINNING,

THENCE N 03deg15'37"W 1740.82' along the W.B.L. of this tract to an I.R.O.P.C. set in concrete for this tract's Northwest corner,

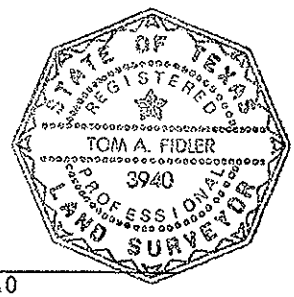
THENCE N 62deg01'58"E 868.58' along the N.W. B.L. of this tract to an I.R.O.P.C. set in concrete for this tract's Northmost corner,

THENCE S 27deg07'40"E 1298.06' along the N.E. B.L. of this tract to an I.R.O.P.C. set in concrete for this tract's Eastmost corner,

THENCE S 35deg09'39"W 1274.64' along the S.E. B.L. of this tract to an I.R.O.P.C. set in concrete for this tract's Southeast corner,

THENCE N 84deg21'15"W 528.56' along the S.B.L. of this tract to this POINT OF BEGINNING, containing 45.939 acres, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

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FIELD NOTES DESCRIPTION OF
"LHAAP-12 LANDFILL AREA"
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The hereinafter described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP-12 Landfill Area" being 9.429 acres of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said "LHAAP-12 Landfill Area" being more particularly described as follows:

Surveyor's Note: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999918513, and is based on surface traverse (using electronic total station) between type "G" Corps of Engineers monuments "2-95"(N=6953300.285 feet & E=3311219.090 feet) and "3-95"(N=6952411.298 feet & E=3314136.438 feet). Said traverse indicates a surface distance of 3050.038 feet between said monuments. The computed land area is based on surface distances. As used herein, the abbreviation I.R.O.P.C. indicates 1/2" iron rebar with orange plastic cap engraved "Fidler" & "RPLS 3940".

Commencing at the monument "2-95" referenced above,

THENCE N 58deg35'33"E 31.72' to a 12" diameter wooden fence corner post found for a Southwest corner of this tract and this POINT OF BEGINNING,

THENCE generally along a barbed wire fence the following eleven courses,

N 23deg52'43"W 96.81' to a 10" diameter wooden fence corner post found for the Westmost corner of this tract,

N 37deg07'57"E 537.87' to a 10" diameter wooden fence corner post,

N 15deg28'17"W 618.92' to a 12" diameter wooden fence corner post,

N 26deg16'28"E 90.81' to a 12" diameter wooden fence corner post,

N 54deg00'30"E 50.67' to a 12" diameter wooden fence corner post found for the Northmost corner of this tract,

Doc 7009064 Bk OR Vol 3640 Pg 9

S 81deg02'29"E 96.24' to a 12" diameter wooden fence corner post,

S 34deg25'01"E 596.16' to a 12" diameter wooden fence corner post found for the Eastmost corner of this tract,

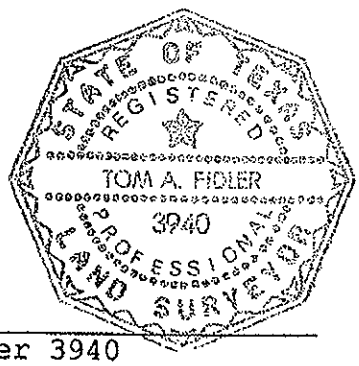
S 12deg11'35"W 370.18' to a 10" diameter wooden fence corner post,

S 36deg09'00"W 434.64' to a 12" diameter wooden fence corner post,

S 87deg15'04"W 286.47' to a 12" diameter wooden fence corner post,

N 57deg18'20"W 15.33' to this POINT OF BEGINNING, containing 9.429 acres, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

Doc Bk Vol Pg
7009064 OR 3640 10

FIGURE 1

7009064 OR 3640 11

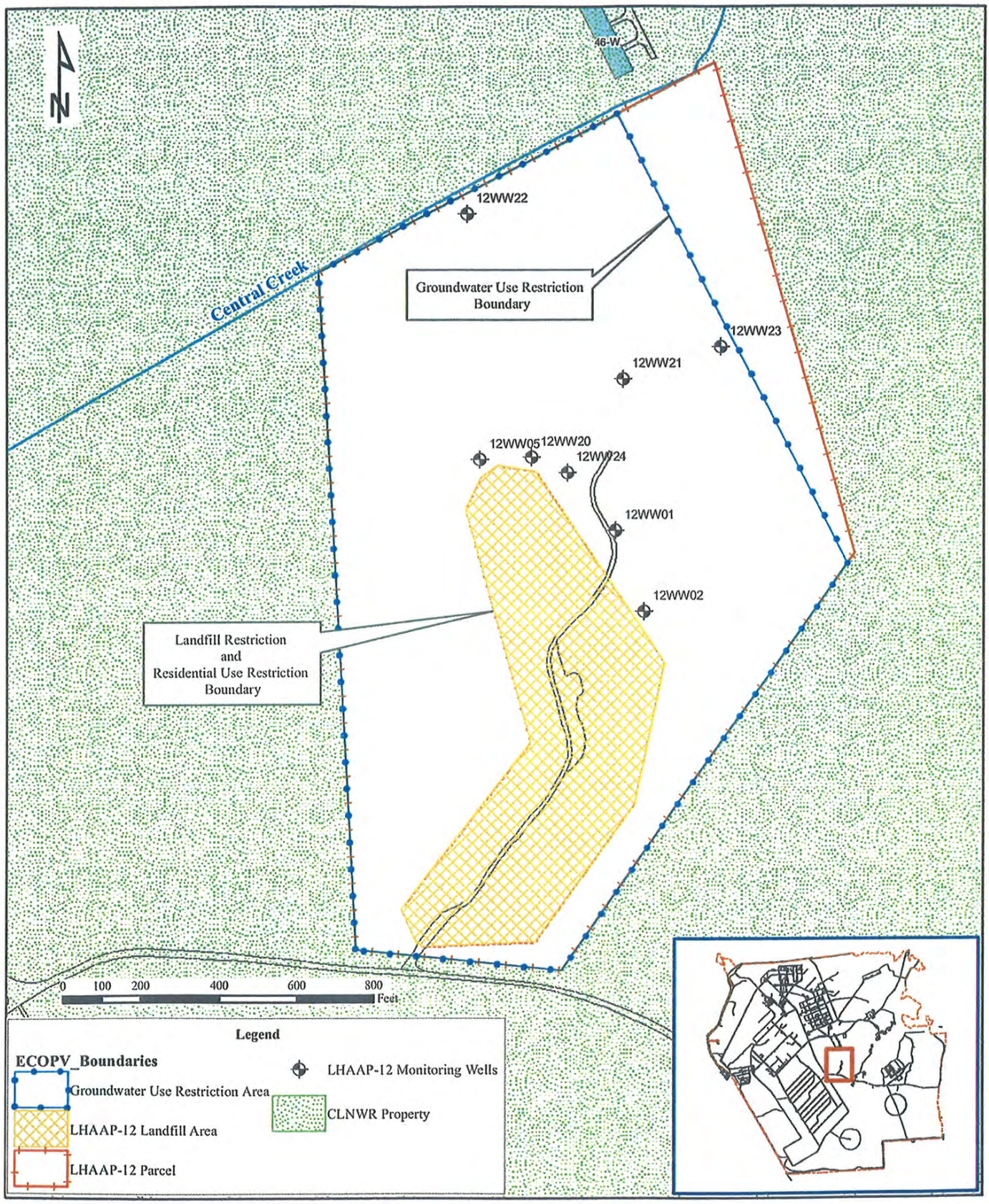


FIGURE 1

Land Use Control Boundaries

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STATE OF TEXAS COUNTY OF HARRISON

I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the volume and page of the named records of:

Harrison County

as stamped hereon by me.

Jun 13,2007

HONORABLE PATSY COX, COUNTY CLERK
Harrison County

LHAAP-12, 12-4

LAND USE CONTROL COMPLIANCE INSPECTION FORM

September 14, 2015

LHAAP-12, Landfill 12 Parcel
Annual Land Use Control Compliance Certification

Land use controls (LUC) at LHAAP-12 in the Landfill 12 Parcel:

• Land use restriction – Prohibition of any activities that would affect the integrity of the cap (i.e. no digging or disturbing the existing cover or contents of the landfill) and of residential use or residential development of the property

• Groundwater use restriction – Prohibition of any activities that would cause exposure to contaminated groundwater (i.e. no withdrawal or use of groundwater for other than environmental monitoring and testing)

Compliance with land use controls:

• No use of groundwater or installation of new groundwater wells (except that required for environmental monitoring and testing), or tampering with existing wells at LHAAP-12

• No reuse activity at LHAAP-12 that would adversely affect the integrity of the landfill cap (i.e no digging or disturbing the existing cover or contents of the landfill) and cap protective components (fencing and signage), and no residential use or residential development of the property

Inspection: In accordance with the LHAAP-12 Remedial Design Addendum dated 21 June 2007, an inspection of LHAAP-12 was conducted by _____ on_____ to visually confirm compliance with the LUCs.

I, the undersigned, do document that the inspection was performed as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief.

Date: _____

Name/Title _____

Signature: _____

Completed annual compliance form, to be kept on file at the Administrative Office of the Caddo Lake National Wildlife Refuge by the Refuge staff and available to EPA, TCEQ and Army upon request. The certification shall be conducted no later than March 1 of each year for the previous calendar year.

LHAAP-16, 16-1
LUCS FROM DRAFT-FINAL REMEDIAL DESIGN

Date December 17, 2021

DRAFT FINAL
REMEDIAL DESIGN
LHAAP-16 LANDFILL
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Prepared For:

U.S. Army Corps of Engineers
Tulsa District

Prepared By:

AECOM

AECOM Technical Services

January 2017

DRAFT FINAL
REMEDIAL DESIGN LHAAP-16 LANDFILL
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Prepared For:

U.S. Army Corps of Engineers

Tulsa District

Prepared By:

AECOM Technical Services

Contract No. W912DY-09-D-0059

Task Order No. DS01

January 2017

4.2.1.2 Substrate Loading and Injection 4-6
4.2.1.3 Bioaugmentation Culture Injection 4-6
4.2.2 Landfill Biobarrier #2 4-7
4.2.2.1 Injection and Monitoring Well Placement and Design 4-7
4.2.2.2 Substrate Loading and Injection 4-7
4.2.2.3 Bioaugmentation Culture Injection 4-8
4.2.3 Landfill Biobarrier #3 4-8
4.2.3.1 Injection Point and Monitoring Well Placement and Design 4-8
4.2.3.2 Substrate Loading and Injection 4-9
4.2.3.3 Bioaugmentation Culture Injection 4-9

4.3 Bayou Biobarrier 4-9
4.3.1 Injection Point and Monitoring Well Placement and Design 4-9
4.3.2 Substrate Loading and Injection 4-10
4.3.3 Bioaugmentation Culture Injection 4-10

4.4 Mid-Plume ISB 4-10
4.4.1 Well Placement and Design 4-10
4.4.1.1 Shallow Groundwater Zone 4-10
4.4.1.2 Intermediate Groundwater Zone 4-11
4.4.2 Substrate Loading and Injection 4-11
4.4.2.1 Shallow Groundwater Zone 4-11
4.4.2.2 Intermediate Groundwater Zone 4-12
4.4.3 Bioaugmentation Culture Injection 4-12

4.5 Performance Monitoring 4-12
4.5.1 Pre-Remedy Implementation Groundwater Sampling 4-13
4.5.2 Evaluation of Design Effectiveness 4-13
4.5.3 Performance Monitoring – Years 1 and 2 4-13
4.5.3.1 ISB Performance Monitoring 4-13
4.5.3.2 MNA Performance Monitoring 4-14
4.5.3.3 Contingency Action for MNA Areas 4-14
4.5.3.4 Follow-up Injections in Biobarriers 4-14
4.5.3.5 Surface Water Monitoring 4-15
4.5.4 Performance Monitoring – Year 3 through Five-Year Review 4-15
4.5.5 Performance Monitoring Following Five-Year Review 4-16

5 LAND USE CONTROL REMEDIAL DESIGN 5-1

5.1 LUC Implementation 5-1

5.2 Maintenance and Monitoring Requirements 5-2

5.3 Reporting of LUC Inspection and Monitoring 5-3
5.3.1 Notice of Planned Property Conveyances 5-4
5.3.2 Opportunity to Review Text of Intended Land Use Controls 5-4
5.3.3 Notification Should Action(s) which Interfere with land Use Control Effectiveness be Discovered Subsequent to Conveyance 5-4
5.3.4 Land Use Control Enforcement 5-4
5.3.5 Modification or Termination of Land Use Controls 5-5

List of Figures

Figure 1-1: LHAAP-16 Location Map

Figure 1-2: Site Location Map

Figure 1-3: LHAAP-16 Site Plan

Figure 2-1: Groundwater Elevation Map, Shallow Zone – June 2016

Figure 2-2: Groundwater Elevation Map, Intermediate Zone – June 2016

Figure 2-3: LHAAP Site Vicinity Map

Figure 2-4: Perchlorate Concentrations in Groundwater, Shallow Zone – May 2013

Figure 2-5: Perchlorate Concentrations in Groundwater, Intermediate Zone – May 2013

Figure 2-6: VOCs in Groundwater, Shallow Zone – May 2013

Figure 2-7: VOCs in Groundwater, Intermediate Zone – May 2013

Figure 3-1: Landfill Cap

Figure 4-1: ISB Locations

Figure 4-2: Landfill Biobarrier #1 Design

Figure 4-3: Landfill Biobarrier #2 Design

Figure 4-4: Landfill Biobarrier #3 Design

Figure 4-5: Bayou Biobarrier Design

Figure 4-6: Mid Plume Design, Shallow Groundwater Zone

Figure 4-7: Mid Plume Design, Intermediate Groundwater Zone

Figure 4-8: MNA and LTM Performance Monitoring Plan

Figure 4-9: Surface Water Sampling Locations

Figure 5-1: Land Use Control Boundaries

List of Tables

Table 1-1: Groundwater and Surface Water Cleanup Levels

Table 1-2: Federal and State ARARs – LHAAP-16 Remedial Action

Table 3-1: Landfill Inspection Schedule

Table 4-1: Injection Depths and Monitoring Well Screen Intervals – Landfill Biobarrier#1

Table 4-2: Summary of Substrate Loading/Injection – Landfill Biobarrier #1

Table 4-3: Screen Intervals of Injection/Monitoring Wells – Landfill Biobarrier#2

Table 4-4: Summary of Substrate Loading/Injection – Landfill Biobarrier#2

Table 4-5: Injection Depths and Monitoring Well Screen Intervals – Landfill Biobarrier#3

Table 4-6: Summary of Substrate Loading/Injection – Landfill Biobarrier#3

Table 4-7: Injection Depths and Monitoring Well Screening Intervals – Bayou Biobarrier

Table 4-8: Summary of Substrate Loading/Injection – Bayou Biobarrier

Table 4-9: Screen Intervals of Injection/Extraction Wells – Mid-Plume ISB

Table 4-10: Summary of Substrate Loading/Injection – Mid-Plume ISB

Table 4-11: Pre-Remedy Groundwater Sampling Plan in the Shallow Zone – LHAAP-16

Table 4-12: Pre-Remedy Groundwater Sampling Plan in the Intermediate Zone – LHAAP-16

Table 4-13: ISB Performance Monitoring Plan (Years 1 and 2) – Landfill Biobarrier #1

Table 4-14: ISB Performance Monitoring Plan (Years 1 and 2) – Landfill Biobarrier #2

Table 4-15: ISB Performance Monitoring Plan (Years 1 and 2) – Landfill Biobarrier #3

Table 4-16: ISB Performance Monitoring Plan (Years 1 and 2) – Bayou Biobarrier

Table 4-17: ISB Performance Monitoring Plan (Years 1 and 2) – Mid-Plume ISB

Table 4-18: MNA Performance Monitoring Plan – LHAAP-16

Table 6-1: LHAAP-16 Remedial Design Implementation Schedule

List of Appendixes

APPENDIX A: LHAAP-16 INSPECTION AND MAINTENANCE CHECKLIST

APPENDIX B: CHEMICAL MANUFACURER'S LITERATURE

APPENDIX C: LHAAP-16 WELL LOGS

APPENDIX D: ESTCP SUBSTRATE CALCULATION SHEETS

APPENDIX E: ANNUAL LUC COMPLIANCE DOCUMENTATION FORM

Acronyms and Abbreviations

µg/L	microgram per liter
ABC+	Anaerobic Biochem Plus
API	American Petroleum Institute
ARAR	applicable or relevant and appropriate requirements
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
cm/sec	centimeters per second
COC	contaminant of concern
DCA	Dichloroethane
DCE	Dichloroethene
DO	dissolved oxygen
DPT	direct push technology
ECP	Environmental Condition of Property
EDS-ER	Electron Donor Solution - Extended Release
ESD	Explanation of Significant Difference
ESTCP	Environmental Security Technology Certification Program
EVO	emulsified vegetable oil
FFA	Federal Facilities Agreement
FS	Feasibility Study
HDPE	high-density polyethyelene
HFCS	high-fructose corn syrup
HSA	hollow stem auger
IRA	Interim Remedial Action
ISB	in-situ bioremediation
IWWP	Installation-Wide Work Plan
lbs	pounds
LHAAP	Longhorn Army Ammunition Plant
LTM	long-term monitoring
LUC	land use control
mg/L	milligrams per liter

MNA	monitored natural attenuation
MOA	Memorandum of Agreement
msl	mean sea level
mV	millivolt
NPL	National Priorities List
O&M	operation and maintenance
ORP	Oxidation-Reduction Potential
RACR	Remedial Action Completion Report
RAO	Remedial Action Objectives
RD	Remedial Design
RI	Remedial Investigation
ROD	Record of Decision
ROI	Radius of Influence
SARA	Superfund Amendment and Reauthorization Act
TAC	Texas Administrative Code
TCA	Trichloroethane
TCE	Trichloroethene
TCEQ	Texas Commission on Environmental Quality
U.S.	United States
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
VOC	volatile organic compound
VC	Vinyl chloride
ZVI	zero valent iron

5 LAND USE CONTROL REMEDIAL DESIGN

This section describes the LUC RD for LHAAP-16. In accordance with the Final ROD (U.S. Army, 2016), the LUC RD will be finalized as the land use component of the Remedial Design.

Per the Final ROD (U.S. Army, 2016), LUCs' performance objectives are to:

- Prohibit access to the contaminated groundwater except for environmental monitoring and testing only;
- Preserve the integrity of the landfill cap, and to restrict intrusive activities (e.g., digging) that would degrade or alter the cap;
- Restrict land use to nonresidential;
- Maintain the integrity of any current or future remedial or monitoring systems; and

The implementation, maintenance, and inspection requirements associated with each of the performance objectives that comprise this LUC RD are described below. The actions taken to implement the LUC objectives during the RA phase, as well as ongoing maintenance, monitoring and reporting requirements will be presented in the Remedial Action Completion Report (RACR), as the final LUC RD. Upon regulatory review and concurrence with the final LUC RD, it will be distributed as part of the Comprehensive LUC Management Plan.

For portions of the Site subject to land use controls that are not owned by the Army, the Army will monitor and report on the implementation, maintenance, and enforcement of land use controls, and coordinate with federal, state, and local governments and owners and occupants of properties subject to land use controls. The Army remains responsible for ensuring that the remedy remains protective of human health and the environment.

5.1 LUC Implementation

The actions required to implement the LUCs for LHAAP-16 are described below. The first of these, the initial notice of LUCs, has been completed. A figure depicting the preliminary LUC boundaries is presented in **Figure 5-1**. The following actions will be undertaken to implement the LUCs for LHAAP-16:

- Provide initial notice of the LUCs before remedial action is implemented.
    - Develop the initial notice of the groundwater and soil (surface and subsurface) contamination and any land use restrictions referenced in the ROD. The notice will consist of a brief description of the contaminants in groundwater and soil, a written description of the LUCS and a figure depicting the preliminary LUC boundaries presented in **Figure 5-1**.
    - Transmit the notice to federal, state and local governments involved at this site and the owners and occupants of the properties subject to those use restrictions and land use controls within 90 days of ROD signature, which is on or before December 12, 2016. The notices will be sent to federal, state and local officials including: U.S. Senator Ted Cruz, U.S. Senator John Cornyn, U.S. Congressman Louie Gohmert, State Senator Kevin Eltiffe, State Representative Chris Paddie, Harrison County

Judge Hugh Taylor, Harrison County Commissioner Precinct 1 William D. Hatfield, City of Uncertain Mayor Sam Canup, and Karnack Water Supply Corporation Board Members. Notice will also be sent to the Caddo Lake National Wildlife Refuge Manager.

- Finalize the Boundaries for the LUCs as a part of the remedial action.
    - Revise the boundaries if necessary. The LUC boundary presented in this RD is subject to change, based on COC results from the two proposed wells to be installed on the east side of Harrison Bayou. The final boundaries of the groundwater LUCs (prevent the use of groundwater contaminated above cleanup levels as a potable water source and prohibit access to the contaminated groundwater except for environmental monitoring and testing only); the landfill LUCs (preserve the integrity of the landfill cap, and to restrict intrusive activities (e.g., digging) that would degrade or alter the cap); the remedial or monitoring system LUCs (maintain the integrity of any current or future remedial or monitoring systems); and, the nonresidential land use LUC (restrict land use to nonresidential) will be reviewed during remedial action activities after an evaluation of new data has been completed and revised if necessary.
    - Survey the LUC Boundaries. The boundaries will be finalized after concurrence by USEPA and TCEQ, and the LUC boundaries will be surveyed by a State-licensed surveyor. A legal description of the surveyed areas will be appended to the survey plat.
- Record the LUCs in Harrison County. The LUC plat, legal description and LUC restriction language will be recorded in the Harrison County Courthouse in accordance with TAC Title 30, §335.566.
- Notify the Texas Department of Licensing and Regulation of the groundwater LUCs. The Texas Department of Licensing and Regulation will be notified of the groundwater restrictions, which include the prohibition of water well installation for any purpose other than environmental monitoring and testing without prior approval from the Army, the USEPA, and the TCEQ. The survey plat, legal boundary and description of the groundwater restriction LUCs, in conjunction with a locator map, will be provided in hard and electronic copy.

5.2 Maintenance and Monitoring Requirements

The LUCs will be maintained in place as follows:

- The landfill LUCs will remain in place as long as the landfill waste remains at the site or until the levels of Contaminants of Concern (i.e., including all hazardous substances, pollutants, and contaminants found at the Site at cleanup levels as listed in **Table 1-1**) allow for unlimited use and unrestricted exposure;
- The LUCs restricting the use of groundwater to environmental monitoring and testing only and the LUC restricting land use to nonresidential will remain in place until the levels of COCs (i.e., including all hazardous substances, pollutants, and contaminants found at the Site

at cleanup levels as listed in **Table 1-1**) in surface and subsurface soil and groundwater allow for unlimited use and unrestricted exposure;

- The LUC to maintain the integrity of any current or future remedial or monitoring systems will remain in place until groundwater cleanup levels of COCs (i.e., including all hazardous substances, pollutants and contaminants found at the Site at cleanup levels as listed in **Table 1-1**) are met; and,
- The LUC prohibiting groundwater use (except for environmental monitoring and testing) as a potable source will remain in place until the levels of COCs (i.e., all hazardous substances, pollutants, and contaminants found at the Site at cleanup levels as listed in **Table 1-1**) in soil and groundwater allow for unlimited use and unrestricted exposure.

Landfill and Remedial or Monitoring System LUCs include physical components that require repair and maintenance. These are described in **Section 3.0.** The Inspection and Maintenance Checklist is provided in **Appendix A.**

The administrative maintenance required to ensure the five LUCs remain in place and effective until the cleanup levels of the COCs are at levels that allow unrestricted use and unlimited exposure are:

- Annual field inspections of the site to confirm that no violations of the LUCs have occurred. Documentation of the inspection will be included in the Inspection and Maintenance Checklist (see **Appendix A).**
- Annual certifications that no LUC-restricted activities have been authorized and that site conditions and use are consistent with the LUCs. The Certification Form is presented in **Appendix E).**
- Periodic transmittal of a LUC Notice to federal, state, and local authorities and to owners and occupants of LHAAP-16. The notice will include the groundwater and soil (surface and subsurface) contamination and any land use restrictions referenced in the ROD, a written description of the LUCs and a figure depicting the LUC boundaries. The transmittal will coincide with each Five Year Review and will be documented in the report.
- The final LUC RD appendix of the RACR will be added to the Comprehensive LUC Management Plan and the plan will be provided to the owner or occupant of LHAAP-16.

The U.S. Army will address LUC problems within its control that are likely to impact remedy integrity and shall address problems as soon as practicable.

5.3 Reporting of LUC Inspection and Monitoring

Beginning with finalization of this RD and approval of the Inspection and Maintenance forms and the Annual Certification Form, the U.S. Army will undertake inspections and certify continued compliance with the LUC objectives. The U.S. Army, or the transferee after transfer, will retain the LUC Inspection and Certification documents in the project files for incorporation into the five-year review reports, and these documents will be made available to USEPA and TCEQ upon request. In addition, should any violations be found during the certification, the U.S. Army will provide to USEPA and TCEQ, along with the document, a separate written explanation indicating the specific violations found and what efforts or measures have or will be

taken to correct those violations. The need to continue inspections and certifications will be revisited at five year reviews.

5.3.1 Notice of Planned Property Conveyances

Upon transfer of Army-owned property, the Army will provide written notice to the transferee of the LHAAP-16 groundwater and soil (surface and subsurface) contamination and any land use restrictions. Within 15 days of transfer, the U.S. Army will provide written notice to USEPA and TCEQ of the division of implementation, maintenance, and enforcement responsibilities unless the information has already been provided in the LUC RD. The notice will describe the mechanism by which the LUC will continue to be implemented, maintained, inspected, reported, and enforced. Upon transfer, such responsibilities may shift to the transferee via appropriate provisions placed in the Environmental Condition of Property (ECP) or other environmental document for transfer. Although the US Army may transfer responsibility for various implementation actions, the U.S. Army will also retain ultimate responsibility for the remedy integrity. This means that the U.S. Army is responsible for addressing substantive violations of the LUC performance objectives that would undermine the U.S. Army's CERCLA remedy. The US Army also will be responsible for incorporating RD information and outlining the transferee's LUC obligations into property transfer documentation. In the event property is transferred out of Federal control, the land use controls relating to property and groundwater restrictions shall be recorded in the deed and shall be enforceable by the United States and the state of Texas.

5.3.2 Opportunity to Review Text of Intended Land Use Controls

The US Army will provide a copy of the groundwater and land use restriction notification to TCEQ for review and approval prior to its recordation in Harrison County. USEPA will also receive a copy for review. The US Army will produce an ECP or other environmental document for transfer of LHAAP-16, but before executing transfer, the US Army will provide USEPA and TCEQ with a copy of the ECP or other environmental document for transfer so that they may have reasonable opportunity, before transfer, to review all LUC-related provisions.

5.3.3 Notification Should Action(s) which Interfere with land Use Control Effectiveness be Discovered Subsequent to Conveyance

Should the US Army discover after conveyance of the site any activity on the property inconsistent with the LUC performance objectives, the US Army shall notify USEPA and TCEQ within 72 hours of such discovery. Consistent with Section 5.2.5 below, the US Army will then work with USEPA, TCEQ and the transferee to correct the problem(s) discovered. This reporting requirement does not preclude the US Army from taking immediate action pursuant to its CERCLA authorities to prevent any perceived risk(s) to human health or the environment.

5.3.4 Land Use Control Enforcement

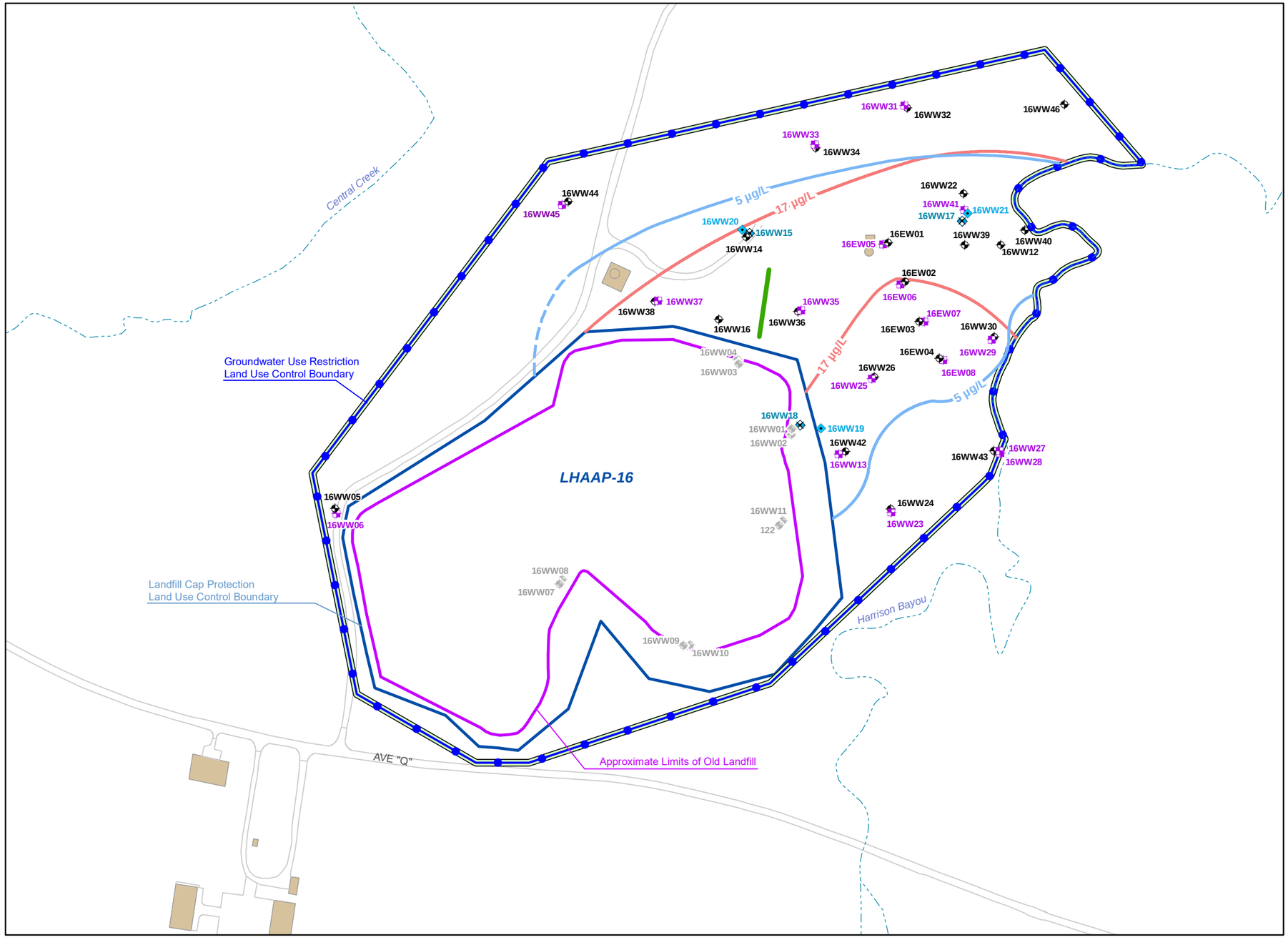
Should the LUC remedy reflected in this RD fail, the US Army will coordinate with USEPA and TCEQ to ensure that appropriate actions are taken to reestablish its protectiveness. These actions are taken to reestablish its protectiveness. These actions may range from informal resolutions with the USFWS or its lessee, to the institution of judicial action against non-federal third

parties. Alternatively, should the circumstances warrant such, the US Army could choose to exercise its response authorities under CERCLA. Should the US Army become aware that any future owner or user of the property has violated any LUC requirement over which a local agency may have independent jurisdiction, the US Army may notify those agencies of such violation(s) and work cooperatively with them to re-achieve owner/user compliance with the LUC.

5.3.5 Modification or Termination of Land Use Controls

The LUCs shall remain in effect until such time as the US Army and USEPA agree that the concentrations of COCs in groundwater have met cleanup levels in groundwater and that surface and subsurface soil concentrations allow unrestricted use. When this occurs, the LUC will be terminated as needed. The decision to terminate the LUC will be documented consistent with the NCP process for post-ROD changes, potentially including an explanation of significant differences or a remedial action complete report. If the property has been transferred and a determination by the US Army and USEPA has been made to terminate the LUC, the US Army shall provide to the owner of the property an appropriate release for recordation pertaining to the site and will also timely advise other local stakeholders of the action.

01149269



Legend

- Existing Shallow Monitoring Well
- Existing Intermediate Monitoring Well
- Existing Upper Deep Monitoring Well
- Existing Lower Deep Monitoring Well
- Abandoned or Plugged Well
- Extent of Perchlorate Contamination > 17 ug/L in Intermediate and Shallow Zones (May 2013)
- Extent of TCE Contamination > 5 ug/L in Intermediate and Shallow Zones (Dashed Where Inferred) (May 2013)
- Location of Semi-Passive Biobarrier Demonstration (February 2004 through June 2006 [ESTCP 2009]).
- Road
- Stream
- Remedial and Monitoring System Boundary
- Groundwater Use Restriction Land Use Control Boundary
- LHAAP-16 Landfill Fence

Path: L:\AGE\GIS\AUS GIS\GIS_Projects\Longhorn_AAP\01_Reports\LHAAP-16\RAWP\Fig 5-1 LHAAP-16 Land Use Control Boundaries.mxd

AECOM

Figure 5-1
Land Use Contol Boundaries
LHAAP-16 Remedial Design

Longhorn Army Ammunition Plant
Karnack, Texas

60256135

January 2017

LHAAP – 16, 16-2
NOTICE OF LAND USE CONTROLS AND NONRESIDENTIAL LAND USE FOR LHAAP-16 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

Date December 17, 2021

01149271

2021-000003204

*** DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT***

NOTICE

9 Pages

FILED AND RECORDED-OPR	CLERKS NOTES
On: 03/22/2021 03:29 PM Document Number: 2021-000003204 Receipt No: 2103298 Amount: $ 54.00 By: Emily Najera, Deputy Elizabeth James, County Clerk Harrison County, Texas	

STATE OF TEXAS

COUNTY OF HARRISON

I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Elizabeth James

Elizabeth James, Harrison County Clerk

Record and Return To:

WILLIAM FOSS
2500 CITY WEST BLVD., SUITE 1700

HOUSTON, TX 77042

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF LAND USE CONTROLS AT LHAAP-16

KNOW ALL MEN BY THESE PRESENTS THAT:

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

I

The U.S. Army, Department of Defense, has performed remedial activities at the land described herein. The remediation site is a capped landfill, located in the south-central portion of the Former Longhorn Army Ammunition Plant (LHAAP) and is designated as LHAAP-16. LHAAP was placed on the National Priorities List (NPL) in August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA) and the TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Remedial activities at LHAAP-16 were performed in accordance with the FFA requirements.

The LHAAP-16 landfill was established in the 1940s and was used for disposal of solid and industrial wastes until the 1980s when disposal activities were terminated. A multilayer cap was completed in 1998 as an early interim remedial action to mitigate potential risks posed by buried source material at the site. The U.S. Department of the Army issued the Final ROD for LHAAP-16, for the final remedy which includes in situ enhanced bioremediation and monitored natural attenuation for groundwater, maintenance and repair of the landfill cap, and land use controls. The ROD was cosigned by USEPA on September 13, 2016. The TCEQ issued a letter concurring with the ROD on September 6, 2016. The LUCs at LHAAP-16 will ensure protection of human health by preserving the integrity of the cap end restricting intrusive activities; restricting groundwater use to environmental monitoring and testing only, restricting use to non-residential, and maintaining groundwater monitoring and remediation systems until levels of contaminants of concern (COCs) allow for unlimited use and unrestricted exposure.

Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E (Room 103. first floor) 12100 Park 35 Circle, Austin, Texas 78753, (512) 239-2900, Monday through Friday 8:00 am to 5:00 pm, or the Administrative Record available at the Marshall Public Library, 300 South Alamo Boulevard, Marshall, Texas 75670, (930) 935-4465, Monday through Friday 9:30AM – 5:30PM.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public on the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

LHAAP-16 covers an area of approximately 13.6 acres, more or less, located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in **Exhibit A**. The LUC boundaries for the landfill cover restriction and the groundwater and land use restrictions encompass 17.811 acres and 70.339 acres, more or less, respectively, as described in **Exhibit A**. The LUC boundaries are also presented in the attached **Figure 1**.

Future use of the parcel is intended as a national wildlife refuge, consistent with non-residential use. For the purposes of this certification, residential land use includes, but is not limited to, single family to multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of education purpose for children/young adults in grades kindergarten through 12. The U.S. Department of the Army has undertaken careful environmental study of the LHAAP-16 site and concluded that the LUCs set forth below are required to ensure protection of human health and the environment:

- Landfill Cover Restriction. The landfill restriction boundary consists of the 17.811-acre tract. Intrusive activities (e.g., digging) are restricted as long as landfill waste remains or until the levels of COCs allow for unlimited use and unrestricted exposure.
- Groundwater Use Restriction. The groundwater use restriction boundary consists of the 70.339-acre tract, more or less, and extends beyond the landfill and LHAAP-16 site boundary. The groundwater underlying this land is contaminated with volatile organic compounds (VOCs) (trichloroethene [TCE], cis-1,2-dichloroethene [DCE], and vinyl chloride [VC]), perchlorate, and five metals (arsenic, chromium, manganese, nickel, and thallium). A prohibition of groundwater use (except for environmental monitoring and testing) as a potable source is in place until the levels of COCs in soil and groundwater allow for unlimited use and unrestricted exposure.
- Non-Residential Use Restriction. The non-residential use restriction boundary is coincident with the boundary for Groundwater Use Restriction and consists of the 70.339-acre tract, more or less. The site is restricted to nonresidential use until it is demonstrated that surface and subsurface soil and groundwater COCs are at levels that allow for unlimited use and unrestricted exposure.

- Maintain Integrity of Monitoring Systems. The integrity of any current or future remedial or monitoring systems will remain in place until the cleanup levels of COCs in groundwater are met.

III

The owner of this site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIN-ISE-LO (H. Procter)
Program Manager/Analyst
Office of the Deputy Chief of Staff, (DAIN-ISE)
Environmental Division, BRAC Field Branch
600 Army Pentagon
Washington, D.C. 22310-0600

Or

Mr. Thomas A. Lineer
Chief
Office of the Deputy Chief of Staff, (DAIN-ISE)
Environmental Division, BRAC Field Branch
600 Army Pentagon
Washington, D.C. 22310-0600

Rose M. Zeiler
Longhorn AP Site Manager

EXECUTED this the 25th day of Feb, 2021.

BEFORE ME, on this 25th day of Feb 2021, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

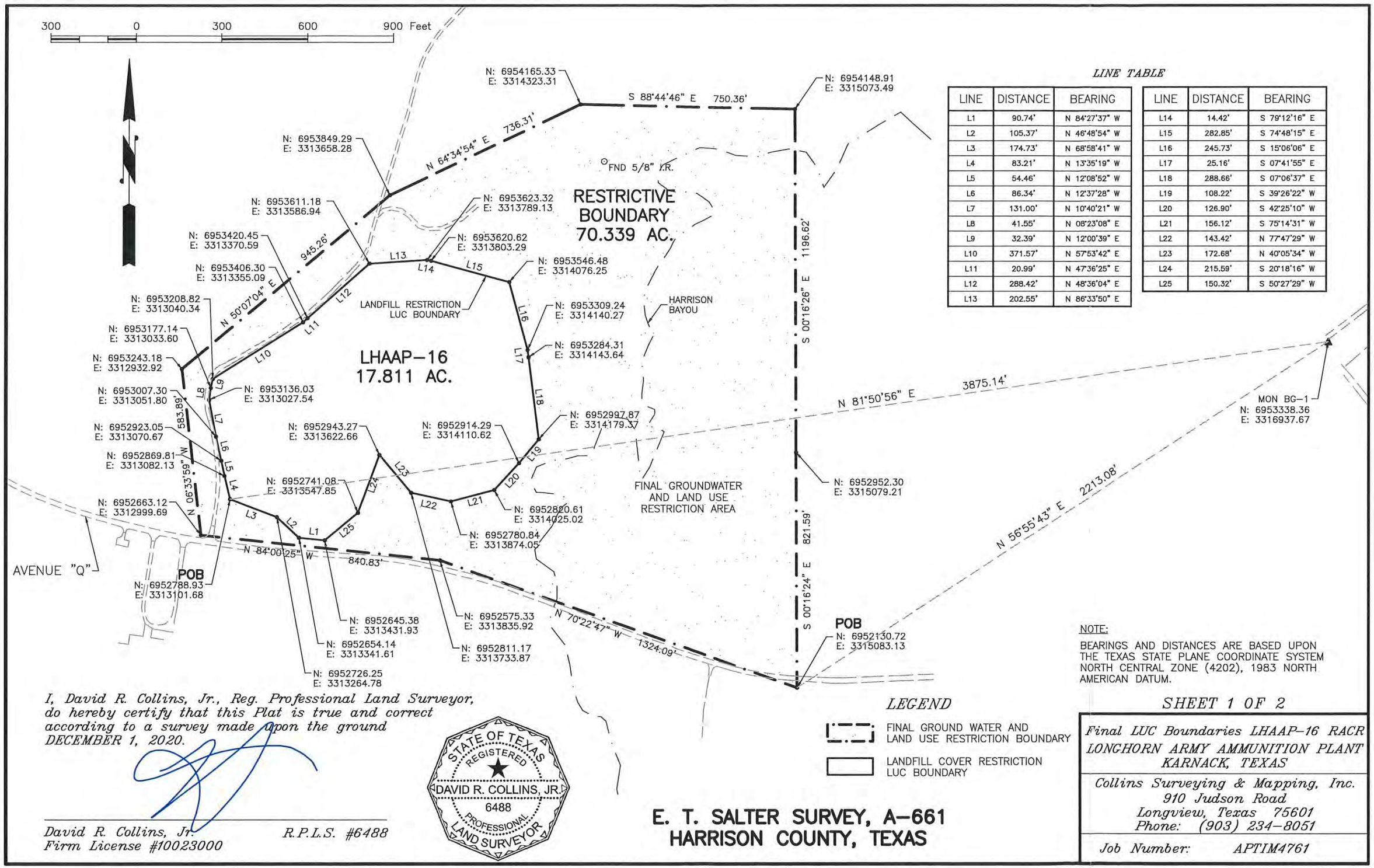
GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 25th day of February, 2021.

STATE OF ARKANSAS NOTARY PUBLIC
KAREN DAVIS
MY COMMISSION # 12382216
EXPIRES: May 20, 2021
Logan County

Notary Public in and for the State of Arkansas
County of Logan

Exhibit A

Survey and Legal Plat



LINE TABLE

LINE	DISTANCE	BEARING
L1	90.74'	N 84°27'37" W
L2	105.37'	N 46°48'54" W
L3	174.73'	N 68°58'41" W
L4	83.21'	N 13°35'19" W
L5	54.46'	N 12°08'52" W
L6	86.34'	N 12°37'28" W
L7	131.00'	N 10°40'21" W
L8	41.55'	N 08°23'08" E
L9	32.39'	N 12°00'39" E
L10	371.57'	N 57°53'42" E
L11	20.99'	N 47°36'25" E
L12	288.42'	N 48°36'04" E
L13	202.55'	N 86°33'50" E

LINE	DISTANCE	BEARING
L14	14.42'	S 79°12'16" E
L15	282.85'	S 74°48'15" E
L16	245.73'	S 15°06'06" E
L17	25.16'	S 07°41'55" E
L18	288.66'	S 07°06'37" E
L19	108.22'	S 39°26'22" W
L20	126.90'	S 42°25'10" W
L21	156.12'	S 75°14'31" W
L22	143.42'	N 77°47'29" W
L23	172.68'	N 40°05'34" W
L24	215.59'	S 20°18'16" W
L25	150.32'	S 50°27'29" W

NOTE:

BEARINGS AND DISTANCES ARE BASED UPON THE TEXAS STATE PLANE COORDINATE SYSTEM NORTH CENTRAL ZONE (4202), 1983 NORTH AMERICAN DATUM.

I, David R. Collins, Jr., Reg. Professional Land Surveyor, do hereby certify that this Plat is true and correct according to a survey made upon the ground DECEMBER 1, 2020.

David R. Collins, Jr. *R.P.L.S. #6488*

Firm License #10023000

STATE OF TEXAS REGISTERED DAVID R. COLLINS, JR. 6488 PROFESSIONAL LAND SURVEYOR

LEGEND

FINAL GROUND WATER AND LAND USE RESTRICTION BOUNDARY

LANDFILL COVER RESTRICTION LUC BOUNDARY

E. T. SALTER SURVEY, A–661
HARRISON COUNTY, TEXAS

SHEET 1 OF 2

Final LUC Boundaries LHAAP–16 RACR
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Collins Surveying & Mapping, Inc.
910 Judson Road
Longview, Texas 75601
Phone: (903) 234–8051

Job Number: APTIM4761

LEGAL DESCRIPTION
LANDFILL COVER RESTRICTION LUC BOUNDARY:

All that certain 17.811 acre tract of land contained within Longhorn Army Ammunition Plant, Harrison County, Texas, said 17.811 acre tract more particularly described as follows:

BEGINNING at a point north of Avenue "Q" and east of a gravel lease road said point with the coordinates of N: 6952788.93, E: 3313101.68, from which a corps of engineers monument BG–1 found at the east corner of the roadway intersection at the entrance of Longhorn Army Ammunition Plant Burning Grounds said monument with the coordinates of N: 6953338.36, E: 3316937.67, and bears N 81°50'56" E 3875.14 feet;

THENCE: N 12°08'52" W 83.21 feet; THENCE: N 12°08'52" W 54.46 feet; N 12°37'28" W 86.34 feet; THENCE: N 10°40'21" W 131.00 feet; THENCE: N 08°23'08" E 41.55 feet; THENCE: N 12°00'39" E 32.39 feet; THENCE: N 57°53'42" E 371.57 feet; THENCE: N 47°36'25" E 20.99 feet; THENCE: N 48°36'04" E 288.42 feet; THENCE: N 86°33'50" E 202.55 feet; THENCE: S 79°12'16" E 14.42 feet; THENCE: S 74°48'15" E 282.85 feet; THENCE: S 15°06'06" E 245.73 feet; THENCE: S 07°41'55" E 25.16 feet; THENCE: S 07°06'37" E 288.66 feet; THENCE: S 39°26'22" W 108.22 feet; THENCE: S 42°25'10" W 126.90 feet; THENCE: S 75°14'31" W 156.12 feet; THENCE: N 77°47'29" W 143.42 feet; THENCE: N 40°05'34" W 172.68 feet; THENCE: S 20°18'16" W 215.59 feet; THENCE: S 50°27'29" W 150.32 feet; THENCE: N 84°27'37" W 90.74 feet; THENCE: N 46°48'54" W 105.37 feet;

THENCE: N 68°58'41" W 174.73 feet to the POINT OF BEGINNING, containing 17.811 acres of land, more or less.

LEGAL DESCRIPTION
FINAL GROUND WATER AND LAND USE RESTRICTION BOUNDARY:

All that certain 70.339 acre tract of land contained within Longhorn Army Ammunition Plant, Harrison County, Texas, said 17.811 acre tract more particularly described as follows:
BEGINNING at a point south of Avenue "Q" with the coordinates of N: 6952130.72, E: 3315083.13, from which a corps of engineers monument BG–1 found at the east corner of the roadway intersection at the entrance of Longhorn Army Ammunition Plant Burning Grounds said monument with the coordinates of N: 6953338.36, E: 3316937.67, and bears N 56°55'43" E 2213.08 feet; THENCE: N 70°22'47" W generally along said Avenue "Q" 1324.09 feet to a point north of said Avenue "Q" for an angle point; THENCE: N 84°00'25" W generally along the north edge of said Avenue "Q" 840.83 feet to a point for the southwest corner of this tract; THENCE: N 06°33'59" W 583.89 feet; THENCE: N 50°07'04" E 945.26 feet; THENCE: N 64°34'54" E 736.31 feet; THENCE: S 88°44'46" E 750.36 feet to a point for the northeast corner of this tract; THENCE: S 00°16'26" E 1196.62 feet;
THENCE: S 00°16'24" E 821.59 feet to the POINT OF BEGINNING, containing 70.339 acres of land, more or less.

SHEET 2 OF 2

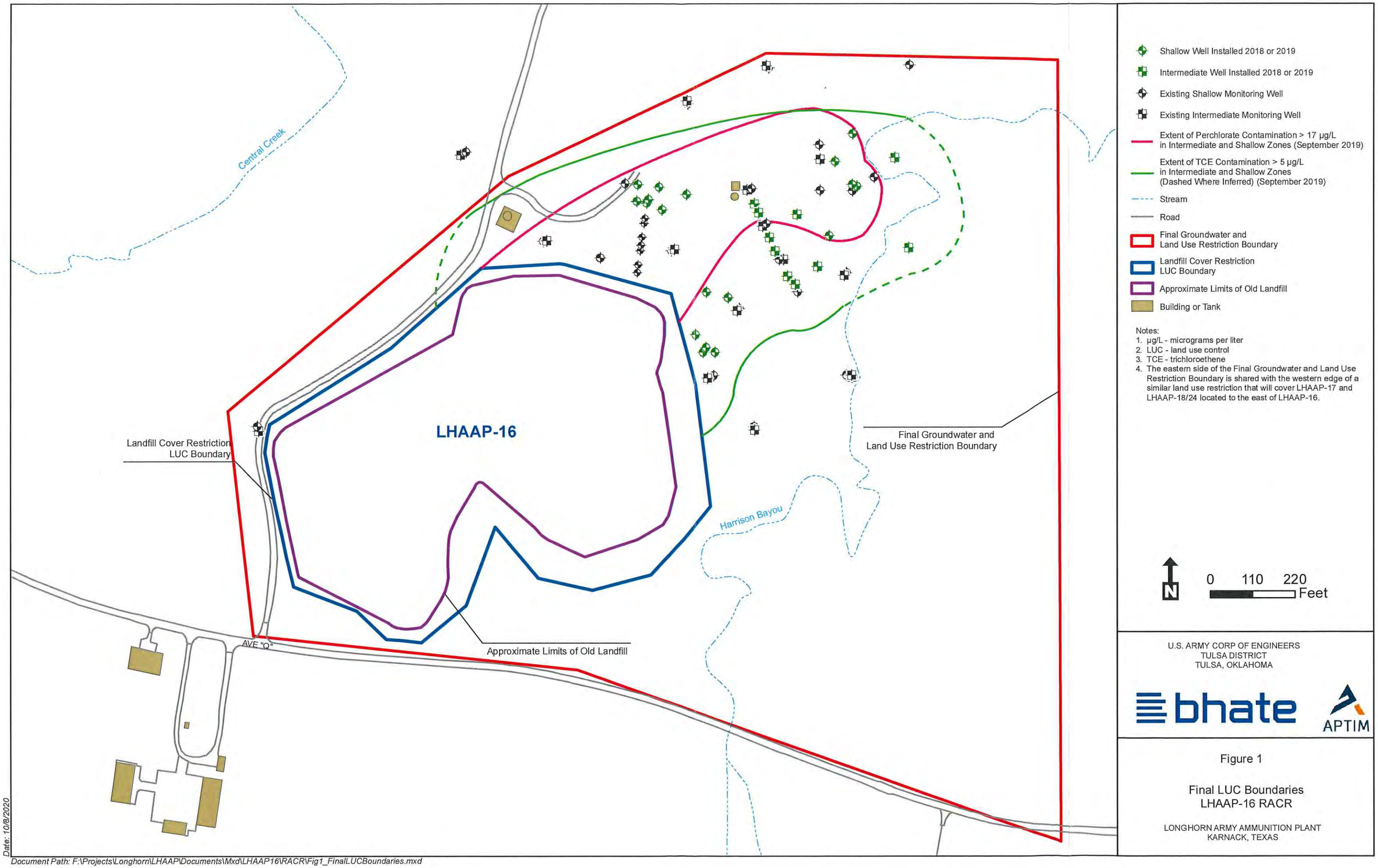
Final LUC Boundaries LHAAP–16 RACR
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Collins Surveying & Mapping, Inc.
910 Judson Road
Longview, Texas 75601
Phone: (903) 234–8051

Job Number: APTIM4761

Figure 1

Final LUC Boundaries



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

bhate APTIM

Figure 1

Final LUC Boundaries
LHAAP-16 RACR

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 10/8/2020

Document Path: F:\Projects\Longhorn\LHAAP\Documents\Mxd\LHAAP16\RACR\Fig1_FinalLUCBoundaries.mxd

LHAAP – 16, 16-3
LAND USE CONTROL INSPECTION AND MAINTENANCE CHECKLIST

Date December 17, 2021

Inspection and Maintenance Checklist

General Information	
Project Name	Inspection and Maintenance, LHAAP-16 Landfill, Longhorn Army Ammunition Plant, Karnack, TX
Contractor	
Inspector's Name	
Inspector's Title	
Inspector's Signature	
Inspector's Contact Number	
Inspection Date	
Type of Inspection	☐ Quarterly ☐ Semiannual ☐ Annual ☐ Prior to forecast rain ☐ After a rain event ☐ Other ----------

Description		**Yes**	**No**	**N/A**	**Comments** (Attach photos/location sketches)	**Corrective Action** (Attach photos)
A. CAP Cover Surface						
A.1	Are there any significant cracks present?					
A.2.	Are there any damaged areas?					
A.3	Is there any ponded water present?					
A.4	Any other relevant observations?					
B. CAP Vegetation and Animal Burrows						
B.1	Are there signs of stressed/ dead vegetation?					
B.2	Are there any significant bare spots?					
B.3	Are deep-rooted plants present?					
B.4	Are there signs of animal burrows?					
B. 5	Any other relevant observations?					

Description		Yes	No	N/A	**Comments** (Attach photos/location sketches)	**Corrective Action** (Attach photos)
C. CAP Erosion and Drainage System						
C.1	Is there any evidence of significant/ clearly visible erosion, settlement, or other deterioration?					
C.2	Are the drainage systems in poor condition?					
C.3	Is there excessive silting or debris clogging?					
C.4	Is there erosion of banks and slopes?					
C.5	Are there areas of choking by overgrown vegetation?					
C.6	Is there pooling of water in or along side a channel or berm?					
C.7	Any other relevant observations?					
D. Groundwater Monitoring Wells						
D.1	Are the installed groundwater monitoring wells in poor condition?					
D.2	Are there any signs of damage, unusual wear, rust and corrosion, vandalism, unauthorized entry/use, or settlement?					
D.3	Is well cap and/or locking mechanism not properly functioning?					
D.4	Are the well heads and protective casings damaged?					
D.5	Is the well cleared of vegetation and accessible?					
D.6	Any other relevant observations?					

Description		Yes	No	N/A	**Comments** (Attach photos/location sketches)	**Corrective Action** (Attach photos)
E. Site Access Features						
E.1	Are the perimeter fence and gates damaged?					
E.2	Gate(s) damaged?					
E.3	Litter encountered within the area?					
E.4	Are the gate locks missing?					
E.5	Are signs to prevent unauthorized entry missing?					
E.6	Are the access roads in unusable or poor condition?					
E.7	Any other relevant observations?					
F. Concrete Aprons and Bollards						
F.1	Are there any significant cracks present?					
F.2	Are there any damaged areas?					
F.3	Any other relevant observations?					

LHAAP – 16, 16-4
ANNUAL LAND USE CONTROL COMPLIANCE CERTIFICATION FORM

Date December 17, 2021

Annual Land Use Control Compliance Certification Form

In accordance with the Remedial Design dated _____ for LHAAP-16 an inspection of the site was conducted by _____ [indicate transferee] on _____.

The land use control mechanisms are:

- Groundwater restrictions - prohibit access to the contaminated groundwater except for environmental monitoring and testing only until cleanup goals are met;
- Landfill integrity - preserve the integrity of the landfill cap and restrict intrusive activities (e.g., digging) that would degrade or alter the cap;
- Land use restrictions - restrict land use to nonresidential;
- Integrity of remedial and monitoring systems - maintain the integrity of any current or future remedial or monitoring systems until cleanup goals are met.

No unauthorized activities or uses have occurred. Compliance with land use controls and restrictions is as follows:

- No use of groundwater (other than environmental testing and monitoring), installation of new groundwater wells, or tampering with existing monitoring wells;
- No landfill intrusive activities (e.g., digging) that would degrade or alter the landfill cap; maintenance of vegetative cover and repair of soil subsidence or erosion areas on the cap;
- No land use other than nonresidential; and
- No activities that would compromise the integrity of the remedial or monitoring systems.

I, the undersigned, do document that the inspection was conducted as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief.

Date: _____

Name/Title: _____

Signature: _____

Annual compliance certification forms shall be completed no later than March 1 of each year for the previous calendar year, retained in the file and provided to Army, EPA and TCEQ upon request.

LHAAP – 16, 16-5
LAND USE CONTROL STAKEHOLDER NOTICE LETTERS AND ATTACHMENTS

Date December 17, 2021

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

February 23, 2021

DAIN-ODB-LO

Hon. Chad L. Sims
Harrison County Judge
#1 Peter Whetstone Square, Room 314
Marshall, Texas 75670

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Judge Sims,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

The point of contact for this action is the undersigned. I may be contacted at 479-635-0110, or by email at rose.m.zeiler.civ@mail.mil

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Attachments:
LHAAP-04 Land Use Controls for Soil and Groundwater Contamination
LHAAP-04 Site Location Map
LHAAP-04 Final Land Use Control Boundary Map
LHAAP-16 Land Use Controls for Soil and Groundwater Contamination
LHAAP-16 Site Location Map
LHAAP-16 Final Land Use Control Boundary Map

Copies furnished:
A. Palmie, TCEQ, Austin, TX
L. Poulos, USEPA, Dallas, TX
K. Nemmers, Bhate, Lakewood, CO (Administrative Record)

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

February 23, 2021

DAIN-ODB-LO

Mr. Thomas Speir
Chairman, Harrison County Historical Commission
200 West Houston Street
Marshall, Texas 75670

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Mr. Speir,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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

February 23, 2021

DAIN-ODB-LO

Mr. William D. Hatfield
Harrison County Commissioner, Precinct 1
Waskom Sub-Courthouse
165 West Texas Avenue
Waskom, Texas 75692

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Commissioner Hatfield,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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

February 23, 2021

DAIN-ODB-LO

Hon. Judye Patterson
Mayor, City of Uncertain, Texas
P.O. Box 277
Uncertain, Texas 75661

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Mayor Patterson,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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

February 23, 2021

DAIN-ODB-LO

Mr. Eric Duerkop
Manager, Caddo Lake National Wildlife Refuge
15600 Highway 134
Karnack, Texas 75661

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Mr. Duerkop,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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

February 23, 2021

DAIN-ODB-LO

Mr. Terry Britt
President, Caddo Lake Water Supply Corporation
P.O. Box 136
Uncertain, Texas 75661

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Mr. Britt,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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Longhorn AAP Site Manager

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

February 23, 2021

DAIN-ODB-LO

Mr. Carl Shelton
President, Leigh Water Supply Corporation
342 Byrd Circle
Karnack, Texas 75661

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Mr. Shelton,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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Longhorn AAP Site Manager

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

February 23, 2021

DAIN-ODB-LO

Rep. Chris Paddie
Texas House of Representatives, District 9
102 West Houston Street
Marshall, Texas 75670

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Representative Paddie,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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

February 23, 2021

DAIN-ODB-LO

Sen. Bryan Hughes
Texas State Senate, District 1
201 West Houston Street, Suite 106
Marshall, Texas 75670

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Senator Hughes,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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

February 23, 2021

DAIN-ODB-LO

Texas Department of Licensing and Regulation
Water Well Drillers and Pump Installers Program
P.O. Box 12157
Austin, Texas 78711

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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

February 23, 2021

DAIN-ODB-LO

Rep. Louis Gohmert
United States House of Representatives
Texas 1st Congressional District
102 West Houston Street
Marshall, Texas 75670

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Representative Gohmert,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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

February 23, 2021

DAIN-ODB-LO

Sen. John Cornyn
United States Senate
Regions Bank Building
100 East Ferguson Street, Suite 1004
Tyler, Texas 75702

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Senator Cornyn,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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

February 23, 2021

DAIN-ODB-LO

Sen. Ted Cruz
United States Senate
305 South Broadway, Suite 501
Tyler, Texas 75702

Re: Land Use Controls and Final Land Use Control Boundary for Soil and Groundwater Contamination at Two Environmental Sites at Former Longhorn Army Ammunition Plant, Karnack, Texas, February 2021

Dear Senator Cruz,

The final remedial actions for two sites, LHAAP 04, Former Pilot Wastewater Treatment Plant; and LHAAP-16 Landfill 16, were completed in November 2019 and December 2019, respectively. The attached information is provided to fulfill a requirement of the Remedial Action Completion Report for each site by giving notice of the land use restrictions referenced in the Record of Decision and to provide a Final Land Use Control boundary map. These notices are being sent to federal, state and local governments involved at this site and the owners and occupants of the property subject to the use restrictions and land use controls.

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A. Palmie, TCEQ, Austin, TX
L. Poulos, USEPA, Dallas, TX
K. Nemmers, Bhate, Lakewood, CO (Administrative Record)

The following attachments were included with the letters:

LHAAP-16 Land Use Controls for Soil and Groundwater Contamination

LHAAP-16 Site Location Map

LHAAP-16 Final Land Use Control Boundary Map

Date December 17, 2021

Land Use Controls for Soil and Groundwater Contamination
Landfill 16 (LHAAP-16)
Longhorn Army Ammunition Plant, Karnack, Texas

The former Longhorn Army Ammunition Plant (LHAAP) is an inactive government-owned, formerly contractor-operated and maintained Department of Defense facility located in central east Texas in the northeast corner of Harrison County. LHAAP is approximately 14 miles northeast of Marshall, Texas. The facility is approximately 40 miles west of Shreveport, Louisiana. The former U.S. Army installation occupied nearly 8,416 acres between State Highway 43 at Karnack, Texas, and the southwestern shore of Caddo Lake and is accessed by State Highways 43 and 134.

LHAAP was placed on the National Priorities List (NPL) on August 9, 1990. Activities to remediate contamination began in 1990. After its listing on the NPL, the U.S. Army, the USEPA, and the Texas Water Commission (currently known as the Texas Commission on Environmental Quality [TCEQ]) entered into a CERCLA Section 120 Federal Facilities Agreement (FFA) for remedial activities at LHAAP. The FFA became effective December 30, 1991. LHAAP operated until 1997 when it was placed on inactive status and classified by the U.S. Army Armament, Munitions, and Chemical Command as excess property.

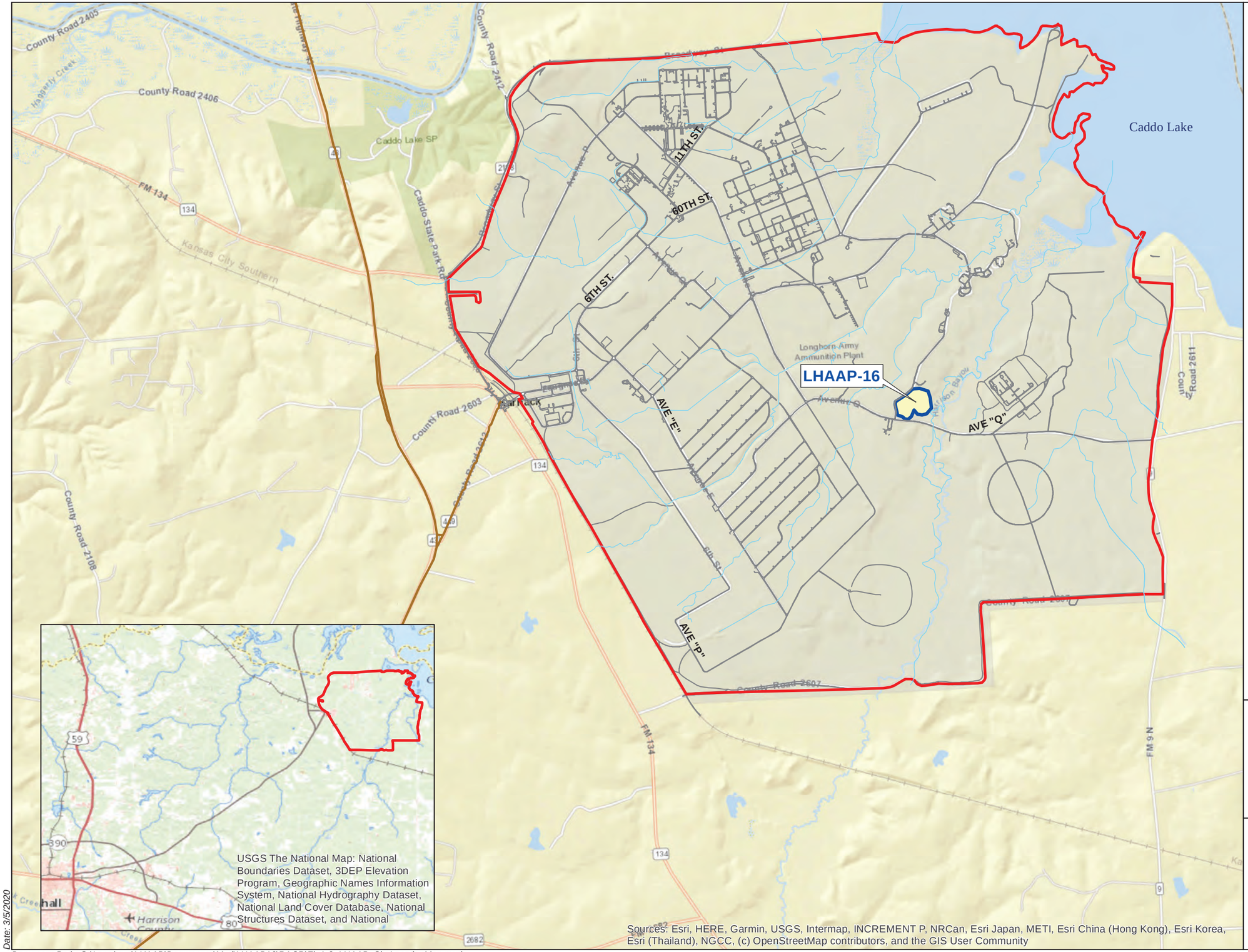
Land Use Controls (LUCs) are applied at LHAAP-16 as part of the remedy in accordance with the LHAAP-16 Record of Decision signed September 13, 2016. The LUCs are necessary because contaminants are present in groundwater at levels that do not support unlimited use and unrestricted exposure and landfill waste remains at the site under the existing landfill cap.

Contaminants of Concern (COCs)
In the shallow and intermediate groundwater zones, the COCs are volatile organic compounds (VOCs) (trichloroethene [TCE], cis-1,2-dichloroethene [DCE], 1,1-DCE, 1,2-dichloroethane, 1,1,2-trichloroethane, methylene chloride, and vinyl chloride [VC]), perchlorate, and five metals (arsenic, chromium, manganese, nickel, and thallium).

Land Use Controls

- The LUC to preserve the integrity of the landfill cap and restrict intrusive activities (e.g., digging) that would degrade or alter the cap shall remain in place as long as the landfill waste remains at the site or until the levels of COCs allow for unlimited use and unrestricted exposure.
- The LUC prohibiting groundwater use (except for environmental monitoring and testing) as a potable source shall be implemented and shall remain in place at the site until the levels of COCs in soil and groundwater allow for unlimited use and unrestricted exposure.
- The LUC restricting land use to nonresidential shall be implemented and shall remain in place at the site until the levels of COCs in surface and subsurface soil and groundwater allow for unlimited use and unrestricted exposure.
- The LUC to maintain the integrity of any current or future remedial or monitoring systems shall remain in place until groundwater cleanup levels of COCs are met.

Further information may be found in the Administrative Record at the Marshall Public Library, at www.longhornaap.com or by contacting Rose M. Zeiler (479-635-0110 or rose.m.zeiler.civ@mail.mil).



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

bhate APTIM

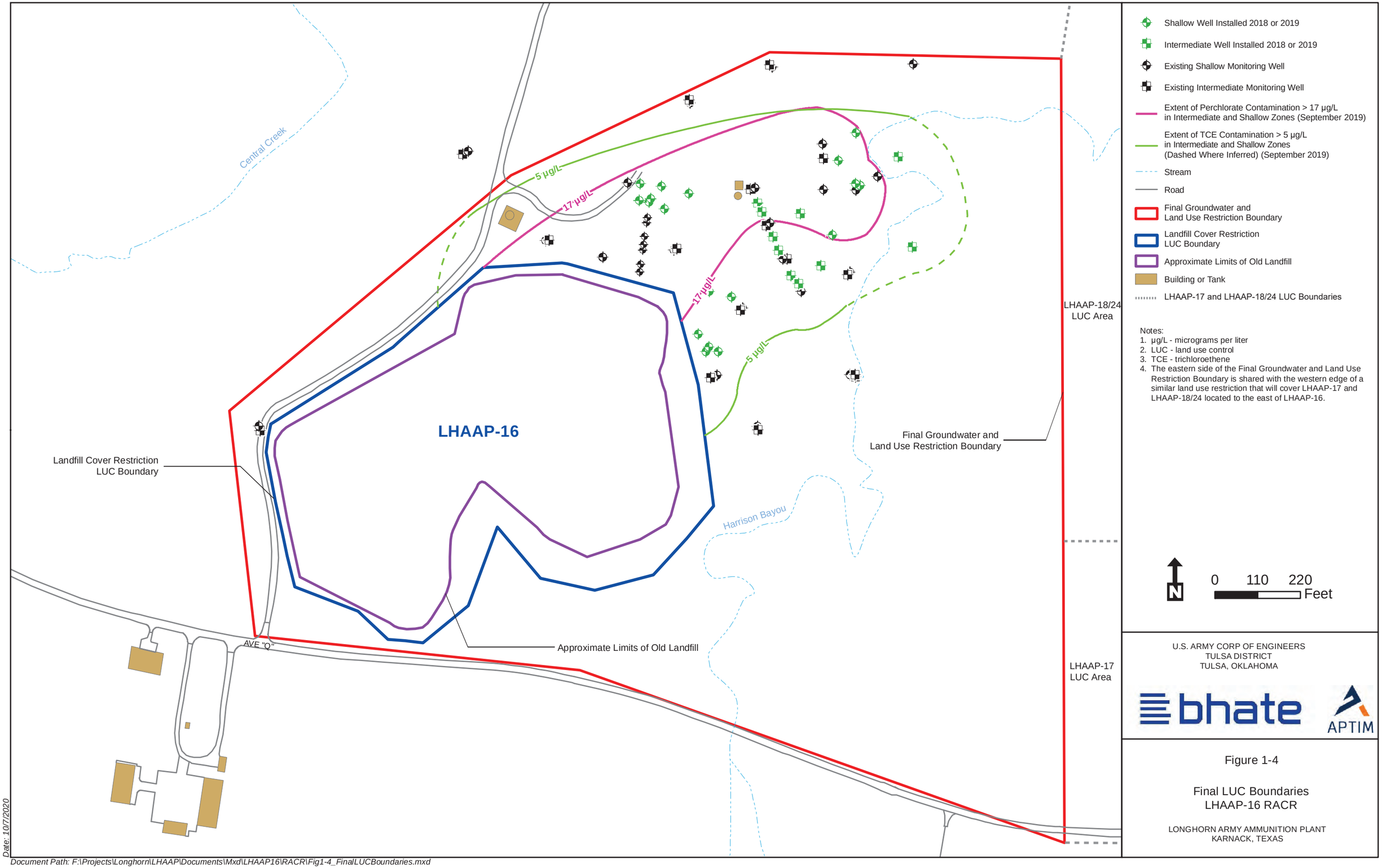
Figure 1-2

LHAAP Site Location Map
LHAAP-16 RACR

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 3/5/2020

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP16\RACR\Fig1-2_LHAAP_SiteLocationMap.mxd



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

bhate APTIM

Figure 1-4

Final LUC Boundaries
LHAAP-16 RACR

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 10/7/2020

Document Path: F:\Projects\Longhorn\LHAAP\Documents\Mxd\LHAAP16\RACR\Fig1-4_FinalLUCBoundaries.mxd

LHAAP – 17, 17-1
DRAFT LUC INSPECTION AND MAINTENANCE LOG
(RAO Inspection and Maintenance Checklist)
(Well Inspection Form)

Date October 4, 2019

RAO Inspection and Maintenance Checklist

General Information	
Project Name	RAO Inspection and Maintenance, LHAAP-17 Longhorn Army Ammunition Plant, Karnack, TX
Contractor	
Inspector's Name	
Inspector's Title	
Inspector's Signature	
Inspector's Contact Number	
Inspection Date	
Type of Inspection	☐ Quarterly ☐ Semiannual ☐ Annual ☐ Prior to forecast rain ☐ After a rain event ☐ Other ----------

A. Groundwater Monitoring Wells						
A.1	Are the installed groundwater monitoring wells in poor condition?					
A.2	Is the well cleared of vegetation and accessible?					
A.3	Any other relevant observations?					
A.4	Are there any significant cracks present?					
A.5	Are there any damaged areas?					

WELL INSPECTION FORM

Job Name: _____ Well ID: _____

Job No.: _____ Completed Date: _____

Client: _____ Measured Depth: _____

Site Location: _____ Inspector: _____

☐ **ABOVE GROUND**

Protective casing? ☐ Yes ☐ No

Material _____

Condition: ☐ Good ☐ Broken ☐ Cracked

Lid Condition: ☐ Good ☐ Broken ☐ Cracked

Hinge Condition: ☐ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ **FLUSH MOUNTED**

Well cover present? ☐ Yes ☐ No

Condition: ☐ Good ☐ Broken ☐ Cracked

Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Visible? ☐ Yes ☐ No

Dimensions _____ Thickness _____

Sloped away from casing? ☐ Yes ☐ No

Check any of the following features that apply:

☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

CONCRETE PAD:

Inner Diameter (inches) _____

Condition: ☐ Good ☐ Broken ☐ Cracked ☐ Other (describe) _____

Cap present? ☐ Yes ☐ No

Well lock present? ☐ Yes ☐ No

Lock functioning properly? ☐ Yes ☐ No

Bump post? ☐ Yes ☐ No

Well ID visible? ☐ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☐ No

Visual obstruction? ☐ Yes ☐ No

Is well open to completed depth? ☐ Yes ☐ No

Is silt present in well? ☐ Yes ☐ No

Is silt greater than 25% of well screen length? ☐ Yes ☐ No

COMMENTS:

LHAAP – 17, 17-2
LUCs FROM DRAFT FINAL REMEDIAL DESIGN

Date October 4, 2019

Draft Final
Remedial Design and Remedial Action Work Plan, LHAAP-17 Burning Ground No. 2 / Flashing Area, Group 2

Longhorn Army Ammunition Plant
Karnack, Texas

Prepared for U.S. Army Corps of Engineers, Tulsa District
Contracting Division
2488 East 81st Street
Tulsa, Oklahoma 74137-4290

Prepared by

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Prepared by

APTIM

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Houston, Texas 77042

Contract No. W9128F-13-D-0012
Task Order No. W9128BV17F0150
Project No. 501032
Rev 0
March 2019

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Draft Final • Rev 0 • March 2019

Table of Contents

List of Tables iii
List of Figures iii
List of Appendices iii
Acronyms and Abbreviations v

1.0 Introduction 1-1
1.1 Site Description 1-1
1.2 Selected Remedy 1-2
1.3 Remedial Action Objectives 1-4
1.4 Document Organization 1-5
1.5 Deviations from the Installation Wide Work Plan 1-6
2.0 Site Characteristics 2-1
2.1 Geology and Hydrogeology 2-1
2.2 Nature and Extent of Contamination 2-1
2.3 Current and Future Land Use 2-2
2.4 Current and Future Surface Water Use 2-2
2.5 Current and Future Groundwater Use 2-3
3.0 Pre-Design Investigation 3-1
3.1 Soil Investigation 3-1
3.2 Aquifer Pumping Test 3-2
4.0 Soil Excavation Remedial Design 4-1
4.1 Design Criteria 4-1
4.2 Performance Objective 4-1
4.3 Excavation Area 4-1
4.4 Confirmation Sampling 4-2
4.5 Waste Characterization and Disposal 4-3
4.6 Backfill and Site Restoration 4-3
4.7 Other Design Considerations 4-3
5.0 Groundwater Extraction and MNA Remedial Design 5-1
5.1 Design Criteria 5-1
5.2 Performance Objective 5-1
5.3 Groundwater Extraction Design 5-1
5.4 System Components 5-2
5.4.1 Extraction Pump Selection 5-2
5.4.2 Extraction/Discharge Piping and Temporary Storage of Groundwater 5-3
5.5 Groundwater Monitoring During Extraction 5-4
5.6 Post Extraction MNA Monitoring Design 5-4
5.7 Contingency Remedy 5-5
6.0 Land Use Control Plan 6-1
6.1 LUC Implementation 6-1
6.2 Maintenance and Monitoring Requirements 6-2
6.3 LUC Inspection and Monitoring 6-4
7.0 Remedial Action Work Plan 7-1
7.1 Field Activities 7-1
7.1.1 Mobilization and Site Setup 7-1
7.1.2 Surveying 7-2

Table of Contents *(continued)*

7.1.3 Soil Excavation and Disposal 7-2
7.1.3.1 Site Preparation 7-2
7.1.3.2 Excavation and Soil Handling 7-3
7.1.3.3 Confirmation Soil Sampling 7-3
7.1.3.4 Backfilling and Site Restoration 7-4
7.2 Groundwater Extraction System Installation 7-5
7.2.1 Extraction Pump Installation 7-5
7.2.2 Extraction/Discharge Piping 7-5
7.2.3 Holding Tank 7-5
7.3 Waste Management 7-6
7.4 Decontamination 7-6
8.0 Post-Remedial Monitoring and Reporting 8-1
8.1 Groundwater Extraction Monitoring 8-1
8.2 RA-O Monitoring Network 8-1
8.3 Groundwater Sampling 8-1
8.3.1 Baseline Sampling 8-2
8.3.2 Evaluation of Extraction Effectiveness 8-2
8.3.3 RA-O Monitoring Year 1 and Year 2 8-2
8.3.4 RA-O Monitoring Years 3 through 5 8-3
8.3.5 RA-O Monitoring Beyond Year 5 8-3
8.4 Response Action Completion Report 8-3
8.5 Annual RA-O Reports 8-3
8.5.1 MNA Evaluation 8-3
9.0 Schedule 9-1
10.0 Operation and Maintenance Procedures 10-1
10.1 Operation and Maintenance of the Groundwater Extraction System 10-1
10.2 Maintenance of the MNA Monitoring System 10-1
10.3 LUC Maintenance and Monitoring Requirements 10-1
11.0 References 11-1

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Draft Final • Rev 0 • March 2019

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Draft Final • Rev 0 • March 2019

List of Tables

Table 1-1 COCs and COPECs for LHAAP-17
Table 1-2 Cleanup Levels for Human Health Risk
Table 1-3 Cleanup Levels for Ecological Risk in Soil (EcoPRGs)
Table 3-1 August 2018 Soil Sample Analytical Results
Table 4-1 Proposed Excavation Sampling Summary
Table 5-1 Shallow Groundwater COC Concentrations
Table 5-2 Estimated Pore Volume and Extraction Volume Calculations
Table 8-1 Proposed MNA Monitoring Network Locations
Table 8-2 Proposed MNA Monitoring Network Analytes and Frequency
Table 9-1 Schedule of Major Site Activities

List of Figures

Figure 1-1 LHAAP Location Map
Figure 1-2 LHAAP-17 Location Map
Figure 1-3 LHAAP-17 Site Details
Figure 2-1 Shallow Zone Potentiometric Surface (November 2017)
Figure 2-2 Intermediate Zone Potentiometric Surface (November 2017)
Figure 2-3 Drinking Water Supply Well Location Map
Figure 3-1 Soil Sample Locations with Concentrations Exceeding the Cleanup Levels
Figure 4-1 Proposed Soil Excavation Boundary
Figure 4-2 Existing Sample Locations for Excavation Confirmation
Figure 5-1 COC Concentrations Detected in Shallow Groundwater – 2009 and 2017
Figure 5-2 Groundwater Extraction Process Flow Diagram
Figure 5-3 Estimated Radius of Influence for Extraction Wells
Figure 6-1 Preliminary Groundwater LUC Boundary Map
Figure 7-1 Groundwater Extraction System Layout
Figure 8-1 Proposed MNA Monitoring Network

List of Appendices

Appendix A Analytical Data Reports from August 2018 Soil Samples
Appendix B Sample Collection Logs for August 2018 Soil Samples
Appendix C Groundwater Extraction Pump and Holding Tank Specification Sheets
Appendix D Operation and Maintenance Forms
Appendix E LUC Compliance Certification

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Draft Final • Rev 0 • March 2019

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Acronyms and Abbreviations

µg/L	micrograms per liter
AECOM	AECOM Engineering Company
APTIM	Aptim Federal Services, LLC
Bgs	below ground surface
Bhate	Bhate Environmental, Inc.
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
COC	chemical of concern
COPEC	chemical of potential ecological concern
CY	cubic yards
DCE	dichloroethene
DNT	dinitrotoluene
ESD	Explanation of Significant Differences
FFA	Federal Facility Agreement
gpm	gallons per minute
GPS	global positioning system
GWTP	groundwater treatment plant
HDPE	high density polyethylene pipe
IWWP	Installation-Wide Work Plan
LHAAP	Longhorn Army Ammunition Plant
LOE	line of evidence
LTM	long-term monitoring
LUC	land use control
mg/kg	milligrams per kilogram
MNA	monitored natural attenuation
MOA	Memorandum of Agreement
NCP	National Contingency Plan
NPL	National Priorities List
O&M	operation and maintenance
PDI	Pre-Design Investigation
RA	remedial action
RACR	Response Action Completion Report
RA-O	Remedial Action-Operation
RAOs	remedial action objectives
RAWP	Remedial Action Work Plan
RD	remedial design
ROD	Record of Decision
Shaw	Shaw Environmental, Inc.
TAC	Texas Administrative Code
TCDD	2,3,7,8-tetrachlorodibenzo-p-dioxin

Acronyms and Abbreviations (continued)

TCE	trichloroethene
TCEQ	Texas Commission on Environmental Quality
TNT	2,4,6-trinitrotoluene
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Draft Final • Rev 0 • March 2019

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Draft Final • Rev 0 • March 2019

6.0 LAND USE CONTROL PLAN

The U.S. Army or its representative will be responsible for LUC implementation and certification, reporting and enforcement. The U.S. Army will address the LUC problems within its control that are likely to impact remedy integrity and will address problems as soon as practicable. Per the Final ROD (Shaw 2016), the LUCs' performance objectives are to:

- Prohibit the use of groundwater contaminated as a potable water source;
- Restrict land use to nonresidential; and
- Maintain the integrity of any current or future remedial or monitoring systems.

The implementation, maintenance, and inspection requirements associated with each of the performance objectives that comprise this LUC RD are described below. The proposed actions to be taken to implement the LUC objectives during the RA phase are described in **Section 8.0**. The implementation activities, as well as ongoing maintenance, monitoring, and reporting requirements will be presented in the Remedial Action Completion Report (RACR), as the final LUC RD. Upon regulatory review and concurrence with the final LUC RD, it will be included as part of the Comprehensive LUC Management Plan.

For portions of the Site subject to land use controls that are not owned by the Army, the Army will monitor and report on the implementation, maintenance, and enforcement of land use controls, and coordinate with federal, state, and local governments and owners and occupants of properties subject to land use controls. The Army retains responsibility for ensuring that the remedy remains protective of human health and the environment.

6.1 LUC Implementation

The actions required to implement the LUCs for LHAAP-17 are described below. The first of these, the initial notice of LUCs was completed on December 8, 2016. The December 8, 2016 notice letters that were sent to relevant officials (U.S. Army 2016) included a preliminary LUC boundary. The proposed LUC boundary for the groundwater use restriction is shown in red on **Figure 6-1**. The LUC boundary for the non-residential site use will be the "Site Boundary" shown in blue on **Figure 6-1**. The following actions will be undertaken to implement the LUCs for LHAAP-17:

- Finalize the boundary for the LUCs as a part of the remedial action.
  - Revise the boundary, if necessary, based on groundwater sampling results. The final boundary of the groundwater LUCs (prevent the use of groundwater contaminated above cleanup levels as a potable water source and prohibit access to the contaminated groundwater except for environmental monitoring and testing

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Draft Final • Rev 0 • March 2019

only); the remedial or monitoring system LUCs (maintain the integrity of any current or future remedial or monitoring systems); and the nonresidential land use LUC (restrict land use to nonresidential) will be reviewed during RA activities after an evaluation of the monitoring data has been completed and revised if necessary.

  - Survey the groundwater use and land use restriction LUC boundaries. The boundaries will be finalized after concurrence by USEPA and TCEQ, and will be surveyed by a State-licensed surveyor. A legal description of the surveyed areas will be appended to the survey plat.

- Record the LUCs in Harrison County. The LUC plat, legal description, and LUC restriction language will be recorded in the Harrison County Courthouse in accordance with TAC Title 30, §335.566.
- Notify the Texas Department of Licensing and Regulation of the groundwater LUCs. The Texas Department of Licensing and Regulation will be notified of the groundwater restrictions, which include the prohibition of water well installation for any purpose other than environmental monitoring and testing without prior approval from the Army, the USEPA, and the TCEQ. The survey plat, legal boundary, and description of the groundwater restriction LUCs, in conjunction with a locator map, will be provided in hard and electronic copy.
- Provide notice after finalizing LUC boundary as part of the RA. The notice will consist of a brief description of the contaminants in groundwater and soil, a written description of the LUCs and a figure depicting the revised LUC boundaries. The notices will be sent to federal, state, and local officials including: U.S. Senators, U.S. Congressman, State Senator, State Representative, Harrison County Judge, Harrison County Commissioner Precinct 1, City of Uncertain Mayor, and Karnack Water Supply Corporation Board Members. Notice will also be sent to the Caddo Lake National Wildlife Refuge Manager.
- Periodically transmit the notice to federal, state, and local governments involved at this site and the owners and occupants of the properties subject to those use restrictions and LUCs. The transmittal will coincide with each Five Year Review and will be documented in the report.

6.2 Maintenance and Monitoring Requirements

The LUCs will be maintained in place as follows:

- The LUCs restricting the use of groundwater to environmental monitoring and testing only and the LUC restricting land use to nonresidential will remain in place until the levels of COCs (i.e., including all hazardous substances, pollutants, and contaminants found at the Site at cleanup levels as listed in **Tables 1-2 and 1-3**) in surface and subsurface soil and groundwater allow for unlimited use and unrestricted exposure;

- The LUC to maintain the integrity of any current or future remedial or monitoring systems will remain in place until groundwater cleanup levels of COCs (i.e., including all hazardous substances, pollutants and contaminants found at the Site at cleanup levels as listed in **Table 1-2**) are met; and,

- The LUC prohibiting groundwater use (except for environmental monitoring and testing) as a potable source will remain in place until the levels of COCs (i.e., all hazardous substances, pollutants, and contaminants found at the Site at cleanup levels as listed in **Tables 1-2 and 1-3**) in soil and groundwater allow for unlimited use and unrestricted exposure.

Remedial or Monitoring System LUCs include physical components that require repair and maintenance. These are described in **Section 10.0.** The RAO and Extraction System Inspection and Maintenance Checklists is provided in **Appendix D.**

The administrative maintenance required to ensure the LUCs remain in place and effective until the cleanup levels of the COCs are at levels that allow unrestricted use and unlimited exposure are:

- Annual field inspections of the site to confirm that no violations of the LUCs have occurred. Documentation of the inspection will be included in the Inspection and Maintenance Checklist (see **Appendix D).**

- Annual certifications that no LUC-restricted activities have been authorized and that site conditions and use are consistent with the LUCs. The Certification Form is presented in **Appendix E).**

- Periodic transmittal of a LUC Notice to federal, state, and local authorities and to owners and occupants of LHAAP-17. The notice will include the groundwater and soil (surface and subsurface) contamination and any land use restrictions referenced in the ROD, a written description of the LUCs and a figure depicting the LUC boundaries. The transmittal will coincide with each Five Year Review and will be documented in the report.

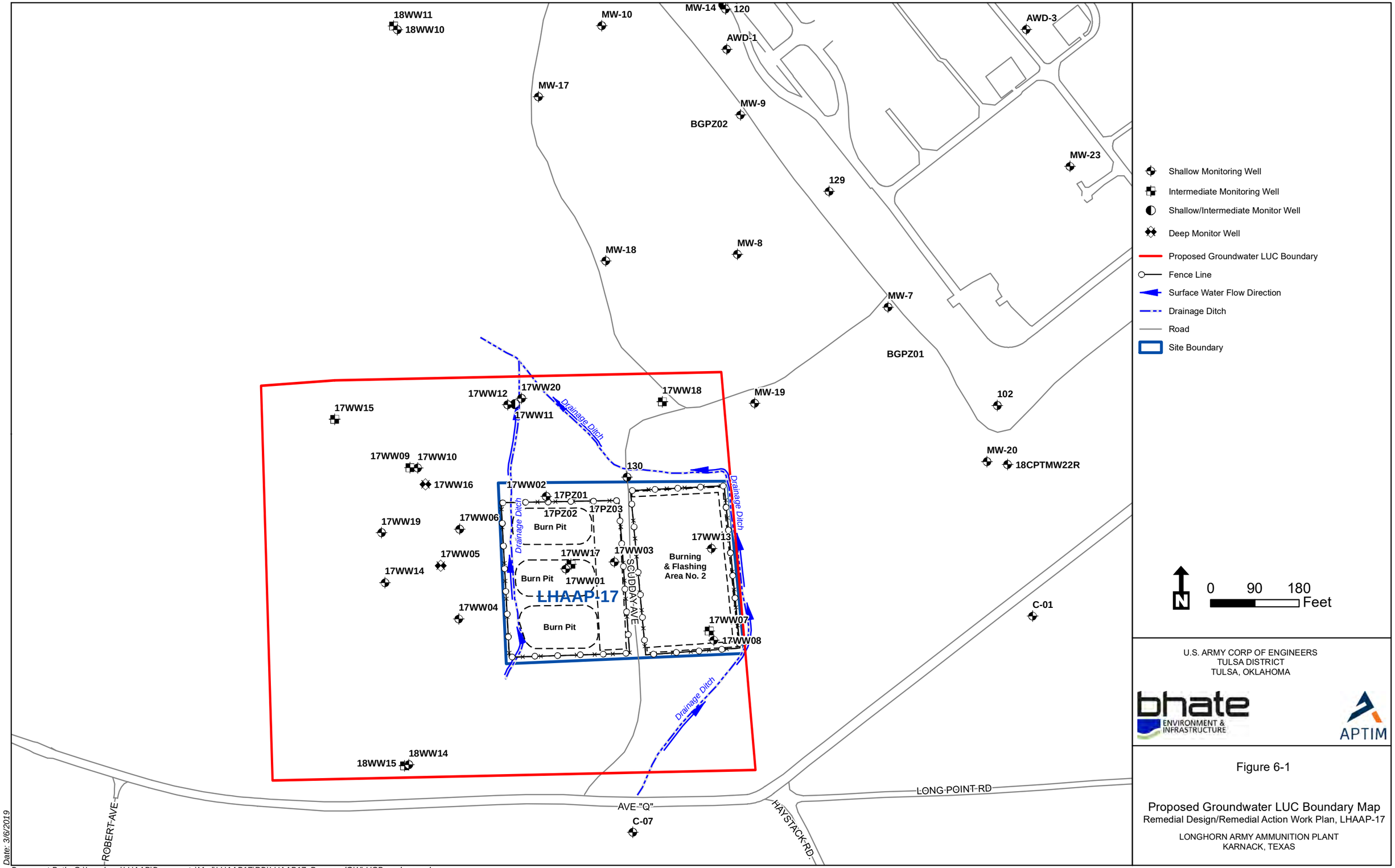
- The final LUC RD appendix of the RACR will be added to the Comprehensive LUC Management Plan and the plan will be provided to the owner or occupant of LHAAP-17.

The U.S. Army will address LUC problems within its control that are likely to impact remedy integrity and shall address problems as soon as practicable.

6.3 LUC Inspection and Monitoring

Upon finalization of this LUC RA, the amended LUC boundary map and legal description recordation will be inserted into the Comprehensive LUC Management Plan for LHAAP. The Comprehensive LUC Management Plan figure and table will be updated to reflect the inclusion of LHAAP-17.

Beginning with finalization of this RD/RAWP and approval of the Inspection and Maintenance form and the Annual Certification Form, the U.S. Army will undertake inspections and certify continued compliance with the LUC objectives. The U.S. Army, or the transferee after transfer, will retain the LUC Inspection and Certification documents in the project files for incorporation into the Five Year Review reports, and these documents will be made available to USEPA and TCEQ upon request. In addition, should any violations be found during the certification, the U.S. Army will provide to USEPA and TCEQ, along with the document, a separate written explanation indicating the specific violations found and what efforts or measures have or will be taken to correct those violations. The need to continue inspections and certifications will be revisited at Five Year Reviews.



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

bhate ENVIRONMENT & INFRASTRUCTURE

APTIM

Figure 6-1

Proposed Groundwater LUC Boundary Map
Remedial Design/Remedial Action Work Plan, LHAAP-17

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Date: 3/6/2019

Document Path: G:\Longhorn\LHAAP\Documents\Mxd\LHAAP17\RD\LHAAP17_ProposedGWLUCBoundary.mxd

LHAAP – 17, 17-3
NOTICE OF LAND USE CONTROLS AND NONRESIDENTIAL LAND USE AT LHAAP-17 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT) (PENDING)

Date October 4, 2019

LHAAP – 17, 17-4
LAND USE CONTROL COMPLIANCE INSPECTION FORM

Date October 4, 2019

Annual Land Use Control Compliance Certification Form

In accordance with the Remedial Design dated_____for LHAAP-17 an inspection of the site was conducted by_____[indicate transferee] on _____.

The land use control mechanisms are:

- Groundwater restrictions - prohibit access to the contaminated groundwater except for environmental monitoring and testing only until cleanup goals are met;
- Land use restrictions - restrict land use to nonresidential;
- Integrity of remedial and monitoring systems - maintain the integrity of any current or future remedial or monitoring systems until cleanup goals are met.

No unauthorized activities or uses have occurred. Compliance with land use controls and restrictions is as follows:

- No use of groundwater (other than environmental testing and monitoring), installation of new groundwater wells, or tampering with existing monitoring wells;
- No land use other than nonresidential; and
- No activities that would compromise the integrity of the remedial or monitoring systems.

I, the undersigned, do document that the inspection was conducted as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief.

Date: _____

Name/Title: _____

Signature: _____

Annual compliance certification forms shall be completed no later than March 1 of each year for the previous calendar year, retained in the file and provided to Army, EPA and TCEQ upon request.

LHAAP – 18/24, 18/24-1
DRAFT LUC INSPECTION AND MAINTENANCE LOG
(RAO Inspection and Maintenance Checklist)
(Well Inspection Form)
(Pending)

Date January 17, 2023

RAO Inspection and Maintenance Checklist

General Information	
Project Name	RAO Inspection and Maintenance, LHAAP-18/24 Longhorn Army Ammunition Plant, Karnack, TX
Contractor Name	
Inspector's Name	
Inspector's Title	
Inspector's Signature	
Inspector's Contact Number	
Inspection Date	
Type of Inspection	☐ Quarterly ☐ Semiannual ☐ Annual ☐ Prior to forecast rain ☐ After a rain event ☐ Other_____

	Description	YES	NO	N/A	Comments (Attach photos/location sketches)	Corrective Action (Attach photos)
A.	**Groundwater Monitoring Wells**					
A.1	Are the installed groundwater monitoring wells in good condition?					
A.2	Is the well cleared of vegetation and accessible?					
A.3	Any other relevant observations?					
A.4	Are there any significant cracks present?					
A.5	Are there any damaged areas?					
B.	**Site Features**					
B.1	Are there any signs of groundwater use?					
B.2	Are there any signs of residential construction?					
B.3	Any other relevant observations?					
C.	**Thermal Treatment System Operations and Maintenance (O&M)**					
C.1	Are there any signs of transformer or voltage control damage?					
C.2	Are there any signs of damage to the Electrical Resistance Heating (ERH) system?					

SAMPLE

General Information	
Project Name	RAO Inspection and Maintenance, LHAAP-18/24 Longhorn Army Ammunition Plant, Karnack, TX
Contractor Name	
Inspector's Name	
Inspector's Title	
Inspector's Signature	
Inspector's Contact Number	
Inspection Date	
Type of Inspection	☐ Quarterly ☐ Semiannual ☐ Annual ☐ Prior to forecast rain ☐ After a rain event ☐ Other_____

	Description	YES	NO	N/A	Comments (Attach photos/location sketches)	Corrective Action (Attach photos)
C.	**Thermal Treatment System Operations and Maintenance (O&M) Cont'd**					
C.3	Are there any signs of damage to the vapor extraction system (blowers, condensate removal system, etc.)?					
C.4	Are there any signs of damage to the emission control system (refrigerated condenser, thermal/catalytic oxidizer or activated carbon, etc.)?					

SAMPLE

WELL INSPECTION FORM

Job Name: _____ Well ID: _____

Job No.: _____ Completed Date: _____

Client: _____ Measured Depth: _____

Site Location: _____ Inspector: _____

☐ **ABOVE GROUND**

Protective casing? ☐ Yes ☐ No

Material _____

Condition: ☐ Good ☐ Broken ☐ Cracked

Lid Condition: ☐ Good ☐ Broken ☐ Cracked

Hinge Condition: ☐ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ **FLUSH MOUNTED**

Well cover present? ☐ Yes ☐ No

Condition: ☐ Good ☐ Broken ☐ Cracked

Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Visible? ☐ Yes ☐ No

Dimensions _____ Thickness _____

Sloped away from casing? ☐ Yes ☐ No

Check any of the following features that apply:

☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

CONCRETE PAD:

Inner Diameter (inches) _____

Condition: ☐ Good ☐ Broken ☐ Cracked ☐ Other (describe) _____

Cap present? ☐ Yes ☐ No

Well lock present? ☐ Yes ☐ No

Lock functioning properly? ☐ Yes ☐ No

Bump post? ☐ Yes ☐ No

Well ID visible? ☐ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☐ No

Visual obstruction? ☐ Yes ☐ No

Is well open to completed depth? ☐ Yes ☐ No

Is silt present in well? ☐ Yes ☐ No

Is silt greater than 25% of well screen length? ☐ Yes ☐ No

COMMENTS:

LHAAP – 18/24, 18/24-2
LUCs FROM REMEDIAL DESIGN
(Pending)

Date January 17, 2023

LHAAP – 18/24, 18/24-3
NOTICE OF LAND USE CONTROLS AND NONRESIDENTIAL LAND USE AT LHAAP-18/24 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)
(Pending)

Date January 17, 2023

Initial Notice of Land Use Controls

LHAAP-18/24 Burning Ground No. 3 and Unlined Evaporation Pond (UEP)

Longhorn Army Ammunition Plant, Karnack, Texas

The former Longhorn Army Ammunition Plant (LHAAP) is an inactive government-owned, formerly contractor-operated and maintained Department of Defense facility located in central east Texas in the northeast corner of Harrison County. LHAAP is approximately 14 miles northeast of Marshall, Texas. The facility is approximately 40 miles west of Shreveport, Louisiana. The former U.S. Army installation occupied nearly 8,416 acres between State Highway 43 at Karnack, Texas and the southwestern shore of Caddo Lake. The installation can be accessed by State Highways 43 and 134.

LHAAP was placed on the National Priorities List (NPL) on August 9, 1990. Activities to remediate contamination began in 1990. After its listing on the NPL, the U.S. Army, the USEPA, and the Texas Water Commission (currently known as the Texas Commission of Environmental Quality [TCEQ]) entered into a CERCLA Section 120 Federal Facilities Agreement (FFA) for remedial activities at LHAAP. The FFA became effective December 30, 1991. LHAAP operated until 1997 when it was placed on inactive status and classified by the U.S. Army Armament, Munitions, and Chemical Command as excess property.

The site addressed in this Initial Notice of Land Use Controls is LHAAP-18/24, which is shown on the attached figures and discussed below.

Land Use Controls (LUCs) are applied at LHAAP-18/24 as part of the remedy in accordance with the LHAAP-18/24 Record of Decision finalized February 25, 2020. The LUCs are necessary because contaminants are present in groundwater at levels that do not support unlimited use and unrestricted exposure. The LUC boundaries may change during remedy implementation.

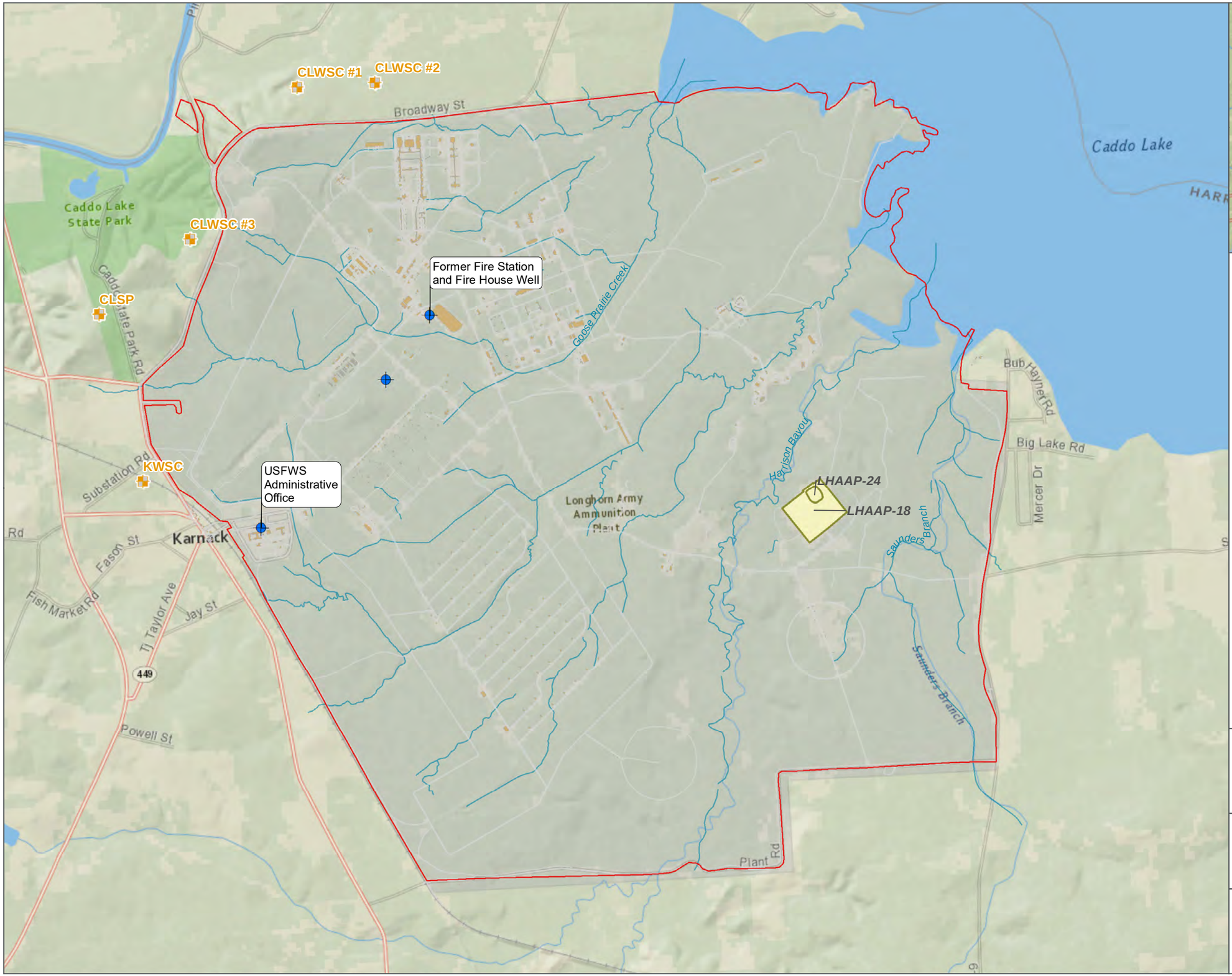
Contaminants of Concern (COCs)

The COCs for LHAAP-18/24 are Volatile Organic Compounds (VOCs), 1,4-dioxane, and perchlorate, which are found at concentrations exceeding acceptable levels in the shallow and Wilcox groundwater zones. In addition, there are isolated locations in both groundwater zones where metals are present at concentrations exceeding U.S. Environmental Protection Agency Maximum Contaminant Levels or TCEQ Protective Concentration Levels.

Land Use Controls

- The LUC prohibiting groundwater use (except for environmental monitoring and testing) shall be implemented and shall remain in place at the site until the levels of COCs in soil and groundwater allow for unlimited use and unrestricted exposure.
- The LUC restricting land use to nonresidential shall be implemented and shall remain in place at the site until the levels of COCs in surface and subsurface soil, and groundwater allow for unlimited use and unrestricted exposure.
- The LUC to maintain the integrity of any current or future remedial or monitoring systems shall remain in place until groundwater cleanup levels of COCs are met.

Further information may be found in the Administrative Record at the Marshall Public Library, at website www.longhornaap.com or by contacting Rose M. Zeiler (479-635-0110 or rose.m.zeiler.civ@mail.mil).



LEGEND

- Public Water Supply Well Locations
- Potable Water Wells
- Roads
- Building
- Site
- LHAAP Installation Boundary

CLWSC – Caddo Lake Water Supply Corporation
KWSC – Karnack Water Supply Corporation

DATA SOURCES: AECOM, 2017. Final Revised Feasibility Study for LHAAP-18/24, Burning Ground No. 3 and Unlined Evaporation Pond, Longhorn Army Ammunition Plant, Karnack, Texas, January.

SITE VICINTY

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

N

0 0.5 1
MILES

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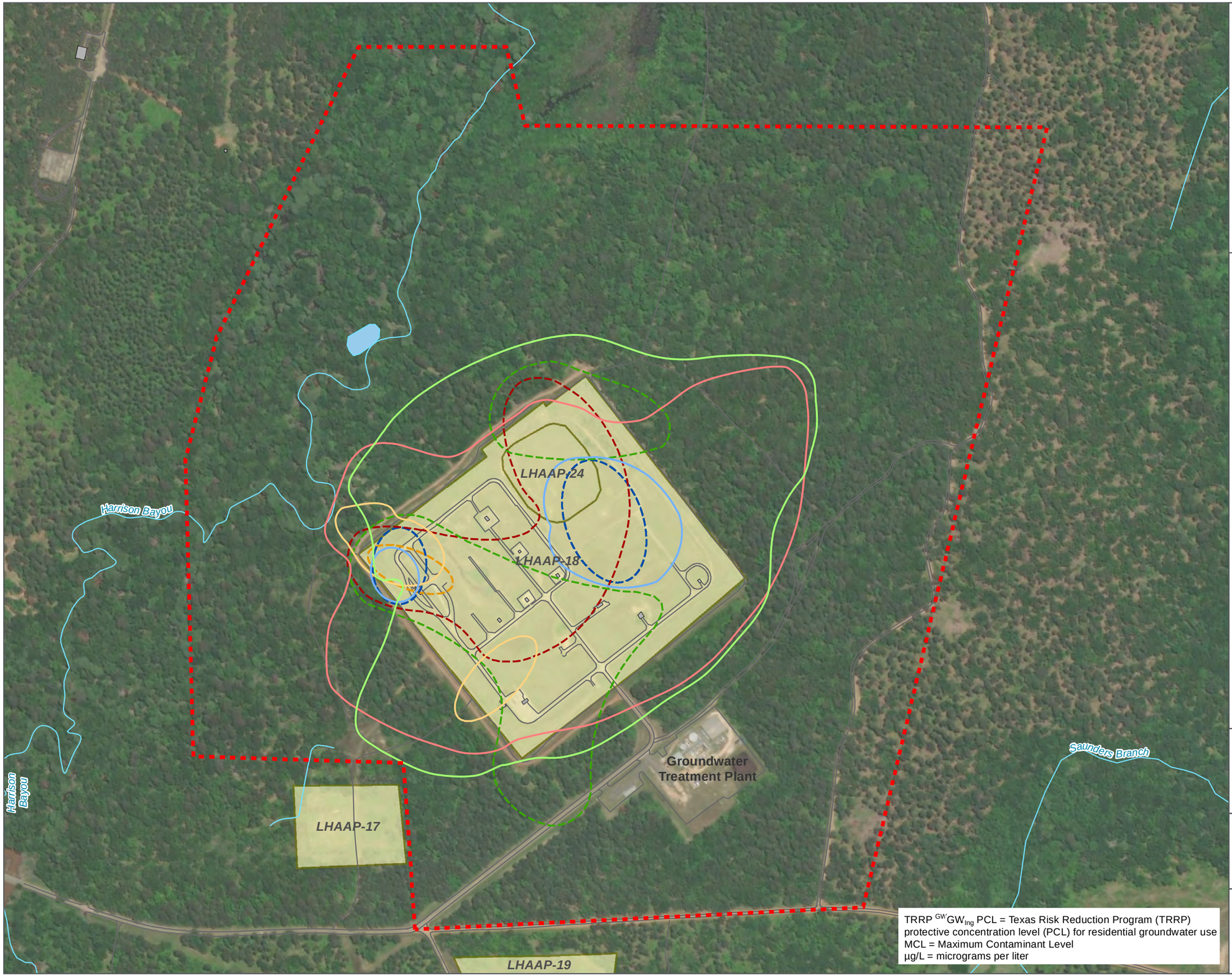
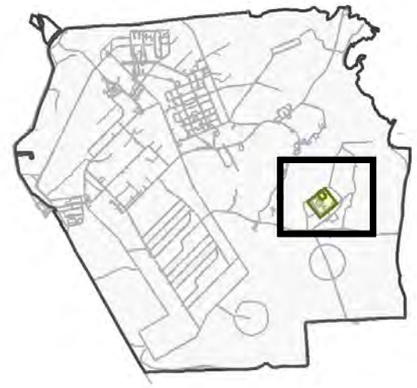




LEGEND

- LHAAP - 18 Preliminary Land Use Control Boundary

Shallow Groundwater Plume

- Perchlorate Contour >= 17 ug/L (TRRP $^{GW}GW_{Ing}$ PCL)
- Trichloroethene Contour >= 5 ug/L (MCL)
- Methylene Chloride Contour >= 5 ug/L (MCL)
- 1,4-Dioxane Contour >= 9.1 ug/L (TRRP $^{GW}GW_{Ing}$ PCL)

Wilcox Groundwater Plume

- Perchlorate Contour >= 17 ug/L (TRRP $^{GW}GW_{Ing}$ PCL)
- Trichloroethene Contour >= 5 ug/L (MCL)
- Methylene Chloride Contour>= 5 ug/L (MCL)
- 1, 4-Dioxane Contour >= 9.1 ug/L (TRRP $^{GW}GW_{Ing}$ PCL)
- Roads
- Buildings
- Site

Source: Final Record of Decision, LHAAP-18/24 Burning Ground No. 3 and Unlined Evaporation Pond, December 2019, Longhorn Army Ammunition Plant, Karnack, Texas

DATA SOURCES: AECOM, 2017. Final Revised Feasibility Study for LHAAP-18/24, Burning Ground No. 3 and Unlined Evaporation Pond, Longhorn Army Ammunition Plant, Karnack, Texas, January.

PRELIMINARY
LAND USE CONTROL BOUNDARY
LHAAP 18/24
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

N

0 250 500
FEET

TRRP $^{GW}GW_{Ing}$ PCL = Texas Risk Reduction Program (TRRP) protective concentration level (PCL) for residential groundwater use
MCL = Maximum Contaminant Level
µg/L = micrograms per liter

PATH: J:\2018\18-025_LHAAP_SITES29_47_18AND24_ROD_(WERNER)\7.2_WORK_IN_PROGRESS\MAP_DOCS\DRAFT\LHAAP18_24\LHAAP_18_24_NOTIFICATION_CONTAMINATIONPLUMES.MXD - USER: KLOFGREN - DATE: 3/11/2020

LHAAP – 18/24, 18/24-4
DRAFT LAND USE CONTROL COMPLIANCE INSPECTION FORM
(Pending)

Date January 17, 2023

Draft Land Use Control Compliance Inspection Form

In accordance with the Remedial Design dated _____ for LHAAP-18/24, an inspection of the site was conducted by _____ [indicate transferee] on _____.

The land use control mechanisms are:

- Groundwater restrictions – prohibition of groundwater use (except for monitoring and testing) until levels of contaminants of concern (COCs) in soil and groundwater allow for unlimited use and unrestricted exposure.
- Land use restrictions - restrict land use to nonresidential until levels of COCs in surface and subsurface soil, and groundwater allow for unlimited use and unrestricted exposure.
- Integrity of remedial and monitoring systems - maintain the integrity of any current or future remedial or monitoring systems until groundwater cleanup of COCs are met.

No unauthorized activities or uses have occurred. Compliance with land use controls and restrictions is as follows:

- No use of groundwater (other than environmental testing and monitoring), installation of new groundwater wells, or tampering with existing monitoring wells;
- No land use other than nonresidential; and
- No activities that would compromise the integrity of any current or future remedial or monitoring systems.

I, the undersigned, do document that the inspection was conducted as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief.

Date: _____

Name/Title:
_____

Signature:
_____

Annual compliance certification forms shall be completed no later than March 1 of each year for the previous calendar year, retained in the file and provided to Army, EPA, and TCEQ upon request.

LHAAP-19

NOTICE OF NONRESIDENTIAL LAND USE AT LHAAP-19 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

2013-000013785

*****DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT*****

MISCELLANEOUS

5 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 11/14/2013 04:23 PM **Document Number:** 2013-000013785 **Receipt No:** 1313735 **Amount:** $ 28.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

AARON WILLIAMS
1645 SOUTH 100 FIRST EAST AVE

TULSA, OK 74128

STATE OF TEXAS
HARRISON COUNTY

INDUSTRIAL SOLID WASTE
CERTIFICATION OF REMEDIATION

KNOW ALL MEN BY THESE PRESENT THAT:

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

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. The site, LHAAP-19, is a C&D Landfill located within the former Longhorn Army Ammunition Plant (LHAAP) in the northeast corner of Harrison County, Texas approximately 14 miles northeast of Marshall, Texas, and approximately 40 miles west of Shreveport, Louisiana. LHAAP was placed on the National Priorities (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-19 is not itself considered an NPL site. The TCEQ, the lead regulatory agency concurs that the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 3.

The C&D landfill, designated LHAAP-19, covers a 7.91 acre tract of land. The maximum depth of the landfill is believed to be less than 15 feet below ground surface. The C&D landfill was sporadically active from 1985 until recent closure activities were conducted. The C&D landfill was permitted by rule to receive non-friable asbestos and other demolition debris. During periods of activity, the monthly disposal rate ranged from 35 to 400 cubic yards of waste. The C&D landfill (formerly referred to as LHAAP-26) was evaluated in 1988. From the landfill evaluation dated 1988, and the buildings description dated 2004, it is concluded that all of the materials deposited in this landfill were what is normally classified as Construction and Demolition Debris (C&D) consisting of wood and metal studs, corrugated metal walls and roofs, concrete rubble, steel re-bar, dry-wall, transite (non-friable asbestos) siding, cardboard, Class 2 paper, packing, plastics, foil, wood packaging, wood debris, bricks, cement and other inert constituents. Records provided by the site manager indicate that hazardous materials such as friable asbestos were disposed of in other permitted landfills. Based on this information and certification of process knowledge by the owner, this landfill is classified as Non-Hazardous Class 2. The final closure assessment report and its supporting documentation demonstrate that the threat to human health or the environment is at or below those required for Risk Reduction Standard Number 2. However, due to the fact that waste was left in place, a cap was constructed to cover the footprint of the landfill and closure of the landfill meets Risk Reduction Standard Number 3.

Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The Texas Commission on Environmental Quality requires certain persons to provide certification and/or recordation in the real property records to notify the public of the conditions of the land and/or the

occurrence of remediation. This certification is not a representation or warranty by the Texas Commission on Environmental Quality of the suitability of this land for any purpose.

II

Being a 7.91 acre tract of land situated in Harrison County, Texas, being out of and a part of a 8,493 acres tract of land known as the former Longhorn Army Ammunition Plant, situated between Highway 43 at Karnack, Texas, and the southwestern shore of Caddo Lake, and being more particularly described by metes and bounds as follows:

(All coordinates shown here on are NAD 83, Texas State Plane North Central Zone 4202, based on GPS Static Processing verified with OPUS).

Beginning at the northwest corner of the herein described tract with coordinates of North: 6951971.54, East: 3316288.74, from which an iron pin set for a GPS Base Point with coordinates of North 6951987.74, East 3316281.35 bears N 24-31-50 E a distance of 17.81 feet;

Thence N 78-23-54 E, 504.61 feet to a point for an angle point with coordinates of North: 6952073.02, East: 3316783.04

Thence S 52-47-27 E, 137.20 feet to a point for an angle point with coordinates of North: 6951990.05, East: 3316892.31;

Thence S 44-12-24 E, 108.04 feet to a point for an angle point with coordinates of North: 6951912.60, East: 3316967.64;

Thence S 01-33-58 W, 110.10 feet to a point for an angle point with coordinates of North: 6951802.55, East: 3316964.63;

Thence S 11-28-04 W, 121.11 feet to a point for an angle point with coordinates of North: 6951683.85, East: 3316940.56;

Thence S 17-11-28 W, 349.04 feet to a point for the southeast corner of the herein described tract with coordinates of North: 6951350.41, East: 3316837.39;

Thence N 89-11-23 W, 294.12 feet to a point for the southwest corner of the herein described tract with coordinates of North: 6951354.57, East: 3316543.30;

Thence N 22-57-01 W, 332.88 feet to an angle point with coordinates of North: 6951661.10, East: 3316413.50;

Thence N 21-53-42 W , 334.57 feet to the place of beginning and containing 7.91 acres of land according to a survey made on the ground on November 12, 2009 by Ace Surveying, Inc.

The United States Department of the Army has undertaken careful environmental study of the LHAAP-19 site and the TCEQ concluded that no further investigation or remedial action is required for LHAAP-19.

Limited monitoring will take place in the form of inspections of the landfill cap and any maintenance required to maintain the cap integrity for a period of five years. The Army shall correct, as needed, erosion of cover material, lack of vegetative growth, and subsidence or ponding of water. If any of these problems occur after the end of the five-year post-closure period or persist for longer than the first five years of post-closure care, the owner or operator shall be responsible for their correction until all problems have been adequately resolved. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multifamily residences;

child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

Institutional controls placed on the property to ensure appropriate future use include: (1) Use must remain non-residential as described above; and (2) No activity shall be conducted or permitted that would damage the integrity of the landfill cover (i.e. unauthorized digging or disturbing the existing cover or contents of the landfill). These restrictions will be placed in the deed transferring any part of the property out of federal ownership.

III

The owner of the site is the Department of the Army and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-BDO (T. Lederle)
600 Army Pentagon
Washington, D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 14th day of November 2013.

STATE OF TEXAS
COUNTY OF Gregg

BEFORE ME, on this the 14th day of Nov, 2013, personally appeared Rose M. Zeiler, of The United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

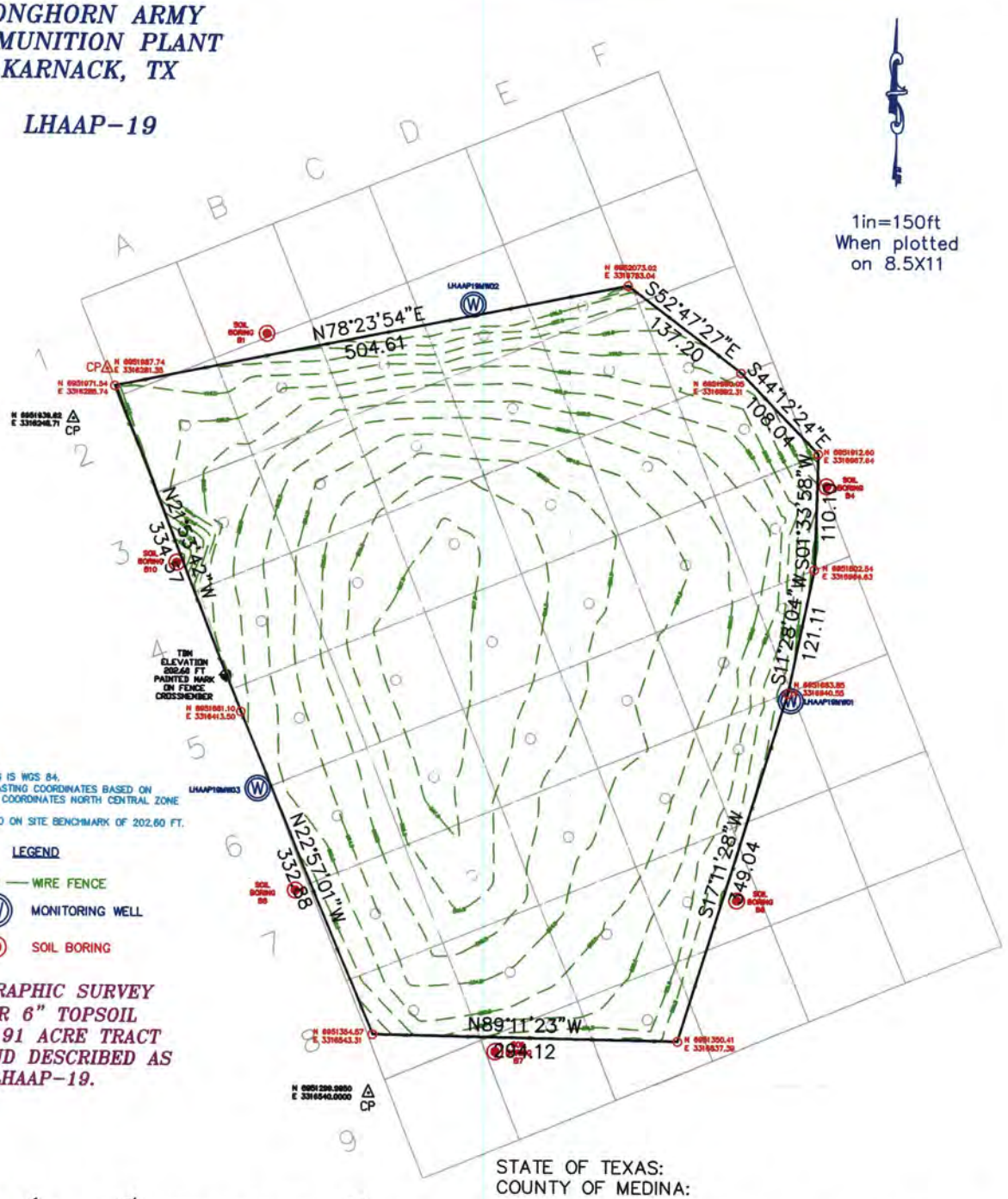
GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 14th day of Nov, 2013.

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

BRENDA McBRIDE
Notary Public State of Texas
COMM. EXP. 5-4-2014

LONGHORN ARMY AMMUNITION PLANT KARNACK, TX

LHAAP-19



NOTES:
1) BASIS OF BEARING IS WGS 84.
2) NORTHING AND EASTING COORDINATES BASED ON TEXAS STATE PLANE COORDINATES NORTH CENTRAL ZONE #4202, NAD83.
3) ELEVATIONS BASED ON SITE BENCHMARK OF 202.60 FT.

LEGEND

— x — WIRE FENCE

(W) MONITORING WELL

SOIL BORING

TOPOGRAPHIC SURVEY AFTER 6" TOPSOIL OF A 7.91 ACRE TRACT OF LAND DESCRIBED AS LHAAP-19.

AS *Ace Surveying, Inc.*

P. O. BOX 597
DEVINE, TEXAS 78016
830-334-7264
830-665-5796 FAX
acesurveying@sbcglobal.net

THIS DRAWING IS THE PROPERTY OF ACE LAND SERVICES AND SHALL NOT BE USED FOR ANY PURPOSE WITHOUT THE WRITTEN CONSENT OF AN AUTHORIZED AGENT OF ACE LAND SERVICES. ACE LAND SERVICES ACCEPTS NO RESPONSIBILITY FOR THE USE OF THIS DRAWING FOR ANY PURPOSE AFTER SIX MONTHS FROM THE DATE SHOWN HEREON. ALL RIGHTS RESERVED. COPYRIGHT 2009, ACE SURVEYING, INC. ©

STATE OF TEXAS
REGISTERED
RHONDA K. BUTLER
5409
PROFESSIONAL
LAND SURVEYOR

STATE OF TEXAS:
COUNTY OF MEDINA:

I, RHONDA K. BUTLER, DO HEREBY CERTIFY THAT THIS PLAT WAS PREPARED FROM AN ACTUAL SURVEY MADE ON THE GROUND BY MEN WORKING UNDER MY SUPERVISION.

RHONDA K. BUTLER
REGISTERED PROFESSIONAL LAND SURVEYOR #5409

SURVEYED: NOVEMBER 12, 2009
FILE NO: ALAMO 1, KARNACK

LHAAP – 29, 29-1
DRAFT LUC INSPECTION AND MAINTENANCE LOG
(RAO Inspection and Maintenance Checklist)
(Well Inspection Form)
(Pending)

Date January 17, 2023

RAO Inspection and Maintenance Checklist

General Information	
Project Name	RAO Inspection and Maintenance, LHAAP-29 Longhorn Army Ammunition Plant, Karnack, TX
Contractor Name	
Inspector's Name	
Inspector's Title	
Inspector's Signature	
Inspector's Contact Number	
Inspection Date	
Type of Inspection	☐ Quarterly ☐ Semiannual ☐ Annual ☐ Prior to forecast rain ☐ After a rain event ☐ Other_____

	Description	YES	NO	N/A	Comments (Attach photos/location sketches)	Corrective Action (Attach photos)
A.	**Groundwater Monitoring Wells**					
A.1	Are the installed groundwater monitoring wells in good condition?					
A.2	Is the well cleared of vegetation and accessible?					
A.3	Any other relevant observations?					
A.4	Are there any significant cracks present?					
A.5	Are there any damaged areas?					
B.	**Site Features**					
B.1	Are there any signs of groundwater use?					
B.2	Are there any signs of residential construction?					
B.3	Any other relevant observations?					
C.	**Thermal Treatment System Operations and Maintenance (O&M)**					
C.1	Are there any signs of transformer or voltage control damage?					
C.2	Are there any signs of damage to the Electrical Resistance Heating (ERH) system?					

SAMPLE

General Information	
Project Name	RAO Inspection and Maintenance, LHAAP-29 Longhorn Army Ammunition Plant, Karnack, TX
Contractor Name	
Inspector's Name	
Inspector's Title	
Inspector's Signature	
Inspector's Contact Number	
Inspection Date	
Type of Inspection	☐ Quarterly ☐ Semiannual ☐ Annual ☐ Prior to forecast rain ☐ After a rain event ☐ Other_____

	Description	YES	NO	N/A	Comments (Attach photos/location sketches)	Corrective Action (Attach photos)
C.	**Thermal Treatment System Operations and Maintenance (O&M) Cont'd**					
C.3	Are there any signs of damage to the vapor extraction system (blowers, condensate removal system, etc.)?					
C.4	Are there any signs of damage to the emission control system (refrigerated condenser, thermal/catalytic oxidizer or activated carbon, etc.)?					

SAMPLE

WELL INSPECTION FORM

Job Name: _____ Well ID: _____

Job No.: _____ Completed Date: _____

Client: _____ Measured Depth: _____

Site Location: _____ Inspector: _____

☐ **ABOVE GROUND**

Protective casing? ☐ Yes ☐ No

Material _____

Condition: ☐ Good ☐ Broken ☐ Cracked

Lid Condition: ☐ Good ☐ Broken ☐ Cracked

Hinge Condition: ☐ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ **FLUSH MOUNTED**

Well cover present? ☐ Yes ☐ No

Condition: ☐ Good ☐ Broken ☐ Cracked

Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Visible? ☐ Yes ☐ No

Dimensions _____ Thickness _____

Sloped away from casing? ☐ Yes ☐ No

Check any of the following features that apply:

☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

CONCRETE PAD:

Inner Diameter (inches) _____

Condition: ☐ Good ☐ Broken ☐ Cracked ☐ Other (describe) _____

Cap present? ☐ Yes ☐ No

Well lock present? ☐ Yes ☐ No

Lock functioning properly? ☐ Yes ☐ No

Bump post? ☐ Yes ☐ No

Well ID visible? ☐ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☐ No

Visual obstruction? ☐ Yes ☐ No

Is well open to completed depth? ☐ Yes ☐ No

Is silt present in well? ☐ Yes ☐ No

Is silt greater than 25% of well screen length? ☐ Yes ☐ No

COMMENTS:

LHAAP – 29, 29-2
LUCs FROM REMEDIAL DESIGN
(Pending)

Date January 17, 2023

LHAAP – 29, 29-3
NOTICE OF LAND USE CONTROLS AND NONRESIDENTIAL LAND USE AT LHAAP-29 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)
(Pending)

Date January 17, 2023

Initial Notice of Land Use Controls

LHAAP-29 Former TNT Production Area, Group 2
Longhorn Army Ammunition Plant, Karnack Texas

The former Longhorn Army Ammunition Plant (LHAAP) is an inactive government-owned, formerly contractor-operated and maintained Department of Defense facility located in central east Texas in the northeast corner of Harrison County. LHAAP is approximately 14 miles northeast of Marshall, Texas. The facility is approximately 40 miles west of Shreveport, Louisiana. The former U.S. Army installation occupied nearly 8,416 acres between State Highway 43 at Karnack, Texas, and the southwestern shore of Caddo Lake and is accessed by State Highways 43 and 134.

LHAAP was placed on the National Priorities List (NPL) on August 9, 1990. Activities to remediate contamination began in 1990. After its listing on the NPL, the U.S. Army, the USEPA, and the Texas Water Commission (currently known as the TCEQ) entered into a CERCLA Section 120 Federal Facilities Agreement (FFA) for remedial activities at LHAAP. The FFA became effective December 30, 1991. LHAAP operated until 1997 when it was placed on inactive status and classified by the U.S. Army Armament, Munitions, and Chemical Command as excess property.

The site addressed in this Initial Notice of Land Use Controls is LHAAP-29, which is shown on the attached Figures and discussed below.

Land Use Controls (LUCs) are applied at LHAAP-29 as part of the remedy in accordance with the LHAAP-29 Record of Decision signed September 19, 2019. The LUCs are necessary because contaminants are present in groundwater at levels that do not support unlimited use and unrestricted exposure. The LUC boundaries may change during remedy implementation.

Contaminants of Concern (COCs)

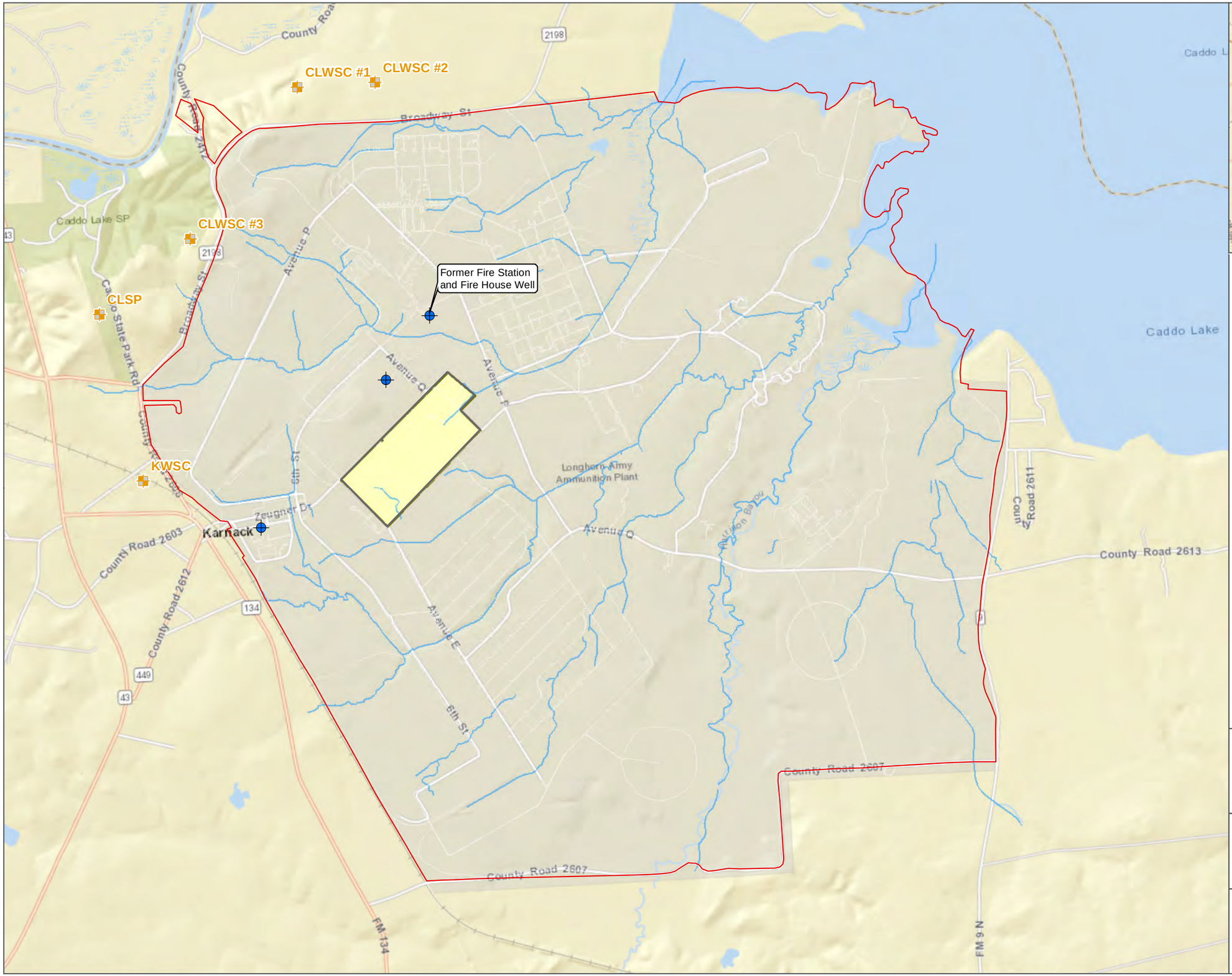
The COCs for LHAAP-29 are Volatile Organic Compounds (VOCs), explosives, and perchlorate, which are found at concentrations exceeding acceptable levels in the shallow groundwater zone. In addition, VOCs are also present at concentrations exceeding acceptable levels in the intermediate groundwater zone.

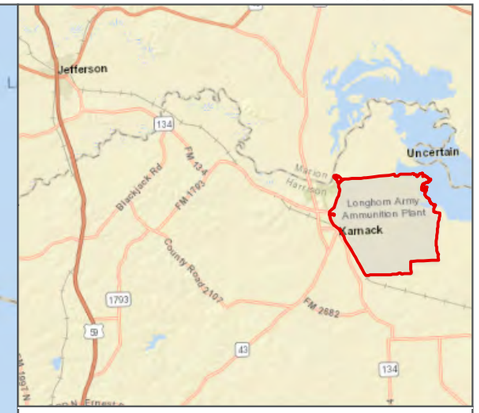
Land Use Controls

- The LUC prohibiting groundwater use (except for environmental monitoring and testing) shall be implemented and shall remain in place at the site until the levels of COCs in soil and groundwater allow for unlimited use and unrestricted exposure.
- The LUC restricting land use to nonresidential shall be implemented and shall remain in place at the site until the levels of COCs in surface and subsurface soil and groundwater allow for unlimited use and unrestricted exposure.
- The LUC to maintain the integrity of any current or future remedial or monitoring systems shall remain in place until groundwater cleanup levels of COCs are met.

Further information may be found in the Administrative Record at the Marshall Public Library, at website www.longhornaap.com or by contacting Rose M. Zeiler (479-635-0110 or rose.m.zeiler.civ@mail.mil).

01149347





LEGEND

- Public Water Supply Well Locations
- Potable Water Wells
- Roads
- Streams
- Site LHAAP-29
- LHAAP Installation Boundary

DATA SOURCES: AECOM, 2016, Draft Final Remedial Investigation Addendum LHAAP-29, Former TNT Production Area, Group 2 Longhorn Army Ammunition Plant, Karnack, Texas. July. ESRI

SITE VICINTY MAP

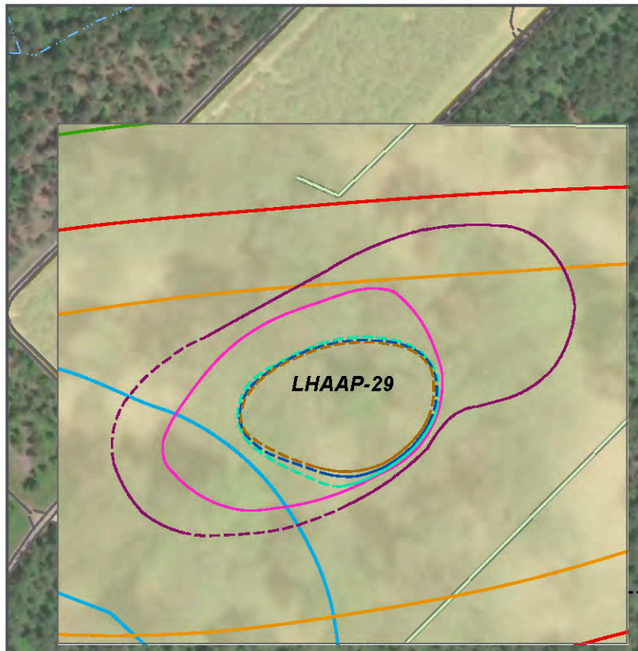
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

N

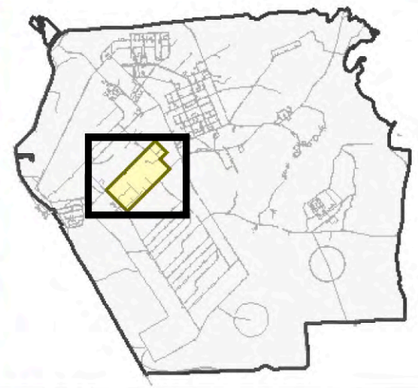
0 0.5 1
MILES

FIGURE 1

PATH: J:\2018\18-025_LHAAP_SITES29_47_18AND24_ROD_(WERNER)\7.2_WORK_IN_PROGRESS\MAP_DOCS\DRAFT\LHAAP29\LHAAP_29_NOTIFICATION_FIGURE1.MXD - USER: KLOFGREN - DATE: 10/11/2019



LHAAP-32
LHAAP-35B (37)
LHAAP-47
LHAAP-23
LHAAP-64
LHAAP-29
LHAAP-45



LEGEND

- Preliminary Land Use Control Boundary
- TNT Cooling Water Drain Line (North)
- TNT Cooling Water Drain Line (South)
- TNT Wastewater Line
- Stream
- Road
- Building
- Site LHAAP-29

Shallow Groundwater Plumes (Dashed Where Inferred), Contour Concentration

- Dinitrotoluenes and Nitrotoluenes, 1.3 µg/L (based on 2,4-dinitrotoluene and 2,6-dinitrotoluene) Maximum Extent of Contamination
- 1,2-Dichloroethane, 5 µg/L
- Perchlorate, 17 µg/L
- Trichloroethene, 5 µg/L

Intermediate Groundwater Contours (Dashed Where Inferred), Contour Concentration

- Trichloroethene, 5 µg/L
- 1,1- DCE, 7 µg/L
- cis-1,2- DCE Isoconcentration, 70 µg/L
- Vinyl Chloride, 2 µg/L
- MC, 5 µg/L

*All concentrations micrograms per liter (µg/L)

PRELIMINARY
LAND USE CONTROL BOUNDARY
LHAAP 29
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

N
0 250 500
FEET

FIGURE 2

PATH: J:\2018\18-025_LHAAP_SITES29_47_18AND24_ROD_[WERNER]\7.2_WORK_IN_PROGRESS\MAP_DOCS\DRAFT\LHAAP29\LHAAP_29_NOTIFICATION_FIGURE.MXD - USER: KLOFGREN - DATE: 10/9/2019

LHAAP – 29, 29-4
DRAFT LAND USE CONTROL COMPLIANCE INSPECTION FORM
(Pending)

Date January 17, 2023

Draft Land Use Control Compliance Inspection Form

In accordance with the Remedial Design dated _____ for LHAAP-29, an inspection of the site was conducted by _____ [indicate transferee] on _____.

The land use control mechanisms are:

- Groundwater restrictions – prohibition of groundwater use (except for monitoring and testing) until levels of contaminants of concern (COCs) in soil and groundwater allow for unlimited use and unrestricted exposure.
- Land use restrictions - restrict land use to nonresidential until levels of COCs in surface and subsurface soil, and groundwater allow for unlimited use and unrestricted exposure.
- Integrity of remedial and monitoring systems - maintain the integrity of any current or future remedial or monitoring systems until groundwater cleanup of COCs are met.

No unauthorized activities or uses have occurred. Compliance with land use controls and restrictions is as follows:

- No use of groundwater (other than environmental testing and monitoring), installation of new groundwater wells, or tampering with existing monitoring wells;
- No land use other than nonresidential; and
- No activities that would compromise the integrity of any current or future remedial or monitoring systems.

I, the undersigned, do document that the inspection was conducted as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief.

Date: _____

Name/Title:
_____

Signature:
_____

Annual compliance certification forms shall be completed no later than March 1 of each year for the previous calendar year, retained in the file and provided to Army, EPA, and TCEQ upon request.

LHAAP-35/36

NOTICE OF NONRESIDENTIAL LAND USE AT SUMPS/WASTE RACK SUMP LOCATIONS (LHAAP-35/36) FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

2012-000000706

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000706 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

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

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. Sump094 (called Sump 094 on the attached Exhibit A) is part of LHAAP-35/36. Sump094 is a former sump location near Building 16-Y physically located within site boundary of LHAAP-48 of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which Sump094 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps (including Sump094) were also associated with wash racks (waste rack sumps) where containers were cleaned and stored. Further information may be found in the Notice of Registration No. 30990 files, which are available for inspection upon request at

TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The Sump094 parcel is 64 square feet, more or less, or 0.00146 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the Sump094 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from Sump094 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of Sump094 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of Sump094 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the ____th day of _____, 2011.

BEFORE ME, on this the 30 th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

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

FIELD NOTES DESCRIPTION OF
SUMP 094
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 64.0 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-1" referenced above,

THENCE N 07deg59'31"W 569.56' to a point for the Southmost corner of this sump and this POINT OF BEGINNING,

THENCE along the boundary of this tract the following four courses :

(01) N 37deg59'57"W 8.00' to a point for the Westmost corner of this tract,
(02) N 52deg00'03"E 8.00' to a point for the Northmost corner of this tract,
(03) S 37deg59'57"E 8.00' to a point for the Eastmost corner of this tract,
(04) S 52deg00'03"W 8.00' to this POINT OF BEGINNING.

This tract contains 64.0 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

Tom A. Fidler, R.P.L.S. Number 3940

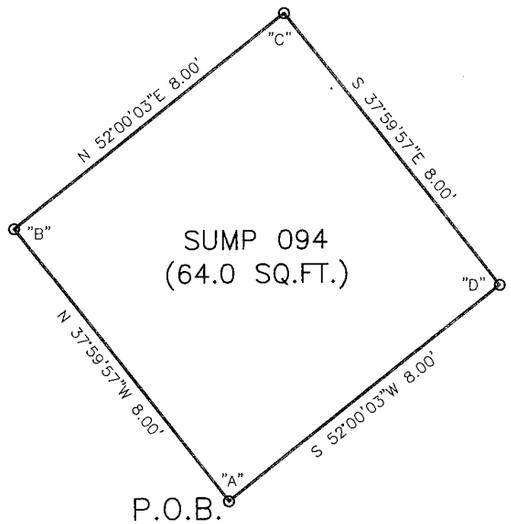
LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

NOTES:

X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
O INDICATES UNMARKED CORNER OF SUMP



COORDINATE TABLE

POINT	NORTH	EAST
A	6959071.485	3314200.311
B	6959077.789	3314195.385
C	6959082.715	3314201.689
D	6959076.411	3314206.615

SCALE 1"=3'

3 0 3 6 9
GRAPHIC SCALE - FEET

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 14, 2011.

N 07°59'31"W 569.56'

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

SUMP 094
(64.0 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	H.PTS H.LEG
03/14/2011	1103025H.DWG	DRAWN BY JTJ

2012-000000707

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000707 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

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

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. Sump095 (called Sump 095 on the attached Exhibit A) is part of LHAAP-35/36. Sump095 is a former sump location near Building 34-Y physically located within site boundary of LHAAP-48 of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which Sump095 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps (including Sump095) were also associated with wash racks (waste rack sumps) where containers were cleaned and stored. Further information may be found in the Notice of Registration No. 30990 files, which are available for inspection upon request at

TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The Sump095 parcel is 69.6 square feet, more or less, or 0.00159 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the Sump095 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from Sump095 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of Sump095 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of Sump095 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM- ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30th day of June, 2011.

BEFORE ME, on this the 30 th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

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

FIELD NOTES DESCRIPTION OF
SUMP 095
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 69.6 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-1" referenced above,

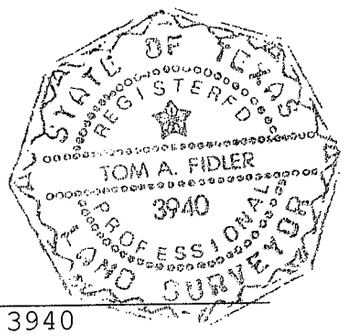
THENCE N 43deg48'28"E 725.22' to a point for the Southmost corner of this sump and this POINT OF BEGINNING,

THENCE along the boundary of this tract the following eight courses :

(01)	N 37deg59'57"W	12.00'	to a point for tract corner,
(02)	S 52deg00'03"W	3.10'	to a point for tract corner,
(03)	N 37deg59'57"W	6.00'	to a point for the Westmost corner of this tract,
(04)	N 52deg00'03"E	8.00'	to a point for the Northmost corner of this tract,
(05)	S 37deg59'57"E	6.00'	to a point for tract corner,
(06)	S 52deg00'03"W	3.10'	to a point for tract corner,
(07)	S 37deg59'57"E	12.00'	to a point for the Eastmost corner of this tract,
(08)	S 52deg00'03"W	1.80'	to this POINT OF BEGINNING.

This tract contains 69.6 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

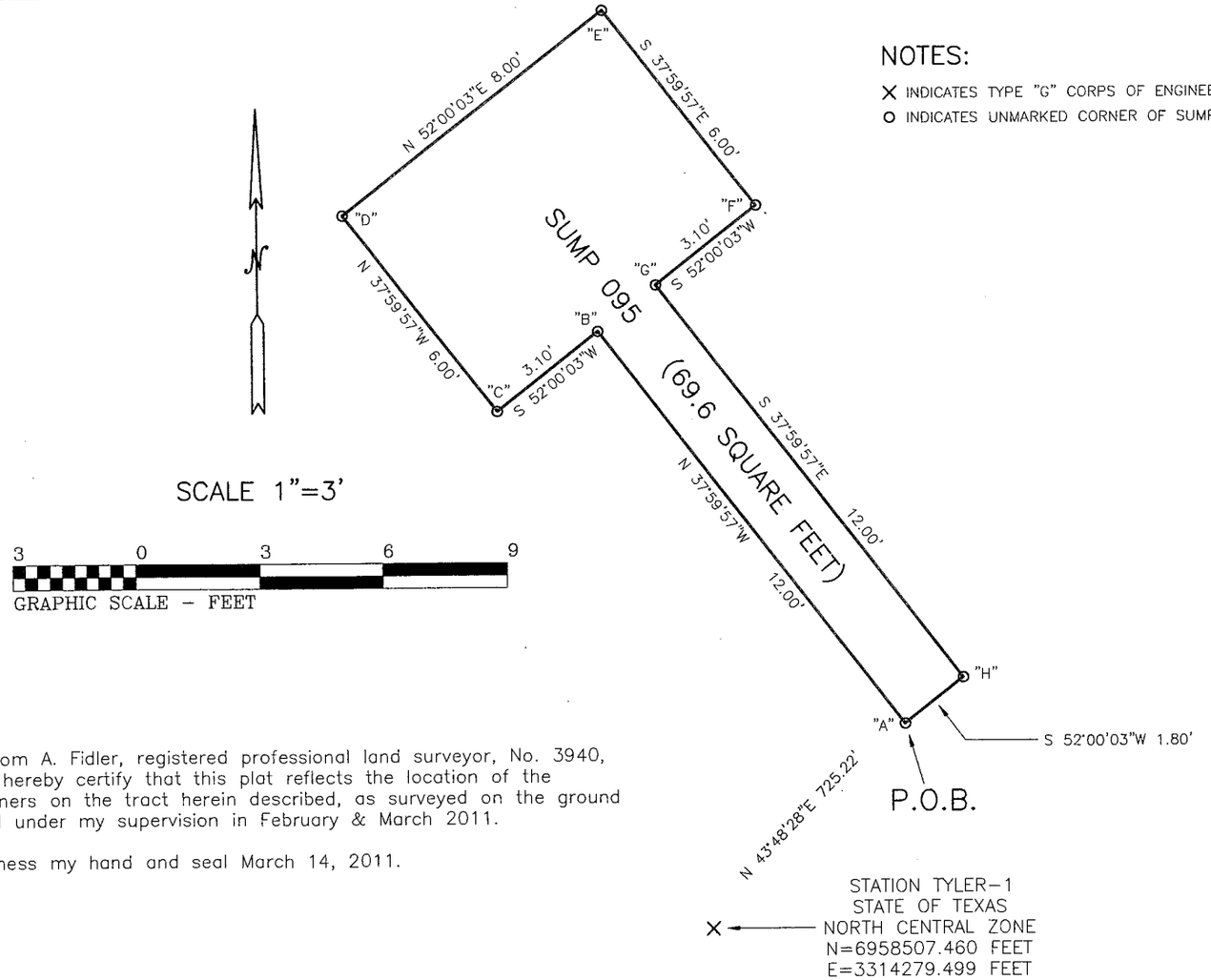


Tom A. Fidler, R.P.L.S. Number 3940

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@coblelynx.com

NOTES:

X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
O INDICATES UNMARKED CORNER OF SUMP



NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

COORDINATE TABLE

POINT	NORTH	EAST
A	6959030.826	3314781.526
B	6959040.282	3314774.138
C	6959038.373	3314771.695
D	6959043.101	3314768.001
E	6959048.027	3314774.305
F	6959043.299	3314777.999
G	6959041.390	3314775.556
H	6959031.934	3314782.944

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 14, 2011.

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

SUMP 095
(69.6 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	F.PTS F.LEG
03/14/2011	1103025F.DWG	DRAWN BY JTJ

2012-000000708

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000708 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

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

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. Sump096 (called Sump 096 on the attached Exhibit A) is part of LHAAP-35/36. Sump096 is a former sump location near Building 34-Y physically located within site boundary of LHAAP-48 of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which Sump096 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps (including Sump096) were also associated with wash racks (waste rack sumps) where containers were cleaned and stored. Further information may be found in the Notice of Registration No. 30990 files, which are available for inspection upon request at

TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The Sump096 parcel is 64 square feet, more or less, or 0.00146 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the Sump096 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from Sump096 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of Sump096 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of Sump096 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

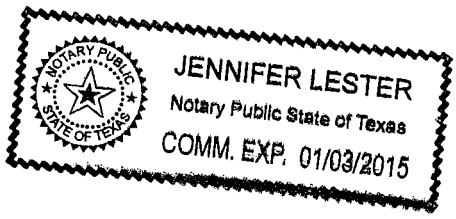
Assistant Chief of Staff for Installation Management
ATTN: DAIM- ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30th day of June, 2011.

BEFORE ME, on this the 30th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.



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

FIELD NOTES DESCRIPTION OF
SUMP 096
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 64.0 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-1" referenced above,

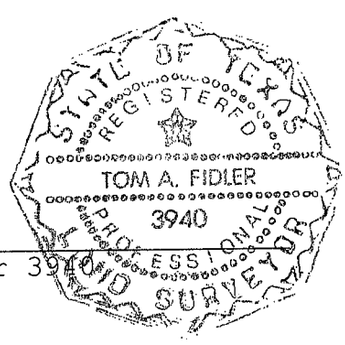
THENCE N 36deg34'53"E 696.04' to a point for the Southmost corner of this sump and this POINT OF BEGINNING,

THENCE along the boundary of this tract the following four courses :

(01) N 37deg59'57"W 8.00' to a point for the Westmost corner of this tract,
(02) N 52deg00'03"E 8.00' to a point for the Northmost corner of this tract,
(03) S 37deg59'57"E 8.00' to a point for the Eastmost corner of this tract,
(04) S 52deg00'03"W 8.00' to this POINT OF BEGINNING.

This tract contains 64.0 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

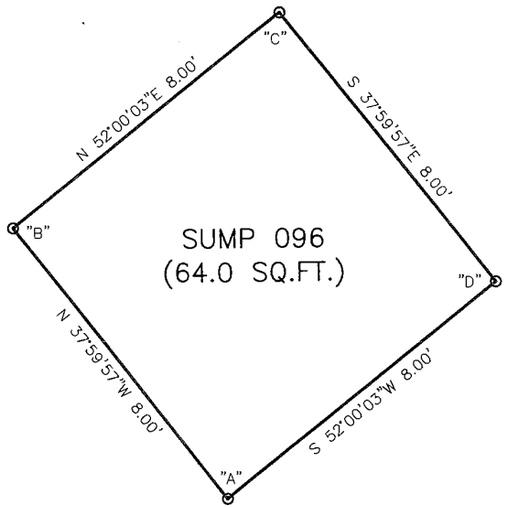
LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

NOTES:

X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
O INDICATES UNMARKED CORNER OF SUMP

SCALE 1"=3'

3 0 3 6 9
GRAPHIC SCALE - FEET



STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

COORDINATE TABLE

POINT	NORTH	EAST
A	6959066.385	3314694.311
B	6959072.689	3314689.385
C	6959077.615	3314695.689
D	6959071.311	3314700.615

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 14, 2011.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

SUMP 096
(64.0 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	G.PTS G.LEG
03/14/2011	1103025G.DWG	DRAWN BY JTJ

2012-000000709

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000709 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

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

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. Sump097 (called Sump 097 on the attached Exhibit A) is part of LHAAP-35/36. Sump097 is a former sump location near Building 38-Y physically located within site boundary of LHAAP-48 of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which Sump097 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps (including Sump097) were also associated with wash racks (waste rack sumps) where containers were cleaned and stored. Further information may be found in the Notice of Registration No. 30990 files, which are available for inspection upon request at

TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The Sump097 parcel is 76.6 square feet, more or less, or 0.00175 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the Sump097 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from Sump097 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of Sump097 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of Sump097 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30 th day of June, 2011.

BEFORE ME, on this the 30 th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

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

FIELD NOTES DESCRIPTION OF
SUMP 097
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 76.6 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-1" referenced above,

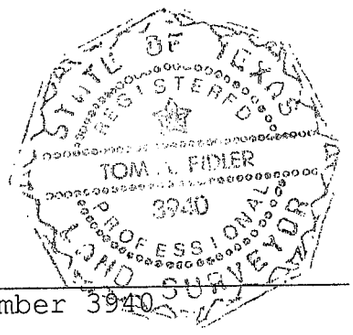
THENCE N 33deg53'28"E 842.86' to this POINT OF BEGINNING, said point being at the Southmost corner of the external face of the concrete which defines this sump,

THENCE along the external face of the concrete which defines this sump the following four courses, each course ending at a corner of the external face of said concrete :

(01)	N 58deg18'32"W	6.20',	being this sump's Westmost corner,
(02)	N 37deg53'34"E	12.45',	being this sump's Northmost corner,
(03)	S 58deg06'49"E	6.18',	being this sump's Eastmost corner,
(04)	S 37deg47'39"W	12.43',	being the aforementioned POINT OF BEGINNING.

This tract contains 76.6 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

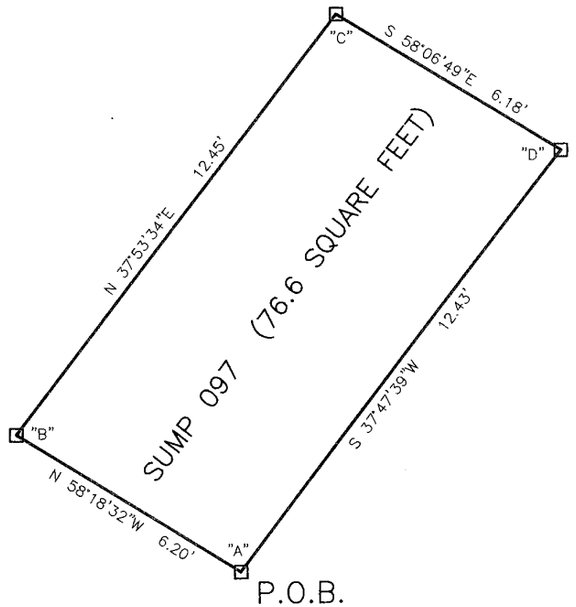
LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

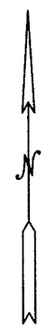
NOTES:

- X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- □ INDICATES CORNER OF EXTERNAL FACE OF CONCRETE
- o INDICATES UNMARKED POINT

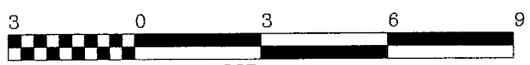


COORDINATE TABLE

POINT	NORTH	EAST
A	6959207.120	3314749.495
B	6959210.377	3314744.219
C	6959220.206	3314751.868
D	6959216.943	3314757.113

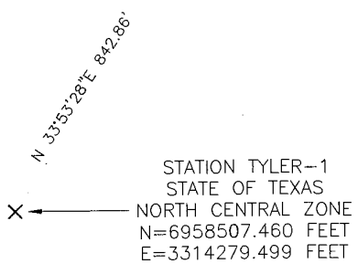


SCALE 1"=3'



I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 4, 2011.



FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

SUMP 097
(76.6 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	Z.PTS Z.LEG
MAR. 4, 2011	0908074Z.DWG	DRAWN BY JTJ

2012-000000710

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000710 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

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

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. Sump098 (called Sump 098 on the attached Exhibit A) is part of LHAAP-35/36. Sump098 is a former sump location near Building 38-Y physically located within site boundary of LHAAP-48 of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which Sump098 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps (including Sump098) were also associated with wash racks (waste rack sumps) where containers were cleaned and stored. Further information may be found in the Notice of Registration No. 30990 files, which are available for inspection upon request at

TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The Sump098 parcel is 39.4 square feet, more or less, or 0.0009 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the Sump098 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from Sump098 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of Sump098 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of Sump098 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30th day of June, 2011.

BEFORE ME, on this the 30th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

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

FIELD NOTES DESCRIPTION OF
SUMP 098
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 39.4 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-1" referenced above,

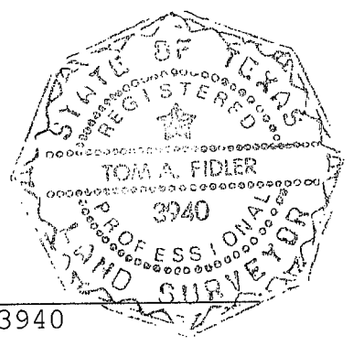
THENCE N 28deg58'18"E 815.98' to this POINT OF BEGINNING, said point being at the Southmost corner of the external face of the concrete which defines this sump,

THENCE along the external face of the concrete which defines this sump the following four courses, each course ending at a corner of the external face of said concrete :

(01)	N 51deg59'37"W	9.74',	being this sump's Westmost corner,
(02)	N 43deg01'55"E	4.05',	being this sump's Northmost corner,
(03)	S 52deg06'01"E	9.75',	being this sump's Eastmost corner,
(04)	S 43deg15'56"W	4.07',	being the aforementioned POINT OF BEGINNING.

This tract contains 39.4 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

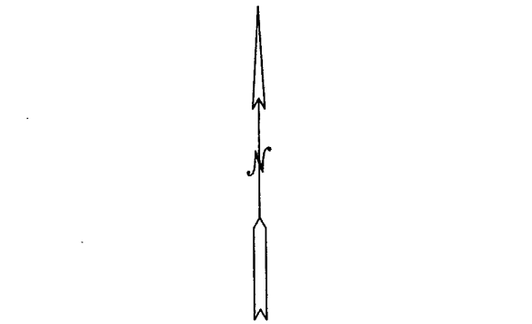


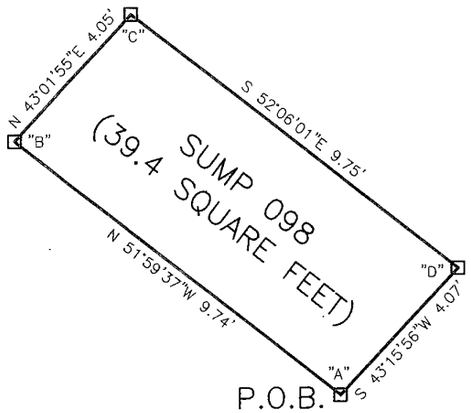
Tom A. Fidler, R.P.L.S. Number 3940

NOTES:

- X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- ☐ INDICATES CORNER OF EXTERNAL FACE OF CONCRETE
- O INDICATES UNMARKED POINT

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com





NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

COORDINATE TABLE

POINT	NORTH	EAST
A	6959221.331	3314674.744
B	6959227.327	3314667.072
C	6959230.288	3314669.837
D	6959224.296	3314677.534

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 4, 2011.

N 28°58'18"E 815.98'

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

SUMP 098
(39.4 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	Y.PTS Y.LEG
MAR. 4, 2011	0908074Y.DWG	DRAWN BY JTJ

2012-000000711

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000711 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

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

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. Sump099 (called Sump 099 on the attached Exhibit A) is part of LHAAP-35/36. Sump099 is a former sump location near Building 38-Y physically located within site boundary of LHAAP-48 of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which Sump099 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps (including Sump099) were also associated with wash racks (waste rack sumps) where containers were cleaned and stored. Further information may be found in the Notice of Registration No. 30990 files, which are available for inspection upon request at

TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The Sump099 parcel is 48 square feet, more or less, or 0.0011 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the Sump099 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from Sump099 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of Sump099 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of Sump099 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30 th day of June, 2011.

BEFORE ME, on this the 30th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

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

FIELD NOTES DESCRIPTION OF
SUMP 099
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 48.0 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-1" referenced above,

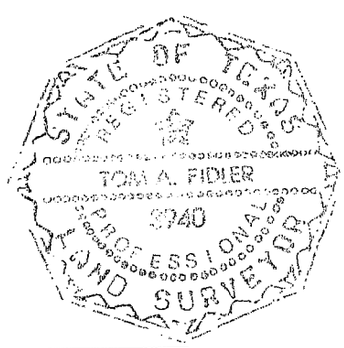
THENCE N 27deg36'35"E 879.49' to a point for the Southmost corner of this sump and this POINT OF BEGINNING,

THENCE along the boundary of this tract the following four courses :

(01) N 37deg59'57"W 8.00' to a point for the Westmost corner of this tract,
(02) N 52deg00'03"E 6.00' to a point for the Northmost corner of this tract,
(03) S 37deg59'57"E 8.00' to a point for the Eastmost corner of this tract,
(04) S 52deg00'03"W 6.00' to this POINT OF BEGINNING.

This tract contains 48.0 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

NOTE

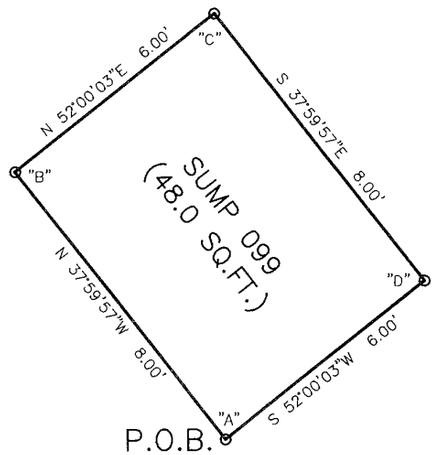
ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

NOTES

X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
O INDICATES UNMARKED CORNER OF SUMP

COORDINATE TABLE

POINT	NORTH	EAST
A	6959286.801	3314687.099
B	6959293.105	3314682.173
C	6959296.799	3314686.901
D	6959290.495	3314691.827



SCALE 1"=3'

3 0 3 6 9
GRAPHIC SCALE - FEET

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 14, 2011.

N 27°36'35"E 879.49'

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

SUMP 099
(48.0 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	J.PTS J.LEG
03/14/2011	1103025J.DWG	DRAWN BY JTJ

2012-000000712

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000712 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

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

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. Sump100 (called Sump 100 on the attached Exhibit A) is part of LHAAP-35/36. Sump100 is a former sump location near Building 45-Y physically located within site boundary of LHAAP-48 of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which Sump100 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps (including Sump100) were also associated with wash racks (waste rack sumps) where containers were cleaned and stored. Further information may be found in the Notice of Registration No. 30990 files, which are available for inspection upon request at

TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The Sump100 parcel is 80 square feet, more or less, or 0.00183 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the Sump100 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from Sump100 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of Sump100 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of Sump100 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30th day of June, 2011.

BEFORE ME, on this the 30th day of JUNE, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

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

FIELD NOTES DESCRIPTION OF
SUMP 100
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 80.0 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-1" referenced above,

THENCE N 23deg52'16"E 995.90' to a point for the Southmost corner of this sump and this POINT OF BEGINNING,

THENCE along the boundary of this tract the following four courses :

(01) N 37deg59'57"W 8.00' to a point for the Westmost corner of this tract,
(02) N 52deg00'03"E 10.00' to a point for the Northmost corner of this tract,
(03) S 37deg59'57"E 8.00' to a point for the Eastmost corner of this tract,
(04) S 52deg00'03"W 10.00' to this POINT OF BEGINNING.

This tract contains 80.0 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

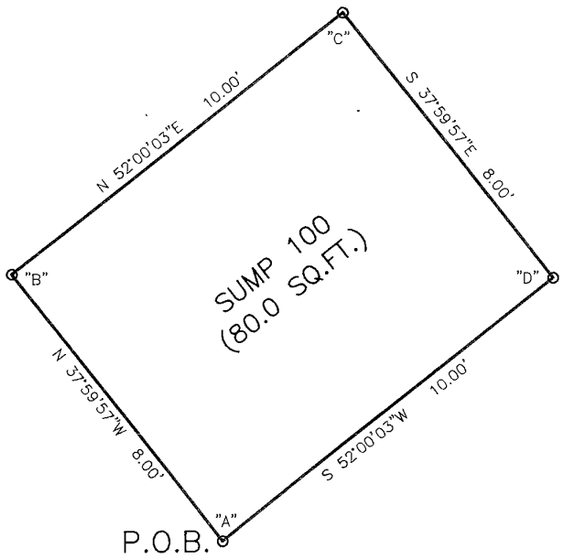
Tom A. Fidler, R.P.L.S. Number 3940

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER–1 & TYLER–2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

COORDINATE TABLE

POINT	NORTH	EAST
A	6959418.170	3314682.523
B	6959424.474	3314677.597
C	6959430.630	3314685.477
D	6959424.326	3314690.403



N 23°52'16"E 995.90'

STATION TYLER–1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

STATION TYLER–2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236–3377 FAX (903) 236–3539
E–MAIL landmark@cablelynx.com

NOTES

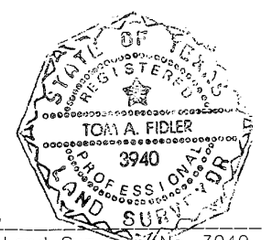
X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
O INDICATES UNMARKED CORNER OF SUMP

SCALE 1"=3'

3 0 3 6 9
GRAPHIC SCALE – FEET

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 14, 2011.



Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET

SUMP 100
(80.0 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	K.PTS K.LEG
03/14/2011	1103025K.DWG	DRAWN BY JTJ

2012-000000713

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000713 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

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

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. Sump101 (called Sump 101 on the attached Exhibit A) is part of LHAAP-35/36. Sump101 is a former sump location near Building 45-Y physically located within site boundary of LHAAP-48 of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which Sump101 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps (including Sump101) were also associated with wash racks (waste rack sumps) where containers were cleaned and stored. Further information may be found in the Notice of Registration No. 30990 files, which are available for inspection upon request at

TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The Sump101 parcel is 67 square feet, more or less, or 0.00153 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the Sump101 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from Sump101 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of Sump101 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of Sump101 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30 th day of June, 2011.

BEFORE ME, on this the 30 th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

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

FIELD NOTES DESCRIPTION OF
SUMP 101
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 67.0 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-1" referenced above,

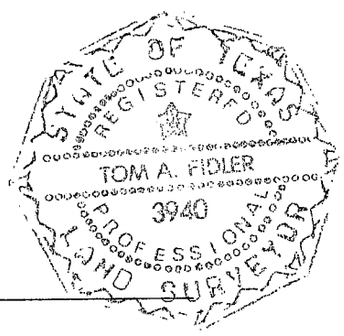
THENCE N 27deg18'47"E 1027.58' to this POINT OF BEGINNING, said point being at the Southmost corner of the external face of the concrete which defines this sump,

THENCE along the external face of the concrete which defines this sump the following four courses, each course ending at a corner of the external face of said concrete :

(01)	N 38deg59'52"W	11.24',	being this sump's Westmost corner,
(02)	N 57deg48'20"E	5.99',	being this sump's Northmost corner,
(03)	S 39deg05'42"E	11.26',	being this sump's Eastmost corner,
(04)	S 57deg59'19"W	6.01',	being the aforementioned POINT OF BEGINNING.

This tract contains 67.0 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

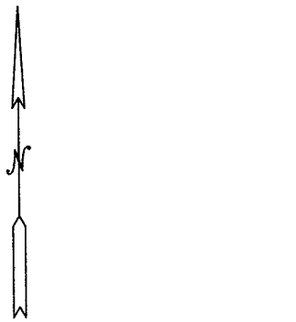


Tom A. Fidler, R.P.L.S. Number 3940

NOTES:

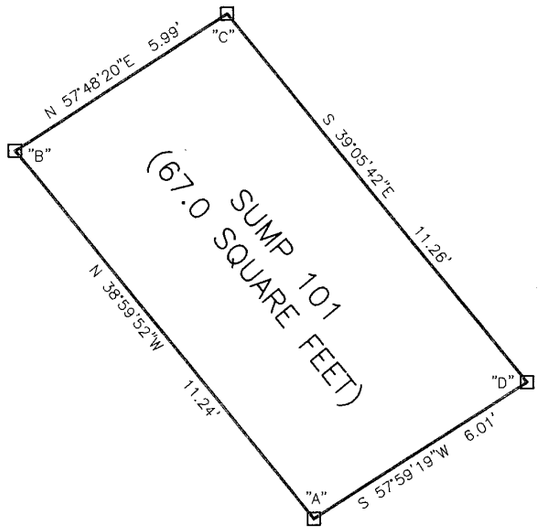
- X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- □ INDICATES CORNER OF EXTERNAL FACE OF CONCRETE
- O INDICATES UNMARKED POINT

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com



SCALE 1"=3'

3 0 3 6 9
GRAPHIC SCALE – FEET



P.O.B.

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

COORDINATE TABLE

POINT	NORTH	EAST
A	6959420.476	3314751.003
B	6959429.211	3314743.930
C	6959432.404	3314749.001
D	6959423.663	3314756.102

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 4, 2011.

N 27°18'47"E 1027.58'

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEETS

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND
SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING
ELECTRONIC TOTAL STATION
INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

SUMP 101
(67.0 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	A.PTS A.LEG
MAR. 4, 2011	1103025A.DWG	DRAWN BY JTJ

2012-000000714

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MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000714 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

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

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. Sump102 (called Sump 102 on the attached Exhibit A) is part of LHAAP-35/36. Sump102 is a former sump location near Building 16-T physically located within site boundary of LHAAP-35C(53) of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which Sump102 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps (including Sump102) were also associated with wash racks (waste rack sumps) where containers were cleaned and stored. Further information may be found in the

Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The Sump102 parcel is 154.4 square feet, more or less, or 0.00354 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the Sump102 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from Sump102 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of Sump102 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of Sump102 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30th day of June, 2011.

BEFORE ME, on this the 30 th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

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

FIELD NOTES DESCRIPTION OF
SUMP 102
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 154.4 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-2" referenced above,

THENCE S 17deg29'41"E 550.28' to a point for the Northmost corner of this sump and this POINT OF BEGINNING,

THENCE along the boundary of this tract the following ten courses :

(01)	S 15deg52'38"E	7.67'	to a point for the Eastmost corner of this tract,
(02)	S 74deg07'22"W	6.94'	to a point for tract corner,
(03)	N 15deg52'38"W	5.54'	to a point for tract corner,
(04)	S 74deg07'22"W	12.94'	to a point for tract corner,
(05)	S 36deg37'46"W	24.51'	to a point for tract corner,
(06)	S 53deg22'14"E	7.10'	to a point for tract corner,
(07)	S 36deg37'46"W	2.10'	to a point for the Southmost corner of this tract,
(08)	N 53deg22'14"W	9.25'	to a point for the Westmost corner of this tract,
(09)	N 36deg37'46"E	27.31'	to a point for tract corner,
(10)	N 74deg07'22"E	20.63'	to this POINT OF BEGINNING.

This tract contains 154.4 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

Tom A. Fidler, R.P.L.S. Number 3940

NOTES:

X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)

O INDICATES UNMARKED CORNER OF SUMP

STATION TYLER–1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING
ELECTRONIC TOTAL STATION
INDICATES 1116.219')

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236–3377 FAX (903) 236–3530
E–MAIL landmark@cablelynx.com

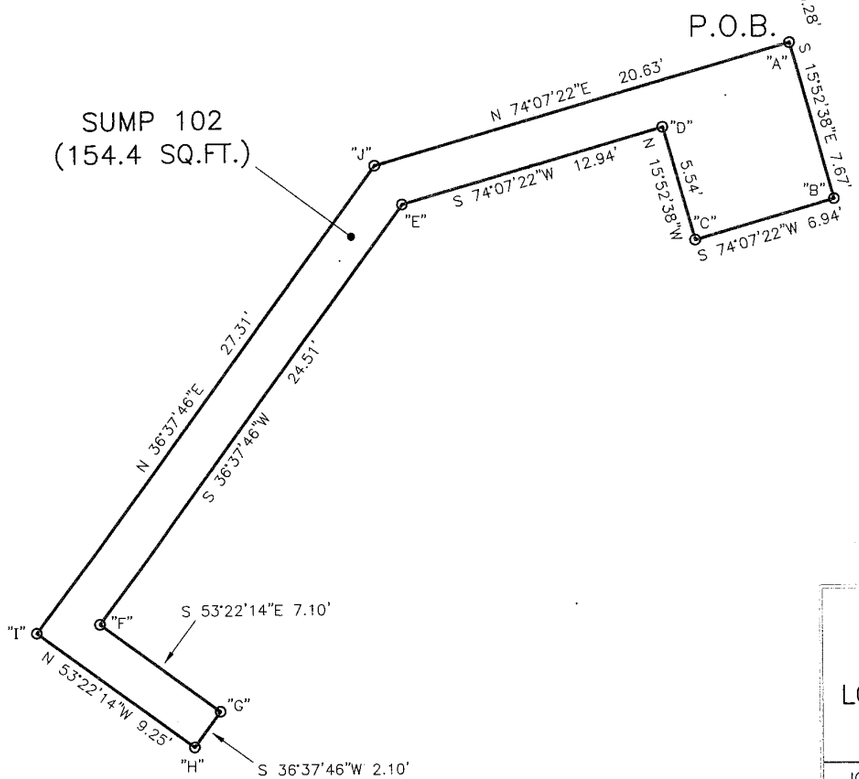
STATION TYLER–2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER–1 & TYLER–2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

SCALE 1"=6'

6 0 6 12 18
GRAPHIC SCALE – FEET



COORDINATE TABLE

POINT	NORTH	EAST
A	6957307.354	3315333.565
B	6957299.975	3315335.664
C	6957298.077	3315328.991
D	6957303.409	3315327.474
E	6957299.870	3315315.030
F	6957280.203	3315300.409
G	6957275.965	3315306.110
H	6957274.278	3315304.856
I	6957279.797	3315297.433
J	6957301.711	3315313.725

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 11, 2011.

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

SUMP 102
(154.4 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #1101007	0407088.CRD	B.PTS B.LEG
MAR. 11, 2011	1103025B.DWG	DRAWN BY JTJ

2012-000000715

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000715 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

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

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. Sump103 (called Sump 103 on the attached Exhibit A) is part of LHAAP-35/36. Sump103 is a former sump location near Building 16-T physically located within site boundary of LHAAP-35C(53) of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which Sump103 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps (including Sump103) were also associated with wash racks (waste rack sumps) where containers were cleaned and stored. Further information may be found in the

Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The Sump103 parcel is 209.1 square feet, more or less, or 0.0048 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the Sump103 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from Sump103 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of Sump103 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of Sump103 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30th day of June, 2011.

BEFORE ME, on this the 30th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

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

FIELD NOTES DESCRIPTION OF
SUMP 103
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 209.1 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-2" referenced above,

THENCE S 20deg31'34"E 601.43' to a point for the Northmost corner of this sump and this POINT OF BEGINNING,

THENCE along the boundary of this tract the following ten courses :

(01)	S 16deg10'14"E	10.01'	to a point for the Eastmost corner of this tract,
(02)	S 73deg49'46"W	9.99'	to a point for tract corner,
(03)	N 16deg10'14"W	2.67'	to a point for tract corner,
(04)	S 36deg37'46"W	27.57'	to a point for the Southmost corner of this tract,
(05)	N 53deg22'14"W	29.02'	to a point for the Westmost corner of this tract,
(06)	N 36deg37'46"E	2.10'	to a point for tract corner,
(07)	S 53deg22'14"E	27.18'	to a point for tract corner,
(08)	N 36deg37'46"E	26.86'	to a point for tract corner,
(09)	N 16deg10'14"W	5.03'	to a point for tract corner,
(10)	N 73deg49'46"E	9.99'	to this POINT OF BEGINNING.

This tract contains 209.1 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

Tom A. Fidler, R.P.L.S. Number 3940

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 11, 2011.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@coblelynx.com

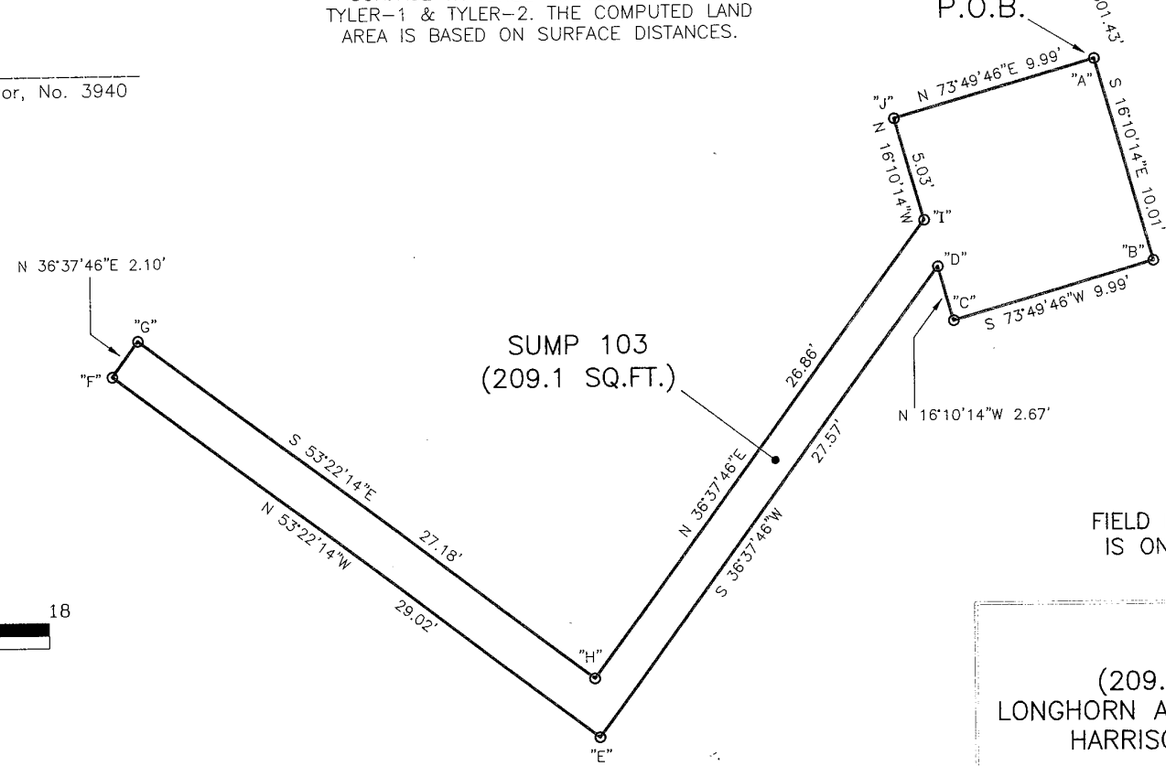
STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

COORDINATE TABLE

POINT	NORTH	EAST
A	6957268.937	3315379.021
B	6957259.319	3315381.810
C	6957256.536	3315372.213
D	6957259.104	3315371.468
E	6957236.982	3315355.021
F	6957254.297	3315331.731
G	6957255.984	3315332.985
H	6957239.765	3315354.800
I	6957261.320	3315370.825
J	6957266.154	3315369.424



SCALE 1"=6'

6 0 6 12 18
GRAPHIC SCALE - FEET

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEET

NOTES:

X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
O INDICATES UNMARKED CORNER OF SUMP

SUMP 103
(209.1 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #1101007	0407088.CRD	C.PTS C.LEG
MAR. 11, 2011	1103025C.DWG	DRAWN BY JTJ

2012-000000716

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000716 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

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I

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The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The Sump104 parcel is 149.2 square feet, more or less, or 0.00342 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the Sump104 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from Sump104 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of Sump104 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of Sump104 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30th day of June, 2011.

BEFORE ME, on this the 30th day of JUNE, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

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

FIELD NOTES DESCRIPTION OF
SUMP 104
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 149.2 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-2" referenced above,

THENCE S 09deg38'40"E 580.62' to a point for the Northmost corner of this sump and this POINT OF BEGINNING,

THENCE along the boundary of this tract the following eight courses :

(01)	S 53deg22'14"E	23.26'	to a point for the Eastmost corner of this tract,
(02)	S 36deg37'46"W	2.24'	to a point for tract corner,
(03)	N 53deg22'14"W	20.93'	to a point for tract corner,
(04)	S 36deg37'46"W	24.04'	to a point for the Southmost corner of this tract,
(05)	N 53deg22'14"W	7.69'	to a point for the Westmost corner of this tract,
(06)	N 36deg37'46"E	7.70'	to a point for tract corner,
(07)	S 53deg22'14"E	5.37'	to a point for tract corner,
(08)	N 36deg37'46"E	18.58'	to this POINT OF BEGINNING.

This tract contains 149.2 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, R.P.L.S. Number 3940

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 11, 2011.

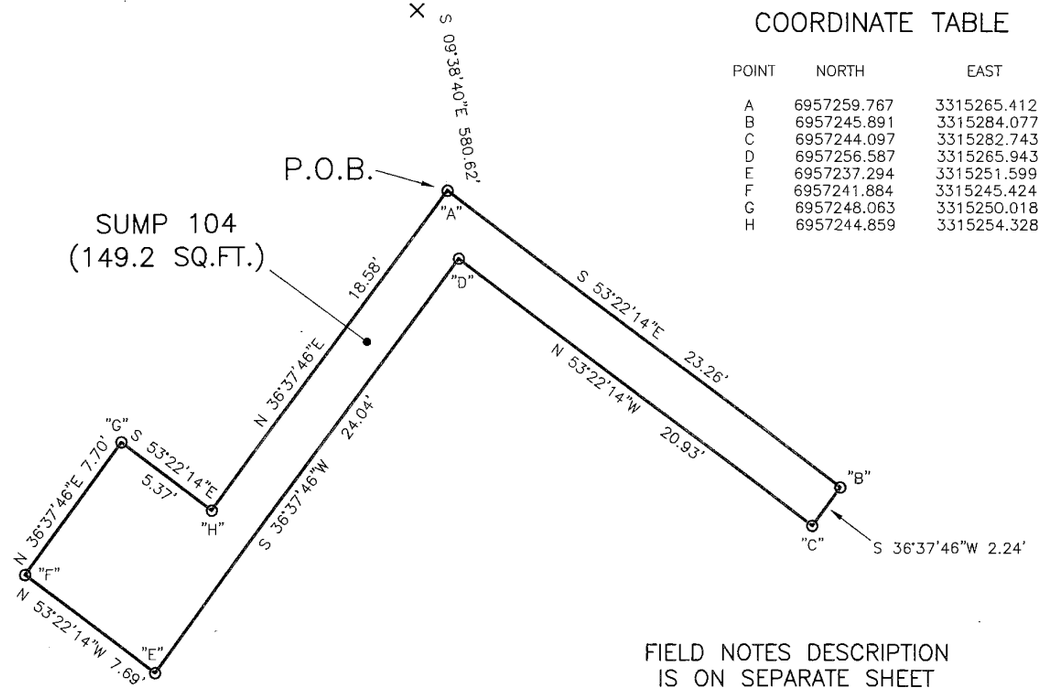
Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET



COORDINATE TABLE

POINT	NORTH	EAST
A	6957259.767	3315265.412
B	6957245.891	3315284.077
C	6957244.097	3315282.743
D	6957256.587	3315265.943
E	6957237.294	3315251.599
F	6957241.884	3315245.424
G	6957248.063	3315250.018
H	6957244.859	3315254.328

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET

SCALE 1"=6'

6 0 6 12 18
GRAPHIC SCALE – FEET

NOTES:

X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
O INDICATES UNMARKED CORNER OF SUMP

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

SUMP 104
(149.2 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #1101007	0407088.CRD	D.PTS D.LEG
MAR. 11, 2011	1103025D.DWG	DRAWN BY JTJ

2012-000000717

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6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000717 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

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

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. Sump105 (called Sump 105 on the attached Exhibit A) is part of LHAAP-35/36. Sump105 is a former sump location near Building 16-T physically located within site boundary of LHAAP-35C(53) of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which Sump105 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps (including Sump105) were also associated with wash racks (waste rack sumps) where containers were cleaned and stored. Further information may be found in the Notice of Registration No. 30990 files, which are available for inspection upon request at

TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The Sump105 parcel is 201.7 square feet, more or less, or 0.00463 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the Sump105 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from Sump105 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of Sump105 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of Sump105 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30 th day of June, 2011.

BEFORE ME, on this the 30 th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

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

FIELD NOTES DESCRIPTION OF
SUMP 105
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 201.7 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-2" referenced above,

THENCE S 13deg17'42"E 623.38' to a point for the Northmost corner of this sump and this POINT OF BEGINNING,

THENCE along the boundary of this tract the following eight courses :

(01)	S 53deg22'14"E	26.51'	to a point for the Eastmost corner of this tract,
(02)	S 36deg37'46"W	15.65'	to a point for tract corner,
(03)	S 53deg22'14"E	8.85'	to a point for tract corner,
(04)	S 36deg37'46"W	10.63'	to a point for the Southmost corner of this tract,
(05)	N 53deg22'14"W	10.86'	to a point for tract corner,
(06)	N 36deg37'46"E	24.04'	to a point for tract corner,
(07)	N 53deg22'14"W	24.50'	to a point for the Westmost corner of this tract,
(08)	N 36deg37'46"E	2.24'	to this POINT OF BEGINNING.

This tract contains 201.7 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

Tom A. Fidler, R.P.L.S. Number 3940

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING
ELECTRONIC TOTAL STATION
INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

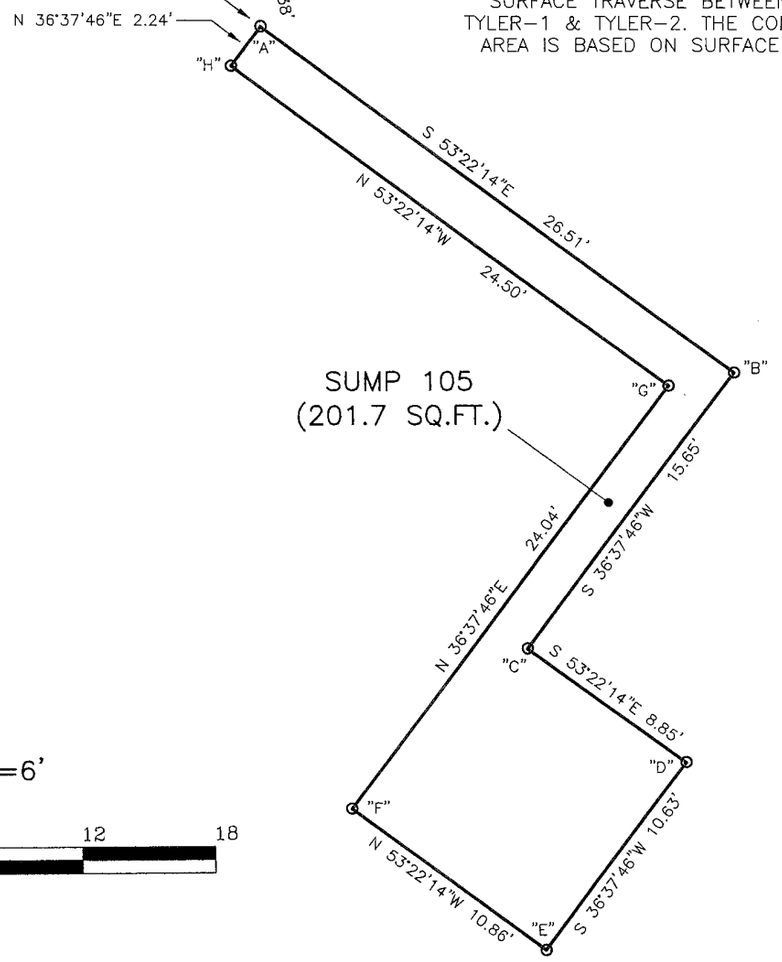
S 13°17'42"E 623.38'

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

COORDINATE TABLE

POINT	NORTH	EAST
A	6957225.505	3315311.497
B	6957209.690	3315332.769
C	6957197.135	3315323.434
D	6957191.856	3315330.535
E	6957183.323	3315324.191
F	6957189.801	3315315.477
G	6957209.095	3315329.822
H	6957223.711	3315310.163



SCALE 1"=6'

6 0 6 12 18
GRAPHIC SCALE - FEET

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 11, 2011.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

NOTES:

X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
O INDICATES UNMARKED CORNER OF SUMP

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET

SUMP 105
(201.7 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #1101007	0407088.CRD	E.PTS E.LEG
MAR. 11, 2011	1103025E.DWG	DRAWN BY JTJ

2012-000000718

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FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000718 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

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

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. Sump123 (called Sump 123 on the attached Exhibit A) is part of LHAAP-35/36. Sump123 is a former sump location near Building 18-Y physically located within site boundary of LHAAP-48 of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which Sump123 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps (including Sump123) were also associated with wash racks (waste rack sumps) where containers were cleaned and stored. Further information may be found in the Notice of Registration No. 30990 files, which are available for inspection upon request at

TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The Sump123 parcel is 60 square feet, more or less, or 0.00137 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the Sump123 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from Sump123 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of Sump123 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of Sump123 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30th day of June, 2011.

BEFORE ME, on this the 30th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

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

FIELD NOTES DESCRIPTION OF
SUMP 123
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 60.0 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-1" referenced above,

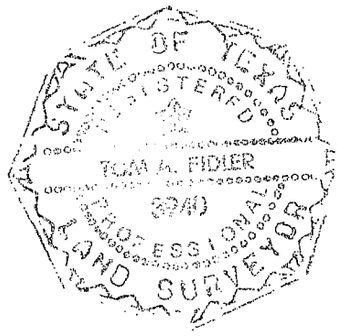
THENCE N 07deg59'31"W 569.56' to a point for the Southmost corner of this sump and this POINT OF BEGINNING,

THENCE along the boundary of this tract the following four courses :

(01) N 37deg59'57"W 6.00' to a point for the Westmost corner of this tract,
(02) N 52deg00'03"E 10.00' to a point for the Northmost corner of this tract,
(03) S 37deg59'57"E 6.00' to a point for the Eastmost corner of this tract,
(04) S 52deg00'03"W 10.00' to this POINT OF BEGINNING.

This tract contains 60.0 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER–1 & TYLER–2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

NOTES

X INDICATES TYPE "C" CORPS OF ENGINEERS MONUMENT (FOUND)

O INDICATES UNMARKED CORNER OF SUMP

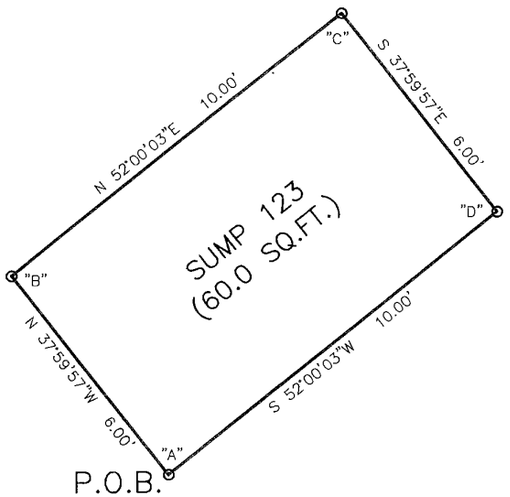
LANDMARK CONSULTANTS, INC.

PROFESSIONAL LAND SURVEYORS

P.O. BOX 606 LONGVIEW, TEXAS 75606

PHONE (903) 236–3377 FAX (903) 236–3530

E–MAIL landmark@cablelynx.com



COORDINATE TABLE

POINT	NORTH	EAST
A	6959122.758	3314187.907
B	6959127.486	3314184.213
C	6959133.642	3314192.093
D	6959128.914	3314195.787

SCALE 1"=3'

3 0 3 6 9

GRAPHIC SCALE – FEET

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 14, 2011.

N 08°28'00"W 622.08'

STATION TYLER–1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET

STATE OF TEXAS REGISTERED TOM A. FIDLER 3940 PROFESSIONAL LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING
ELECTRONIC TOTAL STATION
INDICATES 1116.219')

STATION TYLER–2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

SUMP 123
(60.0 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	I.PTS I.LEG
03/14/2011	1103025I.DWG	DRAWN BY JTJ

2012-000000719

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000719 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

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

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. WRSump001 (called W.R. Sump 001 on the attached Exhibit A) is part of LHAAP-35/36. WRSump001 is a former waste rack sump location near Building 34-Y physically located within site boundary of LHAAP-48 of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36 of which WRSump001 is a part is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2, no further action.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps were also associated with wash racks (waste rack sumps including WRSump001) where containers were cleaned and stored. Further information may be found in the

Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The WRSump001 parcel is 57.1 square feet, more or less, or 0.00131 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the WRSump001 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from WRSump001 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of WRSump001 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of WRSump001 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30th day of June, 2011.

BEFORE ME, on this the 30th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

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

FIELD NOTES DESCRIPTION OF
W.R. SUMP 001
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 57.1 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-1" referenced above,

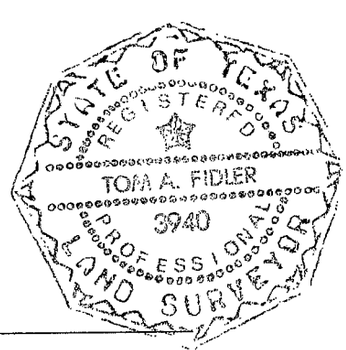
THENCE N 42deg37'08"E 700.32' to this POINT OF BEGINNING, said point being at the Southmost corner of the external face of the concrete wall which defines this sump,

THENCE along the external face of the concrete wall which defines this sump the following twelve courses, each course ending at a corner of the external face of said concrete wall :

(01)	N 36deg36'16"W	4.50',	
(02)	N 51deg51'25"E	1.07',	
(03)	N 38deg08'35"W	2.46',	
(04)	S 63deg07'08"W	0.85',	
(05)	N 38deg08'35"W	7.98',	being this sump's Westmost corner,
(06)	N 51deg51'25"E	3.70',	being this sump's Northmost corner,
(07)	S 39deg59'44"E	8.17',	
(08)	S 52deg07'09"W	1.00',	
(09)	S 39deg59'44"E	2.34',	
(10)	N 50deg00'16"E	1.14',	
(11)	S 39deg59'44"E	4.67',	being this sump's Eastmost corner,
(12)	S 52deg10'33"W	4.68',	being the aforementioned POINT OF BEGINNING.

This tract contains 57.1 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

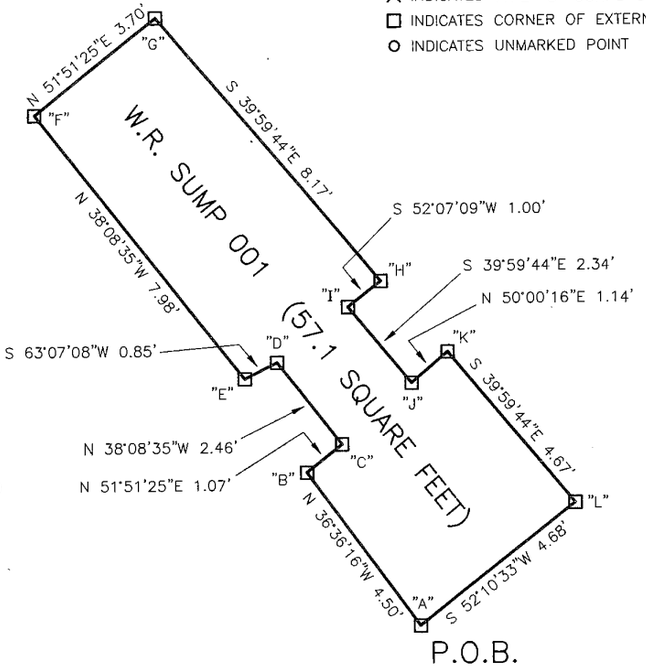


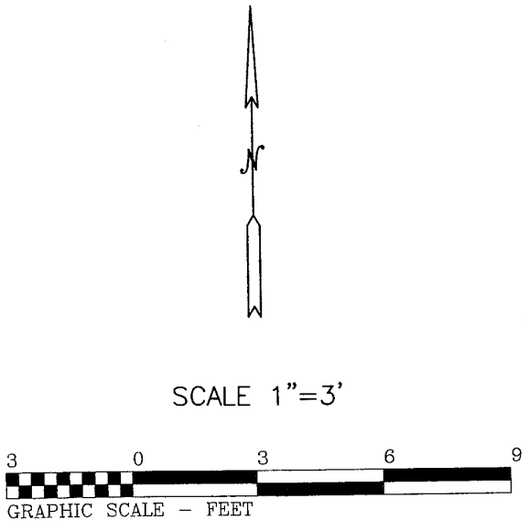
Tom A. Fidler, R.P.L.S. Number 3940

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

NOTES:

X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
□ INDICATES CORNER OF EXTERNAL FACE OF CONCRETE WALL
O INDICATES UNMARKED POINT





NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

COORDINATE TABLE

POINT	NORTH	EAST
A	6959022.804	3314753.696
B	6959026.415	3314751.014
C	6959027.074	3314751.854
D	6959029.012	3314750.332
E	6959028.627	3314749.573
F	6959034.899	3314744.647
G	6959037.183	3314747.555
H	6959030.925	3314752.805
I	6959030.313	3314752.018
J	6959028.519	3314753.523
K	6959029.252	3314754.396
L	6959025.676	3314757.396
M	6959022.804	3314753.696

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 1, 2011.

N 42°37'08"E 700.32'

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEETS

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

W.R. SUMP 001
(57.1 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	W.PTS W.LEG
MAR. 1, 2011	0908074W.DWG	DRAWN BY JTJ

2012-000000720

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000720 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

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

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. WRSump002 (called W.R. Sump 002 on the attached Exhibit A) is part of LHAAP-35/36. WRSump002 is a former waste rack sump location near Building 38-Y physically located within site boundary of LHAAP-48 of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which WRSump002 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2, no further action.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps were also associated with wash racks (waste rack sumps including WRSump002) where containers were cleaned and stored. Further information may be found in the

Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The WRSump002 parcel is 61.1 square feet, more or less, or 0.00140 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the WRSump002 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from WRSump002 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of WRSump002 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of WRSump002 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30th day of June, 2011.

BEFORE ME, on this the 30th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

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

FIELD NOTES DESCRIPTION OF
W.R. SUMP 002
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 61.1 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-1" referenced above,

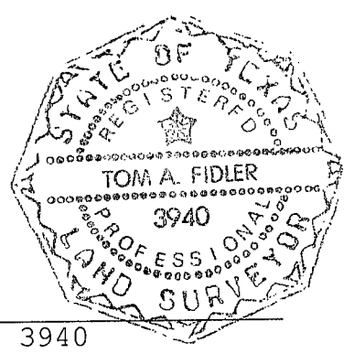
THENCE N 27deg03'19"E 797.78' to this POINT OF BEGINNING, said point being at the Southmost corner of the external face of the concrete wall which defines this sump,

THENCE along the external face of the concrete wall which defines this sump the following twelve courses, each course ending at a corner of the external face of said concrete wall :

(01)	N 50deg15'02"W	4.01',	being this sump's Westmost corner,
(02)	N 38deg19'51"E	7.83',	
(03)	S 58deg29'13"E	0.84',	
(04)	N 41deg11'11"E	3.09',	
(05)	N 51deg30'19"W	1.32',	
(06)	N 40deg19'40"E	4.55',	being this sump's Northmost corner,
(07)	S 54deg31'45"E	4.65',	being this sump's Eastmost corner,
(08)	S 38deg16'58"W	4.65',	
(09)	N 53deg12'50"W	1.23',	
(10)	S 39deg42'05"W	3.32',	
(11)	S 51deg04'42"E	0.79',	
(12)	S 38deg16'58"W	7.89',	being the aforementioned POINT OF BEGINNING.

This tract contains 61.1 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

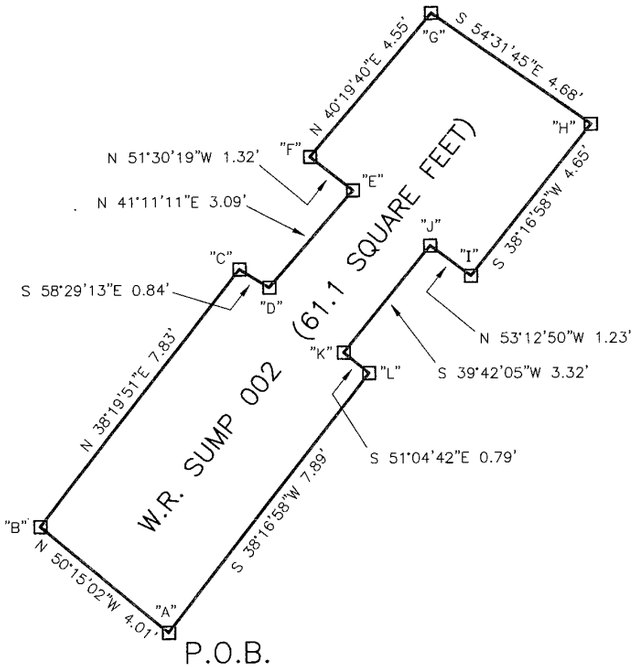


Tom A. Fidler, R.P.L.S. Number 3940

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.



COORDINATE TABLE

POINT	NORTH	EAST
A	6959217.937	3314642.369
B	6959220.500	3314639.287
C	6959226.642	3314644.143
D	6959226.201	3314644.863
E	6959228.524	3314646.896
F	6959229.343	3314645.866
G	6959232.815	3314648.814
H	6959230.097	3314652.628
I	6959226.443	3314649.744
J	6959227.177	3314648.763
K	6959224.624	3314646.643
L	6959224.129	3314647.256
M	6959217.937	3314642.369

NOTES:

- X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- ☐ INDICATES CORNER OF EXTERNAL FACE OF CONCRETE WALL
- O INDICATES UNMARKED POINT

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground ond under my supervision in February & March 2011.

Witness my hand and seal March 1, 2011.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

N 27°03'19"E 797.78'

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

SCALE 1"=3'

3 0 3 6 9
GRAPHIC SCALE - FEET

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEETS

W.R. SUMP 002
(61.1 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	X.PTS X.LEG
MAR. 1, 2011	0908074X.DWG	DRAWN BY JTJ

2012-000000721

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000721 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

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

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. WRSump003 (called W.R. Sump 003 on the attached Exhibit A) is part of LHAAP-35/36. WRSump003 is a former waste rack sump location near Building 16-Y physically located within site boundary of LHAAP-48 of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-35/36, of which WRSump003 is a part, is not considered an NPL site. Environmental activities at LHAAP-35/36 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ, the lead regulatory agency, no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2, no further action.

LHAAP-35/36 is a collection of 125 process sumps and 20 waste rack sumps found in multiple locations across the installation and predominantly associated with process areas. All of the production buildings had sumps that collected wash down water. Sumps were also associated with wash racks (waste rack sumps including WRSump003) where containers were cleaned and stored. Further information may be found in the

Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The WRSump003 parcel is 69.5 square feet, more or less, or 0.00159 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the WRSump003 site and USEPA and TCEQ concluded that no further investigation or action is required. Contaminants in soil samples from WRSump003 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of WRSump003 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of WRSump003 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 30 th day of June, 2011.

BEFORE ME, on this the 30 th day of June, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 30 day of June, 2011.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 01/03/2015

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

FIELD NOTES DESCRIPTION OF
W.R. SUMP 003
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 69.5 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "TYLER-1" referenced above,

THENCE N 00deg06'48"W 643.61' to this POINT OF BEGINNING, said point being at the Southmost corner of the external face of the concrete wall which defines this sump,

THENCE along the external face of the concrete wall which defines this sump the following twelve courses, each course ending at a corner of the external face of said concrete wall :

(01)	N 37deg49'35"W 4.09',	being this sump's	Westmost corner,
(02)	N 48deg49'52"E 10.08',		
(03)	S 40deg22'17"E 0.96',		
(04)	N 51deg37'59"E 1.64',		
(05)	N 32deg53'50"W 1.27',		
(06)	N 49deg58'25"E 4.65',	being this sump's	Northmost corner,
(07)	S 41deg50'19"E 4.65',	being this sump's	Eastmost corner,
(08)	S 43deg56'08"W 4.79',		
(09)	N 44deg10'19"W 1.61',		
(10)	S 52deg56'11"W 1.74',		
(11)	S 39deg31'31"E 1.01',		
(12)	S 49deg33'58"W 10.21',	being the aforementioned POINT OF BEGINNING.	

This tract contains 69.5 square feet, more or less.

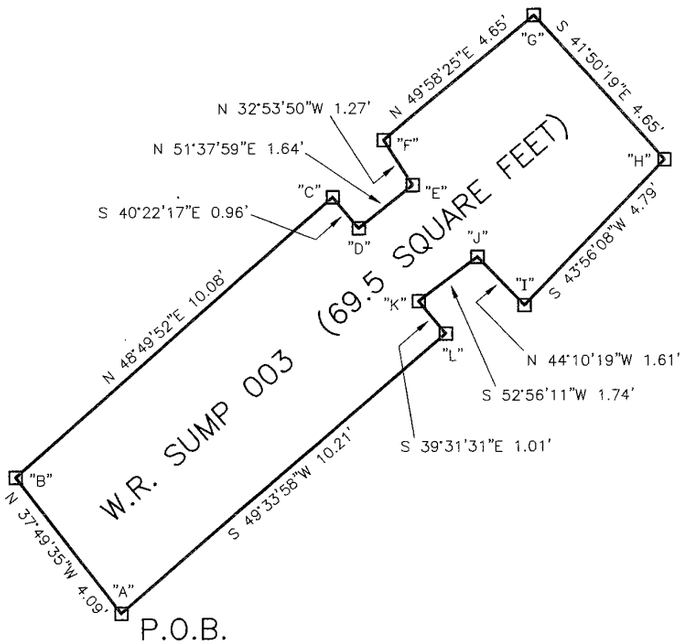
I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, R.P.L.S. Number 3940

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER–1 & TYLER–2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.



LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236–3377 FAX (903) 236–3530
E–MAIL landmark@cablelynx.com

NOTES:

- X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- □ INDICATES CORNER OF EXTERNAL FACE OF CONCRETE WALL
- O INDICATES UNMARKED POINT

COORDINATE TABLE

POINT	NORTH	EAST
A	6959151.071	3314278.227
B	6959154.302	3314275.719
C	6959160.937	3314283.306
D	6959160.202	3314283.931
E	6959161.221	3314285.218
F	6959162.288	3314284.528
G	6959165.278	3314288.088
H	6959161.816	3314291.188
I	6959158.365	3314287.863
J	6959159.516	3314286.744
K	6959158.468	3314285.356
L	6959157.691	3314285.996

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in February & March 2011.

Witness my hand and seal March 1, 2011.

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

N 00°06'48"W 643.61'

STATION TYLER–1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

STATION TYLER–2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

SCALE 1"=3'

3 0 3 6 9
GRAPHIC SCALE – FEET

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEETS

W.R. SUMP 003
(69.5 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	V.PTS V.LEG
MAR. 1, 2011	0908074V.DWG	DRAWN BY JTJ

LHAAP-37, 37-1

LUCs FROM FINAL REMEDIAL DESIGN

September 14, 2015

FINAL
REMEDIAL DESIGN
LHAAP-35B (37), CHEMICAL LABORATORY AND LHAAP-67, ABOVEGROUND STORAGE TANK FARM
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Prepared by

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

August 1, 2011

Table of Contents

List of Figures ii
List of Tables ii
List of Appendices ii
Acronyms and Abbreviations iii

1.0 Purpose 1
2.0 Description of the Site 2
2.1 Hydrogeological Setting 3
2.1.1 Groundwater and Surface Water Interaction 3
3.0 Remedy Performance Objectives 5
4.0 Land Use Controls for the Site 6
5.0 Monitored Natural Attenuation 7
6.0 Remedy Implementation Actions 9
6.1 Design Criteria 9
6.1.1 Basis Of Design 9
6.2 Land Use Control Implementation Actions 11
6.2.1 Comprehensive Land Use Control Management Plan 11
6.2.2 Site Certifications and Reporting 11
6.2.3 Notice of Planned Property Conveyances 12
6.2.4 Opportunity to Review Text of Intended Land Use Controls 12
6.2.5 Notification Should Action(s) Which Interfere with Land Use Control Effectiveness Be Discovered Subsequent to Conveyance 12
6.2.6 Land Use Control Enforcement 12
6.2.7 Modification or Termination of Land Use Controls 12
6.3 Monitored Natural Attenuation Implementation Actions 13
6.4 CERCLA Five-Year Reviews 14
7.0 Points of Contact 15
8.0 References 16

4.0 Land Use Controls for the Site

The LUCs to be implemented by the Army or its representatives for LHAAP-35B(37) and LHAAP-67 to prevent human exposure to residual groundwater contamination presenting an unacceptable risk to human health include:

- Ensure no withdrawal or use of groundwater beneath the sites for anything other than environmental monitoring and testing until cleanup goals are met

Notification of the groundwater use restriction will accompany all transfer documents and will be recorded at the Harrison County Courthouse in accordance with Texas Administrative Code (TAC) Title 30, §335.566.The LUC addresses the areas of LHAAP-35B(37) and LHAAP-67 that include groundwater plumes at LHAAP-35B(37) and LHAAP-67 with levels of contamination that require implementation of a remedy (see **Section 2.0**). The U.S. Army is responsible for implementing, maintaining, monitoring, reporting on, and enforcing the LUC.

U.S. Army and regulators will consult to determine appropriate enforcement actions should there be a failure of an LUC objective at this site after it has transferred. U.S. Army shall obtain USEPA and TCEQ concurrence prior to termination or significant modification of the LUC, or implementation of a change in land use inconsistent with the LUC objectives and use assumptions of the remedy. Although not a remedy, the land use assumption for LHAAP-35B(37) and LHAAP-67 forms the basis for the remedy. The reasonably anticipated future use of the site as part of a national wildlife refuge is consistent with an industrial risk exposure scenario. Notification of the land use assumption of this site will be made in transfer documentation, will be recorded in the Harrison County Courthouse in accordance with TAC Title 30, §335.566 and compliance with the use assumption will be documented in the Five-Year Review reports.

6.2 Land Use Control Implementation Actions

The Army or its representatives will be responsible for LUC implementation and certification, reporting and enforcement. The Army shall address LUC problems within its control that are likely to impact remedy integrity and shall address problems as soon as practicable.

As a condition of property transfer, the Army may require the transferee to assume responsibility for various implementation actions, as indicated below. Although the Army may transfer responsibility for various implementation actions, the Army shall retain its responsibility for remedy integrity. This means that the Army is responsible for addressing substantive violations of performance objectives that would undermine the Army's CERCLA remedy. The Army also will be responsible for: 1) incorporating RD information and outlining the transferee's LUC obligations into property transfer documentation; 2) recording groundwater use restriction and survey plat at the Harrison County Courthouse; and 3) notifying Texas Department of Licensing and Regulation of the groundwater restriction which includes the prohibition of water well installation for any purpose other than environmental monitoring and testing without prior approval from the Army, the USEPA, and the TCEQ. The following LUC implementation actions shall be undertaken by the Army in order to ensure that the aforementioned LUC performance objectives for LHAAP-35B(37) and LHAAP-67 are met and maintained:

6.2.1 Comprehensive Land Use Control Management Plan

Within 30 days of receiving USEPA and TCEQ approval of this RD, the Army will incorporate this document into the Comprehensive LUC Management Plan. The Comprehensive LUC Management Plan consists of LHAAP RD documents and a survey plat showing the locations where LUCs being implemented at LHAAP are applied. The purpose of this Comprehensive LUC Management Plan is to ensure all site specific LUCs are compiled into one comprehensive location for both pre-transfer use by the installation and for post-transfer use by the transferee. This document is also accessible to regulators, the local government and the public. The Comprehensive LUC Management Plan is located in the Marshall Public Library to accompany LHAAP's Administrative Record. As LUC RD documents for additional environmental sites are approved by USEPA and TCEQ, the Army shall likewise add those documents and survey plats to the Comprehensive LUC Management Plan as well as update the previous copy of the plan placed in the Marshall Public Library.

6.2.2 Site Certifications and Reporting

Beginning with finalization of this RD, the Army will undertake annual certifications to confirm continued compliance with the LUC objectives. The Army will retain the annual LUC Compliance Certification documents in the project files for incorporation into the Five-Year Review Reports, and these documents will be made available to USEPA and TCEQ upon request. The certification form will be consistent with the form attached as **Appendix B**. In addition, should any violations be found during the annual certification, the Army will provide to USEPA and TCEQ along with the document, a separate written explanation indicating the specific violations found and what efforts or measures have or will be taken to correct those violations**.** Upon transfer, such responsibilities may shift to the transferee via

appropriate provisions placed in the Environmental Condition of Property (ECP) or other environmental transfer document. The need to continue annual certifications will be revisited at Five-Year Reviews.

6.2.3 Notice of Planned Property Conveyances

The Army shall provide notice to USEPA and TCEQ of plans to convey LHAAP-35B(37) and LHAAP-67 acreage. The notice shall describe the mechanism by which LUCs will continue to be implemented, maintained, inspected, reported, and enforced.

6.2.4 Opportunity to Review Text of Intended Land Use Controls

Army will provide a copy of the groundwater use restriction notification to TCEQ for review and approval prior to its recordation in Harrison County. In addition, the Army will produce an ECP or other environmental document for transfer of LHAAP-35B(37) and LHAAP-67, but before executing transfer, the Army will provide USEPA and TCEQ with a draft copy of the ECP or other environmental document for transfer so that they may have reasonable opportunity, before document execution, to review all LUC-related provisions.

6.2.5 Notification Should Action(s) Which Interfere with Land Use Control Effectiveness Be Discovered Subsequent to Conveyance

Should the Army discover after conveyance of the site any activity on the property inconsistent with the LUC performance objectives, the Army shall notify USEPA and TCEQ within 72 hours of such discovery. Consistent with **Section 6.2.6** below, the Army will then work with USEPA, TCEQ and the transferee to correct the problem(s) discovered. This reporting requirement does not preclude the Army from taking immediate action pursuant to its CERCLA authorities to prevent any perceived risk(s) to human health or the environment.

6.2.6 Land Use Control Enforcement

Should the LUC remedy reflected in this LUC RD fail, the Army will coordinate with USEPA and TCEQ to ensure that appropriate actions are taken to reestablish its protectiveness. These actions may range from informal resolutions with the owner or violator, to the institution of judicial action under the auspices of Texas property law or CERCLA. Alternatively, should the circumstances warrant such, the Army could choose to exercise its response authorities under CERCLA, and then seek cost recovery after the fact from the person(s) or entity(ies) who violated a given LUC. Should the Army become aware that any future owner or user of the property has violated any LUC requirement over which a local agency may have independent jurisdiction, the Army will notify these agencies of such violation(s) and work cooperatively with them to re-achieve owner/user compliance with the LUCs.

6.2.7 Modification or Termination of Land Use Controls

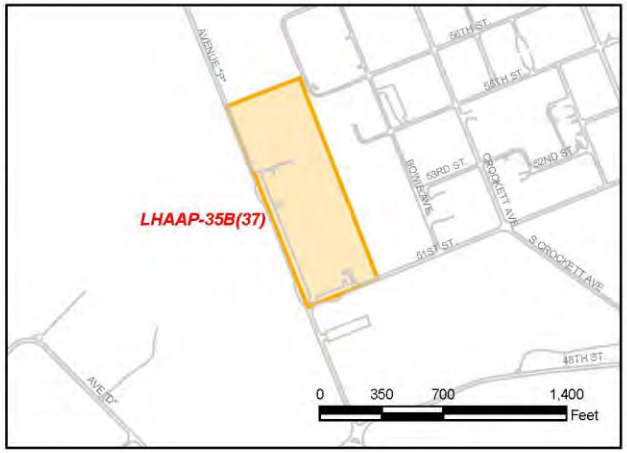
The Army shall not, without USEPA and TCEQ concurrence, make a significant modification to, or terminate a LUC, or make a land use change inconsistent with the LUC objectives and use assumptions of the selected remedy. Likewise, the Army shall seek prior USEPA and TCEQ concurrence before commencing actions that may impact remedy integrity. In the case of an emergency action, the Army shall obtain prior USEPA and TCEQ concurrence as appropriate to the exigencies of the situation.

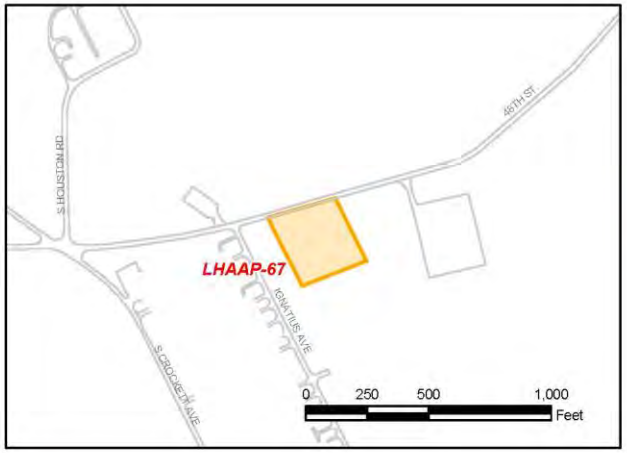
The LUCs shall remain in effect until such time as the Army, TCEQ and USEPA agree that the concentrations of COCs have met cleanup levels. When this occurs, the LUCs will be terminated as needed. The decision to terminate LUCs will be documented consistent with the NCP process for post-ROD changes, potentially including an explanation of significant differences or a remedial action completion report. If the property has been transferred and a determination by the Army, TCEQ and USEPA has been made to terminate one or more of the LUCs, the Army shall provide to the owner of the property an appropriate release for recordation pertaining to the site and will also timely advise other local stakeholders of the action.

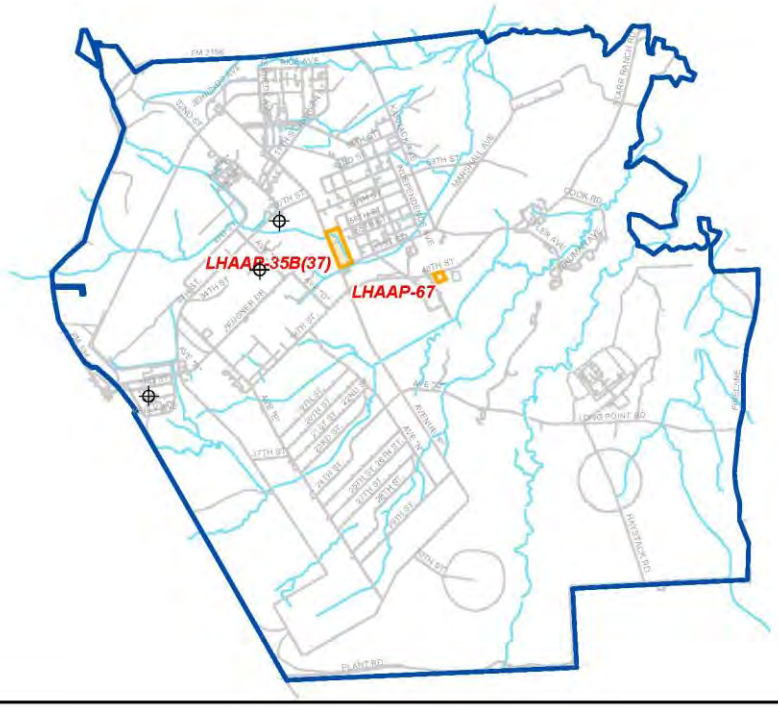
6.3 Monitored Natural Attenuation Implementation Actions

Implementation actions include installation of additional monitoring wells, plugging and abandonment of monitoring wells not designated for long-term monitoring, implementation of a groundwater monitoring plan, monitoring, and reporting. The project schedule and cost summary for implementation actions are provided in **Appendix H**. Groundwater monitoring will be conducted to monitor the effectiveness of MNA in reducing contaminant concentrations over time. Monitoring will also be conducted to evaluate plume migration and ensure that chlorinated solvents-contaminated groundwater does not impact nearby surface water at unacceptable levels. Surface water sampling will be conducted to confirm contaminated groundwater is not migrating to surface water. The Groundwater Monitoring Plan, attached as **Appendix A**, describes the wells, their locations, analytical parameters, the frequency of the monitoring, surface water sampling, and presents a list of the monitored constituents and their respective MCLs. Groundwater monitoring and surface water sampling conducted at LHAAP-35B(37) and LHAAP-67 will follow the Health and Safety Plan (**Appendix E**), the Contractor Quality Control Plan (**Appendix F**), the Chemical Data Acquisition Plan (**Appendix G**), Field Activities (**Appendix C**) and Field Procedures (**Appendix D**) as contained in the appendices of the Remedial Design LHAAP-35B(37) and LHAAP-67.

Annual reports will be prepared for any year in which sampling occurs to document the monitoring program. The first year's annual report will include a review of the first four quarters of data, which include natural attenuation parameters and provide an evaluation for the evidence of MNA as a remedial method and a review of the first year's surface water sample data. The TCEQ provides guidance for MNA as a remedial action in *Monitored Natural Attenuation Demonstrations* (Texas Natural Resource Conservation Commission [TNRCC], RG-366/TRRP-33, October 2001). Although LHAAP is being addressed under the Risk Reduction Standards rather than Texas Risk Reduction Program (TRRP), this guidance is comparable to USEPA guidance and may be used as a guideline for the evaluation of the groundwater data. TRRP guidance specifies recommended lines of evidence to document the occurrence of natural attenuation at a site. For the first annual report, primary and secondary lines of evidence will be evaluated to document that attenuation is occurring at LHAAP-35B(37) and LHAAP-67. The primary line







LEGEND

- Road
- Stream
- Site
- Approximate LHAAP Boundary
- LHAAP Water Supply Well

OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	FILE PATH
Houston, TX	B. Lu 10/12/07	N. Olson 10/31/07	P. Srivastav 10/31/07	T:\GIS\Longhorn\MXD\ST35B67\ROD\SiteLocs.mxd

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

FIGURE 2-2
SITE LOCATION MAP
REMEDIAL DESIGN
LHAAP-35B(37) AND LHAAP-67, GROUP 4
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

LHAAP-37, 37-2

NOTICE OF LAND USE CONTROLS AND NONRESIDENTIAL LAND USE AT LHAAP-35B (37) FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

2015-000002401

*****DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT*****

NOTICE

8 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 03/16/2015 11:17 AM **Document Number:** 2015-000002401 **Receipt No:** 1502837 **Amount:** $ 50.00 **By:** Denise Kio, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

AECOM
112 E. PECAN ST,STE 400
FED-EX ENVELOPE
SAN ANTONIO, TX 78205

STATE OF TEXAS HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF LAND USE CONTROL AT LHAAP-35B (37)

KNOW ALL MEN BY THESE PRESENTS THAT:

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

I

The U.S. Army, Department of Defense, has performed remedial activities at the land described herein. The remediation site is in a former industrial area, located on the Former Longhorn Army Ammunition Plant (LHAAP) and is designated as LHAAP-35B (37) (Chemical Laboratory). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Remedial activities at LHAAP-35B (37) were performed in accordance with the FFA requirements.

The LHAAP-35B (37) was built during the construction of Plant 3 (1953-1955) and was originally used to support the production activities at LHAAP. A Record of Decision (ROD) for LHAAP-35B (37) was signed by the USEPA in 2010 establishing the final remedy which consists of land use control (LUC) in conjunction with monitored natural attenuation (MNA). The site was not remediated to levels suitable for unrestricted use. The LUC at LHAAP-35B (37) is required to prevent human exposure to contaminated groundwater. Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-35B (37) parcel is a 12.2-acre tract, more or less, located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A. Within the LHAAP-35B (37) parcel is designated a LUC boundary which is a 16.578-acre tract, more or less, as described in Exhibit A. The LUC boundary is also presented in the attached Figure 1.

Future use of the parcel is intended as a national wildlife refuge consistent with non-residential use. For purposes of this certification, residential use includes, but is not limited to, single family or multifamily residences; child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12. The United States Department of the Army has undertaken careful environmental study of the LHAAP-35B (37) site and concluded that the LUC set forth below is required to ensure protection of human health and the environment.

(1) Groundwater Restriction. The groundwater use restriction boundary consists of the 16.578-acre tract, more or less. Groundwater underlying this land is contaminated with trichloroethene (TCE), tetrachloroethene (PCE), and 1,1-dichloroethene (1,1-DCE) and shall not be accessed or used for any purpose without the prior written approval of the U.S. Army, the USEPA, and the TCEQ. A LUC restricting the use of groundwater has been established for the protection of human health. The U.S. Army will notify the Texas Department of Licensing and Regulation of the groundwater restriction which includes prohibition of water well installation for any purpose other than environmental monitoring and testing without prior approval by the U.S. Army, the USEPA, and the TCEQ. A restriction against the residential use of groundwater will remain in effect until the levels of the COCs in groundwater and soil allow unrestricted use and unlimited exposure (UUUE).

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

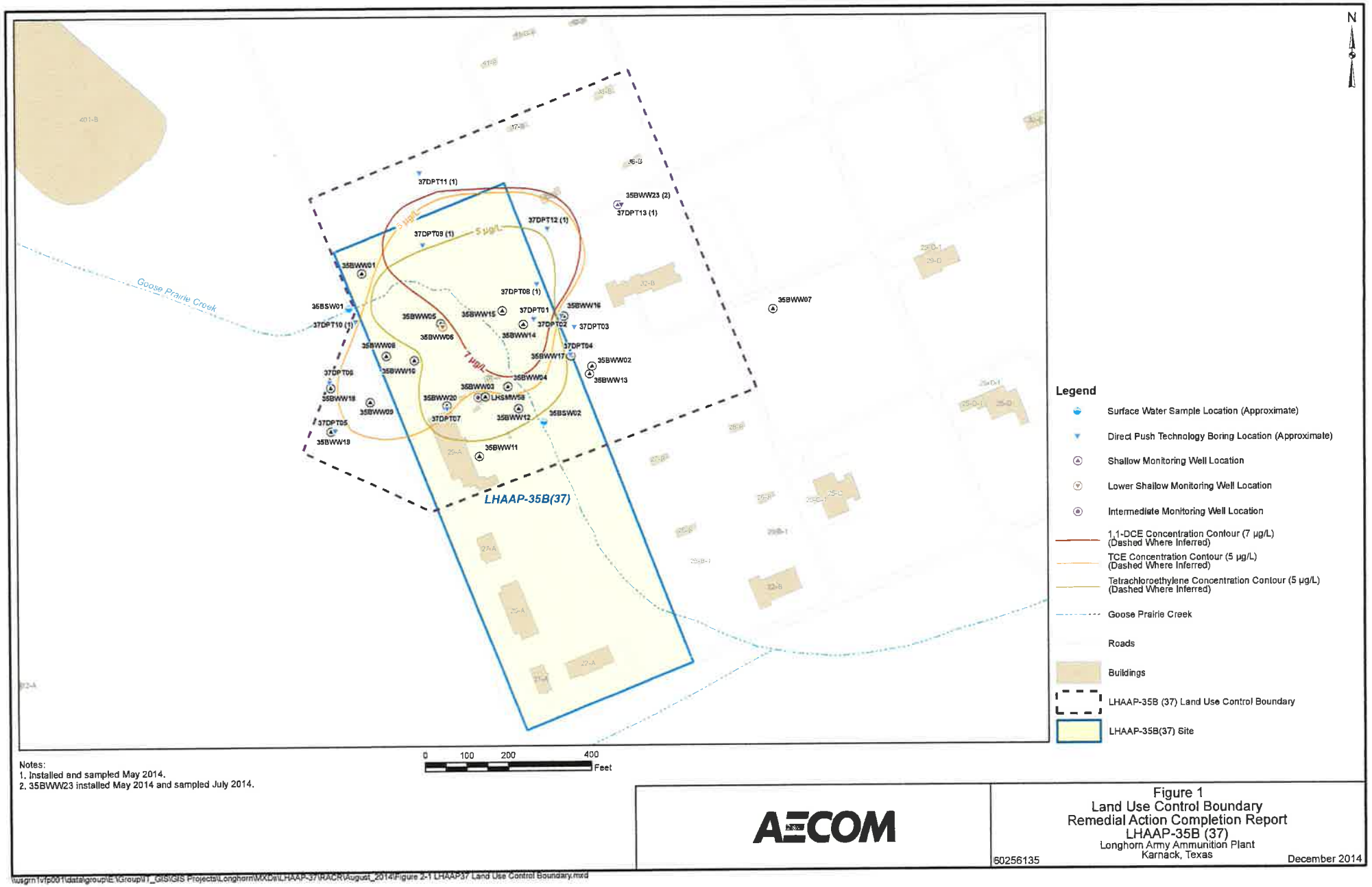
EXECUTED this the 19 th day of February, 2015.

BEFORE ME, on this the 19 th day of February 2015 personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 19th day of February, 2015.

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

GENIE WARNER
Notary Public State of Texas
COMM. EXP. 8/1/2018



Notes:
1. Installed and sampled May 2014.
2. 35BWW23 installed May 2014 and sampled July 2014.

AECOM

Figure 1
Land Use Control Boundary
Remedial Action Completion Report
LHAAP-35B (37)
Longhorn Army Ammunition Plant
Karnack, Texas

60256135 December 2014

\\usgrn1vfp001\data\group\E\Group\IT_GIS\GIS Projects\Longhorn\MXDs\LHAAP-37\RACR\August_2014\Figure 2-1 LHAAP37 Land Use Control Boundary.mxd

EXHIBIT A
SURVEY PLAT

FIELD NOTES DESCRIPTION OF
"LHAAP-35B(37)" LAND USE CONTROL AREA
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, "LHAAP-35B(37)" Land Use Control Area being 16.578 acres of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), "LHAAP-35B(37)" Land Use Control Area being more particularly described as follows :

Surveyor's Note: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.99986172702, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "C-21" (N=6956579.781 feet E=3308499.969 feet) and "X-11" (N=6960733.698 feet E=3304750.367 feet). Said traverse indicates a surface distance of 5596.714 feet between said monuments. The computed land area is based on State Plane distances. As used herein, the abbreviation I.R.O.P.C. indicates 1/2" iron rebar with orange plastic cap engraved "Fidler" and "RPLS 3940" .

Commencing at monument "C-21" referenced above,

THENCE N 22deg47'20"W 1290.84' to a concrete nail set (near the centerline of the asphalt pavement of "Avenue P") for the Southmost corner of this tract and this POINT OF BEGINNING,

THENCE N 67deg25'22"W 354.97' along a S.B.L. of this tract to an I.R.O.P.C. set for this tract's Westmost corner,

THENCE N 20deg54'22"E 363.80' along a W.B.L. of this tract to a concrete nail set (near the centerline of the asphalt pavement of "Avenue P") for this tract's Westerly reentrant corner,

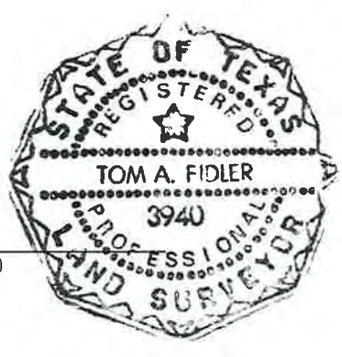
THENCE N 22deg33'04"W 285.83' along a W.B.L. of this tract to a concrete nail set (near the centerline of the asphalt pavement of "Avenue P") for this tract's N.W.C., said nail being S 52deg54'59"E 3687.90' from the aforementioned "X-11" monument,

THENCE N 68deg33'30"E 817.56' along the N.B.L. of this tract to a concrete nail set (near the centerline of the asphalt pavement of "Bowie Avenue") for this tract's Northmost corner,

THENCE S 21deg48'41"E 817.92' along the E.B.L. of this tract to a concrete nail set (near the centerline of the asphalt pavement of "Bowie Avenue") for this tract's Eastmost corner,

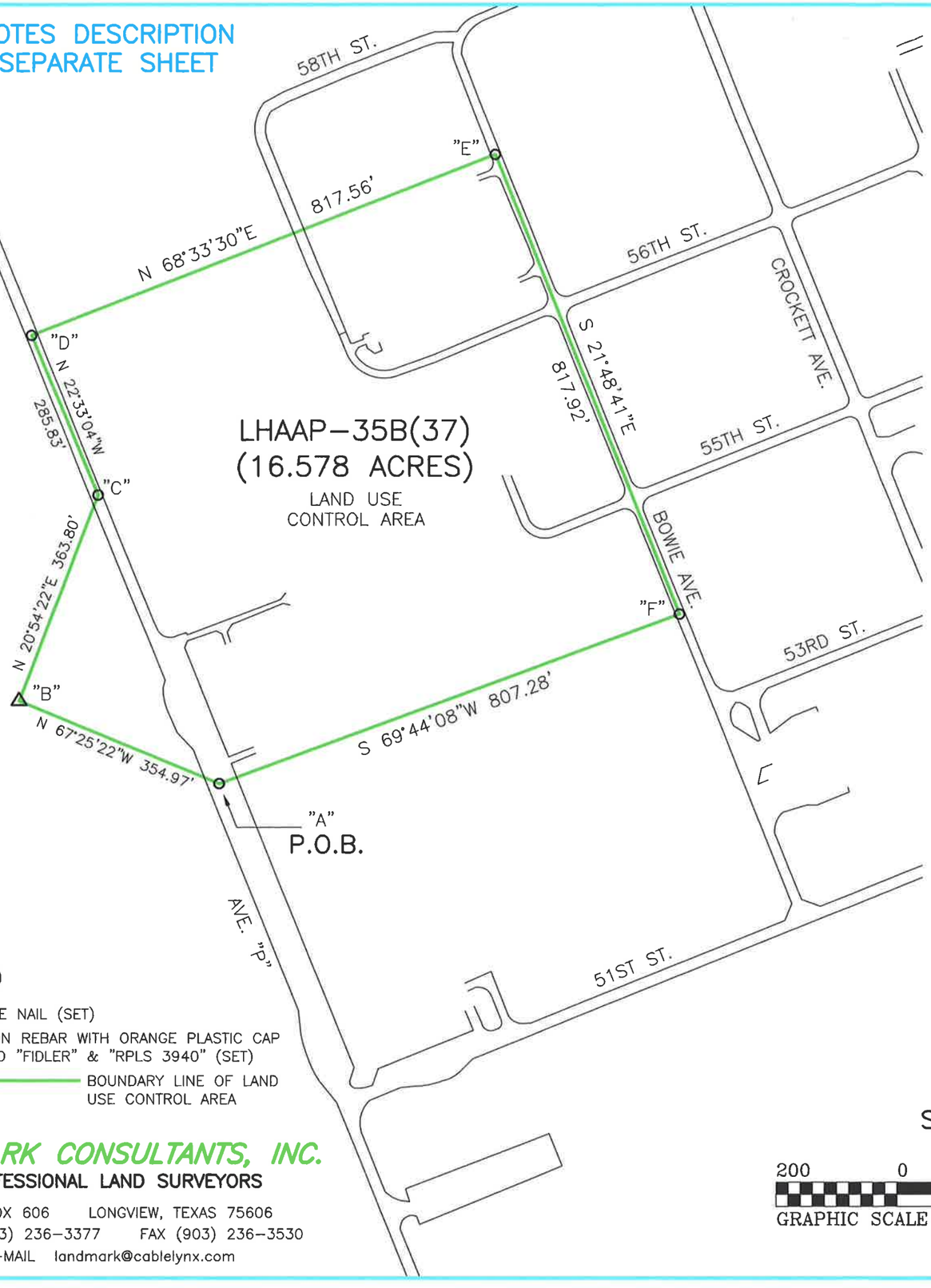
THENCE S 69deg44'08"W 807.28' along a S.B.L. of this tract to this POINT OF BEGINNING, containing 16.578 acres, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET



LEGEND

- ○ CONCRETE NAIL (SET)
- △ 1/2" IRON REBAR WITH ORANGE PLASTIC CAP ENGRAVED "FIDLER" & "RPLS 3940" (SET)
- BOUNDARY LINE OF LAND USE CONTROL AREA

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in January, 2015.

Witness my hand and seal this the 21st day of January, 2015.

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), AND COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.99986172702 & IS BASED ON CALCULATED DISTANCE BETWEEN PUBLISHED STATE PLANE COORDINATES OF STATIONS C-21 & X-11 DIVIDED BY SURFACE TRAVERSE CALCULATED DISTANCE BETWEEN SAME TWO STATIONS. THE COMPUTED LAND AREA IS BASED ON STATE PLANE DISTANCES.

COORDINATE TABLE

POINT	NORTH	EAST
A	6957769.855	3307999.979
B	6957906.138	3307672.216
C	6958245.983	3307802.032
D	6958509.961	3307692.413
E	6958808.823	3308453.390
F	6958049.461	3308757.289

SCALE 1"=200'

200 0 200 400 600
GRAPHIC SCALE - FEET

LHAAP-35B(37) L.U.C.A.
(16.578 ACRES)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	I.PTS I.LEG
01/21/2015	0605063I.DWG	DRAWN BY JTJ

LHAAP-37, 37-3

LAND USE CONTROL COMPLIANCE INSPECTION FORM

September 14, 2015

Sample Annual Land Use Control Compliance Certification Documentation

In accordance with the Remedial Design dated 8/1/11 for LHAAP-35B (37), a certification of site was conducted by _____ [indicate transferee] on _____.

A summary of land use control mechanisms is as follows:

- Groundwater restriction – A restriction against use of groundwater will remain in effect until the levels of the COCs in groundwater and soil allow unrestricted use and unlimited exposure (UUUE). [Indicate whether groundwater restrictions are still required at LHAAP-35B (37)]

A summary of compliance with land use and restriction covenants is as follows:

- No use of groundwater, installation of new groundwater wells, or tampering with existing wells at LHAAP-35B (37).

I, the undersigned, do document that the certification was performed as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief.

Date: _____

Name/Title: _____

Signature: _____

Annual compliance certification forms shall be completed no later than March 1 of each year for the previous calendar year.

LHAAP-46, 46-1

LUCs FROM FINAL REMEDIAL DESIGN

September 14, 2015

Final
Remedial Design
LHAAP-46, Plant 2 Area, Group 4
Longhorn Army Ammunition Plant
Karnack, Texas

Prepared for U.S. Army Corps of Engineers – Tulsa District
1645 South 101st, East Avenue
Tulsa, Oklahoma 74128

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

Contract No. W912QR-04-D-0027, Task Order No. DS02
Shaw Project No. 117591
Rev 0
September 2011

Shaw® a world of Solutions™

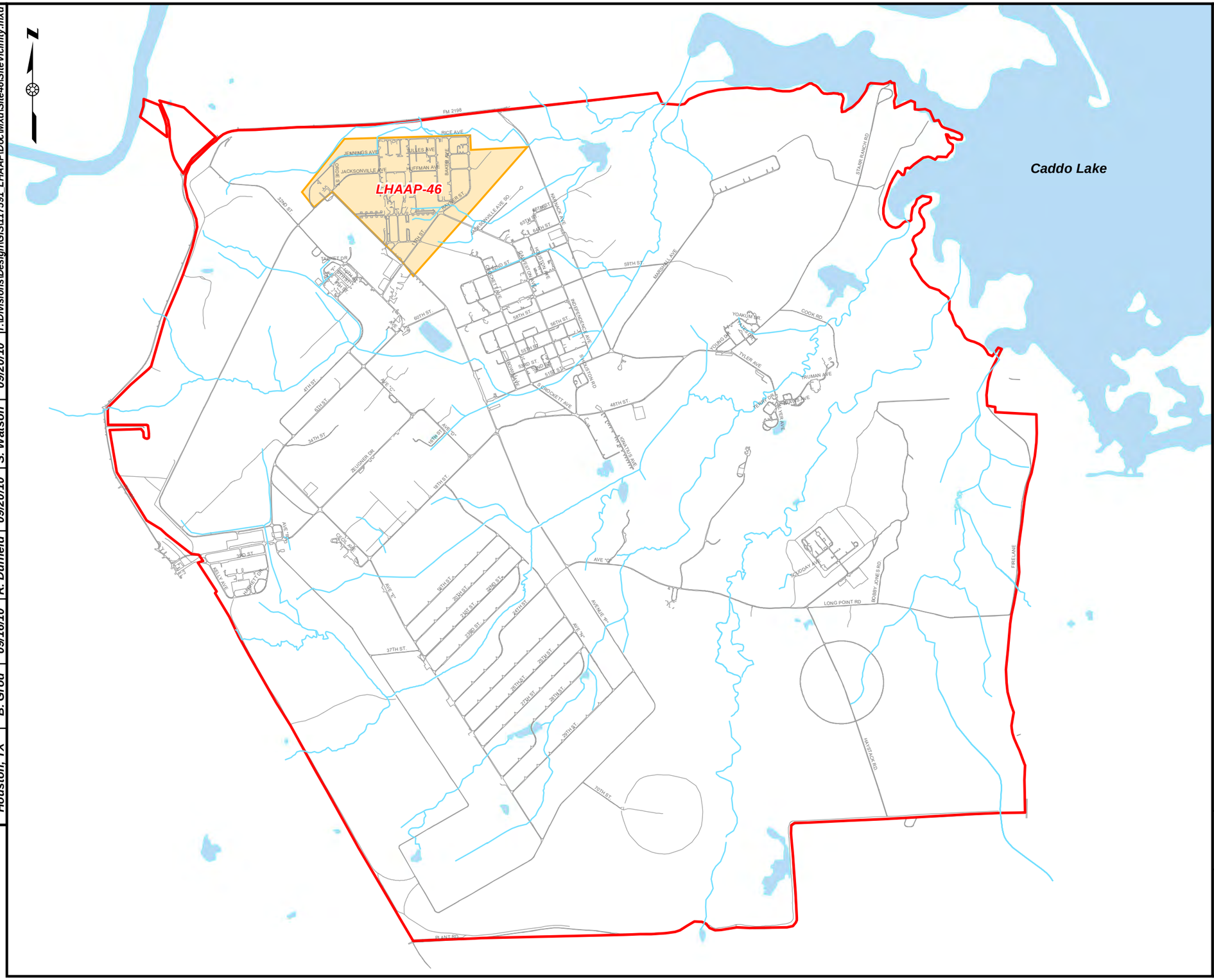
Table of Contents

List of Tables iii
List of Figures iii
List of Appendices iii
Acronyms and Abbreviations iv

1.0 Introduction 1-1
1.1 LHAAP Background 1-1
1.1.1 LHAAP-46 Description 1-1
1.1.2 Remedial Action Objectives 1-2
1.1.3 Planned Remedial Action 1-2
1.2 Cleanup Levels 1-3
1.3 Areas of Contamination 1-3
1.4 Hydrogeology 1-4
2.0 Land Use Control 2-1
3.0 Monitoring System Design 3-1
3.1 MNA Performance Monitoring Well Locations 3-1
3.1.1 Shallow Groundwater Plume 3-1
3.1.2 Intermediate Groundwater Plume 3-2
3.1.3 Vertical Well Cluster 3-3
3.2 MNA Evaluation 3-3
3.3 Long-Term Monitoring 3-3
3.4 Five-Year Reviews 3-3
3.5 Thallium Monitoring 3-4
3.6 Surface Water Monitoring 3-4
4.0 Land Use Control Design and Implementation Plan 4-1
4.1 Land Use Control Implementation 4-1
4.2 Land Use Control Operation and Maintenance 4-2
4.2.1 Site Certification and Reporting 4-2
4.2.2 Notice of Planned Property Conveyances 4-2
4.2.3 Opportunity to Review Text of Intended Land Use Controls 4-3
4.2.4 Notification Should Action(s) which Interfere with Land Use Control Effectiveness be Discovered Subsequent to Conveyance 4-3
4.2.5 Land Use Control Enforcement 4-3
4.2.6 Modification or Termination of Land Use Controls 4-4
4.2.7 Comprehensive Land Use Control Management Plan 4-4
5.0 Field Activities 5-1
5.1 Pre-mobilization Activities 5-1
5.2 Preliminary Activities/Mobilization 5-2
5.3 Site Clearing 5-2
5.4 Monitoring Well Installation 5-2
5.5 Groundwater Sampling 5-2
5.5.1 Monitored Natural Attenuation 5-3
5.5.2 Thallium 5-3
5.5.3 Long-Term Monitoring 5-4
5.6 Surface Water Sampling 5-4
5.7 Waste Management 5-4
5.8 Decontamination of Equipment and Personnel 5-5

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • September 2011

OFFICE	DRAWN BY		CHECKED BY		APPROVED BY		FILE PATH
Houston, TX	B. Grod	09/16/10	R. Duffield	09/20/10	S. Watson	09/20/10	T:\Divisions\Design\GIS\117591_LHAAP\Doc\Mxd\Site46\SiteVicinity.mxd



Shaw

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

FIGURE 1-2

SITE VICINITY MAP
LHAAP-46, REMEDIAL DESIGN

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

2.0 LAND USE CONTROL

The objective of the LUC at LHAAP-46 is to prevent human exposure to residual groundwater contamination presenting an unacceptable risk to human health and ensure that there is no withdrawal or use of groundwater beneath the sites for anything other than environmental monitoring and testing until cleanup goals are met Notification of the groundwater use restriction will accompany all transfer documents and will be recorded at the Harrison County Courthouse in accordance with Texas Administrative Code (TAC) Title 30, §335.566. **Appendix A** provides sample LUC compliance certification documentation.

The LUC addresses the area of LHAAP-46 that includes two groundwater plumes at LHAAP-46 with levels of contamination that require implementation of a remedy (see **Section 1.3**). The U.S. Army is responsible for implementing, maintaining, monitoring, reporting on, and enforcing the LUC.

U.S. Army and regulators will consult to determine appropriate enforcement actions should there be a failure of an LUC objective at this site after it has transferred. U.S. Army shall obtain USEPA and Texas Commission on Environmental Quality (TCEQ) concurrence prior to termination or significant modification of the LUC, or implementation of a change in land use inconsistent with the LUC objectives and use assumptions of the remedy. Although not a remedy, the land use assumption for LHAAP-46 forms the basis for the remedy. The future use of the site as part of a national wildlife refuge is consistent with an industrial risk exposure scenario. Notification of the land use assumption of this site will be made in transfer documentation and will be recorded in the Harrison County Courthouse in accordance with TAC Title 30, §335.566. Compliance with the use assumption will be documented in the five-year review reports.

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • September 2011

4.0 LAND USE CONTROL DESIGN AND IMPLEMENTATION PLAN

This section describes the LUC design and implementation activities for LHAAP-46. The activities will result in a surveyed and recorded groundwater use restriction boundary and an operation and maintenance plan for the LUC.

The objective of the LUC at LHAAP-46 is to prevent human exposure to residual groundwater contamination presenting an unacceptable risk to human health and ensure that there is no withdrawal or use of groundwater beneath the sites for anything other than environmental monitoring and testing until cleanup goals are met. Notification of the groundwater use restriction will accompany all transfer documents. The U.S. Army is responsible for long-term implementation, maintenance, inspection, reporting, and enforcement of the LUC.

The LUC will address the area of LHAAP-46 that includes two groundwater plumes with levels of contamination that require implementation of a remedy (see **Section 1.3**). The Land Use Control Operation and Maintenance (LUC O&M) Plan will identify the measures required for the monitoring and enforcement of the groundwater use restriction.

Upon review and concurrence of this RD, the LUC O&M Plan will be coordinated with regulators, finalized and distributed as part of the Comprehensive LUC Management Plan.

4.1 Land Use Control Implementation

The U.S. Army will undertake the following actions to implement the groundwater restriction LUC for LHAAP-46:

- Define the Area of the Groundwater Use Restriction. The groundwater use restriction boundary will be defined based on the review of the first round of groundwater sampling data in conjunction with historic data. The extent of plume will be bounded by a buffer and may extend to natural groundwater and surface water boundaries.
- Survey the LUC Boundary. The proposed boundary will be finalized after all wells are installed and sampled. Concurrence by USEPA and TCEQ will be obtained, and the LUC boundary will be surveyed by a State-licensed surveyor. A legal description of the surveyed area will be appended to the survey plat.
- Record the LUC in Harrison County. The LUC plat, legal description and groundwater use restriction language will be recorded in the Harrison County Courthouse in accordance with TAC Title 30, §335.56.

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • September 2011

- Notify the Texas Department of Licensing and Regulation of the LUC. The Texas Department of Licensing and Regulation will be notified of the groundwater restriction which includes the prohibition of water well installation for any purpose other than environmental monitoring and testing without prior approval from the U.S. Army, the USEPA, and the TCEQ. The survey plat, legal boundary and description of the groundwater restriction, in conjunction with a locator map, will be provided in hard and electronic copy.

- Develop the LUC O&M Plan. A LUC O&M Plan for LHAAP-46 will be developed. It will include the elements presented in **Section 4.2** below, the county recordation of the LUC survey plat, legal description and restriction language and the annual inspection/certification form.

4.2 Land Use Control Operation and Maintenance

The U.S. Army or its representatives will be responsible for the operation and maintenance of the LHAAP-46 LUC. This includes certification, reporting and enforcement activities. The U.S. Army shall address LUC problems within its control that are likely to impact remedy integrity and shall address problems as soon as practicable. To facilitate long-term operation and maintenance of the groundwater use restriction LUC remedy, U.S. Army will develop a plan that will encompass the elements described in the following subsections.

4.2.1 Site Certification and Reporting

Beginning with finalization of this RD and approval of the annual inspection form, the U.S. Army will undertake annual inspections and certify continued compliance with the LUC objectives. The U.S. Army, or the transferee after transfer, will retain the annual LUC Inspection/Certification documents in the project files for incorporation into the Five Year Review Reports, and these documents will be made available to USEPA and TCEQ upon request. In addition, should any violations be found during the annual certification, the U.S. Army will provide to USEPA and TCEQ along with the document, a separate written explanation indicating the specific violations found and what efforts or measures have or will be taken to correct those violations. The need to continue annual certifications will be revisited at five year reviews.

4.2.2 Notice of Planned Property Conveyances

The U.S. Army shall provide notice to USEPA and TCEQ of plans to convey the LHAAP-46 acreage. The notice shall describe the mechanism by which the LUC will continue to be implemented, maintained, inspected, reported, and enforced. Upon transfer, such responsibilities may shift to the transferee via appropriate provisions placed in the Environmental Condition of Property (ECP) or other environmental document for transfer. Although the U.S. Army may transfer responsibility for various implementation actions, the

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • September 2011

U.S. Army shall retain its responsibility for remedy integrity. This means that the U.S. Army is responsible for addressing substantive violations of the LUC performance objective that would undermine the U.S. Army's CERCLA remedy. The U.S. Army also will be responsible for incorporating RD information and outlining the transferee's LUC obligations into property transfer documentation.

4.2.3 Opportunity to Review Text of Intended Land Use Controls

U.S. Army will provide a copy of the groundwater use restriction notification to TCEQ for review and approval prior to its recordation in Harrison County. USEPA will also receive a copy for review. In addition, the U.S. Army will produce an ECP or other environmental document for transfer of LHAAP-46, but before executing transfer, the U.S. Army will provide USEPA and TCEQ with a copy of the ECP or other environmental document for transfer so that they may have reasonable opportunity, before transfer, to review all LUC-related provisions.

4.2.4 Notification Should Action(s) which Interfere with Land Use Control Effectiveness be Discovered Subsequent to Conveyance

Should the U.S. Army discover after conveyance of the site any activity on the property inconsistent with the LUC performance objective, the U.S. Army shall notify USEPA and TCEQ within 72 hours of such discovery. Consistent with **Section 4.2.5** below, the U.S. Army will then work with USEPA, TCEQ and the transferee to correct the problem(s) discovered. This reporting requirement does not preclude the U.S. Army from taking immediate action pursuant to its CERCLA authorities to prevent any perceived risk(s) to human health or the environment.

4.2.5 Land Use Control Enforcement

Should the LUC remedy reflected in this LUC RD fail, the U.S. Army will coordinate with USEPA and TCEQ to ensure that appropriate actions are taken to reestablish its protectiveness. These actions may range from informal resolutions with the U.S. Fish and Wildlife Service or its lessee, to the institution of judicial action against nonfederal third parties. Alternatively, should the circumstances warrant such, the U.S. Army could choose to exercise its response authorities under CERCLA. Should the U.S. Army become aware that any future owner or user of the property has violated any LUC requirement over which a local agency may have independent jurisdiction, the U.S. Army may notify those agencies of such violation(s) and work cooperatively with them to re-achieve owner/user compliance with the LUC.

4.2.6 Modification or Termination of Land Use Controls

The U.S. Army shall not, without USEPA and TCEQ concurrence, make a significant modification to, or terminate a LUC, or make a land use change inconsistent with the LUC objective. Likewise, the U.S. Army shall seek prior USEPA and TCEQ concurrence before commencing actions that may impact remedy integrity. In the case of an emergency action, the U.S. Army shall obtain prior USEPA and TCEQ concurrence as appropriate to the exigencies of the situation.

The LUCs shall remain in effect until such time as the U.S. Army and USEPA agree that the concentrations of COCs have met cleanup levels. When this occurs, the LUC will be terminated as needed. The decision to terminate the LUC will be documented consistent with the NCP process for post-ROD changes, potentially including an explanation of significant differences or a remedial action completion report. If the property has been transferred and a determination by the U.S. Army and USEPA has been made to terminate the LUC, the U.S. Army shall provide to the owner of the property an appropriate release for recordation pertaining to the site and will also timely advise other local stakeholders of the action.

4.2.7 Comprehensive Land Use Control Management Plan

Upon finalization of the LUC O&M Plan a copy will be inserted into the Comprehensive LUC Management Plan for Longhorn. The Comprehensive LUC Management Plan figure and table will be updated to reflect the inclusion of LHAAP-46.

The Comprehensive LUC Management Plan consists of LHAAP RD documents and a survey plat showing the locations where LUCs being implemented at LHAAP are applied. The purpose of this Comprehensive LUC Management Plan is to ensure all site-specific LUCs are compiled into one comprehensive location for both pre-transfer use by the installation and for post-transfer use by the transferee. This document will be provided to USEPA and TCEQ, and will also be accessible to the local government and the public. The Comprehensive LUC Management Plan is located in the Marshall Public Library to accompany LHAAP's Administrative Record.

The land use assumption of industrial reuse as part of a national wildlife refuge forms the basis for the remedy at LHAAP-46 and this land use assumption will be in included in the Comprehensive LUC Management Plan with supporting documentation.

Contract No. W912QR-04-D-0027, Task Order No. DS02 • Final • Rev 0 • September 2011

LHAAP-46, 46-2

NOTICE OF LAND USE CONTROLS AND NONRESIDENTIAL LAND USE AT LHAAP-46 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

2014-000013307

*****DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT*****

NOTICE

8 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 12/09/2014 10:42 AM **Document Number:** 2014-000013307 **Receipt No:** 1415412 **Amount:** $ 50.00 **By:** Pam Rockwell, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

AECOM
ATTN: AMANDA LAGARDE (FEDEX ENV)
112 E PECAN ST., SUITE 400
SAN ANTONIO, TX 78205

STATE OF TEXAS HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF LAND USE CONTROL AT LHAAP-46

KNOW ALL MEN BY THESE PRESENTS THAT:

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

I

The U.S. Army, Department of Defense, has performed remedial activities at the land described herein. The remediation site is in a former industrial area, located on the Former Longhorn Army Ammunition Plant (LHAAP) and is designated as LHAAP-46 (Plant 2 Area). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Remedial activities at LHAAP-46 were performed in accordance with the FFA requirements.

The LHAAP-46 site was used for production of pyrotechnic and illumination devices until 1997. A Record of Decision (ROD) for LHAAP-46 was signed by U.S. Army and USEPA with TCEQ concurrence in 2010 establishing the final remedy which consists of land use control (LUC) in conjunction with monitored natural attenuation (MNA). The LUC will ensure protection of human health by restricting the use of groundwater to environmental monitoring and testing only. MNA will be implemented to establish confidence in attenuation trends and verify that the constituents of concern (COCs) are stable or shrinking and will not migrate to nearby surface water at levels that may present an unacceptable risk to human health or the environment. Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at

the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-46 parcel is a 190 acre tract, more or less, located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A. Within the LHAAP-46 parcel are designated LUC boundaries including a 63.772-acre tract, more or less, as described in Exhibit A. The LUC boundaries are also presented in the attached Figure 1.

Future use of the parcel is intended as a national wildlife refuge consistent with non-residential use. The United States Department of the Army has undertaken careful environmental study of the LHAAP-46 site and concluded that the LUC set forth below is required to ensure protection of human health and the environment.

(1) Groundwater Restriction. The groundwater use restriction boundary consists of the 63.772-acre tract, more or less. Groundwater underlying this land is contaminated with trichloroethene (TCE) and other volatile organic compounds (VOCs) and shall not be accessed or used for any purpose without the prior written approval of the U.S. Army, the USEPA, and the TCEQ. A LUC restricting the use of groundwater has been established for the protection of human health. The U.S. Army will notify the Texas Department of Licensing and Regulation of the groundwater restriction which includes prohibition of water well installation for any purpose other than environmental monitoring and testing without prior approval by the U.S. Army, the USEPA, and the TCEQ. A restriction against the residential use of groundwater will remain in effect until the levels of the COCs in groundwater and soil allow unrestricted use and unlimited exposure (UUUE).

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 20 th day of November, 2014.

BEFORE ME, on this the 20 th day of November, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

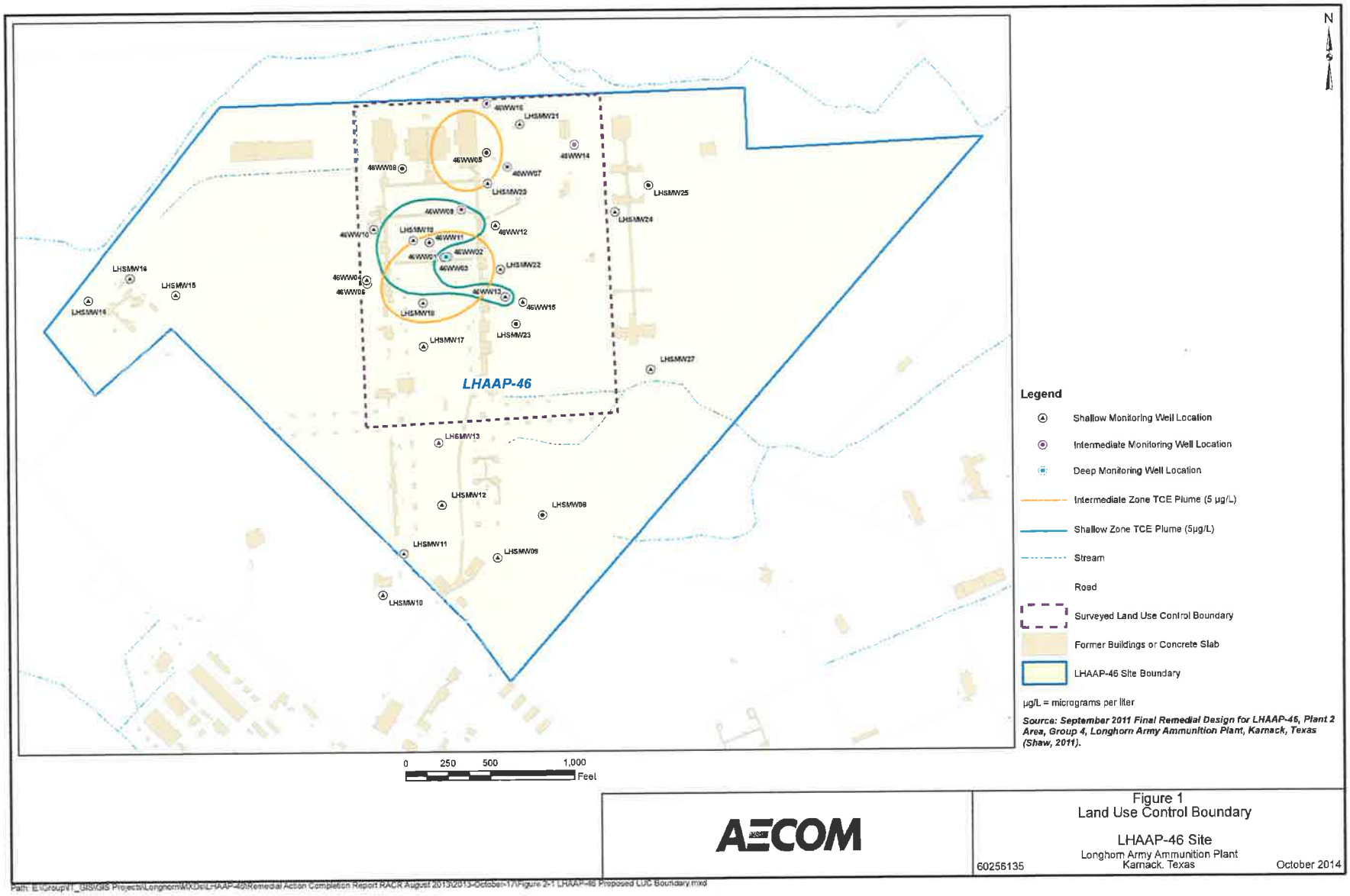
GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 20 day of November, 2014.

ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 03-17-2015

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

EXHIBIT A

COUNTY CLERK'S MEMO
PORTIONS OF THIS
DOCUMENT NOT
REPRODUCIBLE
WHEN RECORDED



FIELD NOTES DESCRIPTION OF
"LHAAP-46" LAND USE CONTROL AREA
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, "LHAAP-46" Land Use Control Area being 63.772 acres of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), "LHAAP-46" Land Use Control Area being more particularly described as follows :

Surveyor's Note: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999861858, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "X-11" (N=6960733.698 feet E=3304750.367 feet) and "HORSE" (N=6960008.269 feet E=3309591.340 feet). Said traverse indicates a surface distance of 4895.701 feet between said monuments. The computed land area is based on grid distances. As used herein, the abbreviation I.R.O.P.C. indicates 1/2" iron rebar with orange plastic cap engraved "Fidler" & "RPLS 3940" .

Commencing at monument "X-11" referenced above,

THENCE N 36deg34'22"E 1386.89' to a concrete nail set (in white paint on asphalt) for the S.W.C. of this tract and this POINT OF BEGINNING,

THENCE N 01deg52'33"W 1886.35' along the W.B.L. of this tract to an I.R.O.P.C. set (in a 6' tall chain link fence running Easterly and Westerly) for this tract's N.W.C. ,

THENCE along said fence, which defines the Northerly Boundary Lines of this tract, the following eleven courses :

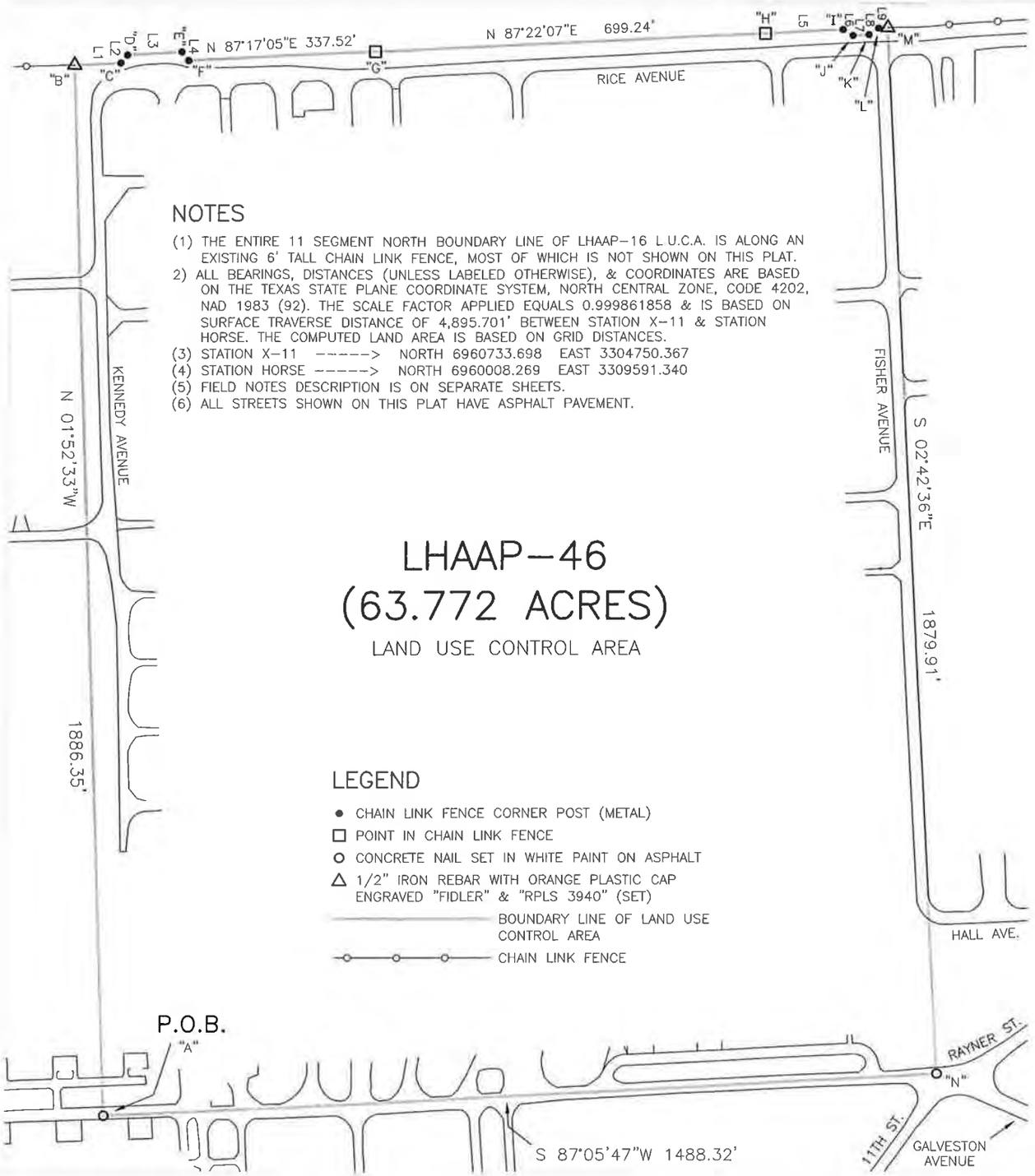
(01) N 86deg41'48"E 82.30' to a fence corner post,
(02) N 39deg20'47"E 18.62' to a bent fence corner post,
(03) N 86deg29'33"E 97.31' to a fence corner post,
(04) S 38deg05'14"E 19.89' to a fence corner post,
(05) N 87deg17'05"E 337.52' to a point in said fence,
(06) N 87deg22'07"E 699.24' to a point in said fence,
(07) N 87deg22'02"E 139.25' to a fence corner post,
(08) S 59deg03'44"E 20.98' to a fence corner post,
(09) N 86deg53'55"E 29.32' to a fence corner post,
(10) N 55deg19'37"E 21.12' to a fence corner post,
(11) N 86deg05'43"E 16.55' to an I.R.O.P.C. set in said fence for this tract's N.E.C. ,

THENCE S 02deg42'36"E 1879.91' along the E.B.L. of this tract to a concrete nail set (in white paint on asphalt) for this tract's S.E.C., from which monument "HORSE" referenced above bears S 52deg51'46"E 3171.37',

THENCE S 87deg05'47"W 1488.32' along the S.B.L. of this tract to this POINT OF BEGINNING. This tract contains 63.772 acres, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

Tom A. Fidler, R.P.L.S. Number 3940



NOTES

(1) THE ENTIRE 11 SEGMENT NORTH BOUNDARY LINE OF LHAAP-16 L.U.C.A. IS ALONG AN EXISTING 6' TALL CHAIN LINK FENCE, MOST OF WHICH IS NOT SHOWN ON THIS PLAT.
2) ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999861858 & IS BASED ON SURFACE TRAVERSE DISTANCE OF 4,895.701' BETWEEN STATION X-11 & STATION HORSE. THE COMPUTED LAND AREA IS BASED ON GRID DISTANCES.
(3) STATION X-11 -----> NORTH 6960733.698 EAST 3304750.367
(4) STATION HORSE -----> NORTH 6960008.269 EAST 3309591.340
(5) FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS.
(6) ALL STREETS SHOWN ON THIS PLAT HAVE ASPHALT PAVEMENT.

LHAAP-46
(63.772 ACRES)
LAND USE CONTROL AREA

LEGEND

- ● CHAIN LINK FENCE CORNER POST (METAL)
- □ POINT IN CHAIN LINK FENCE
- ○ CONCRETE NAIL SET IN WHITE PAINT ON ASPHALT
- △ 1/2" IRON REBAR WITH ORANGE PLASTIC CAP ENGRAVED "FIDLER" & "RPLS 3940" (SET)
- BOUNDARY LINE OF LAND USE CONTROL AREA
- CHAIN LINK FENCE

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in October, 2014.

Witness my hand and seal this the 20th day of October, 2014.

STATE OF TEXAS REGISTERED TOM A. FIDLER 3940 PROFESSIONAL LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

LINE TABLE

LINE	BEARING	DISTANCE
L1	N 86°41'48"E	82.30'
L2	N 39°20'47"E	18.62'
L3	N 86°29'33"E	97.31'
L4	S 38°05'14"E	19.89'
L5	N 87°22'02"E	139.25'
L6	S 59°03'44"E	20.98'
L7	N 86°53'55"E	29.32'
L8	N 55°19'37"E	21.12'
L9	N 86°05'43"E	16.55'

N

SCALE 1"=200'

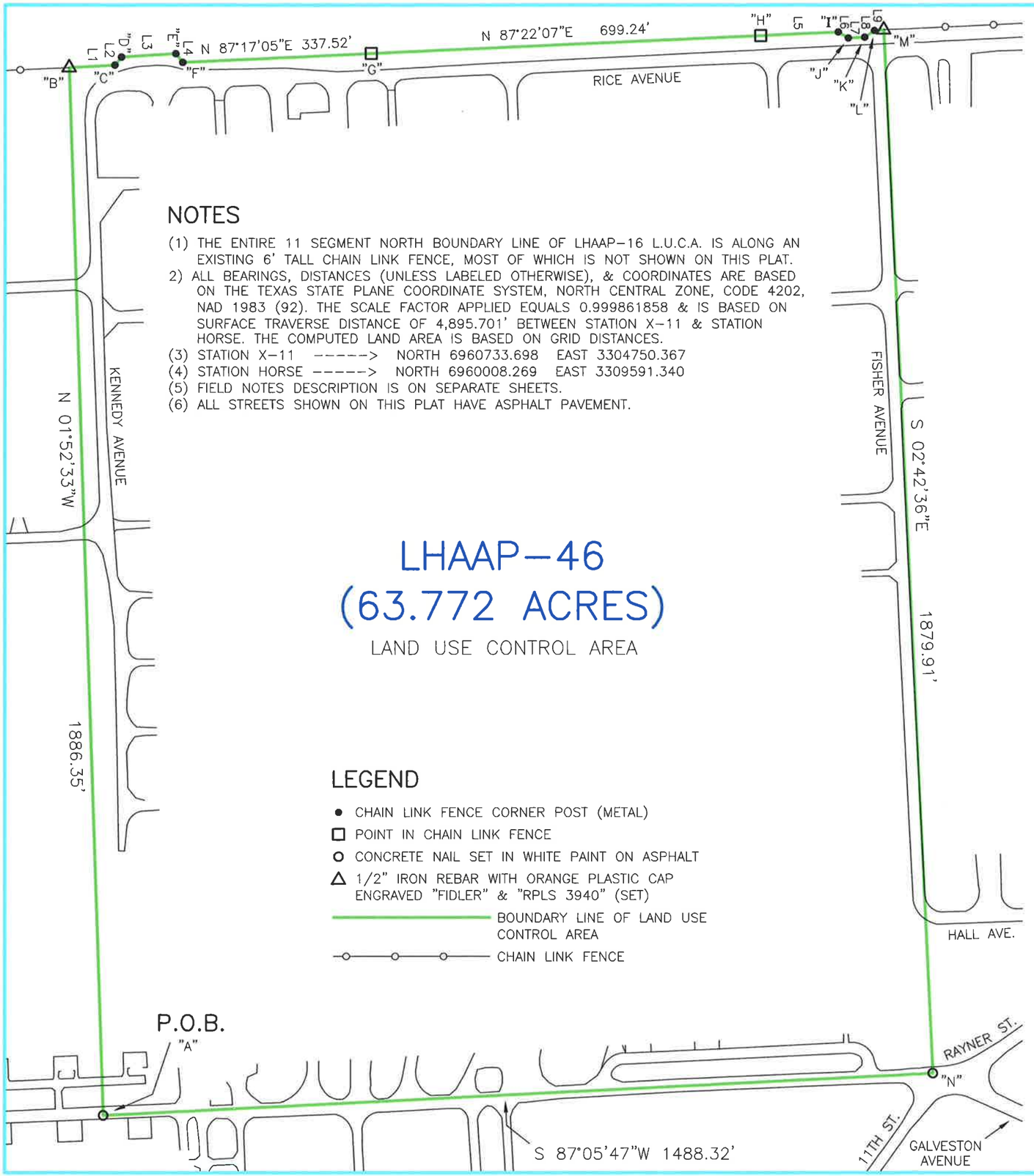
200 0 200 400 600
GRAPHIC SCALE - FEET

COORDINATE TABLE

POINT	NORTH	EAST
A	6961847.512	3305576.740
B	6963732.849	3305514.995
C	6963737.591	3305597.161
D	6963751.988	3305608.964
E	6963757.942	3305706.095
F	6963742.285	3305718.366
G	6963758.275	3306055.508
H	6963790.379	3306754.008
I	6963796.775	3306893.111
J	6963785.987	3306911.111
K	6963787.573	3306940.387
L	6963799.588	3306957.756
M	6963800.715	3306974.265
N	6961922.907	3307063.146

LHAAP-46 L.U.C.A.
(63.772 ACRES)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	U.PTS U.LEG
10/20/2014	1103025U.DWG	DRAWN BY JTJ



NOTES

(1) THE ENTIRE 11 SEGMENT NORTH BOUNDARY LINE OF LHAAP-16 L.U.C.A. IS ALONG AN EXISTING 6' TALL CHAIN LINK FENCE, MOST OF WHICH IS NOT SHOWN ON THIS PLAT.
2) ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999861858 & IS BASED ON SURFACE TRAVERSE DISTANCE OF 4,895.701' BETWEEN STATION X-11 & STATION HORSE. THE COMPUTED LAND AREA IS BASED ON GRID DISTANCES.
(3) STATION X-11 -----> NORTH 6960733.698 EAST 3304750.367
(4) STATION HORSE -----> NORTH 6960008.269 EAST 3309591.340
(5) FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS.
(6) ALL STREETS SHOWN ON THIS PLAT HAVE ASPHALT PAVEMENT.

LHAAP-46
(63.772 ACRES)
LAND USE CONTROL AREA

LEGEND

- ● CHAIN LINK FENCE CORNER POST (METAL)
- □ POINT IN CHAIN LINK FENCE
- ○ CONCRETE NAIL SET IN WHITE PAINT ON ASPHALT
- △ 1/2" IRON REBAR WITH ORANGE PLASTIC CAP ENGRAVED "FIDLER" & "RPLS 3940" (SET)
- BOUNDARY LINE OF LAND USE CONTROL AREA
- CHAIN LINK FENCE

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in October, 2014.

Witness my hand and seal this the 20th day of October, 2014.

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

LINE TABLE

LINE	BEARING	DISTANCE
L1	N 86°41'48"E	82.30'
L2	N 39°20'47"E	18.62'
L3	N 86°29'33"E	97.31'
L4	S 38°05'14"E	19.89'
L5	N 87°22'02"E	139.25'
L6	S 59°03'44"E	20.98'
L7	N 86°53'55"E	29.32'
L8	N 55°19'37"E	21.12'
L9	N 86°05'43"E	16.55'

SCALE 1"=200'

200 0 200 400 600
GRAPHIC SCALE - FEET

COORDINATE TABLE

POINT	NORTH	EAST
A	6961847.512	3305576.740
B	6963732.849	3305514.995
C	6963737.591	3305597.161
D	6963751.988	3305608.964
E	6963757.942	3305706.095
F	6963742.285	3305718.366
G	6963758.275	3306055.508
H	6963790.379	3306754.008
I	6963796.775	3306893.111
J	6963785.987	3306911.111
K	6963787.573	3306940.387
L	6963799.588	3306957.756
M	6963800.715	3306974.265
N	6961922.907	3307063.146

LHAAP-46 L.U.C.A.
(63.772 ACRES)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	U.PTS U.LEG
10/20/2014	1103025U.DWG	DRAWN BY JTJ

LHAAP-46, 46-3

LAND USE CONTROL COMPLIANCE INSPECTION FORM

September 14, 2015

Sample Annual Land Use Control Compliance Certification Documentation

In accordance with the Remedial Design dated 9/30/11 for LHAAP-46 a certification of site was conducted by _____ [indicate transferee] on _____.

A summary of land use control mechanisms is as follows:

- Groundwater restriction – A restriction against use of groundwater will remain in effect until the levels of the COCs in groundwater and soil allow unrestricted use and unlimited exposure (UUUE). [Indicate whether groundwater restrictions are still required at LHAAP-46]

A summary of compliance with land use and restriction covenants is as follows:

- No use of groundwater, installation of new groundwater wells, or tampering with existing wells at LHAAP-46.

I, the undersigned, do document that the certification was performed as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief.

Date: _____

Name/Title: _____

Signature: _____

Annual compliance certification forms shall be completed no later than March 1 of each year for the previous calendar year.

LHAAP – 47, 47-1
DRAFT LUC INSPECTION AND MAINTENANCE LOG
(RAO Inspection and Maintenance Checklist)
(Well Inspection Form)
(Pending)

Date January 17, 2023

RAO Inspection and Maintenance Checklist

General Information	
Project Name	RAO Inspection and Maintenance, LHAAP-47 Longhorn Army Ammunition Plant, Karnack, TX
Contractor Name	
Inspector's Name	
Inspector's Title	
Inspector's Signature	
Inspector's Contact Number	
Inspection Date	
Type of Inspection	☐ Quarterly ☐ Semiannual ☐ Annual ☐ Prior to forecast rain ☐ After a rain event ☐ Other_____

	Description	YES	NO	N/A	Comments (Attach photos/location sketches)	Corrective Action (Attach photos)
A.	**Groundwater Monitoring Wells**					
A.1	Are the installed groundwater monitoring wells in good condition?					
A.2	Is the well cleared of vegetation and accessible?					
A.3	Any other relevant observations?					
A.4	Are there any significant cracks present?					
A.5	Are there any damaged areas?					
B.	**Site Features**					
B.1	Are there any signs of groundwater use?					
B.2	Are there any signs of residential construction?					
B.3	Any other relevant observations?					
C.	**Thermal Treatment System Operations and Maintenance (O&M)**					
C.1	Are there any signs of transformer or voltage control damage?					
C.2	Are there any signs of damage to the Electrical Resistance Heating (ERH) system?					

SAMPLE

General Information	
Project Name	RAO Inspection and Maintenance, LHAAP-47 Longhorn Army Ammunition Plant, Karnack, TX
Contractor Name	
Inspector's Name	
Inspector's Title	
Inspector's Signature	
Inspector's Contact Number	
Inspection Date	
Type of Inspection	☐ Quarterly ☐ Semiannual ☐ Annual ☐ Prior to forecast rain ☐ After a rain event ☐ Other_____

	Description	YES	NO	N/A	Comments (Attach photos/location sketches)	Corrective Action (Attach photos)
C.	**Thermal Treatment System Operations and Maintenance (O&M) Cont'd**					
C.3	Are there any signs of damage to the vapor extraction system (blowers, condensate removal system, etc.)?					
C.4	Are there any signs of damage to the emission control system (refrigerated condenser, thermal/catalytic oxidizer or activated carbon, etc.)?					

SAMPLE

WELL INSPECTION FORM

Job Name: _____ Well ID: _____

Job No.: _____ Completed Date: _____

Client: _____ Measured Depth: _____

Site Location: _____ Inspector: _____

☐ **ABOVE GROUND**

Protective casing? ☐ Yes ☐ No

Material _____

Condition: ☐ Good ☐ Broken ☐ Cracked

Lid Condition: ☐ Good ☐ Broken ☐ Cracked

Hinge Condition: ☐ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ **FLUSH MOUNTED**

Well cover present? ☐ Yes ☐ No

Condition: ☐ Good ☐ Broken ☐ Cracked

Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Visible? ☐ Yes ☐ No

Dimensions _____ Thickness _____

Sloped away from casing? ☐ Yes ☐ No

Check any of the following features that apply:

☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

CONCRETE PAD:

Inner Diameter (inches) _____

Condition: ☐ Good ☐ Broken ☐ Cracked ☐ Other (describe) _____

Cap present? ☐ Yes ☐ No

Well lock present? ☐ Yes ☐ No

Lock functioning properly? ☐ Yes ☐ No

Bump post? ☐ Yes ☐ No

Well ID visible? ☐ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☐ No

Visual obstruction? ☐ Yes ☐ No

Is well open to completed depth? ☐ Yes ☐ No

Is silt present in well? ☐ Yes ☐ No

Is silt greater than 25% of well screen length? ☐ Yes ☐ No

COMMENTS:

LHAAP – 47, 47-2
LUCs FROM REMEDIAL DESIGN
(Pending)

Date January 17, 2023

LHAAP – 47, 47-3
NOTICE OF LAND USE CONTROLS AND NONRESIDENTIAL LAND USE AT LHAAP-47 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)
(Pending)

Date January 17, 2023

Initial Notice of Land Use Controls

LHAAP-47, Plant 3 Area - Solid Rocket Motor Fuel Production

Longhorn Army Ammunition Plant, Karnack, Texas

The former Longhorn Army Ammunition Plant (LHAAP) is an inactive government-owned, formerly contractor-operated and maintained Department of Defense facility located in central east Texas in the northeast corner of Harrison County. LHAAP is approximately 14 miles northeast of Marshall, Texas. The facility is approximately 40 miles west of Shreveport, Louisiana. The former U.S. Army installation occupied nearly 8,416 acres between State Highway 43 at Karnack, Texas and the southwestern shore of Caddo Lake. The installation can be accessed by State Highways 43 and 134.

LHAAP was placed on the National Priorities List (NPL) on August 9, 1990. Activities to remediate contamination began in 1990. After its listing on the NPL, the U.S. Army, the USEPA, and the Texas Water Commission (currently known as the Texas Commission of Environmental Quality [TCEQ]) entered into a CERCLA Section 120 Federal Facilities Agreement (FFA) for remedial activities at LHAAP. The FFA became effective December 30, 1991. LHAAP operated until 1997 when it was placed on inactive status and classified by the U.S. Army Armament, Munitions, and Chemical Command as excess property.

The site addressed in this Initial Notice of Land Use Controls is LHAAP-47, which is shown on the attached figures and discussed below.

Land Use Controls (LUCs) are applied at LHAAP-47 as part of the remedy in accordance with the LHAAP-47 Record of Decision finalized July 19, 2022. The LUCs are necessary because contaminants are present in groundwater at levels that do not support unlimited use and unrestricted exposure. The LUC boundaries may change during remedy implementation.

Contaminants of Concern (COCs)

The COCs in groundwater for LHAAP-47 are Volatile Organic Compounds (VOCs), perchlorate, Semi-Volatile Compounds (SVOCS), and metals, which are found at concentrations exceeding acceptable levels in the shallow, upper intermediate, and intermediate groundwater zones. In addition, there are isolated locations in these groundwater zones where metals are present at concentrations exceeding U.S. Environmental Protection Agency Maximum Contaminant Levels or TCEQ Protective Concentration Levels.

Land Use Controls

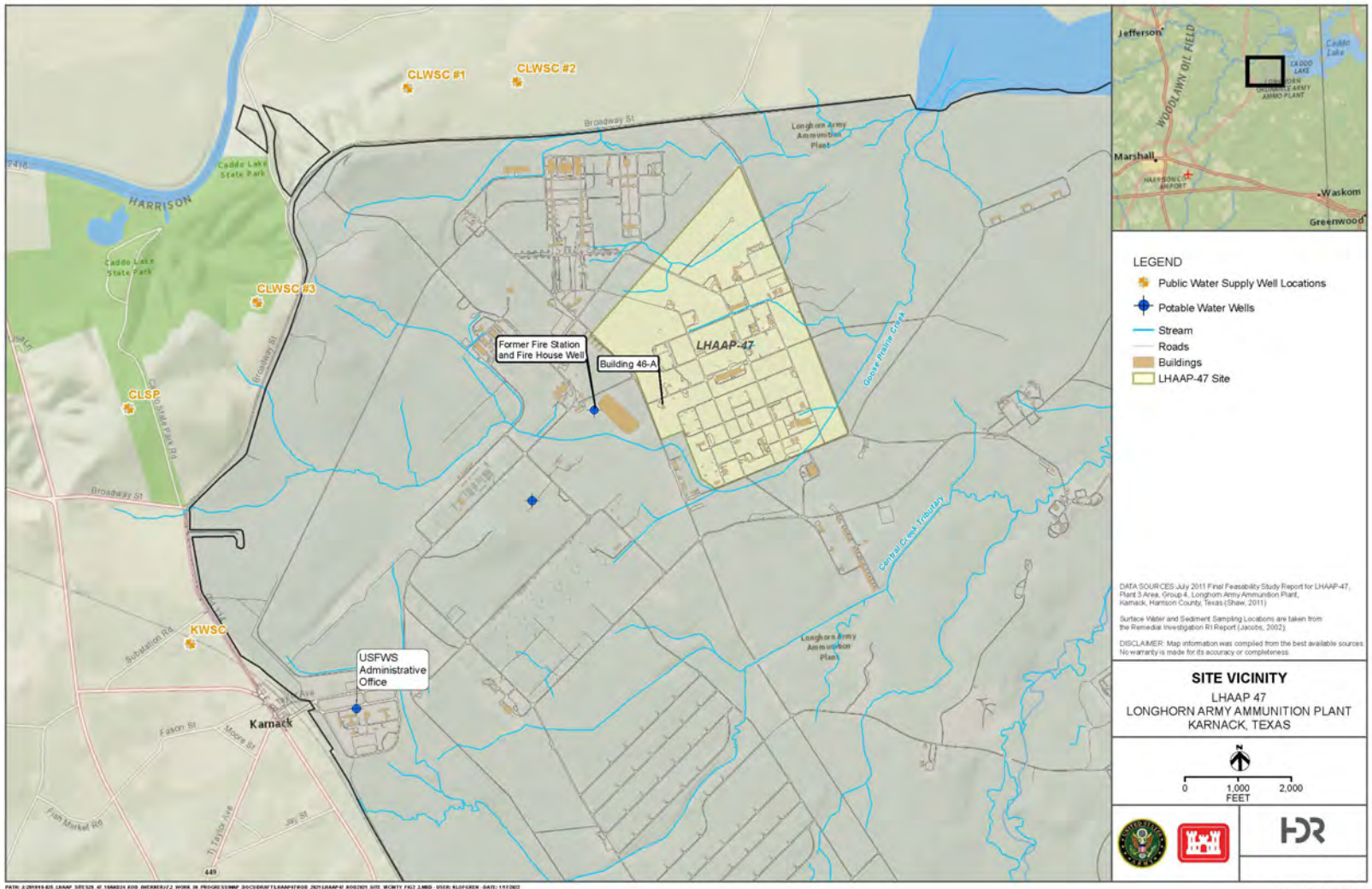
- The LUC prohibiting groundwater use (except for environmental monitoring and testing) shall be implemented and shall remain in place at the site until the levels of COCs in soil and groundwater allow for unlimited use and unrestricted exposure.
- The LUC restricting land use to nonresidential shall be implemented and shall remain in place at the site until the levels of COCs in surface and subsurface soil, and groundwater allow for unlimited use and unrestricted exposure.
- The LUC to maintain the integrity of any current or future remedial or monitoring systems shall remain in place until groundwater cleanup levels of COCs are met.

Further information may be found in the Administrative Record at the Marshall Public Library, at website www.longhornaap.com or by contacting Rose M. Zeiler (571-403-3232 or rose.m.zeiler.ctr@army.mil).

Initial Notice of Land Use Controls

LHAAP-47 Plant 3 Area - Solid Rocket Motor Fuel Production,
Longhorn Army Ammunition Plant, Karnack Texas

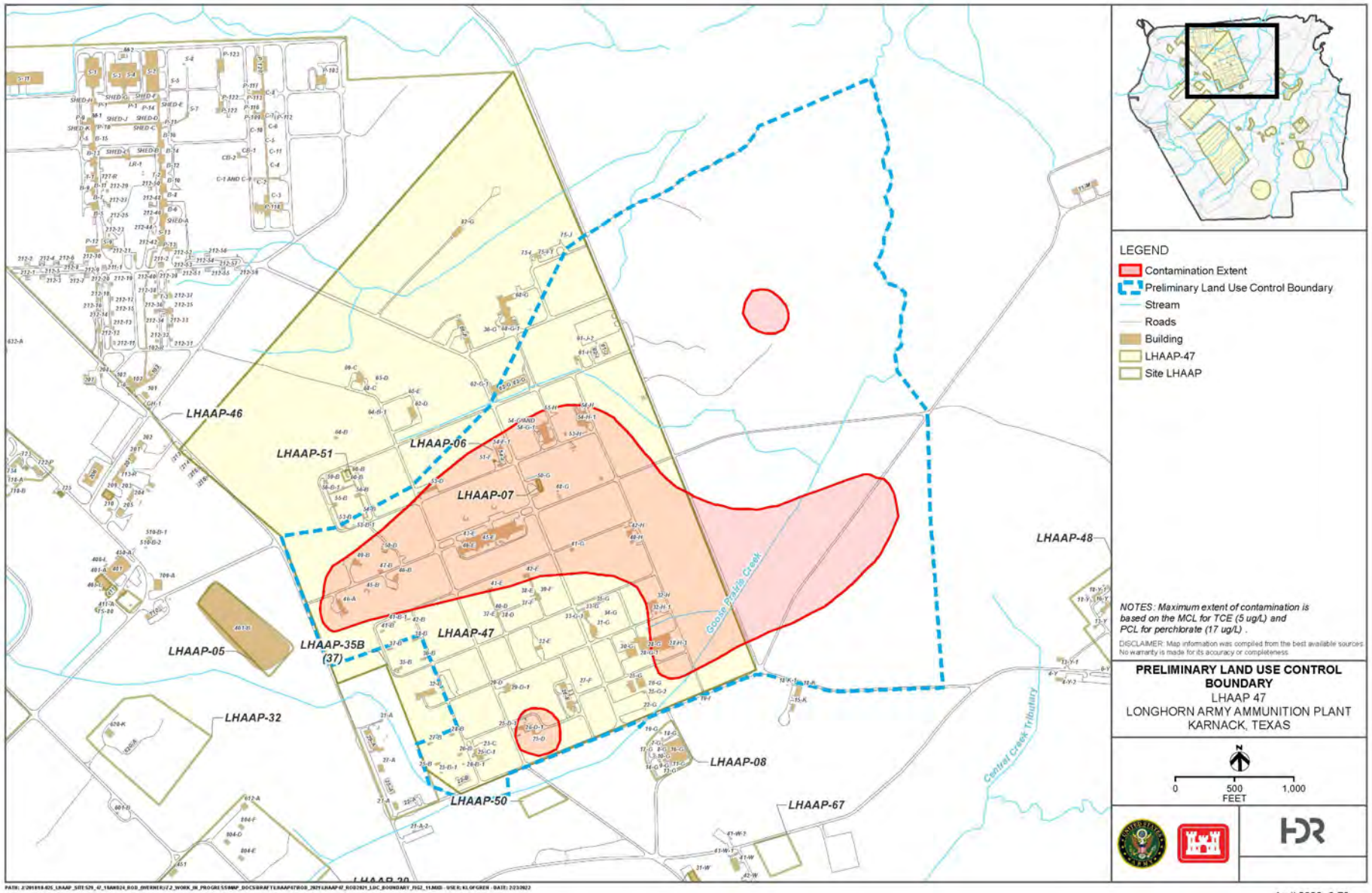
Figure 1. Location of LHAAP-47



Initial Notice of Land Use Controls

LHAAP-47 Plant 3 Area - Solid Rocket Motor Fuel Production,
Longhorn Army Ammunition Plant, Karnack Texas

Figure 2. LHAAP-47 Preliminary LUC Boundary



LHAAP – 47, 47-4
DRAFT LAND USE CONTROL COMPLIANCE INSPECTION FORM
(Pending)

Date January 17, 2023

Draft Land Use Control Compliance Inspection Form

In accordance with the Remedial Design dated _____ for LHAAP-47, an inspection of the site was conducted by _____ [indicate transferee] on _____.

The land use control mechanisms are:

- Groundwater restrictions – prohibition of groundwater use (except for monitoring and testing) until levels of contaminants of concern (COCs) in soil and groundwater allow for unlimited use and unrestricted exposure.
- Land use restrictions - restrict land use to nonresidential until levels of COCs in surface and subsurface soil, and groundwater allow for unlimited use and unrestricted exposure.
- Integrity of remedial and monitoring systems - maintain the integrity of any current or future remedial or monitoring systems until groundwater cleanup of COCs are met.

No unauthorized activities or uses have occurred. Compliance with land use controls and restrictions is as follows:

- No use of groundwater (other than environmental testing and monitoring), installation of new groundwater wells, or tampering with existing monitoring wells;
- No land use other than nonresidential; and
- No activities that would compromise the integrity of any current or future remedial or monitoring systems.

I, the undersigned, do document that the inspection was conducted as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief.

Date: _____

Name/Title:
_____

Signature:
_____

Annual compliance certification forms shall be completed no later than March 1 of each year for the previous calendar year, retained in the file and provided to Army, EPA, and TCEQ upon request.

LHAAP-49

NOTICE OF NONRESIDENTIAL LAND USE AT LHAAP-49 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

2012-000000704

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

7 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000704 **Receipt No:** 1200645 **Amount:** $ 36.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

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

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. LHAAP-49 is a former Acid Storage location at the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA) became effective on December 30, 1991. LHAAP-49 is considered an NPL listed site, and remedial activities at LHAAP-49 were performed in accordance with the FFA requirements.

LHAAP-49 is located in the west-central portion of LHAAP. LHAAP-49 is the former Acid Storage Area, which was used from 1942 to 1945 for storage and formulation of acids and acid mixtures in support of trinitrotoluene production during World War II. Nitric acid and sulfuric acid were manufactured and handled in large quantities in this area. A no further action Record of Decision for LHAAP-49 was signed by USEPA in 2010 establishing no remedy was required. Further information may be found in the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or

in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

LHAAP-49 is a 30.540 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of LHAAP-49 and USEPA and TCEQ concluded that no further investigation or action is required.

Limited monitoring of LHAAP-49 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of LHAAP-49 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 21 th day of July, 2011.

BEFORE ME, on this the 21 th day of July, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 21 day of July, 2011.

ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 03-17-2015

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

FIELD NOTES DESCRIPTION OF
LHAAP-49
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 30.540 acres of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998768897, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "HMX-3" (N=6956487.252 feet E=3303483.509 feet) and "HMX-5" (N=6958206.213 feet E=3305201.721 feet). Said traverse indicates a surface distance of 2430.748 feet between said monuments. The computed land area is based on grid (State Plane) distances.

BEGINNING at a 60d nail set for the Southmost corner of this tract, said nail being in asphalt pavement at the intersection of 6th Street and 4th Street, from which nail the monument "HMX-3" referenced above bears N 09deg00'02"E 74.61' ,

THENCE N 46deg42'14"W crossing some of said asphalt pavement, then generally along 4th Street's Northeast edge of asphalt, then crossing a curved section of 4th Street's asphalt, and continuing beyond 4th Street's asphalt, for a total distance of 509.81', to a 60d nail set for the Southmost West corner of this tract,

THENCE N 45deg04'42"E eventually crossing 4th Street's asphalt, then generally along 4th Street's Southeast edge of asphalt, for a total distance of 1323.80', to a 60d nail set (in the Southeast edge of said asphalt pavement) for the Westerly reentrant corner of this tract,

THENCE N 45deg22'03"W crossing 4th Street's asphalt pavement and continuing for a total distance of 308.18' to a point (in the Southeasterly edge of flowing water [May 3, 2011] of Goose Prairie Creek) for the Northmost West corner of this tract, from which point a 1/2" iron rod with Tom Fidler orange plastic cap set for reference bears S 45deg22'03"E 11.34', said rod being at the top of the Southeasterly bank of Goose Prairie Creek,

THENCE N 47deg40'44"E 331.25' along a N.W. B.L. of this tract to a point (in the Southeasterly edge of flowing water [May 3, 2011] of Goose Prairie Creek) for the Westmost North corner of this tract, from which point a 1/2" iron rod with Tom Fidler orange plastic cap set for reference bears S 44deg45'45"E 13.46', said rod being at the top of the Southeasterly bank of Goose Prairie Creek,

THENCE S 44deg45'45"E along a N.E. B.L. of this tract, and eventually crossing 4th Street's asphalt pavement, for a total distance of 292.85' to a 60d nail set in the Southeast edge of said asphalt pavement for the Northerly reentrant corner of this tract,

THENCE N 44deg47'09"E generally along 4th Street's Southeast edge of asphalt pavement, then entering said pavement at the

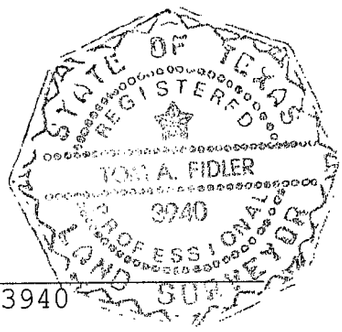
intersection of 4th Street and Avenue "C", for a total distance of 781.21' to a 60d nail set in said asphalt pavement for the Eastmost North corner of this tract,

THENCE S 45deg47'29"E crossing some of said pavement, then generally along the Southwest edge of the asphalt pavement of Avenue "C", then entering said pavement at the intersection of Avenue "C" and 6th Street, for a total distance of 507.27' to a 60d nail set for the Eastmost corner of this tract, from which the monument "HMX-5" referenced above bears N 13deg12'58"E 77.94' ,

THENCE S 44deg55'17"W crossing some of said pavement, then generally along the Northwest edge of the asphalt pavement of 6th Street, then entering said pavement at the aforementioned intersection of 6th Street and 4th Street, for a total distance of 2424.55' to this POINT OF BEGINNING.

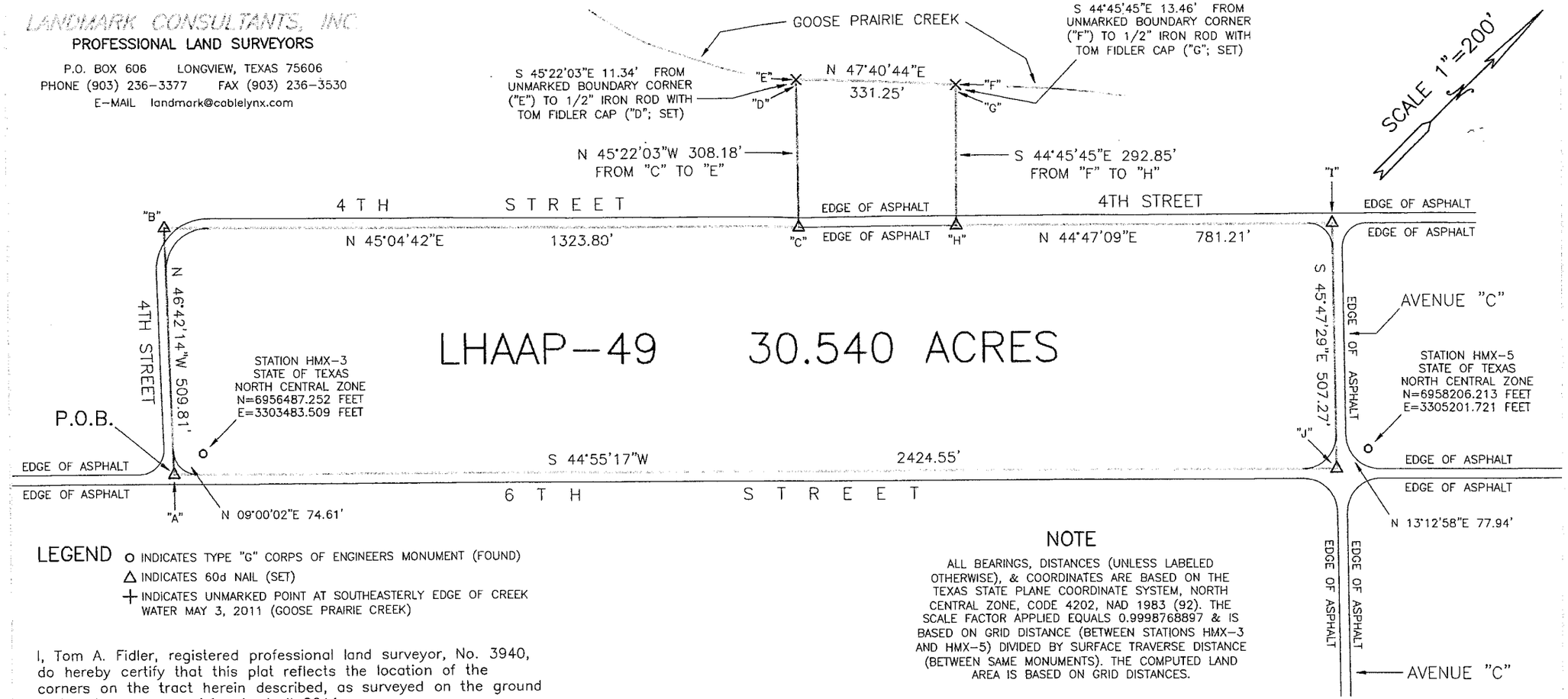
This tract contains 30.540 acres, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

LANDMARK CONSULTANTS, INC
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com



LEGEND
- o INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- △ INDICATES 60d NAIL (SET)
- + INDICATES UNMARKED POINT AT SOUTHEASTERLY EDGE OF CREEK WATER MAY 3, 2011 (GOOSE PRAIRIE CREEK)

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in April 2011.

Witness my hand and seal May 5, 2011.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998768897 & IS BASED ON GRID DISTANCE (BETWEEN STATIONS HMX-3 AND HMX-5) DIVIDED BY SURFACE TRAVERSE DISTANCE (BETWEEN SAME MONUMENTS). THE COMPUTED LAND AREA IS BASED ON GRID DISTANCES.

COORDINATE TABLE

POINT	NORTH	EAST
A	6956413.564	3303471.837
B	6956763.174	3303100.790
C	6957697.967	3304038.137
D(ROD)	6957906.516	3303826.894
E	6957914.483	3303818.824
F	6958137.506	3304063.741
G(ROD)	6958127.951	3304073.216
H	6957929.573	3304269.956
I	6958484.036	3304820.288
J	6958130.332	3305183.901

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS

LHAAP-49
(30.540 ACRES)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #1104040	0407088.CRD	M.PTS M.LEG
MAY 5, 2011	1103025M.DWG	DRAWN BY JTJ

LHAAP-50, 50-1

LUCs FROM FINAL REMEDIAL DESIGN

September 14, 2015

Final
Remedial Design
LHAAP-50
Former Sump Water Tank, Group 4
Longhorn Army Ammunition Plant
Karnack, Texas

Prepared for U.S. Army Corps of Engineers – Tulsa District
1645 South 101st East Avenue
Tulsa, Oklahoma 74128

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

Contract No. W912QR-04-D-0027, Task Order No. DS02
Project No. 117591
Rev 0
September 2011

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Table of Contents

List of Tables iii
List of Figures iii
List of Appendices iii
Acronyms and Abbreviations iv

1.0 Introduction 1-1
1.1 Background 1-1
1.1.1 Description 1-1
1.1.2 Remedial Action Objectives 1-2
1.1.3 Planned Remedial Action 1-3
1.2 Cleanup Levels 1-4
2.0 Pre-Remediation Activities in August 2010 2-1
2.1 Soil Sampling 2-1
2.2 Groundwater Sampling 2-1
2.3 Areas of Contamination 2-2
3.0 Land Use Control 3-1
4.0 Excavation Design 4-1
4.1 Excavation Area 4-1
4.2 Surface Water Monitoring 4-1
5.0 Monitoring System Design 5-1
5.1 Monitoring Performance Monitoring Well Locations 5-1
5.1.1 Shallow Groundwater Plume and Additional Soil Sampling 5-2
5.1.2 Intermediate Groundwater Plume 5-2
6.0 Land Use Control Design and Implementation Plan 6-1
6.1 Land Use Control Implementation 6-1
6.2 Land Use Control Operation and Maintenance 6-2
6.2.1 Site Certification and Reporting 6-2
6.2.2 Notice of Planned Property Conveyances 6-2
6.2.3 Opportunity to Review Text of Intended Land Use Controls 6-3
6.2.4 Notification Should Action(s) which Interfere with Land Use Control Effectiveness be Discovered Subsequent to Conveyance 6-3
6.2.5 Land Use Control Enforcement 6-3
6.2.6 Modification or Termination of Land Use Controls 6-3
6.2.7 Comprehensive Land Use Control Management Plan 6-4
7.0 Field Activities 7-1
7.1 Pre-mobilization Activities 7-1
7.2 Preliminary Activities/Mobilization 7-2
7.3 Site Setup 7-3
7.4 Soil Excavation 7-4
7.5 Confirmation Soil Sampling 7-5
7.6 Soil Sampling 7-5
7.7 Monitoring Well Installation 7-5
7.8 Groundwater Sampling 7-6
7.8.1 Monitored Natural Attenuation 7-6
7.8.2 Intermediate and Deep Zone Groundwater Sampling 7-6
7.8.3 Long-Term Monitoring 7-7

FILE PATH	T:\Divisions\Design\GIS\117591_LHAAP\Doc\Mxd\SiteVicinity.mxd
APPROVED BY	P. Srivastav 11/05/10
CHECKED BY	S. Suryanarayanan 11/03/10
DRAWN BY	B. Muske 11/03/10
OFFICE	Houston, TX

N

Caddo Lake

LHAAP-46
LHAAP-47
LHAAP-02
LHAAP-35A(58)
LHAAP-60
LHAAP-35B(37)
LHAAP-50
LHAAP-08
LHAAP-67
LHAAP-48
LHAAP-35C(53)

FM 2198
RICE AVE
JACKSONVILLE AVE
GARDNER AVE
GALVESTON AVE
11TH ST
3RD ST
60TH ST
59TH ST
58TH ST
57TH ST
56TH ST
55TH ST
54TH ST
53RD ST
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AVENUE A
AVE B
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AVE M
AVE N
AVE O
AVE P
AVE Q
AVENUE R
AVENUE S
AVENUE T
AVENUE U
AVENUE V
AVENUE W
AVENUE X
AVENUE Y
AVENUE Z
MARSHALL AVE
STARR BRIDGE RD
COOKE RD
KARNACK AVE
IMPERIAL MORGAN AVE
S ROCKETT AVE
ZEUNER DR
NARONA AVE
PENNINGTON ST
ROBERT JONES RD
LONG POINT RD
HAVEYACH RD
PLANT RD
FIRE AVE
KELLY AVE
MARTIN DR

LEGEND

- Stream
- Road
- Sites
- Lake
- LHAAP Boundary

0 1,200 2,400 4,800
Feet

Shaw

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

FIGURE 1-2

SITE VICINITY MAP
LHAAP-50 REMEDIAL DESIGN

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

3.0 LAND USE CONTROL

The objective of LUC at LHAAP-50 is to prevent human exposure to residual groundwater contamination presenting an unacceptable risk to human health and ensure that there is no withdrawal or use of groundwater beneath the sites for anything other than environmental monitoring and testing until cleanup levels are met. Notification of the groundwater use restriction will accompany all transfer documents and will be recorded at the Harrison County Courthouse in accordance with Texas Administrative Code (TAC) Title 30, §335.566. **Appendix B** provides sample LUC compliance certification documentation.

The LUC addresses the area of LHAAP-50 that has groundwater plumes (in both the shallow and intermediate groundwater zones) with levels of contamination that require implementation of a remedy (see **Section 2.3**). The groundwater restriction LUC would be maintained until the concentration of contaminants and by-product contaminants have been reduced to below their respective cleanup levels.

The U.S. Army and regulators will consult to determine appropriate enforcement actions should there be a failure of an LUC objective at this site after it has transferred. The U.S. Army shall obtain USEPA and TCEQ concurrence prior to termination or significant modification of the LUC, or implementation of a change in land use inconsistent with the LUC objectives and use assumptions of the remedy. Although not a remedy, the land use assumption for LHAAP-50 forms the basis for the remedy. The future use of the site as part of a national wildlife refuge is consistent with an industrial risk exposure scenario. Notification of the land use assumption of this site will be made in transfer documentation and will be recorded in the Harrison County Courthouse in accordance with TAC Title 30, §335.566. Compliance with the use assumption will be documented in the five-year review reports.

6.0 LAND USE CONTROL DESIGN AND IMPLEMENTATION PLAN

This section describes the LUC design and implementation activities for LHAAP-50. The activities will result in a surveyed and recorded groundwater use restriction boundary and an operation and maintenance plan for the LUC.

The objective of the LUC at LHAAP-50 is to prevent human exposure to residual groundwater contamination presenting an unacceptable risk to human health and ensure that there is no withdrawal or use of groundwater beneath the site for anything other than environmental monitoring and testing until cleanup levels are met. Notification of the groundwater use restriction will accompany all transfer documents. The U.S. Army is responsible for long-term implementation, maintenance, inspection, reporting, and enforcement of the LUC.

The LUC will address the area of LHAAP-50 that includes two groundwater plumes with levels of contamination that require implementation of a remedy (see **Section 1.3**). The Land Use Control Operation and Maintenance Plan (LUC O&M) will identify the measures required for monitoring and enforcement of the groundwater use restriction. Upon review and concurrence of this RD, the LUC O&M Plan will be coordinated with regulators, finalized, and distributed as part of the Comprehensive LUC Management Plan for LHAAP.

6.1 Land Use Control Implementation

The U.S. Army will undertake the following actions to implement the groundwater restriction LUC for LHAAP-50:

- ***Define the Area of the Groundwater Use Restriction.*** The groundwater use restriction boundary will be defined based on the review of the first round of groundwater sampling data in conjunction with historic data. The extent of plume will be bounded by a buffer and may extend to natural groundwater and surface water boundaries.
- ***Survey the LUC Boundary.*** The proposed boundary will be finalized after all wells are installed and sampled. Concurrence by USEPA and TCEQ will be obtained, and the LUC boundary will be surveyed by a State-licensed surveyor. A legal description of the surveyed area will be appended to the survey plat.
- ***Record the LUC in Harrison County.*** The LUC plat, legal description and groundwater use restriction language will be recorded in the Harrison County Courthouse in accordance with TAC Title 30, §335.566.

- ***Notify the Texas Department of Licensing and Regulation of the LUC.*** The Texas Department of Licensing and Regulation will be notified of the groundwater restriction which includes the prohibition of water well installation for any purpose other than environmental monitoring and testing without prior approval from the U.S. Army, the USEPA, and the TCEQ. The survey plat, legal boundary and description of the groundwater restriction, in conjunction with a locator map, will be provided in hard and electronic copy.
- ***Develop the LUC O&M Plan.*** An LUC O&M Plan for LHAAP-50 will be developed. It will include the elements presented in **Section 6.2**, the county recordation of the LUC survey plat, legal description and restriction language, and the inspection/certification form.

6.2 Land Use Control Operation and Maintenance

The U.S. Army or its representatives will be responsible for the operation and maintenance of the LHAAP-50 LUC. This includes certification, reporting, and enforcement activities. The U.S. Army shall address LUC problems within its control that are likely to impact remedy integrity and shall address problems as soon as practicable. To facilitate long-term operation and maintenance of the groundwater use restriction LUC remedy, the U.S. Army will develop a plan that will encompass the elements described in the following subsections.

6.2.1 Site Certification and Reporting

Beginning with finalization of this RD and approval of the inspection form, the U.S. Army will undertake inspections and certify continued compliance with the LUC objectives. The U.S. Army or the transferee after transfer will retain the LUC Inspection Certification documents in the project files for incorporation into the five-year review reports, and these documents will be made available to USEPA and TCEQ upon request. In addition, should any violations be found during the certification, the U.S. Army will provide to USEPA and TCEQ, along with the document, a separate written explanation indicating the specific violations found and what efforts or measures have or will be taken to correct those violations. The need to continue certifications will be revisited at five year reviews.

6.2.2 Notice of Planned Property Conveyances

The U.S. Army shall provide notice to USEPA and TCEQ of plans to convey the LHAAP-50 acreage. The notice shall describe the mechanism by which the LUC will continue to be implemented, maintained, inspected, reported, and enforced. Upon transfer, such responsibilities may shift to the transferee via appropriate provisions placed in the Environmental Condition of Property (ECP) or other environmental document for transfer. Although the U.S. Army may transfer responsibility for various implementation actions, the U.S. Army shall retain its responsibility for remedy integrity. This means that the U.S. Army

is responsible for addressing substantive violations of the LUC performance objective that would undermine the U.S. Army's CERCLA remedy. The U.S. Army also will be responsible for incorporating RD information and outlining the transferee's LUC obligations into property transfer documentation.

6.2.3 Opportunity to Review Text of Intended Land Use Controls

The U.S. Army will provide a copy of the groundwater use restriction notification to TCEQ for review and approval prior to its recordation in Harrison County. The USEPA will also receive a copy for review. In addition, the U.S. Army will produce an ECP or other environmental document for transfer of LHAAP-50, but before executing transfer, the U.S. Army will provide USEPA and TCEQ with a copy of the ECP or other environmental document for transfer so that they may have reasonable opportunity, before transfer, to review all LUC-related provisions.

6.2.4 Notification Should Action(s) which Interfere with Land Use Control Effectiveness be Discovered Subsequent to Conveyance

Should the U.S. Army discover after conveyance of the site any activity on the property inconsistent with the LUC performance objective, the U.S. Army shall notify USEPA and TCEQ within 72 hours of such discovery. Consistent with **Section 6.2.5** below, the U.S. Army will then work with USEPA, TCEQ and the transferee to correct the problem(s) discovered. This reporting requirement does not preclude the U.S. Army from taking immediate action pursuant to its CERCLA authorities to prevent any perceived risk(s) to human health or the environment.

6.2.5 Land Use Control Enforcement

Should the LUC remedy reflected in this RD fail, the U.S. Army will coordinate with USEPA and TCEQ to ensure that appropriate actions are taken to reestablish its protectiveness. These actions may range from informal resolutions with the USFWS or its lessee, to the institution of judicial action against non-federal third parties. Alternatively, should the circumstances warrant such, the U.S. Army could choose to exercise its response authorities under CERCLA. Should the U.S. Army become aware that any future owner or user of the property has violated any LUC requirement over which a local agency may have independent jurisdiction; the U.S. Army may notify those agencies of such violation(s) and work cooperatively with them to re-achieve owner/user compliance with the LUC.

6.2.6 Modification or Termination of Land Use Controls

The U.S. Army shall not, without USEPA and TCEQ concurrence, make a significant modification to, or terminate an LUC, or make a land use change inconsistent with the LUC objective. Likewise, the U.S. Army shall seek prior USEPA and TCEQ concurrence before

commencing actions that may impact remedy integrity. In the case of an emergency action, the U.S. Army shall obtain prior USEPA and TCEQ concurrence as appropriate to the exigencies of the situation.

The LUC shall remain in effect until such time as the U.S. Army and USEPA agree that the concentrations of COCs have met cleanup levels. When this occurs, the LUC will be terminated as needed. The decision to terminate the LUC will be documented consistent with the NCP process for post-ROD changes, potentially including an explanation of significant differences or a remedial action completion report. If the property has been transferred and a determination by the U.S. Army and USEPA has been made to terminate the LUC, the U.S. Army shall provide to the owner of the property an appropriate release for recordation pertaining to the site and will also timely advise other local stakeholders of the action.

6.2.7 Comprehensive Land Use Control Management Plan

Upon finalization of the LUC O&M Plan, a copy will be inserted into the Comprehensive LUC Management Plan for Longhorn. The Comprehensive LUC Management Plan figure and table will be updated to reflect the inclusion of LHAAP-50.

The Comprehensive LUC Management Plan consists of LHAAP RD documents and a survey plat showing the locations where LUC being implemented at LHAAP are applied. The purpose of this Comprehensive LUC Management Plan is to ensure all site-specific LUC are compiled into one comprehensive location for both pre-transfer use by the installation and for post-transfer use by the transferee. This document will be provided to USEPA and TCEQ and is also accessible to the public. The Comprehensive LUC Management Plan is located in the Marshall Public Library to accompany LHAAP's Administrative Record.

The land use assumption of industrial use as part of a national wildlife refuge forms the basis for the remedy at LHAAP-50 and this land use assumption will be included in the Comprehensive LUC Management Plan with supporting documentation.

LHAAP-50, 50-2

NOTICE OF LAND USE CONTROLS AND NONRESIDENTIAL LAND USE AT LHAAP-50 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

2015-000006109

*****DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT*****

NOTICE

8 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 06/18/2015 01:32 PM **Document Number:** 2015-000006109 **Receipt No:** 1507040 **Amount:** $ 50.00 **By:** Vickie Gagnard, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT COUNTY OF HARRISON TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox, Harrison County Clerk

Record and Return To:

AMANDA LAGARDE
112 EAST PECAN ST
SUITE 400
SAN ANTONIO, TX 78205

STATE OF TEXAS HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF LAND USE CONTROL AT LHAAP-50

KNOW ALL MEN BY THESE PRESENTS THAT:

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

I

The U.S. Army, Department of Defense, has performed remedial activities at the land described herein. The remediation site is in a former industrial area, located on the Former Longhorn Army Ammunition Plant (LHAAP) and is designated as LHAAP-50 (Former Sump Water Tank). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Remedial activities at LHAAP-50 were performed in accordance with the FFA requirements.

The LHAAP-50 site, when operational, contained a 47,000-gallon capacity aboveground storage tank (AST) which received industrial wastewater from various industrial waste production sumps throughout LHAAP from 1955 to 1988. After the solids were filtered, the storage tank contents were discharged up stream of the bridge on Crockett Avenue, south of 51st Street into Goose Prairie Creek. The AST has been removed. A Record of Decision (ROD) for LHAAP-50 was signed by the U.S. Army and USEPA with TCEQ concurrence in 2010 establishing the final remedy which consists of a land use control (LUC) in conjunction with monitored natural attenuation (MNA) and limited perchlorate-impacted soil removal. The soil was removed to non-residential levels. The site was not remediated to levels suitable for unrestricted use. The LUC at LHAAP-50 will ensure protection of human health by restricting the use of contaminated groundwater to environmental monitoring and testing only. MNA will be implemented to establish confidence in attenuation trends and verify that the constituents of

concern (COCs) are stable or shrinking and will not migrate to nearby surface water at levels that may present an unacceptable risk to human health or the environment. Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8:00 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-50 parcel is a 1 acre tract, more or less, located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in **Exhibit A**. Within the LHAAP-50 parcel is designated a LUC boundary which is a 23.891-acre tract, more or less, as described in **Exhibit A**. The LUC boundary is also presented in the attached **Figure 1**.

Future use of the parcel is intended as a national wildlife refuge consistent with non-residential use. For purposes of this certification, residential land use includes, but is not limited to, single family to multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12. The United States Department of the Army has undertaken careful environmental study of the LHAAP-50 site and concluded that the LUC set forth below is required to ensure protection of human health and the environment.

(1) Groundwater Restriction. The groundwater use restriction boundary consists of the 23.891-acre tract, more or less. Groundwater underlying this land is contaminated with tetrachloroethylene (PCE), trichloroethylene (TCE), 1,1-dichloroethylene (1,1-DCE), 1,2-dichloroethane (1,2-DCA), cis-1,2-dichloroethylene (cis-1,2-DCE), vinyl chloride and other volatile organic compounds (VOCs) and perchlorate and shall not be accessed or used for any purpose without the prior written approval of the U.S. Army, the USEPA, and the TCEQ. A LUC restricting the use of groundwater has been established for the protection of human health. The U.S. Army will notify the Texas Department of Licensing and Regulation of the groundwater restriction which includes prohibition of water well installation for any purpose other than environmental monitoring and testing without prior approval by the U.S. Army, the USEPA, and the TCEQ. A restriction against the residential use of groundwater will remain in effect until the levels of the COCs in groundwater and soil allow unrestricted use and unlimited exposure (UUUE).

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

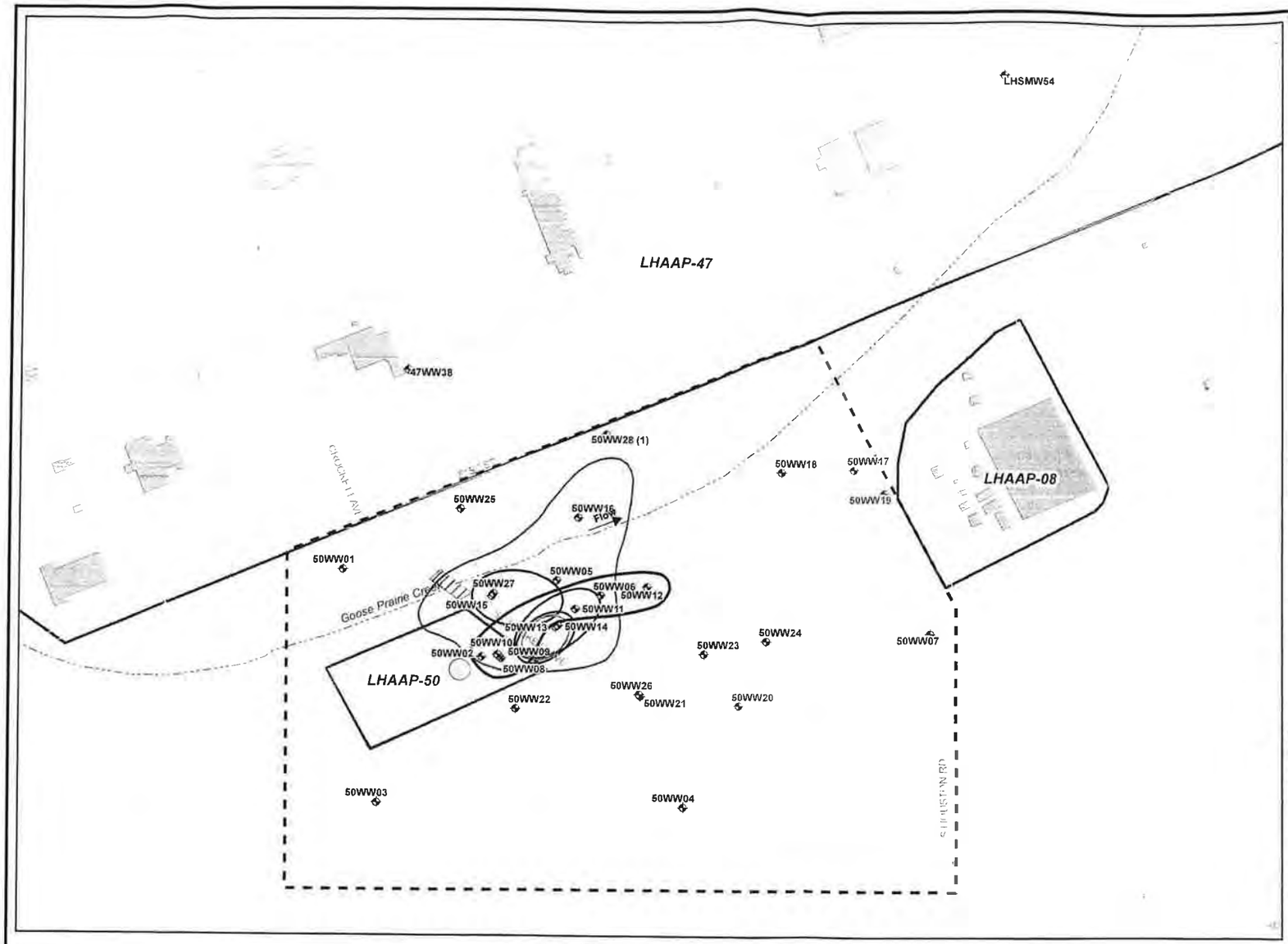
EXECUTED this the 18 th day of June, 2015.

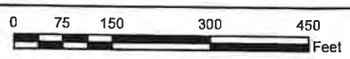
BEFORE ME, on this the 18 th day of June, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 18th day of June, 2015.

GENIE WARNER
Notary Public State of Texas
COMM. EXP. 8/1/2018

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





N

Legend

- Lower Shallow Monitoring Well
- Upper Shallow Monitoring Well
- Fully Penetrating Shallow Monitoring Well
- Intermediate Monitoring Well
- Perchlorate Exceeding GW-Industrial (72 • µg/L)
- cis-1,2-DCE Plume (70 µg/L Extent)
- 1,1-DCE (7 µg/L Extent) and 1,2-DCA (5 µg/L Extent) Plumes
- PCE Plume (5 µg/L Extent)
- TCE Plume (5 µg/L Extent)
- VC Plume (2 µg/L Extent)
- Roads
- Goose Prairie Creek
- Proposed Land Use Control Boundary
- Bridges
- Buildings
- Former Storage Tank Location
- Site Boundaries

Note:
1. 50WW28 installed in May 2014 and sampled in July 2014.

AECOM

Figure 1
Land Use Control Boundary
LHAAP-50 Site
Longhorn Army Ammunition Plant
Karnack, Texas

60256135

June 2015

Path: E:\Group\IT_GIS\GIS Projects\Longhorn\MXDs\LHAAP-50\RAO Report\2015-Jan-20\Figure 2-1_LHAAP50_Land Use Control Boundary.mxd

EXHIBIT A

FIELD NOTES DESCRIPTION OF
"LHAAP-50" LAND USE CONTROL AREA
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, "LHAAP-50" Land Use Control Area being 23.891 acres of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), "LHAAP-50" Land Use Control Area being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999968791070, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "C-21" (N=6956579.781 feet E=3308499.969 feet), "IGNATIUS-1" (N=6957090.304 feet E=3311081.788 feet), and "RACE" (N=6958817.935 feet E=3310081.598 feet). The computed land area is based on State Plane distances. As used herein, the abbreviation I.R.O.P.C. indicates 1/2" iron rebar with orange plastic cap engraved "Fidler" and "RPLS 3940" .

Commencing at monument "C-21" referenced above,

THENCE N 59deg10'26"E 819.91' to an I.R.O.P.C. set for the Southwest corner of this tract and this POINT OF BEGINNING,

THENCE N 00deg00'15"E 644.05' along the W.B.L. of this tract to a concrete nail set in asphalt pavement for this tract's N.W.C.,

THENCE N 67deg57'46"E 1061.76' along the N.W. B.L. of this tract to a 60d nail set in asphalt pavement for the Northmost corner of this tract,

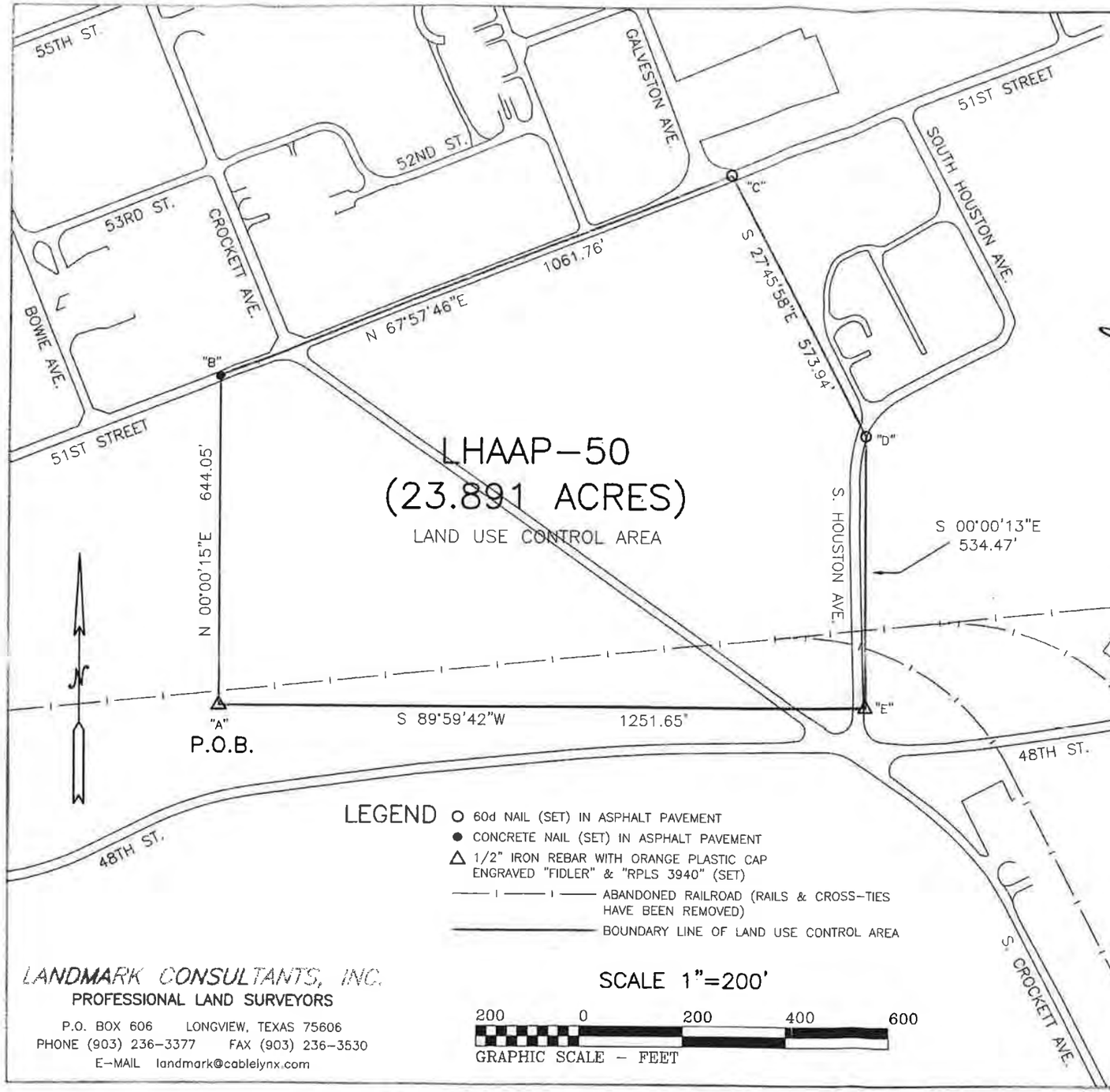
THENCE S 27deg45'58"E 573.94' along the N.E. B.L. of this tract to a 60d nail set for one of this tract's two Eastmost corners,

THENCE S 00deg00'13"E 534.47' along the E.B.L. of this tract to an I.R.O.P.C. set for this tract's S.E.C., from which "IGNATIUS-1" referenced above bears N 81deg47'47"E 632.57',

THENCE S 89deg59'42"W 1251.65' along the S.B.L. of this tract to this POINT OF BEGINNING, containing 23.891 acres, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground under my supervision.

Tom A. Fidler, R.P.L.S. Number 3940



I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision on April 29 & 30, 2015.

Witness my hand and seal this the 4th day of May, 2015.

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), AND COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999968791070 AND IS BASED ON CALCULATED DISTANCE BETWEEN PUBLISHED STATE PLANE COORDINATES (OF STATIONS C-21, IGNATIUS-1, & RACE) DIVIDED BY SURFACE TRAVERSE CALCULATED DISTANCE BETWEEN SAME THREE STATIONS. THE COMPUTED LAND AREA IS BASED ON STATE PLANE DISTANCES.

COORDINATE TABLE

	NORTH	EAST
A	6956999.929	3309204.044
B	6957643.979	3309204.091
C	6958042.360	3310188.284
D	6957534.507	3310455.661
E	6957000.041	3310455.696

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEET

LEGEND

- ○ 60d NAIL (SET) IN ASPHALT PAVEMENT
- ● CONCRETE NAIL (SET) IN ASPHALT PAVEMENT
- △ 1/2" IRON REBAR WITH ORANGE PLASTIC CAP ENGRAVED "FIDLER" & "RPLS 3940" (SET)
- ABANDONED RAILROAD (RAILS & CROSS-TIES HAVE BEEN REMOVED)
- BOUNDARY LINE OF LAND USE CONTROL AREA

SCALE 1"=200'

200 0 200 400 600
GRAPHIC SCALE - FEET

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

LHAAP-50 L.U.C.A.
(23.891 ACRES)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	W.PTS W.LEG
05/04/2015	1103025W.DWG	DRAWN BY JTJ

LHAAP-50, 50-3

LAND USE CONTROL COMPLIANCE INSPECTION FORM

September 14, 2015

Sample Annual Land Use Control Compliance Certification Documentation

In accordance with the Remedial Design dated 9/30/11 for LHAAP-50 a certification of site was conducted by _____ [indicate transferee] on _____.

A summary of land use control mechanisms is as follows:

- Groundwater restriction – A restriction against use of groundwater will remain in effect until the levels of the COCs in groundwater and soil allow unrestricted use and unlimited exposure (UUUE). [Indicate whether groundwater restrictions are still required at LHAAP-50]

A summary of compliance with land use and restriction covenants is as follows:

- No use of groundwater, installation of new groundwater wells, or tampering with existing wells at LHAAP-50.

I, the undersigned, do document that the certification was performed as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief.

Date: _____

Name/Title: _____

Signature: _____

Annual compliance certification forms shall be completed no later than March 1 of each year for the previous calendar year.

LHAAP-51

NOTICE OF NONRESIDENTIAL LAND USE AT LHAAP-51 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

2010-000005557

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

7 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 04/27/2010 04:08 PM **Document Number:** 2010-000005557 **Receipt No:** 1006195 **Amount:** $ 36.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW E & I
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

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

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. The site, LHAAP-51, is the area of a demolished building location known as Building 60-B, former photographic lab, located within the Plant 3 production area of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-51 is not itself considered an NPL site. Environmental activities at LHAAP-51 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ as the lead regulatory agency that no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-51 (Building 60-B) was constructed in 1945 for the processing of X-ray film. The building had a concrete floor without a floor drain. Spent developing waste was drummed and transferred to another building for disposal. Small quantities of black and white developer and fixer solutions were generated by the X-ray lab. Activities ceased in the late 1970s or early 1980s. Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-51 parcel is 5,754 square foot, more or less, or 0.13209 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the LHAAP-51 site and USEPA and TCEQ concluded that no further investigation or action is required for LHAAP-51. Contaminants in soil samples from LHAAP-51 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of LHAAP-51 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of LHAAP-51 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951
or
Assistant Chief of Staff for Installation Management
ATTN: DAIM-BDO (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 10th day of March, 2010.

BEFORE ME, on this the 10 th day of March, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 10 day of March, 2010.

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

ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 3-17-2011

FIELD NOTES DESCRIPTION OF
"LHAAP-51" TRACT
(INCLUDES THE REMAINS OF A DEMOLISHED BUILDING)
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP-51" including, but not being limited to, the concrete slab of a demolished building in the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract "LHAAP-51" being more particularly described as follows :

Surveyor's Note #1: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999861727, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "X-11" (N=6960733.698 feet E=3304750.367 feet) and "HORSE" (N=6960008.269 feet E=3309591.340 feet). Said traverse indicates a surface distance of 4895.70 feet between said monuments. The computed land area is based on surface distances.

Surveyor's Note #2: This field notes description is based on State Plane coordinates supplied (in the form of an Autocad DXF file) by Shaw Environmental & Infrastructure Group.

Commencing at monument "HORSE" referenced above,

THENCE N 86deg33'08"W 1716.42' to a concrete nail with head dimple set for the S.E.C. of this tract and this POINT OF BEGINNING,

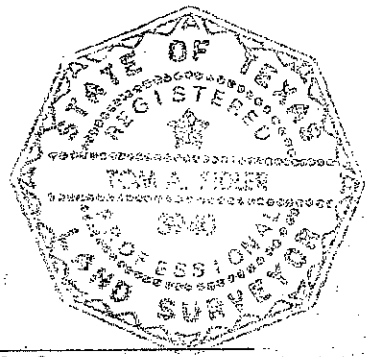
THENCE S 68deg51'01"W 68.17' along the S.B.L. of this tract to a 60d nail set for this tract's S.W.C. ,

THENCE N 21deg08'59"W 84.39' along the W.B.L. of this tract to a 60d nail set for this tract's N.W.C. , said nail being S 79deg23'36"E 3086.37' from said monument "X-11" ,

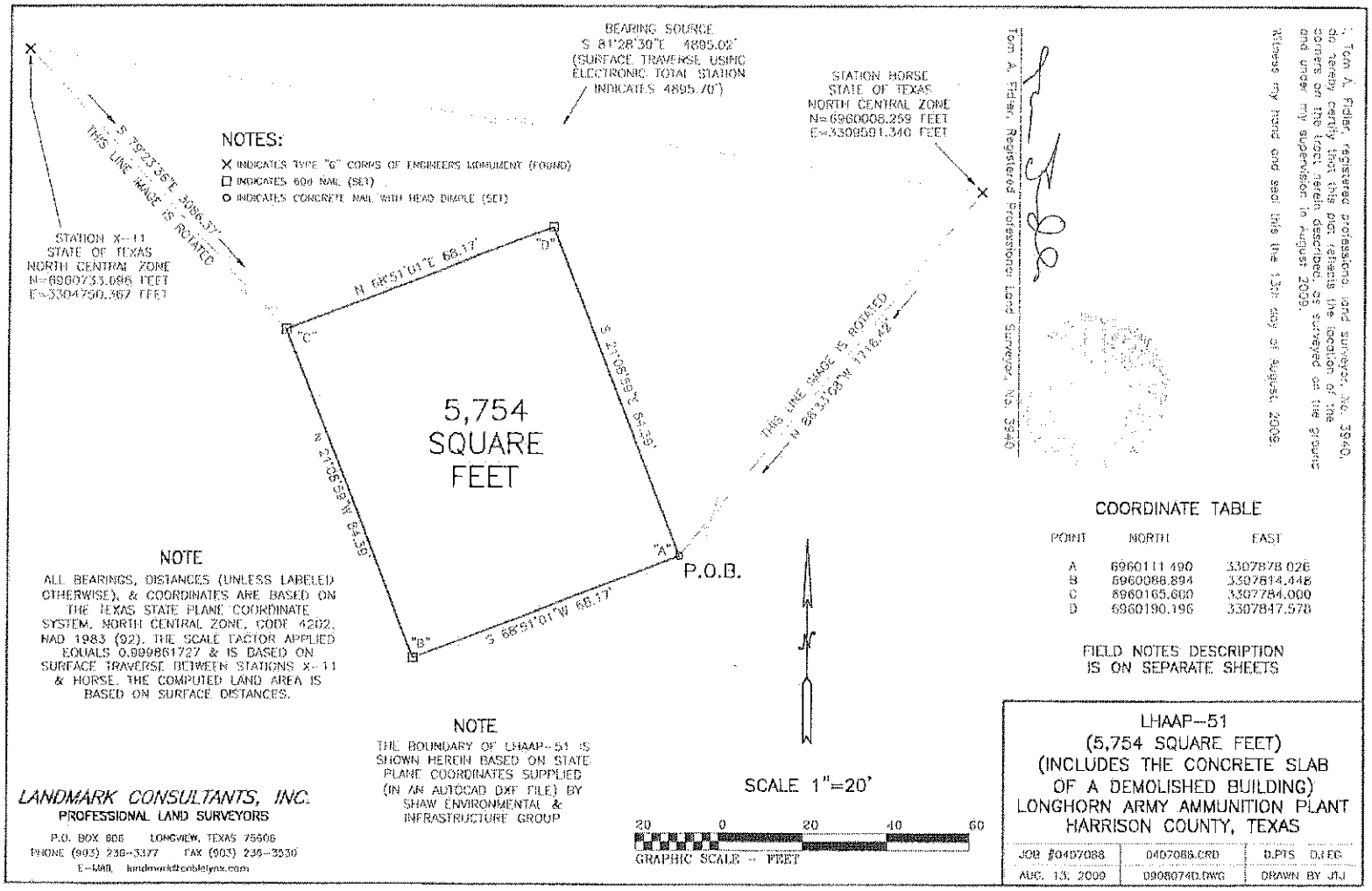
THENCE N 68deg51'01"E 68.17' along the N.B.L. of this tract to a 60d nail set for this tract's N.E.C. ,

THENCE S 21deg08'59"E 84.39' along the E.B.L. of this tract to this POINT OF BEGINNING. This tract contains 5,754 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940



I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August 2009.

Witness my hand and seal this the 13th day of August, 2009.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999861727 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS X-11 & HORSE. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

NOTE

THE BOUNDARY OF LHAAP-51 IS SHOWN HEREIN BASED ON STATE PLANE COORDINATES SUPPLIED (IN AN AUTOCAD DXF FILE) BY SHAW ENVIRONMENTAL & INFRASTRUCTURE GROUP

COORDINATE TABLE

POINT	NORTH	EAST
A	6960111.490	3307878.026
B	6960086.894	3307814.448
C	6960165.600	3307784.000
D	6960190.196	3307847.578

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEETS

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 806 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

LHAAP--51
(5,754 SQUARE FEET)
(INCLUDES THE CONCRETE SLAB
OF A DEMOLISHED BUILDING)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	D.PTS	D.FB
AUG. 13, 2009	0908074D.DWG	DRAWN BY	JTJ

LHAAP-55

NOTICE OF NONRESIDENTIAL LAND USE AT SEPTIC TANK LOCATIONS FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

2010-000005562

*****DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT*****

MISCELLANEOUS

34 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 04/27/2010 04:08 PM **Document Number:** 2010-000005562 **Receipt No:** 1006195 **Amount:** $ 144.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify tbat this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW E & I
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

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

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. The site, LHAAP-55, consisted of 10 septic tank and leachate field systems that served outlying areas of the former Longhorn Army Ammunition Plant (LHAAP) within or near LHAAP-48 and LHAAP-35C(53). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-55 is not itself considered an NPL site. Environmental activities at LHAAP-55 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ as the lead regulatory agency that no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-55 consisted of 10 septic tank and leachate field systems that served outlying areas of LHAAP that could not be connected to the plant sanitary sewer system. Although there was no history of industrial waste being placed into these septic tanks, soil samples were collected from borings installed at septic systems that were associated with industrial processes and analyzed for metals, explosives, semi volatile organic compounds, and volatile organic compounds where appropriate. Further information

may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-55 parcel include: ST-01 with 1,807 square feet, more or less, or 0.04148 acre tract; ST-02 with 1,791 square feet, more or less, or 0.04111 acre tract; ST-03 with 1,784 square feet, more or less, or 0.04095 acre tract; ST-04 with 1,789 square feet, more or less, or 0.04106 acre tract; ST-05 with 1,825 square feet more or less, or 0.04189 acre tract; ST-06 with 1,800 square feet, more or less, or 0.04132 acre tract; ST-07 with 1,865 square feet, more or less, or 0.04281 acre tract; ST-08 with 1,785 square feet, more or less, or 0.04097 acre tract; ST-09 with 2,004 square feet, more or less, or 0.04600 acre tract; and ST-10 with 1,804 square feet, more or less, or 0.04141 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the LHAAP-55 site and USEPA and TCEQ concluded that no further investigation or action is required for LHAAP-55. Contaminants in soil samples from LHAAP-55 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of LHAAP-55 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of LHAAP-55 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951
or
Assistant Chief of Staff for Installation Management
ATTN: DAIM-BDO (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 10 th day of March, 2010.

BEFORE ME, on this the 10 th day of March, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 10 day of March, 2010.

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

ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 3-17-2011

FIELD NOTES DESCRIPTION OF
SEPTIC TANK ST-01, ITS LEACHATE FIELD, AND A 2' WIDE
CORRIDOR CENTERED ON THE SEWER PIPE CONNECTING THE TWO

CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 1,807 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note #1: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998636625, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "IGNATIUS-1" (N=6957090.304 feet E=3311081.788 feet) and "IGNATIUS-2" (N=6955582.752 feet E=3311851.704 feet). Said traverse indicates a surface distance of 1693.005 feet between said monuments. The computed land area is based on surface distances.

Surveyor's Note #2: This field notes description is based on State Plane coordinates supplied by Shaw Environmental & Infrastructure Group. Landmark Consultants, Inc. has not probed the ground surface in this area in an attempt to determine the location of Septic Tank ST-01, its leachate field, or the sewer pipe connecting the two.

Commencing at monument "IGNATIUS-1" referenced above,

THENCE S 37deg17'23"E 1017.21' to a 60d nail set for the Westmost N.W.C. of this tract and this POINT OF BEGINNING,

THENCE N 63deg19'52"E 19.74' along a N.B.L. of this tract to a 60d nail set for this tract's Westmost N.E.C. ,

THENCE S 26deg40'08"E 4.90' along an E.B.L. of this tract to a 60d nail set for this tract's Northeast reentrant corner ,

THENCE N 89deg25'37"E 24.40' along a N.B.L. of this tract to a 60d nail set for this tract's Northwest reentrant corner ,

THENCE N 00deg00'00"E 18.03' along a W.B.L. of this tract to a 60d nail set for this tract's Eastmost N.W.C. ,

THENCE N 90deg00'00"E 46.53' along a N.B.L. of this tract to a 60d nail set for this tract's Eastmost N.E.C. ,

THENCE S 00deg00'00"E 32.43' along an E.B.L. of this tract to a 60d nail set for this tract's Eastmost S.E.C. ,

THENCE N 90deg00'00"W 46.53' along a S.B.L. of this tract to a 60d nail set for this tract's Eastmost S.W.C. ,

THENCE N 00deg00'00"E 12.40' along a W.B.L. of this tract to a 60d nail set for this tract's Southwest reentrant corner,

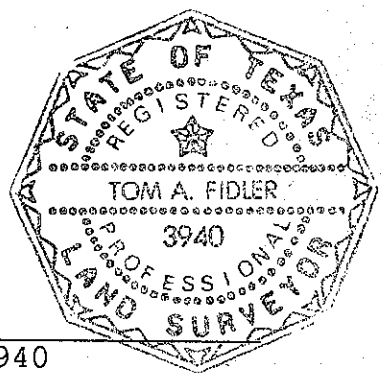
THENCE S 89deg25'37"W 23.40' along a S.B.L. of this tract to a 60d nail set for this tract's Southeast reentrant corner,

THENCE S 26deg40'08"E 5.57' along an E.B.L. of this tract to a 60d nail set for this tract's Westmost S.E.C. ,

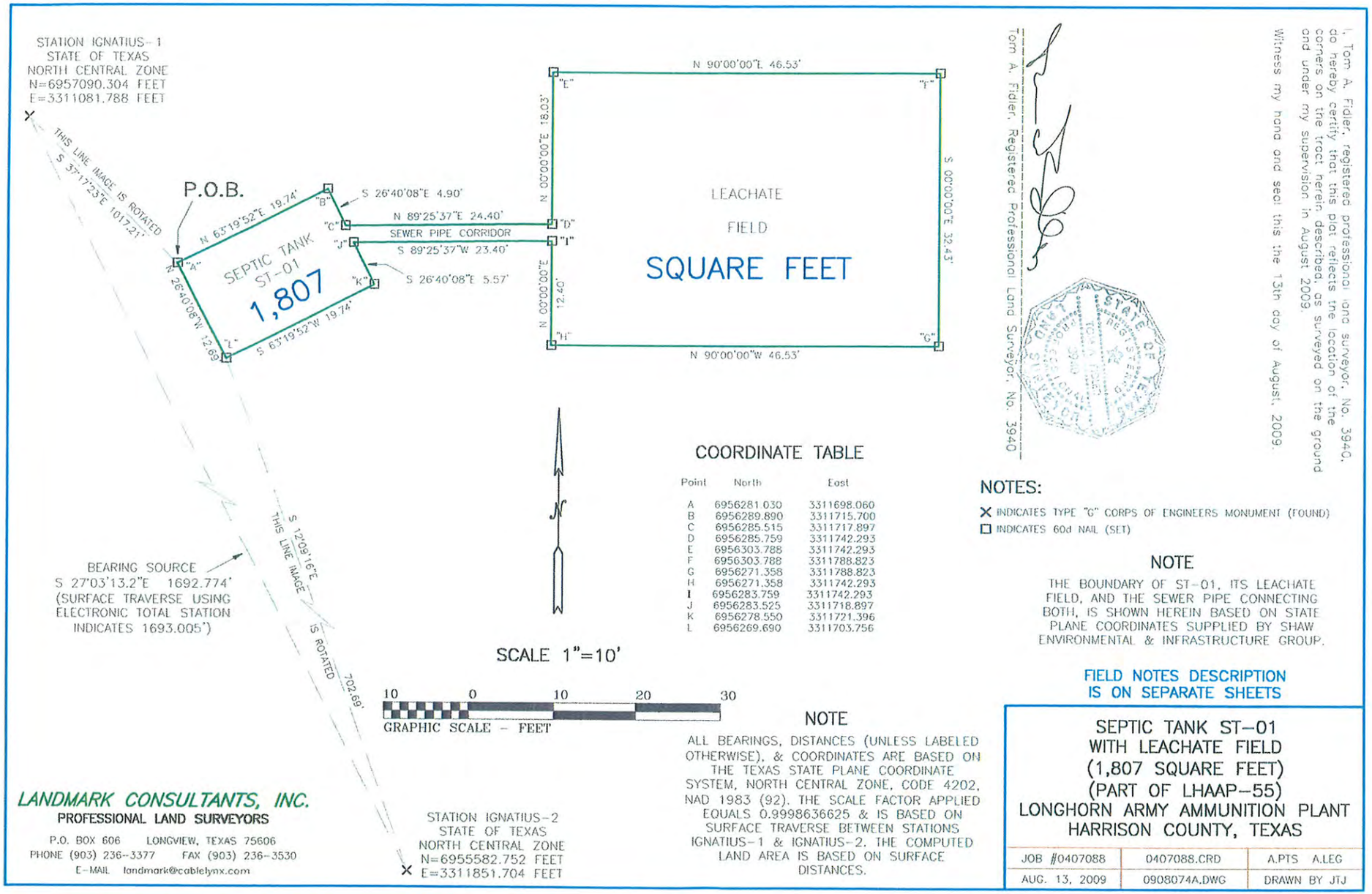
THENCE S 63deg19'52"W 19.74' along a S.B.L. of this tract to a 60d nail set for this tract's Westmost S.W.C., from which station "IGNATIUS-2" referenced above bears S 12deg09'16"E 702.69' ,

THENCE N 26deg40'08"W 12.69' along a W.B.L. of this tract to this POINT OF BEGINNING. This tract contains 1,807 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940



COORDINATE TABLE

Point	North	East
A	6956281.030	3311698.060
B	6956289.890	3311715.700
C	6956285.515	3311717.897
D	6956285.759	3311742.293
E	6956303.788	3311742.293
F	6956303.788	3311788.823
G	6956271.358	3311788.823
H	6956271.358	3311742.293
I	6956283.759	3311742.293
J	6956283.525	3311718.897
K	6956278.550	3311721.396
L	6956269.690	3311703.756

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August 2009.

Witness my hand and seal this the 13th day of August, 2009.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

STATE OF TEXAS
TOM A. FIDLER
REGISTERED
PROFESSIONAL
LAND SURVEYOR

NOTES:

X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
□ INDICATES 60d NAIL (SET)

NOTE

THE BOUNDARY OF ST-01, ITS LEACHATE FIELD, AND THE SEWER PIPE CONNECTING BOTH, IS SHOWN HEREIN BASED ON STATE PLANE COORDINATES SUPPLIED BY SHAW ENVIRONMENTAL & INFRASTRUCTURE GROUP.

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEETS

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998636625 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS IGNATIUS-1 & IGNATIUS-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

SEPTIC TANK ST-01
WITH LEACHATE FIELD
(1,807 SQUARE FEET)
(PART OF LHAAP-55)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	A.PTS A.LEG
AUG. 13, 2009	0908074A.DWG	DRAWN BY JTJ

FIELD NOTES DESCRIPTION OF
SEPTIC TANK ST-02, ITS LEACHATE FIELD, AND A 2' WIDE
CORRIDOR CENTERED ON THE SEWER PIPE CONNECTING THE TWO

CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 1,791 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note #1: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Surveyor's Note #2: This field notes description is based on State Plane coordinates supplied by Shaw Environmental & Infrastructure Group. Landmark Consultants, Inc. has not probed the ground surface in this area in an attempt to determine the location of Septic Tank ST-02, its leachate field, or the sewer pipe connecting the two.

Commencing at monument "TYLER-1" referenced above,

THENCE N 05deg57'31"W 746.36' to a 60d nail set for the Eastmost S.E.C. of this tract and this POINT OF BEGINNING,

THENCE N 90deg00'00"W 19.74' along a S.B.L. of this tract to a 60d nail set (in an abandoned utility pole lying on the ground) for this tract's Eastmost S.W.C. ,

THENCE N 00deg00'00"E 5.36' along a W.B.L. of this tract to a 60d nail set for this tract's Southwest reentrant corner,

THENCE N 90deg00'00"W 15.73' along a S.B.L. of this tract to a 60d nail set for this tract's Southeast reentrant corner,

THENCE S 00deg00'00"W 15.91' along an E.B.L. of this tract to a 60d nail set for this tract's Westmost S.E.C. ,

THENCE N 90deg00'00"W 46.53' along a S.B.L. of this tract to a 60d nail set for this tract's Westmost S.W.C. ,

THENCE N 00deg00'00"E 32.43' along a W.B.L. of this tract to a 60d nail set for this tract's Westmost N.W.C. ,

THENCE N 90deg00'00"E 46.53' along a N.B.L. of this tract to a 60d nail set for this tract's Westmost N.E.C. ,

THENCE S 00deg00'00"E 14.52' along an E.B.L. of this tract to a 60d nail set for this tract's Northeast reentrant corner,

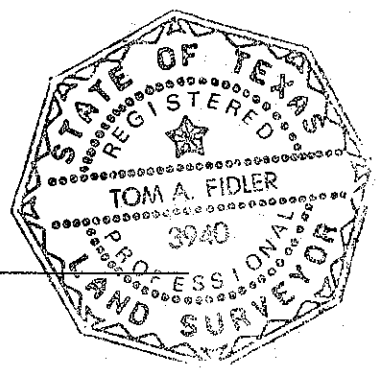
THENCE S 90deg00'00"E 15.73' along a N.B.L. of this tract to a 60d nail set for this tract's Northwest reentrant corner,

THENCE N 00deg00'00"W 5.33' along a W.B.L. of this tract to a 60d nail set for this tract's Eastmost N.W.C. ,

THENCE N 90deg00'00"E 19.74' along a N.B.L. of this tract to a 60d nail set for this tract's Eastmost N.E.C. ,

THENCE S 00deg00'00"E 12.69' along an E.B.L. of this tract to this POINT OF BEGINNING. This tract contains 1,791 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

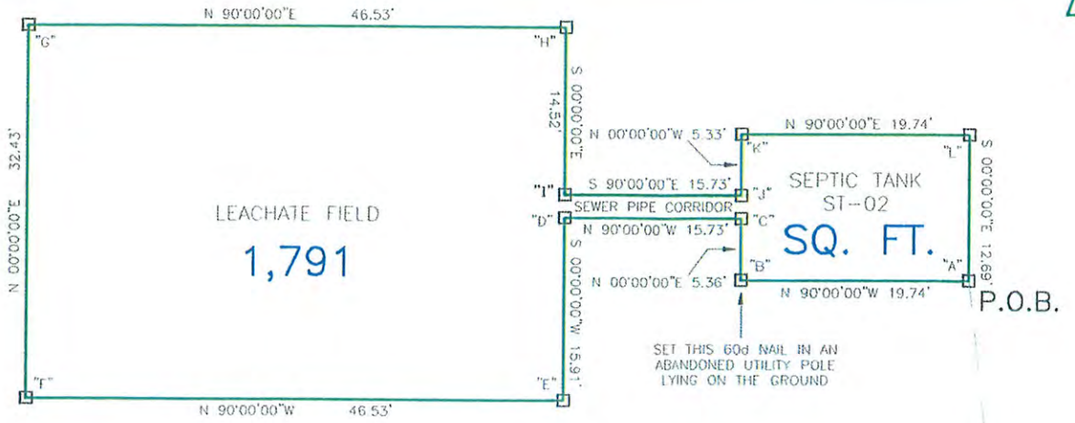


Tom A. Fidler, R.P.L.S. Number 3940

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202. NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.99989542238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.



COORDINATE TABLE

Point	North	East
A	6959249.790	3314202.020
B	6959249.790	3314182.280
C	6959255.150	3314182.280
D	6959255.150	3314166.552
E	6959239.240	3314166.552
F	6959239.240	3314120.022
G	6959271.670	3314120.022
H	6959271.670	3314166.552
I	6959257.150	3314166.552
J	6959257.150	3314182.280
K	6959262.480	3314182.280
L	6959262.480	3314202.020

NOTES:

- ✕ INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- □ INDICATES 60d NAIL (SET)
- o INDICATES UNMARKED POINT

NOTE

THE BOUNDARY OF ST-02, ITS LEACHATE FIELD, AND THE SEWER PIPE CORRIDOR CONNECTING BOTH, IS SHOWN HEREIN BASED ON STATE PLANE COORDINATES SUPPLIED (IN AN AUTOCAD DXF FILE) BY SHAW ENVIRONMENTAL & INFRASTRUCTURE GROUP.

SCALE 1"=10'

N 05°57'31"W 746.36'

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August through October 2009.

Witness my hand and seal October 26, 2009.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS

SEPTIC TANK ST-02 WITH LEACHATE FIELD (1,791 SQUARE FEET) (PART OF LHAAP-55) LONGHORN ARMY AMMUNITION PLANT HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	J.PTS J.LEG
10/26/2009	0908074J.DWG	DRAWN BY JTJ

FIELD NOTES DESCRIPTION OF
SEPTIC TANK ST-03, ITS LEACHATE FIELD, AND A 2' WIDE
CORRIDOR CENTERED ON THE SEWER PIPE CONNECTING THE TWO

CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 1,784 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note #1: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Surveyor's Note #2: This field notes description is based on State Plane coordinates supplied by Shaw Environmental & Infrastructure Group. Landmark Consultants, Inc. has not probed the ground surface in this area in an attempt to determine the location of Septic Tank ST-03, its leachate field, or the sewer pipe connecting the two.

Commencing at monument "TYLER-1" referenced above,

THENCE N 24deg50'41"E 537.01' to a 60d nail set for the Southmost South corner of this tract and this POINT OF BEGINNING,

THENCE N 35deg57'31"W 30.43' along a S.W. B.L. of this tract to a 60d nail set for a South reentrant corner of this tract,

THENCE S 54deg02'29"W 1.92' along a S.E. B.L. of this tract to a 60d nail set for a South corner of this tract,

THENCE N 38deg10'26"W 12.26' along a S.W. B.L. of this tract to a 60d nail set for a South reentrant corner of this tract,

THENCE S 50deg49'08"W 5.10' along a S.E. B.L. of this tract to a 60d nail set for this tract's Northmost South corner,

THENCE N 39deg10'52"W 19.74' along a S.W. B.L. of this tract to a 60d nail set for this tract's Westmost corner,

THENCE N 50deg49'08"E 12.69' along a N.W. B.L. of this tract to a 60d nail set for this tract's Westmost North corner,

THENCE S 39deg10'52"E 19.74' along a N.E. B.L. of this tract to a 60d nail set for this tract's Westmost East corner,

THENCE S 50deg49'08"W 5.58' along a S.E. B.L. of this tract to a 60d nail set for this tract's East reentrant corner,

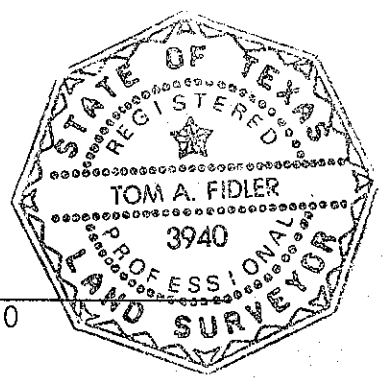
THENCE S 38deg10'26"E 10.37' along a N.E. B.L. of this tract to a 60d nail set for this tract's North reentrant corner,

THENCE N 54deg02'29"E 46.53' along a N.W. B.L. of this tract to a 60d nail set for this tract's Eastmost North corner,

THENCE S 35deg57'31"E 32.43' along a N.E. B.L. of this tract to a 60d nail set for this tract's Eastmost East corner,

THENCE S 54deg02'29"W 46.53' along a S.E. B.L. of this tract to this POINT OF BEGINNING. This tract contains 1,784 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

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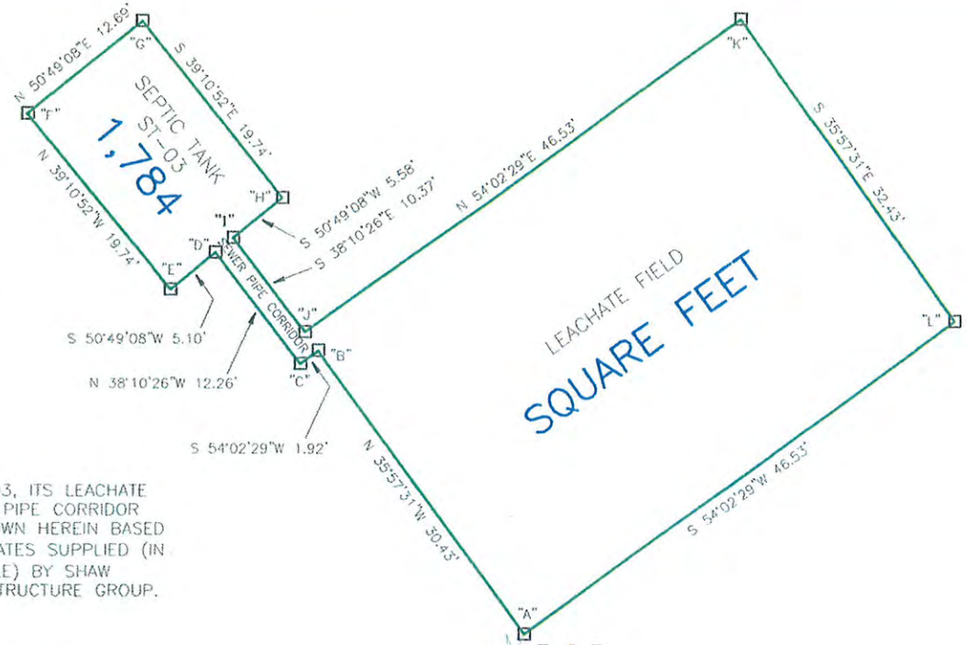


NOTES:

- ✕ INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- □ INDICATES 60d NAIL (SET)
- o INDICATES UNMARKED POINT

NOTE

THE BOUNDARY OF ST-03, ITS LEACHATE FIELD, AND THE SEWER PIPE CORRIDOR CONNECTING BOTH, IS SHOWN HEREIN BASED ON STATE PLANE COORDINATES SUPPLIED (IN AN AUTOCAD DXF FILE) BY SHAW ENVIRONMENTAL & INFRASTRUCTURE GROUP.

COORDINATE TABLE

Point	North	East
A	6958994.769	3314505.128
B	6959019.400	3314487.259
C	6959018.270	3314485.702
D	6959027.905	3314478.127
E	6959024.680	3314474.170
F	6959039.982	3314461.699
G	6959047.999	3314471.535
H	6959032.697	3314484.007
I	6959029.169	3314479.678
J	6959021.019	3314486.085
K	6959048.342	3314523.748
L	6959022.091	3314542.791

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August through October 2009.

Witness my hand and seal October 26, 2009.

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

SCALE 1"=10'

10 0 10 20 30
GRAPHIC SCALE - FEET

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEETS

SEPTIC TANK ST-03
WITH LEACHATE FIELD
(1,784 SQUARE FEET)
(PART OF LHAAP-55)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	K.PTS K.LEG
10/26/2009	0908074K.DWG	DRAWN BY JTJ

FIELD NOTES DESCRIPTION OF
SEPTIC TANK ST-04, ITS LEACHATE FIELD, AND A 2' WIDE
CORRIDOR CENTERED ON THE SEWER PIPE CONNECTING THE TWO

CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 1,789 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note #1: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Surveyor's Note #2: This field notes description is based on State Plane coordinates supplied by Shaw Environmental & Infrastructure Group. Landmark Consultants, Inc. has not probed the ground surface in this area in an attempt to determine the location of Septic Tank ST-04, its leachate field, or the sewer pipe connecting the two.

Commencing at monument "TYLER-1" referenced above,

THENCE S 64deg44'32"W 426.66' to a 60d nail set for the Southmost S.E.C. of this tract and this POINT OF BEGINNING,

THENCE N 89deg51'08"W 32.43' along a S.B.L. of this tract to a 60d nail set for this tract's Southmost S.W.C. ,

THENCE N 00deg08'52"E 46.53' along a W.B.L. of this tract to a 60d nail set for this tract's Southmost N.W.C. ,

THENCE S 89deg51'08"E 14.56' along a N.B.L. of this tract to a 60d nail set for this tract's Northwest reentrant corner,

THENCE N 00deg00'00"W 14.73' along a W.B.L. of this tract to a 60d nail set for this tract's Southwest reentrant corner,

THENCE N 89deg42'35"W 5.65' along a S.B.L. of this tract to a 60d nail set for this tract's Northmost S.W.C. ,

THENCE N 00deg17'25"E 19.74' along a W.B.L. of this tract to a concrete nail with head dimple set (in old asphalt) for this tract's Northmost N.W.C. ,

THENCE S 89deg42'35"E 12.69' along a N.B.L. of this tract to a 60d nail set for this tract's Northmost N.E.C. ,

THENCE S 00deg17'25"W 19.74' along an E.B.L. of this tract to a 60d nail set for this tract's Northmost S.E.C. ,

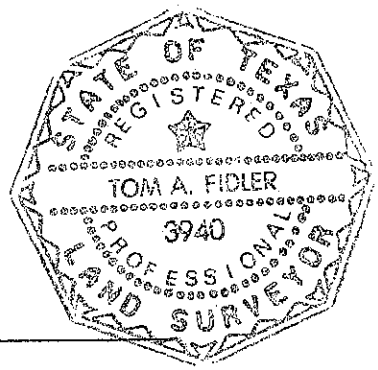
THENCE N 89deg42'35"W 5.04' along a S.B.L. of this tract to a 60d nail set for this tract's Southeast reentrant corner,

THENCE S 00deg00'00"E 14.73' along an E.B.L. of this tract to a 60d nail set for this tract's Northeast reentrant corner,

THENCE S 89deg51'08"E 15.87' along a N.B.L. of this tract to a 60d nail set for this tract's Southmost N.E.C. ,

THENCE S 00deg08'52"W 46.53' along an E.B.L. of this tract to this POINT OF BEGINNING. This tract contains 1,789 square feet, more or less.

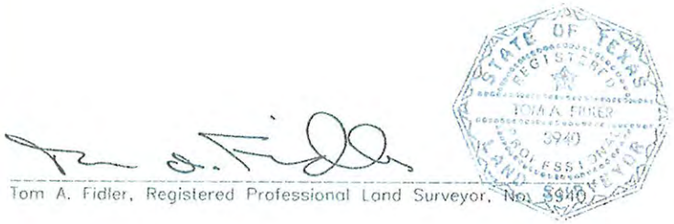
I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August through October 2009.

Witness my hand and seal October 26, 2009.



Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

NOTE

THE BOUNDARY OF ST-04, ITS LEACHATE FIELD, AND THE SEWER PIPE CORRIDOR CONNECTING BOTH, IS SHOWN HEREIN BASED ON STATE PLANE COORDINATES SUPPLIED (IN AN AUTOCAD DXF FILE) BY SHAW ENVIRONMENTAL & INFRASTRUCTURE GROUP.

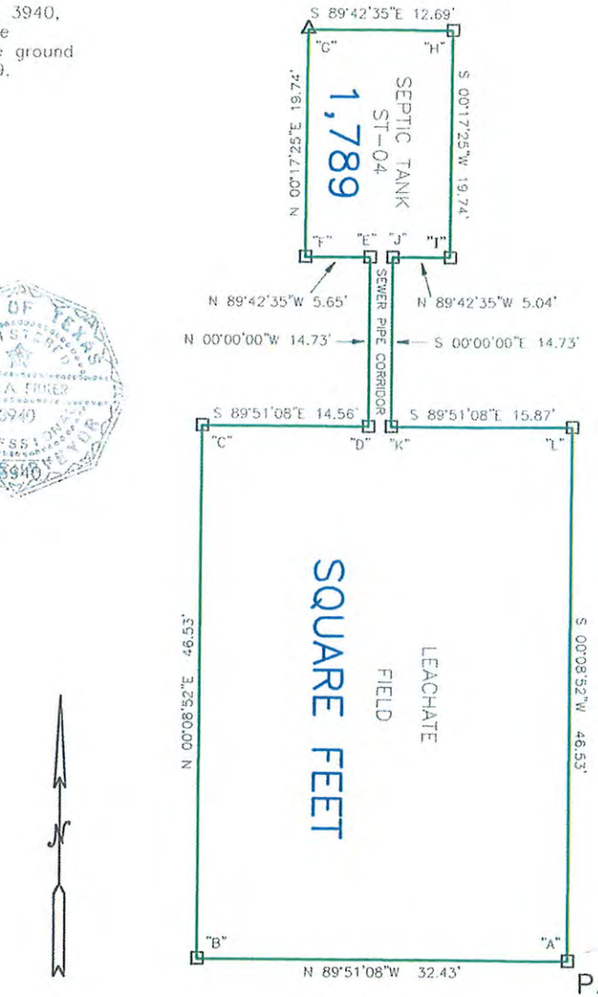
NOTES:

- X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- □ INDICATES 60d NAIL (SET)
- △ INDICATES CONCRETE NAIL WITH HEAD DIMPLE (SET)

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS

SEPTIC TANK ST-04 WITH LEACHATE FIELD (1,789 SQUARE FEET) (PART OF LHAAP-55) LONGHORN ARMY AMMUNITION PLANT HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	1.PTS 1.LEG
10/26/2009	09080741.DWG	DRAWN BY JTJ



SCALE 1"=10'

10 0 10 20 30

GRAPHIC SCALE - FEET

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PROFESSIONAL LAND SURVEYORS
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E-MAIL landmark@cablelynx.com

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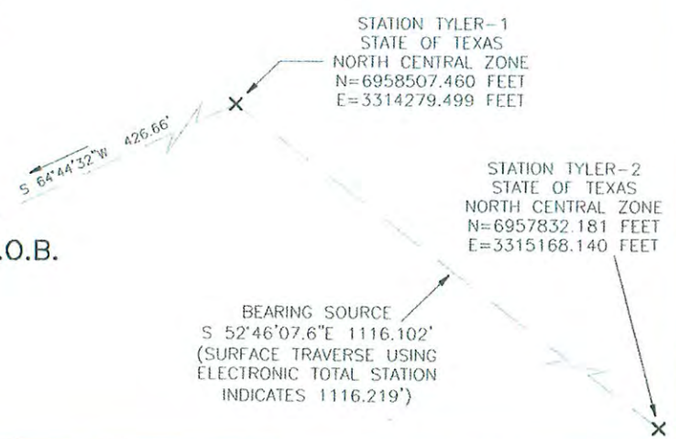
COORDINATE TABLE

Point	North	East
A	6958325.408	3313893.629
B	6958325.492	3313861.199
C	6958372.022	3313861.319
D	6958371.984	3313875.880
E	6958386.716	3313875.880
F	6958386.744	3313870.230
G	6958406.484	3313870.330
H	6958406.420	3313883.020
I	6958386.680	3313882.920
J	6958386.706	3313877.880
K	6958371.979	3313877.880
L	6958371.938	3313893.749



FIELD NOTES DESCRIPTION OF
SEPTIC TANK ST-05, ITS LEACHATE FIELD, AND A 2' WIDE
CORRIDOR CENTERED ON THE SEWER PIPE CONNECTING THE TWO

CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 1,825 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note #1: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Surveyor's Note #2: This field notes description is based on State Plane coordinates supplied by Shaw Environmental & Infrastructure Group. Landmark Consultants, Inc. has not probed the ground surface in this area in an attempt to determine the location of Septic Tank ST-05, its leachate field, or the sewer pipe connecting the two.

Commencing at monument "TYLER-2" referenced above,

THENCE N 52deg46'07.6"W 36.82' to a point, said point being S 52deg46'07.6"E 1079.28' from said monument "TYLER-1" ,

THENCE S 37deg13'52"W 81.68' to a 60d nail set for the Northmost East corner of this tract and this POINT OF BEGINNING ,

THENCE S 33deg39'28"W 12.69' along a S.E. B.L. of this tract to a 60d nail set for this tract's Northmost South corner,

THENCE N 56deg20'32"W 17.74' along a S.W. B.L. of this tract to a chisled "X" set in concrete for this tract's South reentrant corner,

THENCE S 36deg51'06"W 32.79' along a S.E. B.L. of this tract to a 60d nail set for this tract's East reentrant corner,

THENCE S 57deg33'12"E 44.52' along a N.E. B.L. of this tract to a 60d nail set for this tract's Southmost East corner,

THENCE S 32deg26'48"W 32.43' along a S.E. B.L. of this tract to a 60d nail set for this tract's Southmost South corner,

THENCE N 57deg33'12"W 46.53' along a S.W. B.L. of this tract to a 60d nail set for this tract's West corner,

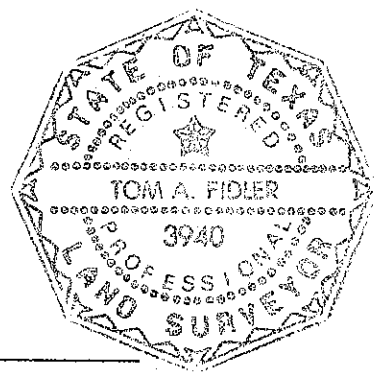
THENCE N 32deg26'48"E 32.43' along a N.W. B.L. of this tract to a 60d nail set for deflection corner,

THENCE N 36deg51'06"E 32.84' along a N.W. B.L. of this tract to a chisled "X" set in concrete for deflection corner,

THENCE N 33deg39'28"E 12.69' along a N.W. B.L. of this tract to a 60d nail set for this tract's North corner,

THENCE S 56deg20'32"E 19.74' along a N.E. B.L. of this tract to this POINT OF BEGINNING. This tract contains 1,825 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

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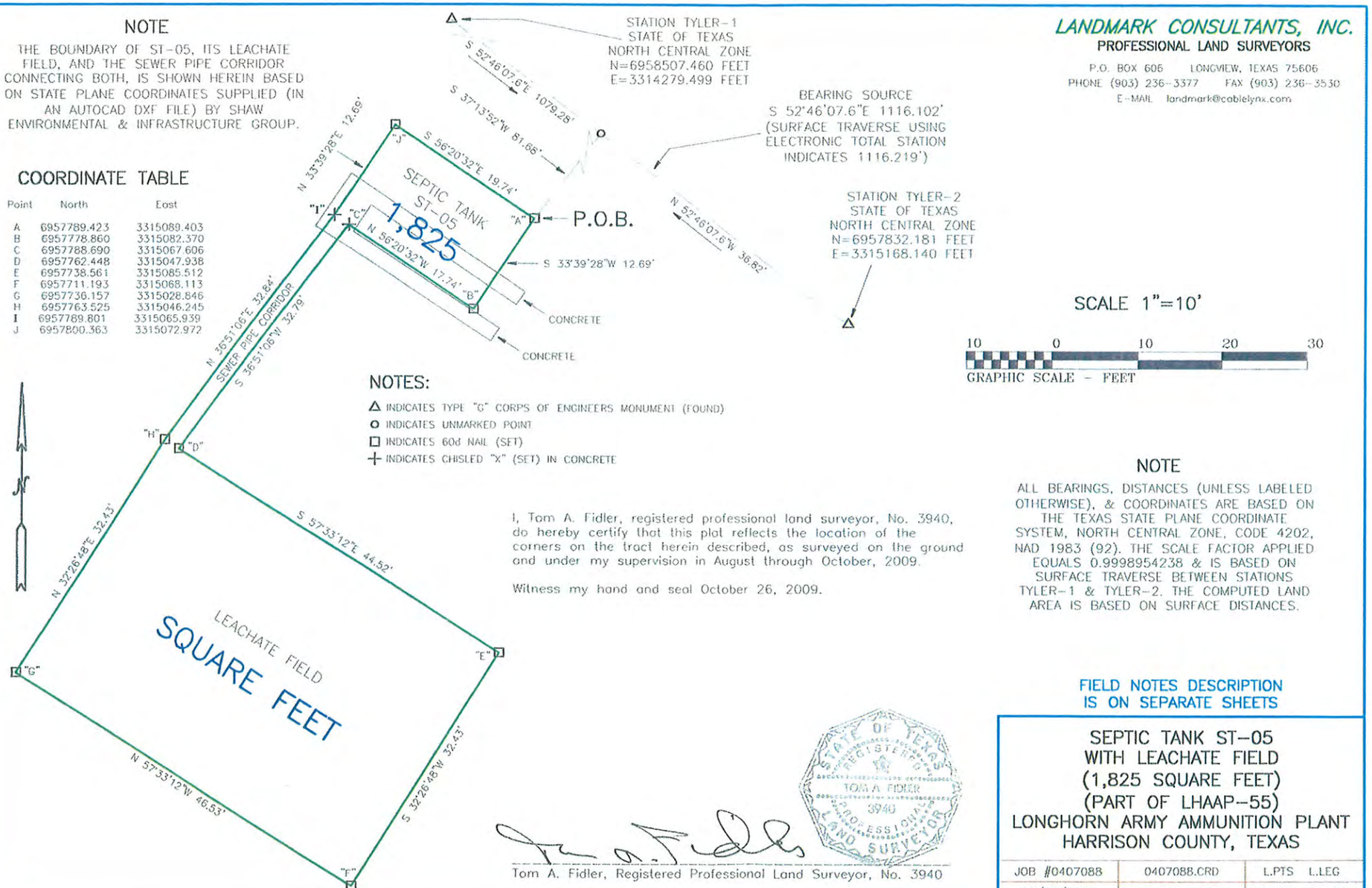
NOTE

THE BOUNDARY OF ST-05, ITS LEACHATE FIELD, AND THE SEWER PIPE CORRIDOR CONNECTING BOTH, IS SHOWN HEREIN BASED ON STATE PLANE COORDINATES SUPPLIED (IN AN AUTOCAD DXF FILE) BY SHAW ENVIRONMENTAL & INFRASTRUCTURE GROUP.

COORDINATE TABLE

Point	North	East
A	6957789.423	3315089.403
B	6957778.860	3315082.370
C	6957788.690	3315067.606
D	6957762.448	3315047.938
E	6957738.561	3315085.512
F	6957711.193	3315068.113
G	6957736.157	3315028.846
H	6957763.525	3315046.245
I	6957789.801	3315065.939
J	6957800.363	3315072.972



SCALE 1"=10'

10 0 10 20 30
GRAPHIC SCALE - FEET

NOTES:

△ INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
o INDICATES UNMARKED POINT
□ INDICATES 60d NAIL (SET)
+ INDICATES CHISLED "X" (SET) IN CONCRETE

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August through October, 2009.

Witness my hand and seal October 26, 2009.

NOTE

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STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEETS

SEPTIC TANK ST-05
WITH LEACHATE FIELD
(1,825 SQUARE FEET)
(PART OF LHAAP-55)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	L.PTS L.LEG
10/26/2009	0908074L.DWG	DRAWN BY JTJ

FIELD NOTES DESCRIPTION OF
SEPTIC TANK ST-06, ITS LEACHATE FIELD, AND A 2' WIDE
CORRIDOR CENTERED ON THE SEWER PIPE CONNECTING THE TWO

CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 1,800 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note #1: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Surveyor's Note #2: This field notes description is based on State Plane coordinates supplied by Shaw Environmental & Infrastructure Group. Landmark Consultants, Inc. has not probed the ground surface in this area in an attempt to determine the location of Septic Tank ST-06, its leachate field, or the sewer pipe connecting the two.

Commencing at monument "TYLER-2" referenced above,

THENCE S 85deg57'52"E 1425.64' to a 60d nail set for the Northmost N.W.C. of this tract and this POINT OF BEGINNING,

THENCE N 67deg08'12"E 12.69' along a N.B.L. of this tract to a 60d nail set for this tract's Northmost N.E.C. ,

THENCE S 22deg51'48"E 19.74' along an E.B.L. of this tract to a 60d nail set for this tract's Northmost S.E.C. ,

THENCE S 67deg08'12"W 4.97' along a S.B.L. of this tract to a 60d nail set for this tract's S.E. reentrant corner,

THENCE S 22deg49'50"E 19.87' along an E.B.L. of this tract to a 60d nail set for this tract's N.E. reentrant corner,

THENCE N 64deg30'12"E 16.55' along a N.B.L. of this tract to a

60d nail set for this tract's Southmost N.E.C. ,

THENCE S 25deg29'48"E 46.53' along an E.B.L. of this tract to a 60d nail set for this tract's Southmost S.E.C. ,

THENCE S 64deg30'12"W 32.43' along a S.B.L. of this tract to a 60d nail set for this tract's Southmost S.W.C. ,

THENCE N 25deg29'48"W 46.53' along a W.B.L. of this tract to a 60d nail set for this tract's Southmost N.W.C. ,

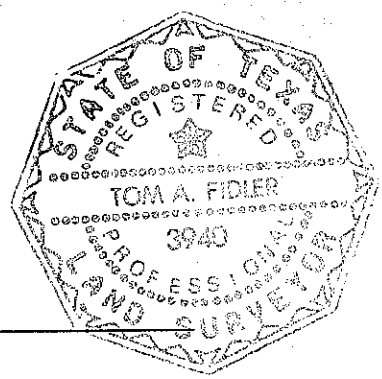
THENCE N 64deg30'12"E 13.88' along a N.B.L. of this tract to a 60d nail set for this tract's N.W. reentrant corner,

THENCE N 22deg49'50"W 19.96' along a W.B.L. of this tract to a 60d nail set for this tract's S.W. reentrant corner,

THENCE S 67deg08'12"W 5.72' along a S.B.L. of this tract to a 60d nail set for this tract's Northmost S.W.C. ,

THENCE N 22deg51'48"W 19.74' along a W.B.L. of this tract to this POINT OF BEGINNING. This tract contains 1,800 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

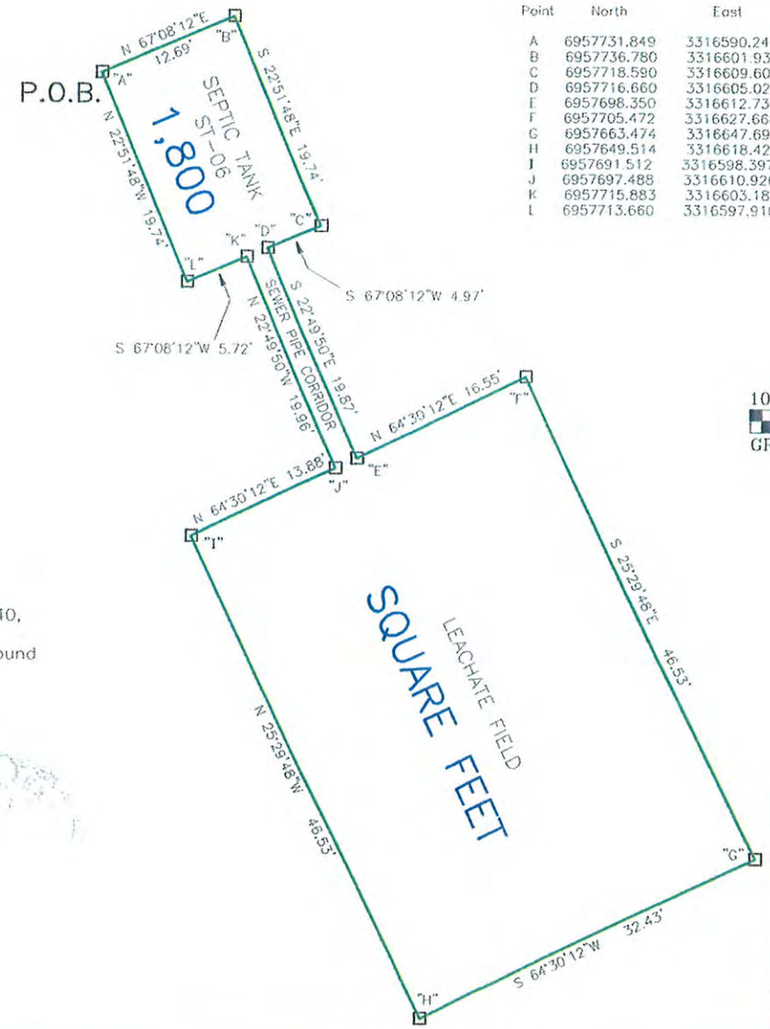
STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 1116.219')

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

S 85°57'52"E 1425.64'

NOTES: X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
☐ INDICATES 60d NAIL (SET)



COORDINATE TABLE

Point	North	East
A	6957731.849	3316590.240
B	6957736.780	3316601.933
C	6957718.590	3316609.603
D	6957716.660	3316605.025
E	6957698.350	3316612.734
F	6957705.472	3316627.668
G	6957663.474	3316647.697
H	6957649.514	3316618.426
I	6957691.512	3316598.397
J	6957697.488	3316610.926
K	6957715.883	3316603.182
L	6957713.660	3316597.910

SCALE 1"=10'

10 0 10 20 30
GRAPHIC SCALE - FEET

NOTE

THE BOUNDARY OF ST-06, ITS LEACHATE FIELD, AND THE SEWER PIPE CORRIDOR CONNECTING BOTH, IS SHOWN HEREIN BASED ON STATE PLANE COORDINATES SUPPLIED (IN AN AUTOCAD DXF FILE) BY SHAW ENVIRONMENTAL & INFRASTRUCTURE GROUP.

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August through October, 2009.

Witness my hand and seal October 26, 2009.

Tom A. Fidler, R.P.L.S. Number 3940

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS

SEPTIC TANK ST-06 WITH LEACHATE FIELD (1,800 SQUARE FEET) (PART OF LHAAP-55) LONGHORN ARMY AMMUNITION PLANT HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	R.PTS R.LEG
10/26/2009	0908074R.DWG	DRAWN BY JTJ

FIELD NOTES DESCRIPTION OF
SEPTIC TANK ST-07, ITS LEACHATE FIELD, AND A 2' WIDE
CORRIDOR CENTERED ON THE SEWER PIPE CONNECTING THE TWO

CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 1,865 square feet of land out of the Longhorn Ordance Works Reservation, (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note #1: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Surveyor's Note #2: This field notes description is based on State Plane coordinates supplied by Shaw Environmental & Infrastructure Group. Landmark Consultants, Inc. has not probed the ground surface in this area in an attempt to determine the location of Septic Tank ST-07, its leachate field, or the sewer pipe connecting the two.

Commencing at monument "TYLER-2" referenced above,

THENCE S 20deg14'47"E 467.25' to a 60d nail set for the N.E.C. corner of this tract and this POINT OF BEGINNING ,

THENCE S 13deg37'37"E 32.43' along an E.B.L. of this tract to a 60d nail set for this tract's S.E.C. ,

THENCE S 76deg22'23"W 46.53' along a S.B.L. of this tract to a 60d nail set for this tract's S.W.C. ,

THENCE N 13deg37'37"W 14.74' along a W.B.L. of this tract to a 60d nail set for this tract's Eastmost reentrant corner,

THENCE S 77deg04'57"W 23.21' along a S.B.L. of this tract to a 60d nail set for a somewhat reentrant corner of this tract,

THENCE S 29deg56'20"W 28.62' along a S.E. B.L. of this tract

to a 60d nail set for this tract's Southmost reentrant corner,

THENCE S 54deg24'06"E 5.82' along a N.E. B.L. of this tract to a 60d nail set for this tract's East corner,

THENCE S 35deg35'54"W 19.74' along a S.E. B.L. of this tract to a 60d nail set for this tract's South corner,

THENCE N 54deg24'06"W 12.69' along a S.W. B.L. of this tract to a 60d nail set for this tract's West corner,

THENCE N 35deg35'54"E 19.74' along a N.W. B.L. of this tract to a 60d nail set for this tract's North corner,

THENCE S 54deg24'06"E 4.86' along a N.E. B.L. of this tract to a 60d nail set for this tract's Westmost reentrant corner,

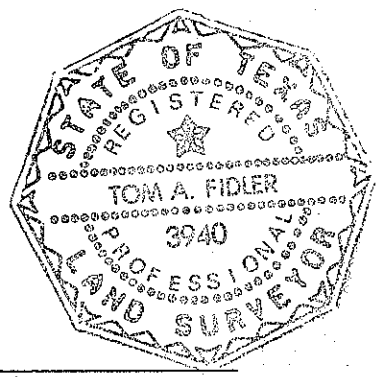
THENCE N 29deg56'20"E 29.29' along a N.W. B.L. of this tract to a 60d nail set for this tract's Southmost N.W.C. ,

THENCE N 77deg04'57"E 24.06' along a N.B.L. of this tract to a 60d nail set for this tract's Northmost reentrant corner,

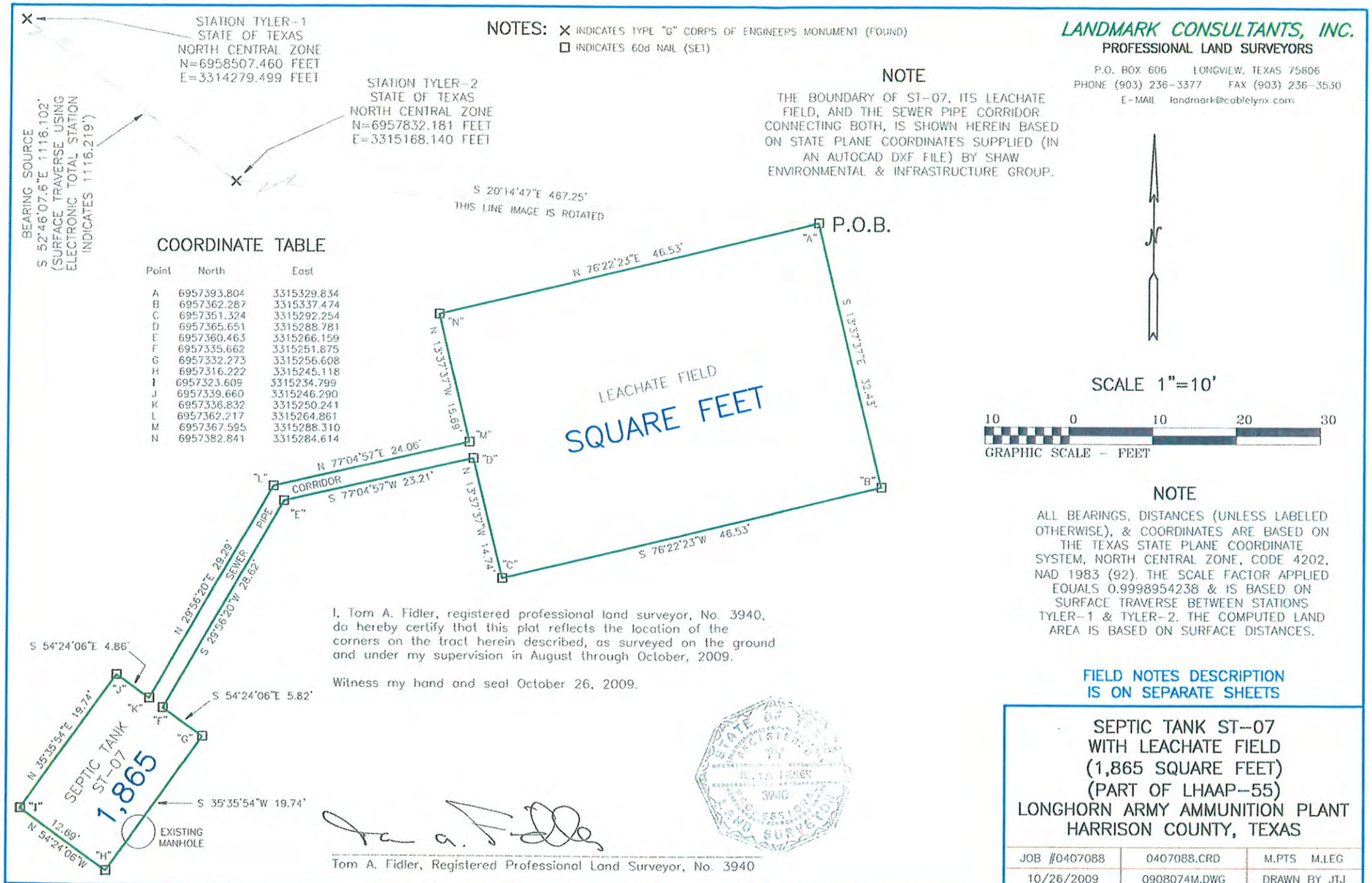
THENCE N 13deg37'37"W 15.69' along a W.B.L. of this tract to a 60d nail set for this tract's Northmost N.W.C. ,

THENCE N 76deg22'23"E 46.53' along a N.B.L. of this tract to this POINT OF BEGINNING. This tract contains 1,865 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940



NOTES: ✕ INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
□ INDICATES 60d NAIL (SET)

COORDINATE TABLE

Point	North	East
A	6957393.804	3315329.834
B	6957362.287	3315337.474
C	6957351.324	3315292.254
D	6957365.651	3315288.781
E	6957360.463	3315266.159
F	6957335.662	3315251.875
G	6957332.273	3315256.608
H	6957316.222	3315245.118
I	6957323.609	3315234.799
J	6957339.660	3315246.290
K	6957336.832	3315250.241
L	6957362.217	3315264.861
M	6957367.595	3315288.310
N	6957382.841	3315284.614

NOTE

THE BOUNDARY OF ST-07, ITS LEACHATE FIELD, AND THE SEWER PIPE CORRIDOR CONNECTING BOTH, IS SHOWN HEREIN BASED ON STATE PLANE COORDINATES SUPPLIED (IN AN AUTOCAD DXF FILE) BY SHAW ENVIRONMENTAL & INFRASTRUCTURE GROUP.

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PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

SCALE 1"=10'

10 0 10 20 30
GRAPHIC SCALE - FEET

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August through October, 2009.

Witness my hand and seal October 26, 2009.

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS

SEPTIC TANK ST-07 WITH LEACHATE FIELD (1,865 SQUARE FEET) (PART OF LHAAP-55) LONGHORN ARMY AMMUNITION PLANT HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	M.PTS M.LEG
10/26/2009	0908074M.DWG	DRAWN BY JTJ

FIELD NOTES DESCRIPTION OF
SEPTIC TANK ST-08, ITS LEACHATE FIELD, AND A 2' WIDE
CORRIDOR CENTERED ON THE SEWER PIPE CONNECTING THE TWO

CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 1,785 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note #1: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Surveyor's Note #2: This field notes description is based on State Plane coordinates supplied by Shaw Environmental & Infrastructure Group. Landmark Consultants, Inc. has not probed the ground surface in this area in an attempt to determine the location of Septic Tank ST-08, its leachate field, or the sewer pipe connecting the two.

Commencing at monument "TYLER-2" referenced above,

THENCE S 37deg52'57"E 620.24' to a 60d nail set for the Northmost N.E.C. corner of this tract and this POINT OF BEGINNING,

THENCE S 16deg08'12"E 46.53' along an E.B.L. of this tract to a 60d nail set for this tract's Eastmost S.E.C. ,

THENCE S 73deg51'48"W 32.43' along a S.B.L. of this tract to a 60d nail set for slight deflection corner,

THENCE S 70deg49'57"W 12.79' along a S.B.L. of this tract to a 60d nail set for this tract's Southmost reentrant corner,

THENCE S 17deg16'09"E 6.37' along an E.B.L. of this tract to a 60d nail set for this tract's Westmost S.E.C. ,

THENCE S 72deg43'51"W 19.74' along a S.B.L. of this tract to a 60d nail set for this tract's only S.W.C. ,

THENCE N 17deg16'09"W 12.69' along a W.B.L. of this tract to a chisled "X" set in concrete for this tract's Southmost N.W.C. ,

THENCE N 72deg43'51"E 19.74' along a N.B.L. of this tract to a 60d nail set for this tract's Southmost N.E.C. ,

THENCE S 17deg16'09"E 4.32' along an E.B.L. of this tract to a 60d nail set for this tract's Westmost reentrant corner,

THENCE N 70deg49'57"E 12.83' along a N.B.L. of this tract to a 60d nail set for this tract's Eastmost reentrant corner,

THENCE N 16deg08'12"W 44.52' along a W.B.L. of this tract to a 60d nail set for this tract's Northmost N.W.C. ,

THENCE N 73deg51'03"E 32.43' along a N.B.L. of this tract to this POINT OF BEGINNING. This tract contains 1,785 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, R.P.L.S. Number 3940

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING
ELECTRONIC TOTAL STATION
INDICATES 1116.219')

S 37°52'57"E 620.24'
THIS LINE IMAGE IS ROTATED

NOTES: o INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
□ INDICATES 60d NAIL (SET)
X INDICATES CHISLED "X" SET IN CONCRETE

NOTE

THE BOUNDARY OF ST-08, ITS LEACHATE FIELD, AND THE SEWER PIPE CORRIDOR CONNECTING BOTH, IS SHOWN HEREIN BASED ON STATE PLANE COORDINATES SUPPLIED (IN AN AUTOCAD DXF FILE) BY SHAW ENVIRONMENTAL & INFRASTRUCTURE GROUP.

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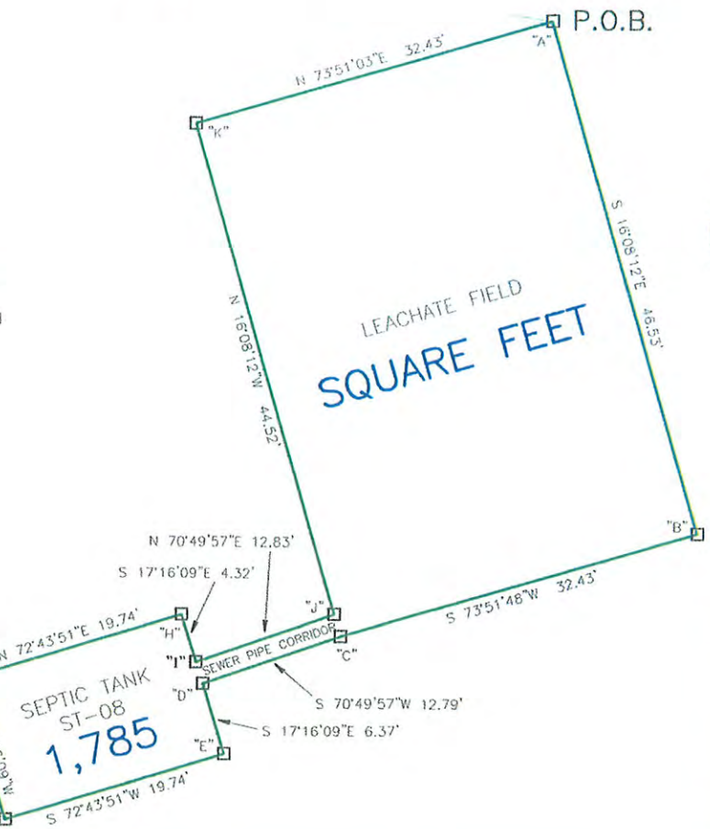
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

COORDINATE TABLE

Point	North	East
A	6957342.644	3315548.994
B	6957297.947	3315561.926
C	6957288.934	3315530.774
D	6957284.733	3315518.689
E	6957278.650	3315520.580
F	6957272.790	3315501.730
G	6957284.908	3315497.963
H	6957290.768	3315516.813
I	6957286.644	3315518.095
J	6957290.858	3315530.217
K	6957333.624	3315517.844



SCALE 1"=10'

10 0 10 20 30
GRAPHIC SCALE - FEET

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August through October, 2009.

Witness my hand and seal October 26, 2009.

Tom A. Fidler, R.P.L.S. Number 3940

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEETS

SEPTIC TANK ST-08
WITH LEACHATE FIELD
(1,785 SQUARE FEET)
(PART OF LHAAP-55)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	N.PTS N.LEG
10/26/2009	0908074N.DWG	DRAWN BY JTJ

FIELD NOTES DESCRIPTION OF
SEPTIC TANK ST-09, ITS LEACHATE FIELD, AND A 2' WIDE
CORRIDOR CENTERED ON THE SEWER PIPE CONNECTING THE TWO

CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 2,004 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note #1: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Surveyor's Note #2: This field notes description is based on State Plane coordinates supplied by Shaw Environmental & Infrastructure Group. Landmark Consultants, Inc. has not probed the ground surface in this area in an attempt to determine the location of Septic Tank ST-09, its leachate field, or the sewer pipe connecting the two.

Commencing at monument "TYLER-2" referenced above,

THENCE S 03deg30'04"E 1101.12' to a 60d nail set for the North corner of this tract and this POINT OF BEGINNING,

THENCE S 47deg56'14"E 12.69' along a N.E. B.L. of this tract to a 60d nail set for this tract's East corner,

THENCE S 42deg03'46"W 19.74' along a S.E. B.L. of this tract to a 60d nail set for this tract's South corner,

THENCE N 47deg56'14"W 4.08' along a S.W. B.L. of this tract to a 60d nail set for this tract's S.E. reentrant corner,

THENCE S 18deg07'53"E 120.09' along an E.B.L. of this tract to a 60d nail set for this tract's N.E. reentrant corner,

THENCE N 67deg40'46"E 15.01' along a N.B.L. of this tract to a

60d nail set for this tract's N.E.C. ,

THENCE S 22deg19'14"E 46.53' along an E.B.L. of this tract to a 60d nail set for this tract's S.E.C. ,

THENCE S 67deg40'46"W 32.43' along a S.B.L. of this tract to a 60d nail set for this tract's S.W.C. ,

THENCE N 22deg19'14"W 46.53' along a W.B.L. of this tract to a 60d nail set for this tract's N.W.C. ,

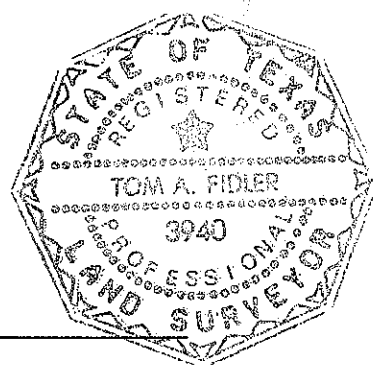
THENCE N 67deg40'46"E 15.42' along a N.B.L. of this tract to a 60d nail set for this tract's N.W. reentrant corner,

THENCE N 18deg07'53"W 123.73' along a W.B.L. of this tract to a 60d nail set for this tract's S.W. reentrant corner,

THENCE N 47deg56'14"W 4.59' along a S.W. B.L. of this tract to a 60d nail set for this tract's West corner,

THENCE N 42deg03'46"E 19.74' along a N.W. B.L. of this tract to this POINT OF BEGINNING. This tract contains 2,004 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

SEPTIC TANK ST-09 WITH LEACHATE FIELD (2,004 SQUARE FEET) (PART OF LHAAP-55) LONGHORN ARMY AMMUNITION PLANT HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	P.PTS P.LEG
10/26/2009	0908074P.DWG	DRAWN BY JTJ

STATION TYLER-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6958507.460 FEET
E=3314279.499 FEET

STATION TYLER-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6957832.181 FEET
E=3315168.140 FEET

BEARING SOURCE
S 52°46'07.6"E 1116.102'
(SURFACE TRAVERSE USING
ELECTRONIC TOTAL STATION
INDICATES 1116.219')

S 03°30'04"E 1101.12'

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August through October, 2009.

Witness my hand and seal October 26, 2009.

Tom A. Fidler, R.P.L.S. Number 3940

P.O.B.

N 42°03'46"E 19.74'
S 47°56'14"E 12.69'
N 47°56'14"W 4.59'
N 47°56'14"W 4.08'
S 42°03'46"W 19.74'
S 18°07'53"E 120.09' ALONG EAST EDGE OF SEWER PIPE CORRIDOR
N 18°07'53"W 123.73' ALONG WEST EDGE OF SEWER PIPE CORRIDOR
N 67°40'46"E 15.01'
N 67°40'46"E 15.42'
S 22°19'14"E 46.53'
N 22°19'14"W 46.53'
S 67°40'46"W 32.43'

SEPTIC TANK ST-09
LEACHATE FIELD

TOTAL AREA
2,004 SQ.FT.

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

NOTE

THE BOUNDARY OF ST-09, ITS LEACHATE FIELD, AND THE SEWER PIPE CORRIDOR CONNECTING BOTH, IS SHOWN HEREIN BASED ON STATE PLANE COORDINATES SUPPLIED (IN AN AUTOCAD DXF FILE) BY SHAW ENVIRONMENTAL & INFRASTRUCTURE GROUP.

COORDINATE TABLE

Point	North	East
A	6956733.117	3315235.383
B	6956724.615	3315244.805
C	6956709.960	3315231.580
D	6956712.690	3315228.554
E	6956598.566	3315265.925
F	6956604.265	3315279.807
G	6956561.221	3315297.479
H	6956548.905	3315267.479
I	6956591.949	3315249.807
J	6956597.804	3315264.070
K	6956715.386	3315225.567
L	6956718.462	3315222.159

SCALE 1"=20'

20 0 20 40 60
GRAPHIC SCALE - FEET

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

NOTES: × INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
□ INDICATES 60d NAIL (SET)

FIELD NOTES DESCRIPTION OF
SEPTIC TANK ST-10, ITS LEACHATE FIELD, AND A 2' WIDE
CORRIDOR CENTERED ON THE SEWER PIPE CONNECTING THE TWO

CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 1,804 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note #1: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998954238, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "TYLER-1" (N=6958507.460 feet E=3314279.499 feet) and "TYLER-2" (N=6957832.181 feet E=3315168.140 feet). Said traverse indicates a surface distance of 1116.219 feet between said monuments. The computed land area is based on surface distances.

Surveyor's Note #2: This field notes description is based on State Plane coordinates supplied by Shaw Environmental & Infrastructure Group. Landmark Consultants, Inc. has not probed the ground surface in this area in an attempt to determine the location of Septic Tank ST-10, its leachate field, or the sewer pipe connecting the two.

Commencing at monument "TYLER-2" referenced above,

THENCE S 34deg34'49"E 861.93' to a 60d nail set for the Westmost N.W.C. of this tract and this POINT OF BEGINNING,

THENCE S 81deg33'36"E 46.53' along a N.B.L. of this tract to a 60d nail set for this tract's Westmost N.E.C. ,

THENCE S 08deg26'24"W 13.21' along an E.B.L. of this tract to a 60d nail set for this tract's N.E. reentrant corner,

THENCE S 82deg30'08"E 21.87' along a N.B.L. of this tract to a 60d nail set for this tract's N.W. reentrant corner,

THENCE N 08deg55'06"E 4.34' along a W.B.L. of this tract to a 60d nail set for this tract's Eastmost N.W.C. ,

THENCE S 81deg04'54"E 19.74' along a N.B.L. of this tract to a 60d nail set for this tract's Eastmost N.E.C. ,

THENCE S 08deg55'06"W 12.69' along an E.B.L. of this tract to a 60d nail set for this tract's Eastmost S.E.C. ,

THENCE N 81deg04'54"W 19.74' along a S.B.L. of this tract to a 60d nail set for this tract's Eastmost S.W.C. ,

THENCE N 08deg55'06"E 6.34' along a W.B.L. of this tract to a 60d nail set for this tract's S.W. reentrant corner,

THENCE N 82deg30'08"W 21.85' along a S.B.L. of this tract to a 60d nail set for this tract's S.E. reentrant corner,

THENCE S 08deg26'24"W 17.22' along an E.B.L. of this tract to a 60d nail set for this tract's Westmost S.E.C. ,

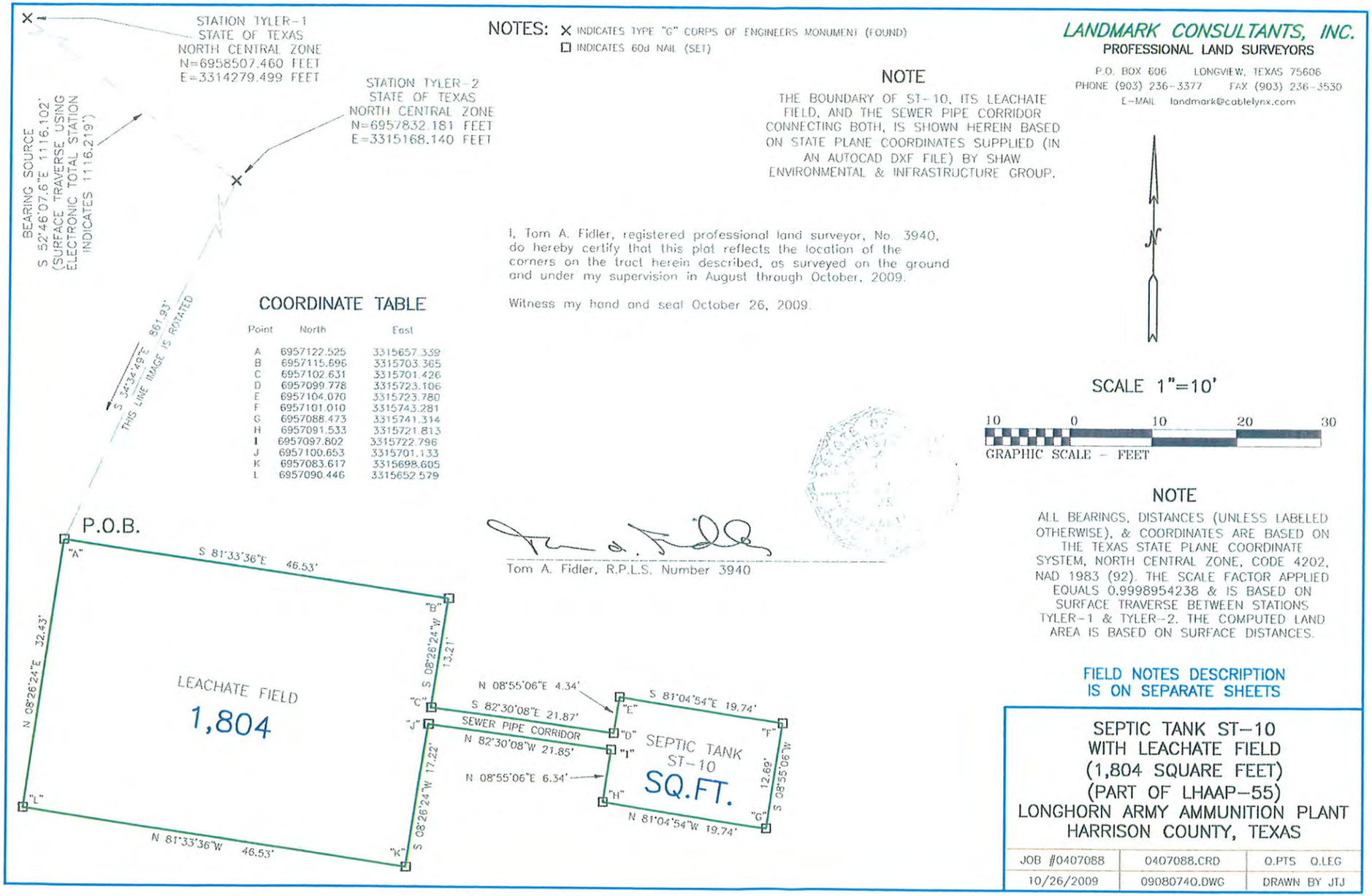
THENCE N 81deg33'36"W 46.53' along a S.B.L. of this tract to a 60d nail set for this tract's Westmost S.W.C. ,

THENCE N 08deg26'24"E 32.43' along a W.B.L. of this tract to this POINT OF BEGINNING. This tract contains 1,804 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, R.P.L.S. Number 3940



NOTES: X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
☐ INDICATES 60d NAIL (SET)

NOTE

THE BOUNDARY OF ST-10, ITS LEACHATE FIELD, AND THE SEWER PIPE CORRIDOR CONNECTING BOTH, IS SHOWN HEREIN BASED ON STATE PLANE COORDINATES SUPPLIED (IN AN AUTOCAD DXF FILE) BY SHAW ENVIRONMENTAL & INFRASTRUCTURE GROUP.

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
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PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August through October, 2009.

Witness my hand and seal October 26, 2009.

COORDINATE TABLE

Point	North	East
A	6957122.525	3315657.339
B	6957115.896	3315703.365
C	6957102.631	3315701.426
D	6957099.778	3315723.106
E	6957104.070	3315723.780
F	6957101.010	3315743.281
G	6957088.473	3315741.314
H	6957091.533	3315721.813
I	6957097.802	3315722.796
J	6957100.653	3315701.133
K	6957083.617	3315698.605
L	6957090.446	3315652.579

Tom A. Fidler, R.P.L.S. Number 3940

SCALE 1"=10'

10 0 10 20 30
GRAPHIC SCALE - FEET

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998954238 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS TYLER-1 & TYLER-2. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEETS

SEPTIC TANK ST-10
WITH LEACHATE FIELD
(1,804 SQUARE FEET)
(PART OF LHAAP-55)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	O.PTS O.LEG
10/26/2009	09080740.DWG	DRAWN BY JTJ

LHAAP-35A(58), 58-1

LUCs FROM FINAL REMEDIAL DESIGN

September 14, 2015

Final

Remedial Design
LHAAP-35A(58), Shops Area, Group 4
Longhorn Army Ammunition Plant
Karnack, Texas

Prepared for U.S. Army Corps of Engineers – Tulsa District
1645 South 101st East Avenue
Tulsa, Oklahoma 74128

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

Contract No. W912QR-04-D-0027, Task Order No. DS02
Project No. 117591
Rev 0
September 2011

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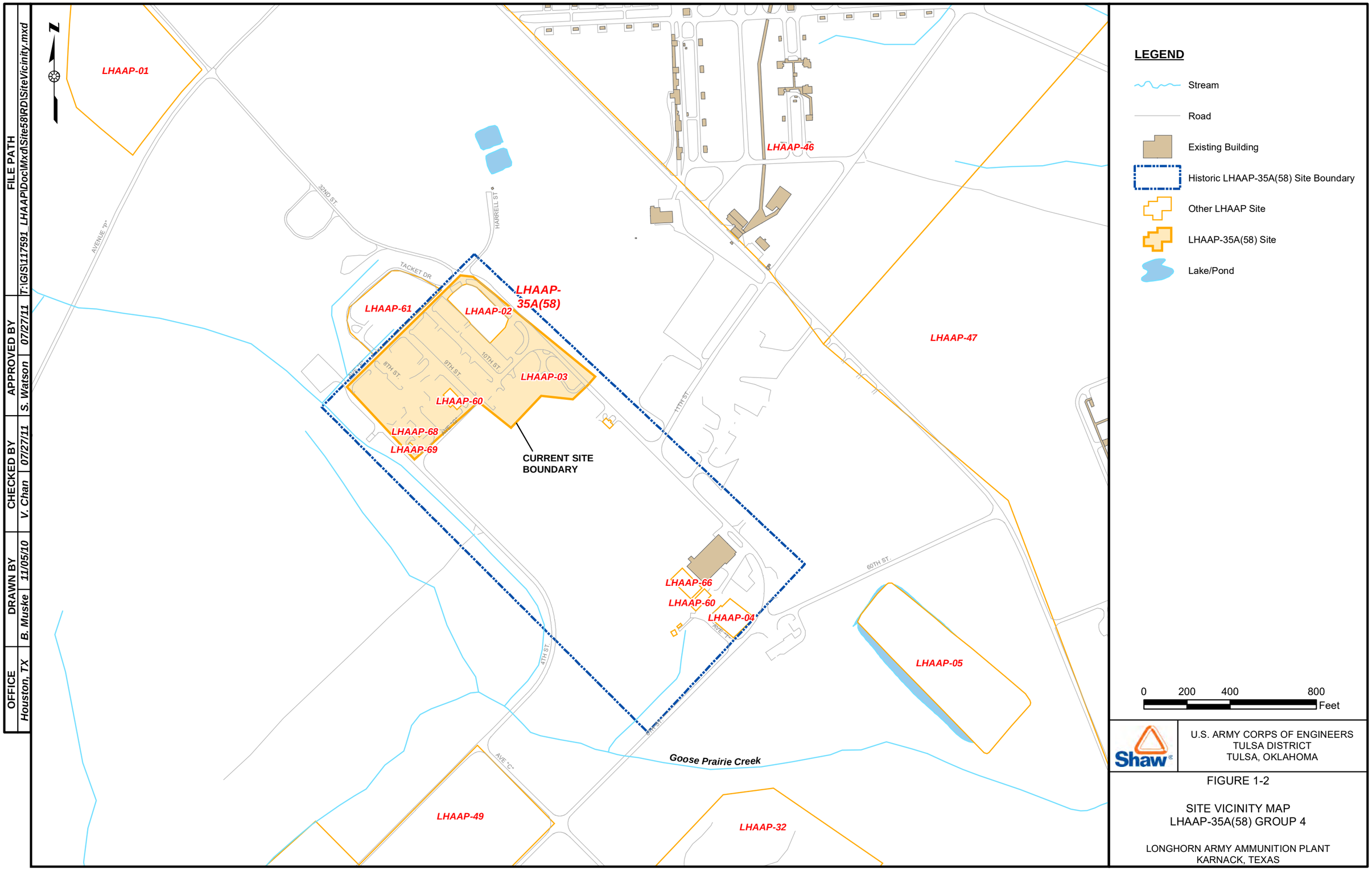
Table of Contents

List of Tables iii
List of Figures iii
List of Appendices iii
Acronyms and Abbreviations iv

1.0 Introduction **1-1**
1.1 Longhorn Army Ammunition Plant Background 1-1
1.1.1 LHAAP-35A(58) Description 1-1
1.2 Remedial Action Objectives 1-2
1.3 Planned Remedial Action 1-3
1.3.1 In Situ Bioremediation (eastern plume target area only) 1-3
1.3.2 Monitored Natural Attenuation (eastern and western plumes) 1-4
1.3.3 Land Use Control (eastern and western plumes) 1-5
1.3.4 Long-Term Monitoring/Five-Year Reviews (eastern and western plumes) 1-5
1.4 Cleanup Levels 1-5
1.5 Areas of Contamination 1-5
1.6 Hydrogeology 1-7
2.0 Land Use Control **2-1**
3.0 Monitored Natural Attenuation Design **3-1**
3.1 Monitored Natural Attenuation Performance Monitoring Well Locations 3-1
3.1.1 Direct-Push Technology Groundwater Sampling and Installation of Monitoring Wells 3-2
3.1.2 Vertical Well Clusters (eastern and western plumes) 3-2
3.2 Monitored Natural Attenuation Evaluation (western plume) 3-3
3.3 Long-Term Monitoring (eastern and western plumes) 3-3
3.4 Five-Year Reviews (eastern and western plumes) 3-3
3.5 Surface Water Monitoring 3-3
4.0 Land Use Control Design and Implementation Plan **4-1**
4.1 Land Use Control Implementation 4-1
4.2 Land Use Control Operation and Maintenance 4-2
4.2.1 Site Certification and Reporting 4-2
4.2.2 Notice of Planned Property Conveyances 4-2
4.2.3 Opportunity to Review Text of Intended Land Use Controls 4-3
4.2.4 Notification Should Action(s) Which Interfere with Land Use Control Effectiveness be Discovered Subsequent to Conveyance 4-3
4.2.5 Land Use Control Enforcement 4-3
4.2.6 Modification or Termination of Land Use Controls 4-3
4.2.7 Comprehensive Land Use Control Management Plan 4-4
5.0 In Situ Bioremediation Design (eastern plume target area) **5-1**
5.1 Injections 5-2
5.2 Amendments 5-2
5.2.1 Components 5-2
5.2.2 Treatability Study 5-2
5.3 Performance Monitoring and Transition to Monitored Natural Attenuation 5-3
6.0 Field Activities **6-1**
6.1 Pre-mobilization Activities 6-1

Contract No. W912QR-04-D-0027, Task Order No. DS02• Final • Rev 0 • September 2011



FILE PATH	
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	APPROVED BY	
	S. Watson	07/27/11

	CHECKED BY	
	V. Chan	07/27/11

	DRAWN BY	
	B. Muske	11/05/10

OFFICE
Houston, TX

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

FIGURE 1-2

SITE VICINITY MAP
LHAAP-35A(58) GROUP 4

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

2.0 LAND USE CONTROL

The objective of the LUC at LHAAP-35A(58) is to prevent human exposure to residual groundwater contamination presenting an unacceptable risk to human health and ensure that there is no withdrawal or use of groundwater beneath the site for anything other than environmental monitoring and testing until cleanup goals are met. Notification of the groundwater use restriction will accompany all transfer documents and will be recorded at the Harrison County Courthouse in accordance with Texas Administrative Code (TAC) Title 30, §335.566. **Appendix A** provides sample LUC compliance certification documentation.

The LUC addresses the two groundwater plumes at LHAAP-35A(58) with levels of contamination that require implementation of a remedy (see **Section 1.3**). The U.S. Army is responsible for implementing, maintaining, monitoring, reporting on, and enforcing the LUC.

U.S. Army and regulators will consult to determine appropriate enforcement actions should there be a failure of an LUC objective at this site after it has transferred. U.S. Army shall obtain USEPA and Texas Commission on Environmental Quality (TCEQ) concurrence prior to termination or significant modification of the LUC, or implementation of a change in land use inconsistent with the LUC objectives and use assumptions of the remedy. Although not a remedy, the land use assumption for LHAAP-35A(58) forms the basis for the remedy. The future use of the site as part of a national wildlife refuge is consistent with the industrial risk exposure scenario. Notification of the land use assumption of this site will be made in transfer documentation and will be recorded in the Harrison County Courthouse in accordance with TAC Title 30, §335.566. Compliance with the use assumption will be documented in the five-year review reports.

4.0 LAND USE CONTROL DESIGN AND IMPLEMENTATION PLAN

This section describes the LUC design and implementation activities for LHAAP-35A(58). The activities will result in a surveyed and recorded groundwater use restriction boundary and an operation and maintenance plan for the LUC.

The objective of the LUC at LHAAP-35A(58) is to prevent human exposure to residual groundwater contamination presenting an unacceptable risk to human health and ensure that there is no withdrawal or use of groundwater beneath the site for anything other than environmental monitoring and testing until cleanup goals are met. Notification of the groundwater use restriction will accompany all transfer documents. The U.S. Army is responsible for long-term implementation, maintenance, inspection, reporting, and enforcement of the LUC.

The LUC will address the area of LHAAP-35A(58) that includes two groundwater plumes with levels of contamination that require implementation of a remedy (see **Section 1.3**). The Land Use Control Operation and Maintenance (LUC O&M) Plan will identify the measures required for monitoring and enforcement of the groundwater use restriction. Upon review and concurrence of this RD, the LUC O&M Plan will be coordinated with regulators, finalized, and distributed as part of the Comprehensive LUC Management Plan.

4.1 Land Use Control Implementation

The U.S. Army will undertake the following actions to implement the groundwater restriction LUC for LHAAP-35A(58):

- Define the Area of the Groundwater Use Restriction. The groundwater use restriction boundary will be defined based on the review of the first round of groundwater sampling data in conjunction with historic data. The extent of plume will be bounded by a buffer and may extend to natural groundwater and surface water boundaries.

- Survey the LUC Boundary. The proposed boundary will be finalized after all wells are installed and sampled. Concurrence by USEPA and TCEQ will be obtained, and the LUC boundary will be surveyed by a State-licensed surveyor. A legal description of the surveyed area will be appended to the survey plat.

- Record the LUC in Harrison County. The LUC plat, legal description and groundwater use restriction language will be recorded in the Harrison County Courthouse in accordance with TAC Title 30, §335.566.

Contract No. W912QR-04-D-0027, Task Order No. DS02• Final • Rev 0 • September 2011

- Notify the Texas Department of Licensing and Regulation of the LUC. The Texas Department of Licensing and Regulation will be notified of the groundwater restriction which includes the prohibition of water well installation for any purpose other than environmental monitoring and testing without prior approval from the Army, the USEPA, and the TCEQ. The survey plat, legal boundary and description of the groundwater restriction, in conjunction with a locator map, will be provided in hard and electronic copy.

- Develop the LUC O&M Plan. A LUC O&M Plan for LHAAP-35A(58) will be developed. It will include the elements presented in **Section 4.2**, the county recordation of the LUC survey plat, legal description and restriction language, and the inspection/certification form.

4.2 Land Use Control Operation and Maintenance

The U.S. Army or its representatives will be responsible for the operation and maintenance of the LHAAP-35A(58) LUC. This includes certification, reporting and enforcement activities. The U.S. Army shall address LUC problems within its control that are likely to impact remedy integrity and shall address problems as soon as practicable. To facilitate long-term operation and maintenance of the groundwater use restriction LUC remedy, the U.S. Army will develop a plan that will encompass the elements described in the following subsections.

4.2.1 Site Certification and Reporting

Beginning with finalization of this RD and approval of the inspection form, the U.S. Army will undertake inspections and certify continued compliance with the LUC objectives. The U.S. Army, or the transferee after transfer, will retain the LUC Inspection Certification documents in the project files for incorporation into the five-year review reports, and these documents will be made available to USEPA and TCEQ upon request. In addition, should any violations be found during the certification, the U.S. Army will provide to USEPA and TCEQ, along with the document, a separate written explanation indicating the specific violations found and what efforts or measures have or will be taken to correct those violations. The need to continue certifications will be revisited at five year reviews.

4.2.2 Notice of Planned Property Conveyances

The U.S. Army shall provide notice to USEPA and TCEQ of plans to convey the LHAAP-35A(58) acreage. The notice shall describe the mechanism by which the LUC will continue to be implemented, maintained, inspected, reported, and enforced. Upon transfer, such responsibilities may shift to the transferee via appropriate provisions placed in the Environmental Condition of Property (ECP) or other environmental document for transfer. Although the U.S. Army may transfer responsibility for various implementation actions, the U.S. Army shall retain its responsibility for remedy integrity. This means that the U.S. Army

Contract No. W912QR-04-D-0027, Task Order No. DS02• Final • Rev 0 • September 2011

is responsible for addressing substantive violations of the LUC performance objective that would undermine the U.S. Army's CERCLA remedy. The U.S. Army also will be responsible for incorporating RD information and outlining the transferee's LUC obligations into property transfer documentation.

4.2.3 Opportunity to Review Text of Intended Land Use Controls

U.S. Army will provide a copy of the groundwater use restriction notification to TCEQ for review and approval prior to its recordation in Harrison County. USEPA will also receive a copy for review. In addition, the U.S. Army will produce an ECP or other environmental document for transfer of LHAAP-35A(58), but before executing transfer, the U.S. Army will provide USEPA and TCEQ with a copy of the ECP or other environmental document for transfer so that they may have reasonable opportunity, before transfer, to review all LUC-related provisions.

4.2.4 Notification Should Action(s) Which Interfere with Land Use Control Effectiveness be Discovered Subsequent to Conveyance

Should the U.S. Army discover after conveyance of the site any activity on the property inconsistent with the LUC performance objective, the U.S. Army shall notify USEPA and TCEQ within 72 hours of such discovery. Consistent with **Section 4.2.5** below, the U.S. Army will then work with USEPA, TCEQ and the transferee to correct the problem(s) discovered. This reporting requirement does not preclude the U.S. Army from taking immediate action pursuant to its CERCLA authorities to prevent any perceived risk(s) to human health or the environment.

4.2.5 Land Use Control Enforcement

Should the LUC remedy reflected in this RD fail, the U.S. Army will coordinate with USEPA and TCEQ to ensure that appropriate actions are taken to reestablish its protectiveness. These actions may range from informal resolutions with the United States Fish and Wildlife Service (USFWS) or its lessee, to the institution of judicial action against non-federal third-parties. Alternatively, should the circumstances warrant such, the U.S. Army could choose to exercise its response authorities under CERCLA. Should the U.S. Army become aware that any future owner or user of the property has violated any LUC requirement over which a local agency may have independent jurisdiction, the U.S. Army may notify those agencies of such violation(s) and work cooperatively with them to re-achieve owner/user compliance with the LUC.

4.2.6 Modification or Termination of Land Use Controls

The U.S. Army shall not, without USEPA and TCEQ concurrence, make a significant modification to, or terminate a LUC, or make a land use change inconsistent with the LUC

objective. Likewise, the U.S. Army shall seek prior USEPA and TCEQ concurrence before commencing actions that may impact remedy integrity. In the case of an emergency action, the U.S. Army shall obtain prior USEPA and TCEQ concurrence as appropriate to the exigencies of the situation.

The LUC shall remain in effect until such time as the U.S. Army and USEPA agree that the concentrations of COCs have met cleanup levels. When this occurs, the LUC will be terminated as needed. The decision to terminate the LUC will be documented consistent with the NCP process for post-ROD changes, potentially including an explanation of significant differences or a remedial action completion report. If the property has been transferred and a determination by the U.S. Army and USEPA has been made to terminate the LUC, the U.S. Army shall provide to the owner of the property an appropriate release for recordation pertaining to the site and will also timely advise other local stakeholders of the action.

4.2.7 Comprehensive Land Use Control Management Plan

Upon finalization of the LUC O&M Plan, a copy will be inserted into the Comprehensive LUC Management Plan for Longhorn. The Comprehensive LUC Management Plan figure and table will be updated to reflect the inclusion of LHAAP-35A(58).

The Comprehensive LUC Management Plan consists of LHAAP RD documents and a survey plat showing the locations where LUCs being implemented at LHAAP are applied. The purpose of this Comprehensive LUC Management Plan is to ensure all site specific LUCs are compiled into one comprehensive location for both pre-transfer use by the installation and for post-transfer use by the transferee. This document will be provided to USEPA and TCEQ, and is also accessible to the local government and the public. The Comprehensive LUC Management Plan is located in the Marshall Public Library to accompany LHAAP's Administrative Record.

The land use assumption of industrial use as part of a national wildlife refuge forms the basis for the remedy at LHAAP-35A(58) and this land use assumption will be included in the Comprehensive LUC Management Plan with supporting documentation.

LHAAP-35A(58), 58-2

NOTICE OF LAND USE CONTROLS AND NONRESIDENTIAL LAND USE AT LHAAP-35A (58) FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

2015-000002402

*****DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT*****

NOTICE

8 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 03/16/2015 11:17 AM **Document Number:** 2015-000002402 **Receipt No:** 1502837 **Amount:** $ 50.00 **By:** Denise Kio, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

AECOM
112 E. PECAN ST,STE 400
FED-EX ENVELOPE
SAN ANTONIO, TX 78205

STATE OF TEXAS HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF LAND USE CONTROL AT LHAAP-35A (58)

KNOW ALL MEN BY THESE PRESENTS THAT:

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

I

The U.S. Army, Department of Defense, has performed remedial activities at the land described herein. The remediation site is in a former industrial area, located on the Former Longhorn Army Ammunition Plant (LHAAP) and is designated as LHAAP-35A (58) (Shops Area). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Remedial activities at LHAAP-35A (58) were performed in accordance with the FFA requirements.

The Shops Area now designated as LHAAP-35A (58) was established in 1942 as part of the installation's initial construction (Shaw, 2011). The facility was used to provide plant-operated laundry, automotive, woodworking, metalworking, painting, refrigeration, and electrical services. The site was active throughout LHAAP's mission and was deactivated along with the rest of the installation in 1996-1997. A Record of Decision (ROD) for LHAAP-35A (58) was signed by the U.S. Army and USEPA with TCEQ concurrence in 2010 establishing the final remedy which is separated into two areas: 1) eastern plume; and 2) western plume. The eastern plume remedy includes land use control (LUC); enhanced in-situ bioremediation (EISB) in the area of highest levels of constituents of concern (COCs) followed by monitored natural attenuation (MNA). The western plume remedy consists of LUC and MNA. The site was not remediated to levels suitable for unrestricted use. The LUC at LHAAP-35A (58) is required to prevent human exposure to contaminated groundwater. Further information may be found by

examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-35A (58) parcel is a 11-acre tract, more or less, located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A. Associated with the LHAAP-35A (58) parcel is designated a LUC boundary which is a 46.524-acre tract, more or less, as described in Exhibit A. The LUC boundary is also presented in the attached Figure 1. Contained within the LHAAP-35A (58) LUC boundary are sites LHAAP-02, LHAAP-03, LHAAP-56, LHAAP-59, LHAAP-60, LHAAP-65, LHAAP-68 and LHAAP-69.

Future use of the parcel is intended as a national wildlife refuge consistent with non-residential use. For purposes of this certification, residential use includes, but is not limited to, single family or multifamily residences; child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12. The United States Department of the Army has undertaken careful environmental study of the LHAAP-35A (58) site and concluded that the LUC set forth below is required to ensure protection of human health and the environment.

(1) Groundwater Restriction. The groundwater use restriction boundary consists of the 46.524-acre tract, more or less. Groundwater underlying this land is contaminated with tetrachloroethene (PCE), trichloroethene (TCE), 1,1-dichloroethene (1,1-DCE), cis-1,2-DCE), trans-1,2-DCE, and vinyl chloride (VC) and shall not be accessed or used for any purpose without the prior written approval of the U.S. Army, the USEPA, and the TCEQ. A LUC restricting the use of groundwater has been established for the protection of human health. The U.S. Army will notify the Texas Department of Licensing and Regulation of the groundwater restriction which includes prohibition of water well installation for any purpose other than environmental monitoring and testing without prior approval by the U.S. Army, the USEPA, and the TCEQ. A restriction against the residential use of groundwater will remain in effect until the levels of the COCs in groundwater and soil allow unrestricted use and unlimited exposure (UUUE).

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

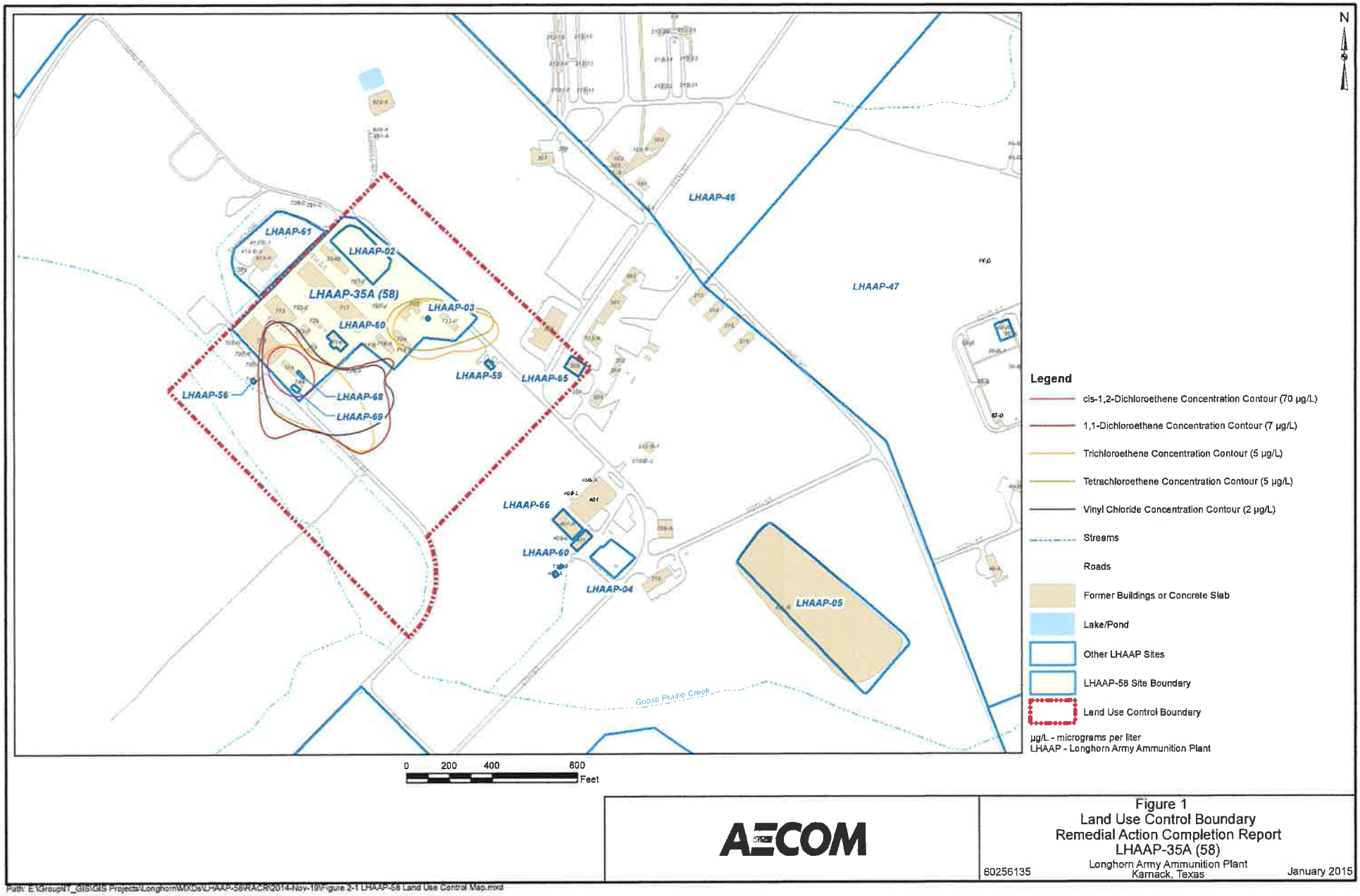
EXECUTED this the ____th day of _____, 2015.

BEFORE ME, on this the 19 th day of February 2015, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 19th day of February, 2015.

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

GENIE WARNER
Notary Public State of Texas
COMM. EXP. 8/1/2018



AECOM

Figure 1
Land Use Control Boundary
Remedial Action Completion Report
LHAAP-35A (58)
Longhorn Army Ammunition Plant
Karnack, Texas

60256135 January 2015

Path: E:\Group\T_GIS\GIS Projects\Longhorn\MXDs\LHAAP-58\RACR\2014-Nov-19\Figure 2-1 LHAAP-58 Land Use Control Map.mxd

EXHIBIT A
SURVEY PLAT

FIELD NOTES DESCRIPTION OF
"LHAAP-35A(58)" LAND USE CONTROL AREA
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, "LHAAP-35A(58)" Land Use Control Area being 46.524 acres of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), "LHAAP-35A(58)" Land Use Control Area being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.99991470929, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "X-11" (N=6960733.698 feet E=3304750.367 feet) and "HMX-5" (N=6958206.213 feet E=3305201.721 feet). Said traverse indicates a surface distance of 2567.689 feet between said monuments. The computed land area is based on State Plane distances. As used herein, the abbreviation I.R.O.P.C. indicates 1/2" iron rebar with orange plastic cap engraved "Fidler" and "RPLS 3940" .

Commencing at monument "X-11" referenced above,

THENCE N 52deg16'47"E 216.98' to an I.R.O.P.C. set for the North corner of this tract and this POINT OF BEGINNING,

THENCE S 47deg09'34"E 1327.84' along the N.E. B.L. of this tract to an I.R.O.P.C. set for this tract's East corner,

THENCE S 44deg05'45"W 1089.57' along a S.E. B.L. of this tract to a 60d nail set (near the Easterly edge of the asphalt pavement of "4th Street") for this tract's only reentrant corner,

THENCE along a curve to the right (having a radius of 397.10' and an arc length of 496.33', being subtended by a chord of S 09deg27'29"W 464.64') defining this tract's E.B.L., said curve approximating the curved Easterly edge of the asphalt pavement of "4th Street", to a 60d nail found for the South end of said curve,

THENCE S 45deg14'57"W 21.48' along a S.E. B.L. of this tract to a point for this tract's Southmost corner, said point being N 17deg16'14"W 525.07' from the aforementioned "HMX-5" monument and S 44deg25'14"E 8.86' from a concrete nail set for reference near the centerline of the asphalt pavement of "4th Street",

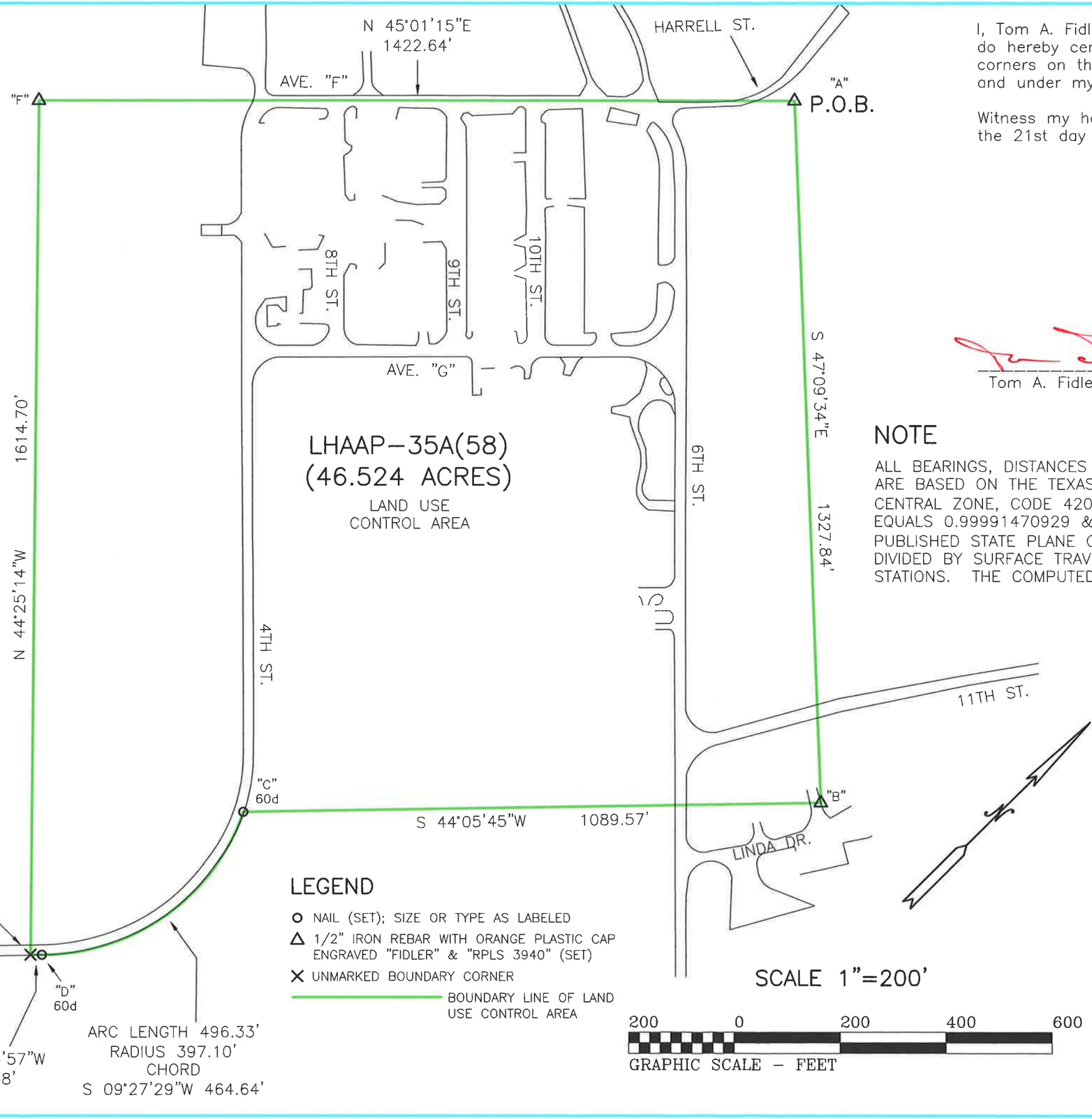
THENCE N 44deg25'14"W 1614.70' along the S.W. B.L. of this tract to an I.R.O.P.C. set for this tract's West corner,

THENCE N 45deg01'15"E 1422.64' along the N.W. B.L. of this tract to this POINT OF BEGINNING, containing 46.524 acres, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.

Tom A. Fidler, R.P.L.S. Number 3940

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com



LEGEND

- NAIL (SET); SIZE OR TYPE AS LABELED
- △ 1/2" IRON REBAR WITH ORANGE PLASTIC CAP ENGRAVED "FIDLER" & "RPLS 3940" (SET)
- X UNMARKED BOUNDARY CORNER
- BOUNDARY LINE OF LAND USE CONTROL AREA

SCALE 1"=200'

200 0 200 400 600
GRAPHIC SCALE – FEET

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in January, 2015.

Witness my hand and seal this the 21st day of January, 2015.

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), AND COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.99991470929 & IS BASED ON CALCULATED DISTANCE BETWEEN PUBLISHED STATE PLANE COORDINATES (OF STATIONS X-11 & HMX-5) DIVIDED BY SURFACE TRAVERSE CALCULATED DISTANCE BETWEEN SAME TWO STATIONS. THE COMPUTED LAND AREA IS BASED ON STATE PLANE DISTANCES.

COORDINATE TABLE

	NORTH	EAST
A	6960866.446	3304921.998
B	6959963.566	3305895.634
C	6959181.058	3305137.444
D	6958722.729	3305061.091
E	6958707.606	3305045.836
F	6959860.854	3303915.676

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET

LHAAP-35A(58) L.U.C.A.
(46.524 ACRES)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	V.PTS V.LEG
01/21/2015	1103025V.DWG	DRAWN BY JTJ

LHAAP-35A(58), 58-3

LAND USE CONTROL COMPLIANCE INSPECTION FORM

September 14, 2015

Sample Annual Land Use Control Compliance Certification Documentation

In accordance with the Remedial Design dated 9/30/11 for LHAAP-35A (58) a certification of site was conducted by _____ [indicate transferee] on _____.

A summary of land use control mechanisms is as follows:

- Groundwater restriction – A restriction against use of groundwater will remain in effect until the levels of the COCs in groundwater and soil allow unrestricted use and unlimited exposure (UUUE). [Indicate whether groundwater restrictions are still required at LHAAP-35A (58)]

A summary of compliance with land use and restriction covenants is as follows:

- No use of groundwater, installation of new groundwater wells, or tampering with existing wells at LHAAP-35A (58).

I, the undersigned, do document that the certification was performed as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief.

Date: _____

Name/Title: _____

Signature: _____

Annual compliance certification forms shall be completed no later than March 1 of each year for the previous calendar year.

LHAAP-59

NOTICE OF NONRESIDENTIAL LAND USE FOR LHAAP-59 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

2011-000003378

*****DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT*****

NOTICE

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 03/24/2011 03:52 PM **Document Number:** 2011-000003378 **Receipt No:** 1103745 **Amount:** $ 32.00 **By:** Lauren Boyd, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

AARON WILLIAMS EC-ER
1645 SOUTH 101ST EAST AVENUE

STATE OF TEXAS HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

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

I

The U.S. Army, Department of Defense, has performed a remedial investigation of the land described herein. The site, LHAAP-59, the former Pesticide Storage Building 725, was constructed in 1984 to support maintenance activities at the plant as a pesticide storage building. LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-59 is not itself considered an NPL site. Environmental activities at LHAAP-59 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ as the lead regulatory agency that no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-59 consists of a Building 725 and the surrounding area. The building, now removed, contained a concrete floor with floor drains that discharged to two nearby sumps. Soil samples were collected near the building and sumps and analyzed for metals, semivolatile organic compounds, volatile organic compounds, dioxins and furans in the 1990s and in 2007 additional samples were collected and analyzed for pesticides and herbicides near the sumps and at the building. Low levels of pesticides were detected. An analysis demonstrated that

these chemicals in soil did not exhibit a potential for release to the groundwater in excess of the groundwater MSC (GW-Ind) and were considered to be protective for nonresidential worker exposure, as specified in 30 TAC §335.559(g)(2)(B). Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30
p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-59 parcel is a 0.2537 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the LHAAP-59 site and USEPA and TCEQ concluded that no further investigation or action is required for LHAAP-59. Contaminants in soil samples from LHAAP-59 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of LHAAP-59 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of LHAAP-59 is consistent with the non-residential use scenario evaluated in the risk screening. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multifamily residences; child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through
12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-BDO (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 25 th day of January, 2011.

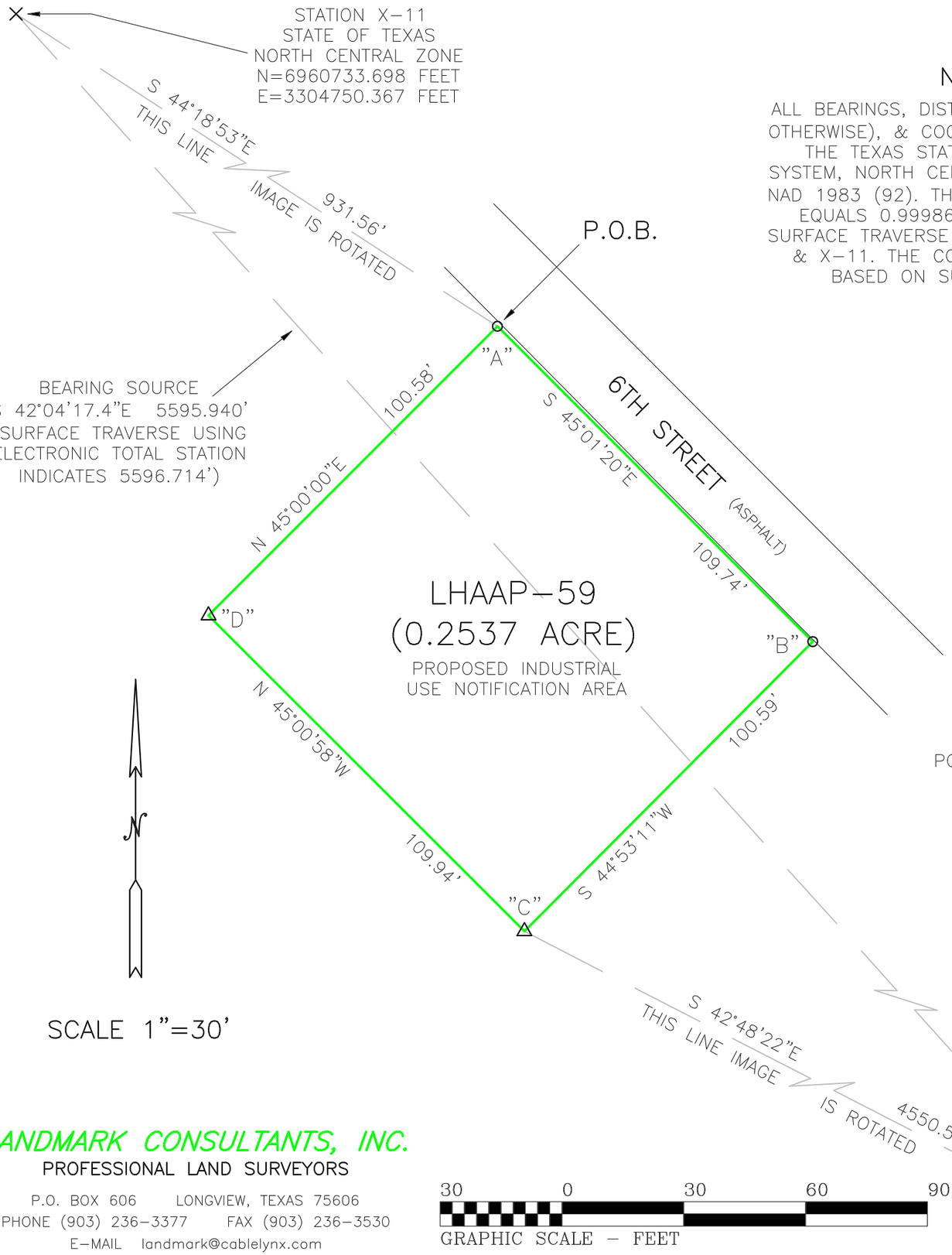
BEFORE ME, on this the 25 th day of Jan 2011, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 25 day of January, 2011.

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

ANGELA I UMPHRES
Notary Public State of Texas
COMM EXP. 3-17-2011

01149595

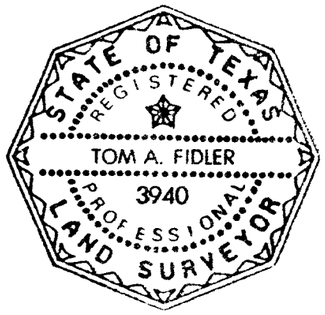


NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999861727 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS C–21 & X–11. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in July 2008.

Witness my hand and seal this the 29th day of July, 2008



Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

COORDINATE TABLE

POINT	NORTH	EAST
A	6960067.154	3305401.154
B	6959989.588	3305478.780
C	6959918.320	3305407.794
D	6959996.035	3305330.035

NOTES:

- X INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- O INDICATES CONCRETE NAIL IN BOTTLE CAP (SET IN ASPHALT)
- △ INDICATES 1/2" IRON REBAR WITH ORANGE PLASTIC CAP ENGRAVED "FIDLER" & "RPLS 3940" (SET)
- ——— INDICATES BOUNDARY OF PROPOSED INDUSTRIAL USE NOTIFICATION AREA

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEET

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236–3377 FAX (903) 236–3530
E–MAIL landmark@cablelynx.com

LHAAP–59
(0.2537 ACRE)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	0605063D.DWG
07/29/2008	0605063.CRD	DRAWN BY JTJ

FIELD NOTES DESCRIPTION OF
"LHAAP–59" TRACT
(PROPOSED INDUSTRIAL USE NOTIFICATION AREA)
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP–59" being 0.2537 acre of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract "LHAAP–59" being more particularly described as follows :

Surveyor's Note: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999861727, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "X–11" (N=6960733.698 feet E=3304750.367 feet) and "C–21" (N=6956579.781 feet E=3308499.969 feet). Said traverse indicates a surface distance of 5596.714 feet between said monuments. The computed land area is based on surface distances. As used herein, the abbreviation I.R.O.P.C. indicates 1/2" iron rebar with orange plastic cap engraved "Fidler" & "RPLS 3940", and the abbreviation C.N.I.B.C. indicates concrete nail in bottle cap.

Commencing at monument "X–11" referenced above,

THENCE S 44deg18'53"E 931.56' to a C.N.I.B.C. set (in the asphalt pavement of the road known as 6th Street) for the North corner of this tract and this POINT OF BEGINNING,

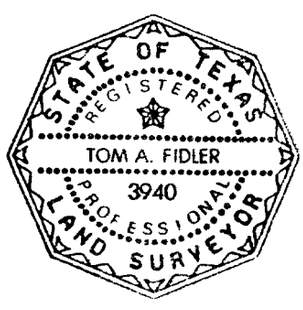
THENCE S 45deg01'20"E 109.74' along the N.E. B.L. of this tract to a C.N.I.B.C. set (in the asphalt pavement of the road known as 6th Street) for this tract's East corner,

THENCE S 44deg53'11"W 100.59' along the S.E. B.L. of this tract to an I.R.O.P.C. set for this tract's South corner, from which the monument "C–21" referenced above bears S 42deg48'22"E 4550.54',

THENCE N 45deg00'58"W 109.94' along the S.W. B.L. of this tract to an I.R.O.P.C. set for this tract's West corner,

THENCE N 45deg00'00"E 100.58' along the N.W. B.L. of this tract to this POINT OF BEGINNING, containing 0.2537 acre, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler

Tom A. Fidler, R.P.L.S. Number 3940

LHAAP-60

NOTICE OF NONRESIDENTIAL LAND USE AT LHAAP-60 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

2010-000005561

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

16 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 04/27/2010 04:08 PM **Document Number:** 2010-000005561 **Receipt No:** 1006195 **Amount:** $ 72.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW E & I
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

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

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. The site, LHAAP-60, consisted of four pesticide storage buildings located in the steam plant and shops area of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-60 is not itself considered an NPL site. Environmental activities at LHAAP-60 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ as the lead regulatory agency that no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-60 consisted of buildings 411, 411-A, 714, and shed TS-80, which were located in the northwestern portion of LHAAP near the steam plant and shops area in the general vicinity of sites LHAAP-02, LHAAP-04, LHAAP-35A(58), and LHAAP-66. Pesticides and herbicides were stored in the now demolished buildings. Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at

the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-60 parcels include: Building 411 with 4,242 square feet, more or less, or 0.09738 acre tract; Building TS-80 with 186 square feet, more or less, or 0.00426 acre tract; Building 411-A with 484 square feet, more or less, or 0.01111 acre tract; and Building 714 with 4,468 square feet, more or less, or 0.10463 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the LHAAP-60 site and USEPA and TCEQ concluded that no further investigation or action is required for LHAAP-60. Contaminants in soil samples from LHAAP-60 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of LHAAP-60 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of LHAAP-60 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951
or
Assistant Chief of Staff for Installation Management
ATTN: DAIM-BDO (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 10 th day of March 2010.

BEFORE ME, on this the 10 th day of March, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 10 day of March, 2010.

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

ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 3-17-2011

FIELD NOTES DESCRIPTION OF
"LHAAP-60A" TRACT
(FOUNDATION SLAB OF DEMOLISHED BUILDING 411)
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP-60A" being the concrete foundation slab of demolished Building 411, "LHAAP-60A" being located within the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract "LHAAP-60A" being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999861727, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "X-11" (N=6960733.698 feet E=3304750.367 feet) and "C-21" (N=6956579.781 feet E=3308499.969 feet). Said traverse indicates a surface distance of 5596.714 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "X-11" referenced above,

THENCE S 42deg04'17.4"E 1875.89' to a point, from which point monument "C-21" referenced above bears S 42deg04'17.4"E 3720.05',

(as used below, the abbreviation C.C.F.S. indicates corner of concrete foundation slab)

THENCE S 47deg55'43"W 188.47' to a C.C.F.S. found for the Northmost corner of this tract and this description's POINT OF BEGINNING,

THENCE S 45deg09'46"E 41.80' along the Northeast B.L. of this tract to a C.C.F.S. found for this tract's Eastmost corner,

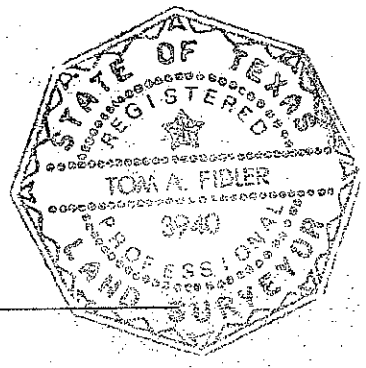
THENCE S 44deg51'53"W 101.29' along the Southeast B.L. of this

tract to a C.C.F.S. found for this tract's Southmost corner,

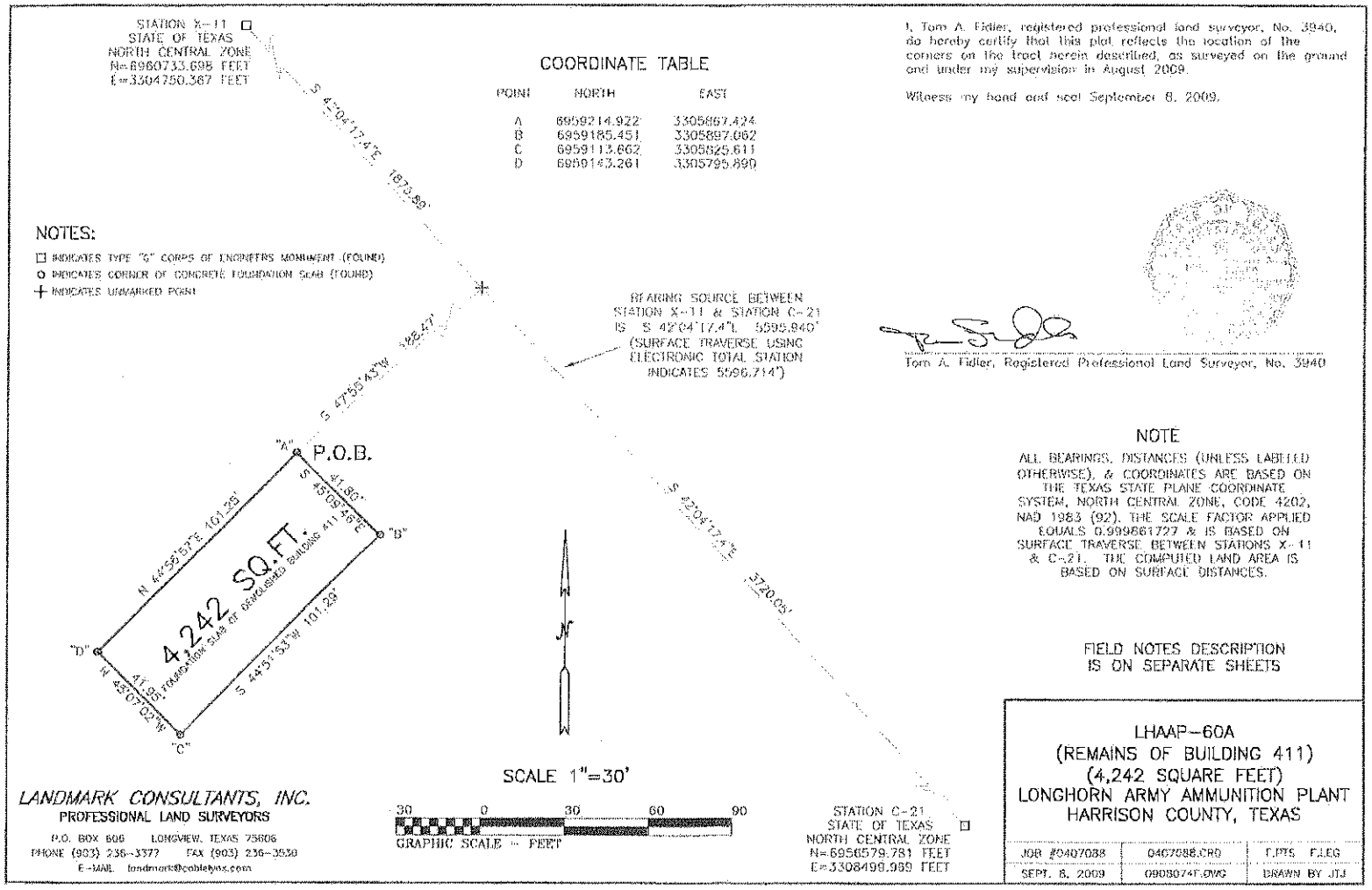
THENCE N 45deg07'02"W 41.95' along the Southwest B.L. of this tract to a C.C.F.S. found for this tract's Westmost corner,

THENCE N 44deg56'57"E 101.25' along the Northwest B.L. of this tract to this POINT OF BEGINNING. This tract contains 4,242 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940



COORDINATE TABLE

POINT	NORTH	EAST
A	6959214.922	3305867.424
B	6959185.451	3305897.062
C	6959113.662	3305825.611
D	6959143.261	3305795.890

NOTES:

- ☐ INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- O INDICATES CORNER OF CONCRETE FOUNDATION SLAB (FOUND)
- + INDICATES UNMARKED POINT

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August 2009.

Witness my hand and seal September 8, 2009.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999861727 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS X-11 & C-21. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 806 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cableone.com

LHAAP-60A
(REMAINS OF BUILDING 411)
(4,242 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	F.PTS F.LEG
SEPT. 8, 2009	0908074F.DWG	DRAWN BY JTJ

"LHAAP-60B" TRACT
(BUILDING TS-80)
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, the perimeter of tract "LHAAP-60B" being defined by the four corners of the external face of the exterior walls of Building TS-80 (said Building is constructed of galvanized corrugated sheet metal), tract "LHAAP-60B" being located within the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract "LHAAP-60B" being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999861727, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "X-11" (N=6960733.698 feet E=3304750.367 feet) and "C-21" (N=6956579.781 feet E=3308499.969 feet). Said traverse indicates a surface distance of 5596.714 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "X-11" referenced above,

THENCE S 42deg04'17.4"E 1919.72' to a point, from which point monument "C-21" referenced above bears S 42deg04'17.4"E 3676.22',

(as used below, the abbreviation C.E.F.E.W. indicates Corner of the External Face of the Exterior Walls of Building TS-80)

THENCE S 47deg55'43"W 378.14' to a C.E.F.E.W. found for the Northmost corner of this tract and this description's POINT OF BEGINNING,

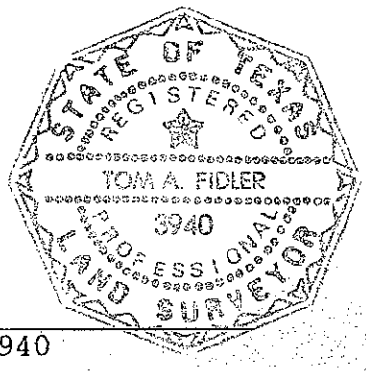
THENCE S 41deg54'33"E 8.55' along the Northeast B.L. of this tract to a C.E.F.E.W. found for this tract's Eastmost corner,

THENCE S 48deg12'22"W 22.54' along the Southeast B.L. of this tract to a C.E.F.E.W. found for this tract's Southmost corner,

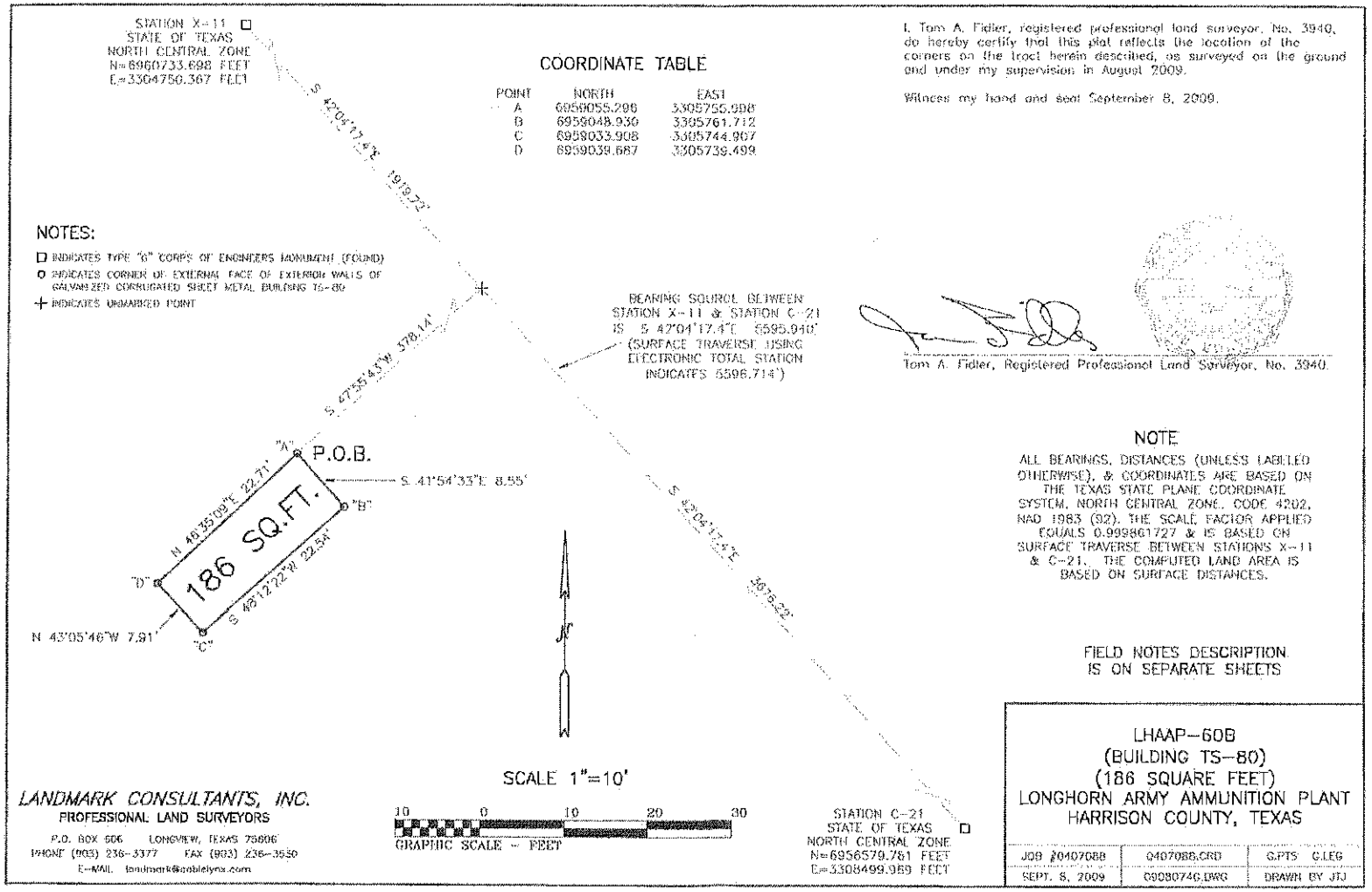
THENCE N 43deg05'46"W 7.91' along the Southwest B.L. of this tract to a C.E.F.E.W. found for this tract's Westmost corner,

THENCE N 46deg35'09"E 22.71' along the Northwest B.L. of this tract to this POINT OF BEGINNING. This tract contains 186 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940



COORDINATE TABLE

POINT	NORTH	EAST
A	6959055.296	3305755.988
B	6959048.930	3305761.712
C	6959033.908	3305744.907
D	6959039.687	3305739.499

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August 2009.

Witness my hand and seal September 8, 2009.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940.

NOTES:

- ☐ INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- O INDICATES CORNER OF EXTERNAL FACE OF EXTERIOR WALLS OF GALVANIZED CORRUGATED SHEET METAL BUILDING TS-80
- + INDICATES UNMARKED POINT

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999861727 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS X-11 & C-21. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS

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PROFESSIONAL LAND SURVEYORS
P.O. BOX 506 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3550
E-MAIL landmark@cablelynx.com

LHAAP-60B
(BUILDING TS-80)
(186 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	G.PTS C.LEG
SEPT. 8, 2009	0908074C.DWG	DRAWN BY JTJ

FIELD NOTES DESCRIPTION OF
"LHAAP-60C" TRACT
(FOUNDATION SLAB OF DEMOLISHED BUILDING 411-A)
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP-60C" being the concrete foundation slab of demolished Building 411-A, tract "LHAAP-60C" being located within the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract "LHAAP-60C" being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999861727, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "X-11" (N=6960733.698 feet E=3304750.367 feet) and "C-21" (N=6956579.781 feet E=3308499.969 feet). Said traverse indicates a surface distance of 5596.714 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "X-11" referenced above,

THENCE S 42deg04'17.4"E 1924.12' to a point, from which point monument "C-21" referenced above bears S 42deg04'17.4"E 3671.82',

(as used below, the abbreviation C.C.F.S. indicates corner of concrete foundation slab)

THENCE S 47deg55'43"W 418.77' to a C.C.F.S. found for the Northmost corner of this tract and this description's POINT OF BEGINNING,

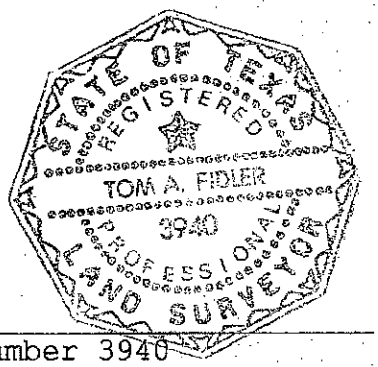
THENCE S 28deg26'16"E 24.08' along the Northeast B.L. of this tract to a C.C.F.S. found for this tract's Eastmost corner,

THENCE S 61deg38'48"W 20.15' along the Southeast B.L. of this tract to a C.C.F.S. found for this tract's Southmost corner,

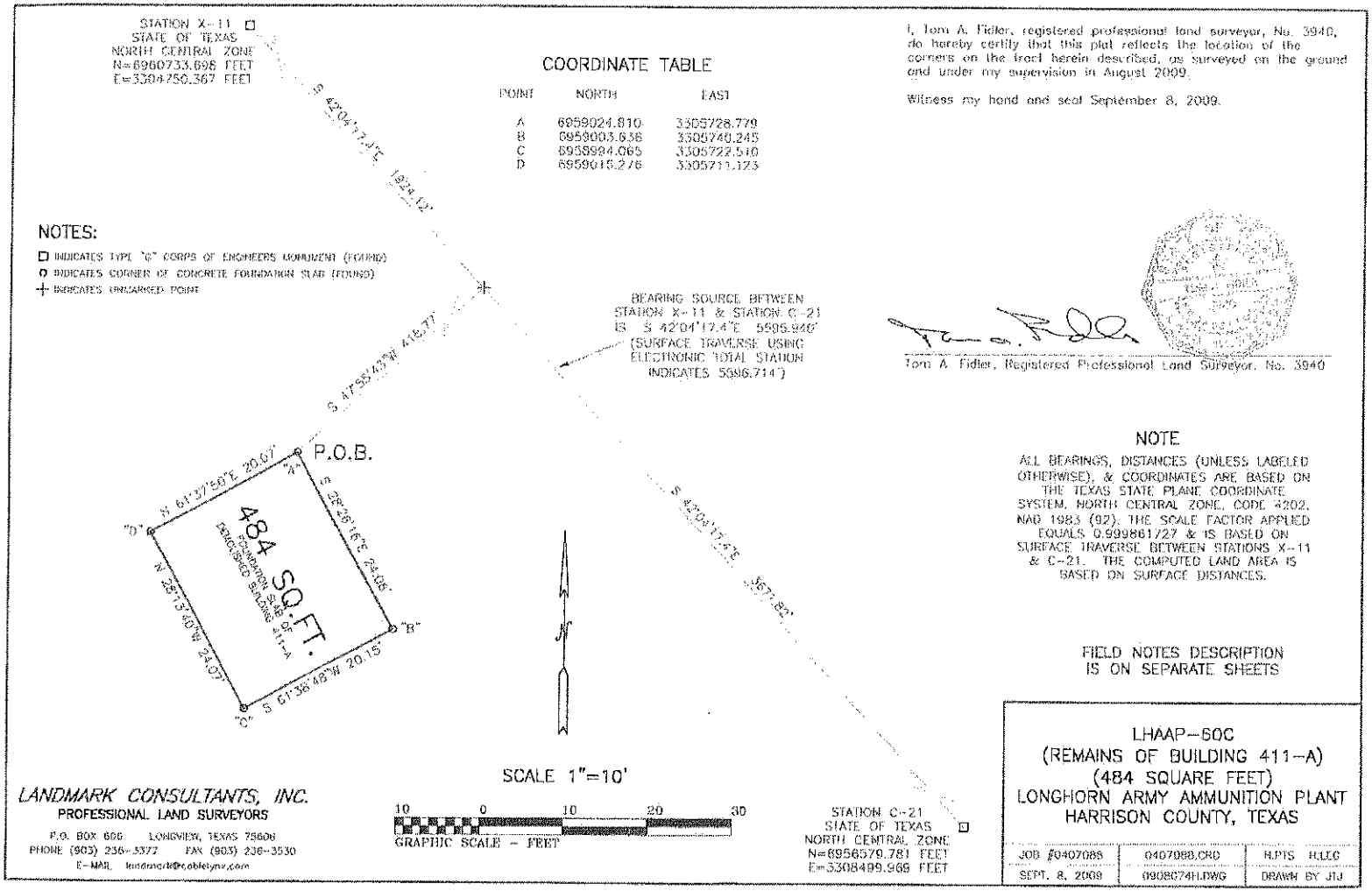
THENCE N 28deg13'40"W 24.07' along the Southwest B.L. of this tract to a C.C.F.S. found for this tract's Westmost corner,

THENCE N 61deg37'50"E 20.07' along the Northwest B.L. of this tract to this POINT OF BEGINNING. This tract contains 484 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940



COORDINATE TABLE

POINT	NORTH	EAST
A	6959024.810	3305728.779
B	6959003.636	3305740.245
C	6958994.065	3305722.510
D	6959015.276	3305711.173

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August 2009.

Witness my hand and seal September 8, 2009.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

NOTES:

- ☐ INDICATES TYPE "C" CORPS OF ENGINEERS MONUMENT (FOUND)
- o INDICATES CORNER OF CONCRETE FOUNDATION SLAB (FOUND)
- ⊕ INDICATES UNMARKED POINT

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999861727 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS X-11 & C-21. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEETS

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cobblynx.com

LHAAP-60C
(REMAINS OF BUILDING 411-A)
(484 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	H.PTS H.LLG
SEPT. 8, 2009	0908074HLDWG	DRAWN BY JTJ

FIELD NOTES DESCRIPTION OF
"LHAAP-60D" TRACT
(INCLUDES FOUNDATION SLAB OF DEMOLISHED BUILDING #714)
CADDO LAKE NATTONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP-60D" including the concrete foundation slab of demolished Building #714 plus an area adjacent to the Southwest edge of said slab, "LHAAP-60D" being located within the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract "LHAAP-60D" being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999861727, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "X-11" (N=6960733.698 feet E=3304750.367 feet) and "C-21" (N=6956579.781 feet E=3308499.969 feet). Said traverse indicates a surface distance of 5596.714 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "X-11" referenced above,

THENCE S 42deg04'17.4"E 395.512' to a point, from which point monument "C-21" referenced above bears S 42deg04'17.4"E 5200.428'

(as used below, the abbreviation C.C.F.S. indicates corner of concrete foundation slab)

THENCE S 47deg55'43"W 442.92' to a C.C.F.S. found for the Northmost corner of this tract and this description's POINT OF BEGINNING,

THENCE S 44deg51'26"E 91.43' along the Northeast B.L. of this tract, and generally along the Northeast edge of said concrete slab, to a C.C.F.S. found for this tract's Eastmost corner,

THENCE S 44deg50'54"W 44.35' along a Southeast B.L. of this tract, and generally along the Southeast edge of said concrete slab, to a C.C.F.S. found for this tract's Southmost corner,

THENCE N 44deg59'57"W 29.43' along a Southwest B.L. of this tract, and generally along the Southwest edge of said concrete slab, to a point for this tract's Southmost reentrant corner,

THENCE S 45deg00'03"W 14.90' along a Southeast B.L. of this tract to a 60d nail set for this tract's Westmost South corner,

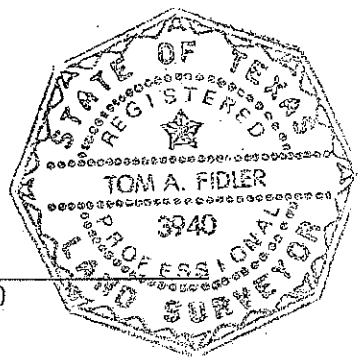
THENCE N 44deg59'57"W 32.36' along a Southwest B.L. of this tract to a 60d nail set for this tract's Southmost West corner,

THENCE N 45deg00'03"E 14.90' along a Northwest B.L. of this tract to a point for this tract's Northmost reentrant corner,

THENCE N 44deg59'57"W 30.02' along a Southwest B.L. of this tract, and generally along the Southwest edge of said concrete slab, to a C.C.F.S. found for this tract's Northmost West corner,

THENCE N 45deg20'52"E 44.58' along a Northwest B.L. of this tract, and generally along the Northwest edge of said concrete slab, to this POINT OF BEGINNING. This tract contains 4,558 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

STATION X-11
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6960733.698 FEET
E=3304750.367 FEET

S 42°04'17.4"E 395.81'

S 47°55'43"W 442.92'

NOTES:

- □ INDICATES TYPE "B" CORPS OF ENGINEERS MONUMENT (FOUND)
- ■ INDICATES CORNER OF CONCRETE FOUNDATION SLAB (FOUND)
- △ INDICATES 60d NAIL (SET)
- ┼ INDICATES UNMARKED POINT

COORDINATE TABLE

POINT	NORTH	EAST
A	6960143.322	3304686.596
B	6960078.513	3304751.083
C	6960047.071	3304719.807
D	6960067.881	3304698.997
E	6960057.345	3304688.461
F	6960080.231	3304665.577
G	6960090.766	3304676.113
B	6960111.994	3304654.886

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August through October, 2009.

Witness my hand and seal October 26, 2009.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

BEARING SOURCE BETWEEN STATION X-11 & STATION C-21 IS S 42°04'17.4"E 5595.940' (SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 5596.714')

P.O.B.

"A"

N 45°20'50"E 44.56'

EDGE OF SLAB

"B"

S 44°51'26"E 97.43'

EDGE OF SLAB

"FOUNDATION SLAB OF DEMOLISHED BUILDING #714"

4,558 SQ.FT.

"G"

N 44°59'57"W 30.00'

N 45°00'03"E 14.90'

EDGE OF SLAB

"F"

G R O U N D

"D"

N 44°59'57"W 32.36'

N 44°59'57"W 99.45'

EDGE OF SLAB

S 44°50'54"W 44.35'

"E"

"C"

S 45°00'03"W 14.90'

S 42°04'17.4"E 5200.428'

SCALE 1"=20'

20 0 20 40 60

GRAPHIC SCALE - FEET

STATION C-21
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6956579.781 FEET
E=3308499.969 FEET

NOTE

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FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS

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PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cebridgelynx.com

LHAAP-60D
(4,558 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.DRJ	1 PTS 1 LEG
10/26/2009	09080747.DWG	DRAWN BY JRJ

LHAAP-64

NOTICE OF NONRESIDENTIAL LAND USE AT LHAAP-64 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

2010-000005558

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

7 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 04/27/2010 04:08 PM **Document Number:** 2010-000005558 **Receipt No:** 1006195 **Amount:** $ 36.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW E & I
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

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

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. The site, LHAAP-64, is the location of a former transformer storage area located in the western portion of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-64 is not itself considered an NPL site. Environmental activities at LHAAP-64 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ as the lead regulatory agency that no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-64 is located next to site LHAAP-29. Polychlorinated biphenyl (PCB)-containing transformers were stored on a pad on Zeugner Drive immediately southwest of Building 707-B. Approximately 20 out-of-service non-PCB transformers were stored on pallets with no curbs or other containment. The site was used for the storage of transformer oil. The contaminants of concern were petroleum and oil lubricants and PCBs. Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas

75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-64 parcel is 847 square feet, more or less, or 0.01944 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the LHAAP-64 site and USEPA and TCEQ concluded that no further investigation or action is required for LHAAP-64. Contaminants in soil samples from LHAAP-64 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of LHAAP-64 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of LHAAP-64 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951
or
Assistant Chief of Staff for Installation Management
ATTN: DAIM-BDO (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 10th day of March, 2010.

BEFORE ME, on this the 10 th day of March, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 10 day of March, 2010.

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

ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 3-17-2011

FIELD NOTES DESCRIPTION OF
"LHAAP-64" TRACT
(ADJACENT TO FOUNDATION SLAB OF DEMOLISHED BUILDING #707-B)
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP-64" being located within the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), tract "LHAAP-64" being adjacent to the Southwest edge of the concrete foundation slab of demolished Building #707-B, tract "LHAAP-64" being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998463585, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "C-1" (N=6955947.067 feet E=3305400.600 feet) and "C-22" (N=6955892.461 feet E=3307823.958 feet). Said traverse indicates a surface distance of 2424.346 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "C-1" referenced above,

THENCE S 32deg52'16"W 338.58' to the West corner of the concrete slab of demolished building 707-B, said slab corner marking the North corner of this tract and this POINT OF BEGINNING,

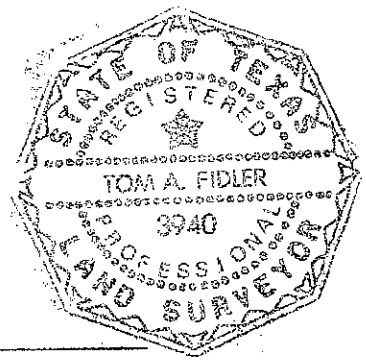
THENCE S 45deg00'47"E 29.76' along the N.E. B.L. of this tract, and generally along the Southwest edge of said concrete slab, to the South corner of said concrete slab, said slab corner marking the East corner of this tract,

THENCE S 44deg55'45"W 28.44' along the S.E. B.L. of this tract to a concrete nail with head dimple set (in asphalt) for the South corner of this tract,

THENCE N 45deg00'47"W 29.75' along the S.W. B.L. of this tract to a concrete nail with head dimple set (in asphalt) for the West corner of this tract,

THENCE N 44deg54'27"E 28.44' along the N.W. B.L. of this tract to this POINT OF BEGINNING. This tract contains 847 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

NOTES:

□ INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
O INDICATES CORNER OF CONCRETE FOUNDATION SLAB (FOUND)
△ INDICATES 60d NAIL (SET)
+ INDICATES CONCRETE NAIL WITH HEAD DIMPLE (SET)

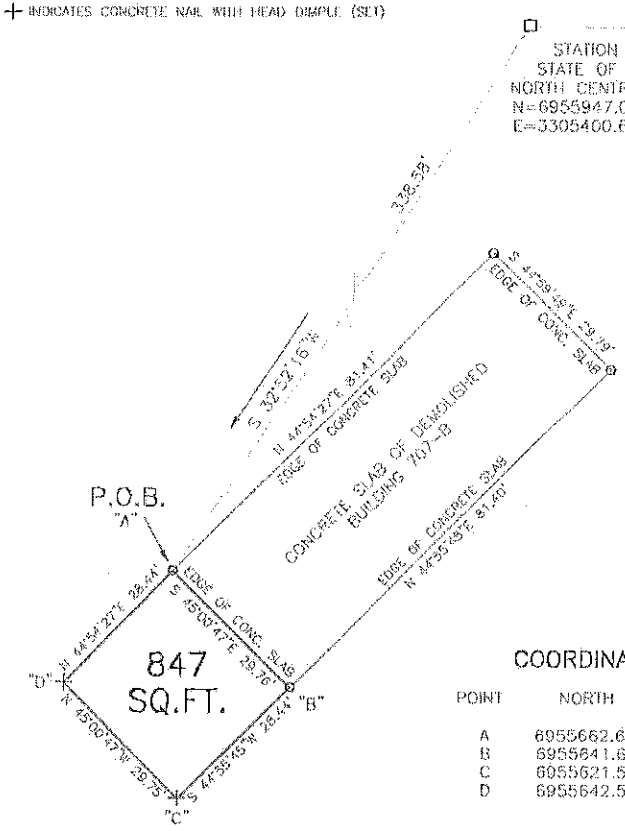
I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August through November, 2009.

Witness my hand and seal November 12, 2009.

STATION C-1
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6955947.067 FEET
E=3305400.600 FEET

BEARING SOURCE BETWEEN STATION C-1 & STATION C-22 IS S 88°42'33.0"E 2423.973' (SURFACE TRAVERSE USING ELECTRONIC TOTAL STATION INDICATES 2424.346')

STATION C-22
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6955892.461 FEET
E=3307823.958 FEET



COORDINATE TABLE

POINT	NORTH	EAST
A	6955662.694	3305216.833
B	6955641.654	3305237.884
C	6955621.519	3305217.798
D	6955642.552	3305196.756

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999846358S & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS C-1 & C-22. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS

SCALE 1"=20'

20 0 20 40 60
GRAPHIC SCALE – FEET

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-5377 FAX (903) 236-5530
E-MAIL landmark@cableone.com

LHAAP-64
(847 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	0 PTS 0 LEG
NOV. 12, 2009	090807AU.DWG	DRAWN BY JDJ

LHAAP-66

NOTICE OF NONRESIDENTIAL LAND USE AT LHAAP-66 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

2010-000005559

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

7 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 04/27/2010 04:08 PM **Document Number:** 2010-000005559 **Receipt No:** 1006195 **Amount:** $ 36.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW E & I
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

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

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. The site, LHAAP-66, is the location of a leaking transformer from the electric power substation and transformer area, near Building 401. Building 401 housed gas-fired boilers that generated steam for distribution throughout the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-66 is not itself considered an NPL site. Environmental activities at LHAAP-66 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ as the lead regulatory agency that no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-66 is located at the electric power substation and includes several transformers. One of these transformers was reported to be leaking, but subsequent environmental activities confirmed there was no release to the soil from polychlorinated biphenyls. The electric power substation still provides power to parts of LHAAP. Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465,

Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-66 parcel is 8,616 square foot, more or less, or 0.19779 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the LHAAP-66 site and USEPA and TCEQ concluded that no further investigation or action is required for LHAAP-66. Contaminants in soil samples from LHAAP-66 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of LHAAP-66 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of LHAAP-66 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951
or
Assistant Chief of Staff for Installation Management
ATTN: DAIM-BDO (T. Lederle)
600 Army Pentagon
Washington D:C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 10th day of March, 2010.

BEFORE ME, on this the 10 th day of March, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 10 day of March, 2010.

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

ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 3-17-2011

FIELD NOTES DESCRIPTION OF
"LHAAP-66" TRACT
(CONTAINS AN ELECTRIC POWER SUBSTATION)
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP-66" containing an electric power substation, including transformers, "LHAAP-66" being located within the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract "LHAAP-66" being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999861727, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "X-11" (N=6960733.698 feet E=3304750.367 feet) and "C-21" (N=6956579.781 feet E=3308499.969 feet). Said traverse indicates a surface distance of 5596.714 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "X-11" referenced above,

THENCE S 42deg04'17.4"E 1722.19' to a point, from which point monument "C-21" referenced above bears S 42deg04'17.4"E 3873.75',

(as used below, the abbreviation F.C.P. indicates 2-1/2" diameter chain link fence corner pipe)

THENCE S 47deg55'43"W 210.22' to an F.C.P. found (leaning approximately 15 degrees) for the Northmost corner of this tract and this description's POINT OF BEGINNING,

THENCE S 45deg10'23"E 130.14' along a chain link fence found for the Northeast B.L. of this tract to an F.C.P. found for this tract's Eastmost corner,

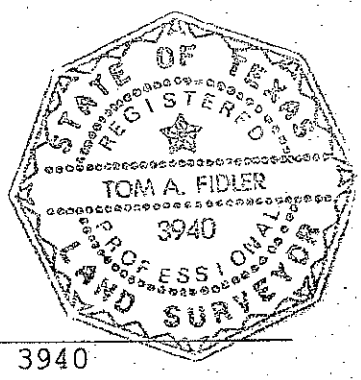
THENCE S 44deg46'19"W 65.93' along a chain link fence found for

the Southeast B.L. of this tract to an F.C.P. found for this tract's Southmost corner,

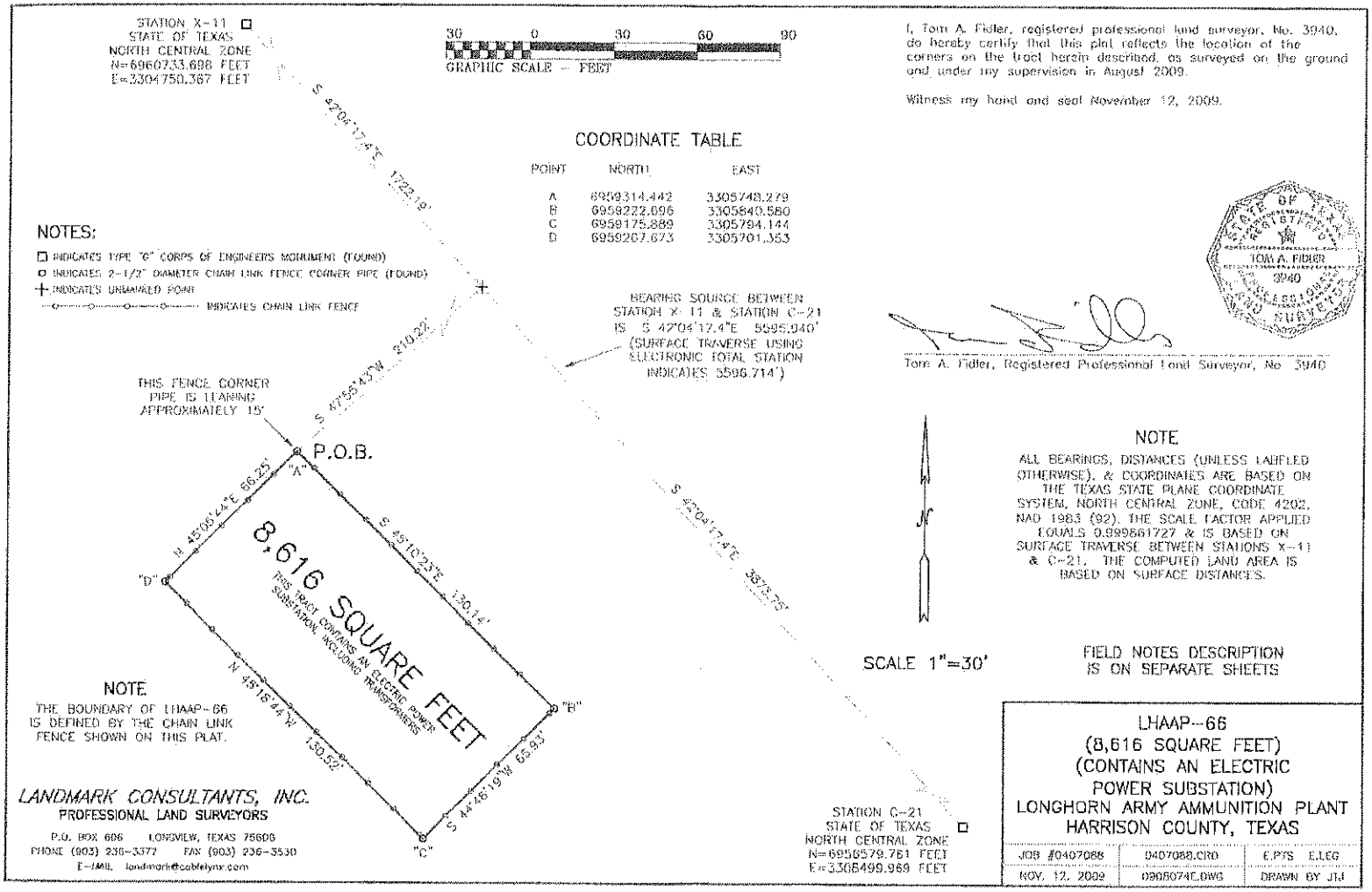
THENCE N 45deg18'44"W 130.52' along a chain link fence found for the Southwest B.L. of this tract to an F.C.P. found for this tract's Westmost corner,

THENCE N 45deg05'44"E 66.25' along a chain link fence found for the Northwest B.L. of this tract to this POINT OF BEGINNING. This tract contains 8,616 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940



I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August 2009.

Witness my hand and seal November 12, 2009.

STATE OF TEXAS REGISTERED TOM A. FIDLER 3940 LICENSED LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999861727 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS X-11 & C-21. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

SCALE 1"=30'

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS

NOTE

THE BOUNDARY OF LHAAP-66 IS DEFINED BY THE CHAIN LINK FENCE SHOWN ON THIS PLAT.

LANDMARK CONSULTANTS, INC.
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E-MAIL landmark@cablelynx.com

LHAAP-66
(8,616 SQUARE FEET)
(CONTAINS AN ELECTRIC POWER SUBSTATION)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	E.PTS E.LEG
NOV. 12, 2009	0908074C.DWG	DRAWN BY JTJ

LHAAP-67, 67-1

LUCs FROM FINAL REMEDIAL DESIGN

September 14, 2015

FINAL
REMEDIAL DESIGN
LHAAP-35B (37), CHEMICAL LABORATORY AND LHAAP-67, ABOVEGROUND STORAGE TANK FARM
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Prepared by

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

August 1, 2011

Table of Contents

List of Figures ii
List of Tables ii
List of Appendices ii
Acronyms and Abbreviations iii

1.0 Purpose 1
2.0 Description of the Site 2
2.1 Hydrogeological Setting 3
2.1.1 Groundwater and Surface Water Interaction 3
3.0 Remedy Performance Objectives 5
4.0 Land Use Controls for the Site 6
5.0 Monitored Natural Attenuation 7
6.0 Remedy Implementation Actions 9
6.1 Design Criteria 9
6.1.1 Basis Of Design 9
6.2 Land Use Control Implementation Actions 11
6.2.1 Comprehensive Land Use Control Management Plan 11
6.2.2 Site Certifications and Reporting 11
6.2.3 Notice of Planned Property Conveyances 12
6.2.4 Opportunity to Review Text of Intended Land Use Controls 12
6.2.5 Notification Should Action(s) Which Interfere with Land Use Control Effectiveness Be Discovered Subsequent to Conveyance 12
6.2.6 Land Use Control Enforcement 12
6.2.7 Modification or Termination of Land Use Controls 12
6.3 Monitored Natural Attenuation Implementation Actions 13
6.4 CERCLA Five-Year Reviews 14
7.0 Points of Contact 15
8.0 References 16

4.0 Land Use Controls for the Site

The LUCs to be implemented by the Army or its representatives for LHAAP-35B(37) and LHAAP-67 to prevent human exposure to residual groundwater contamination presenting an unacceptable risk to human health include:

- Ensure no withdrawal or use of groundwater beneath the sites for anything other than environmental monitoring and testing until cleanup goals are met

Notification of the groundwater use restriction will accompany all transfer documents and will be recorded at the Harrison County Courthouse in accordance with Texas Administrative Code (TAC) Title 30, §335.566.The LUC addresses the areas of LHAAP-35B(37) and LHAAP-67 that include groundwater plumes at LHAAP-35B(37) and LHAAP-67 with levels of contamination that require implementation of a remedy (see **Section 2.0**). The U.S. Army is responsible for implementing, maintaining, monitoring, reporting on, and enforcing the LUC.

U.S. Army and regulators will consult to determine appropriate enforcement actions should there be a failure of an LUC objective at this site after it has transferred. U.S. Army shall obtain USEPA and TCEQ concurrence prior to termination or significant modification of the LUC, or implementation of a change in land use inconsistent with the LUC objectives and use assumptions of the remedy. Although not a remedy, the land use assumption for LHAAP-35B(37) and LHAAP-67 forms the basis for the remedy. The reasonably anticipated future use of the site as part of a national wildlife refuge is consistent with an industrial risk exposure scenario. Notification of the land use assumption of this site will be made in transfer documentation, will be recorded in the Harrison County Courthouse in accordance with TAC Title 30, §335.566 and compliance with the use assumption will be documented in the Five-Year Review reports.

6.2 Land Use Control Implementation Actions

The Army or its representatives will be responsible for LUC implementation and certification, reporting and enforcement. The Army shall address LUC problems within its control that are likely to impact remedy integrity and shall address problems as soon as practicable.

As a condition of property transfer, the Army may require the transferee to assume responsibility for various implementation actions, as indicated below. Although the Army may transfer responsibility for various implementation actions, the Army shall retain its responsibility for remedy integrity. This means that the Army is responsible for addressing substantive violations of performance objectives that would undermine the Army's CERCLA remedy. The Army also will be responsible for: 1) incorporating RD information and outlining the transferee's LUC obligations into property transfer documentation; 2) recording groundwater use restriction and survey plat at the Harrison County Courthouse; and 3) notifying Texas Department of Licensing and Regulation of the groundwater restriction which includes the prohibition of water well installation for any purpose other than environmental monitoring and testing without prior approval from the Army, the USEPA, and the TCEQ. The following LUC implementation actions shall be undertaken by the Army in order to ensure that the aforementioned LUC performance objectives for LHAAP-35B(37) and LHAAP-67 are met and maintained:

6.2.1 Comprehensive Land Use Control Management Plan

Within 30 days of receiving USEPA and TCEQ approval of this RD, the Army will incorporate this document into the Comprehensive LUC Management Plan. The Comprehensive LUC Management Plan consists of LHAAP RD documents and a survey plat showing the locations where LUCs being implemented at LHAAP are applied. The purpose of this Comprehensive LUC Management Plan is to ensure all site specific LUCs are compiled into one comprehensive location for both pre-transfer use by the installation and for post-transfer use by the transferee. This document is also accessible to regulators, the local government and the public. The Comprehensive LUC Management Plan is located in the Marshall Public Library to accompany LHAAP's Administrative Record. As LUC RD documents for additional environmental sites are approved by USEPA and TCEQ, the Army shall likewise add those documents and survey plats to the Comprehensive LUC Management Plan as well as update the previous copy of the plan placed in the Marshall Public Library.

6.2.2 Site Certifications and Reporting

Beginning with finalization of this RD, the Army will undertake annual certifications to confirm continued compliance with the LUC objectives. The Army will retain the annual LUC Compliance Certification documents in the project files for incorporation into the Five-Year Review Reports, and these documents will be made available to USEPA and TCEQ upon request. The certification form will be consistent with the form attached as **Appendix B**. In addition, should any violations be found during the annual certification, the Army will provide to USEPA and TCEQ along with the document, a separate written explanation indicating the specific violations found and what efforts or measures have or will be taken to correct those violations**.** Upon transfer, such responsibilities may shift to the transferee via

appropriate provisions placed in the Environmental Condition of Property (ECP) or other environmental transfer document. The need to continue annual certifications will be revisited at Five-Year Reviews.

6.2.3 Notice of Planned Property Conveyances

The Army shall provide notice to USEPA and TCEQ of plans to convey LHAAP-35B(37) and LHAAP-67 acreage. The notice shall describe the mechanism by which LUCs will continue to be implemented, maintained, inspected, reported, and enforced.

6.2.4 Opportunity to Review Text of Intended Land Use Controls

Army will provide a copy of the groundwater use restriction notification to TCEQ for review and approval prior to its recordation in Harrison County. In addition, the Army will produce an ECP or other environmental document for transfer of LHAAP-35B(37) and LHAAP-67, but before executing transfer, the Army will provide USEPA and TCEQ with a draft copy of the ECP or other environmental document for transfer so that they may have reasonable opportunity, before document execution, to review all LUC-related provisions.

6.2.5 Notification Should Action(s) Which Interfere with Land Use Control Effectiveness Be Discovered Subsequent to Conveyance

Should the Army discover after conveyance of the site any activity on the property inconsistent with the LUC performance objectives, the Army shall notify USEPA and TCEQ within 72 hours of such discovery. Consistent with **Section 6.2.6** below, the Army will then work with USEPA, TCEQ and the transferee to correct the problem(s) discovered. This reporting requirement does not preclude the Army from taking immediate action pursuant to its CERCLA authorities to prevent any perceived risk(s) to human health or the environment.

6.2.6 Land Use Control Enforcement

Should the LUC remedy reflected in this LUC RD fail, the Army will coordinate with USEPA and TCEQ to ensure that appropriate actions are taken to reestablish its protectiveness. These actions may range from informal resolutions with the owner or violator, to the institution of judicial action under the auspices of Texas property law or CERCLA. Alternatively, should the circumstances warrant such, the Army could choose to exercise its response authorities under CERCLA, and then seek cost recovery after the fact from the person(s) or entity(ies) who violated a given LUC. Should the Army become aware that any future owner or user of the property has violated any LUC requirement over which a local agency may have independent jurisdiction, the Army will notify these agencies of such violation(s) and work cooperatively with them to re-achieve owner/user compliance with the LUCs.

6.2.7 Modification or Termination of Land Use Controls

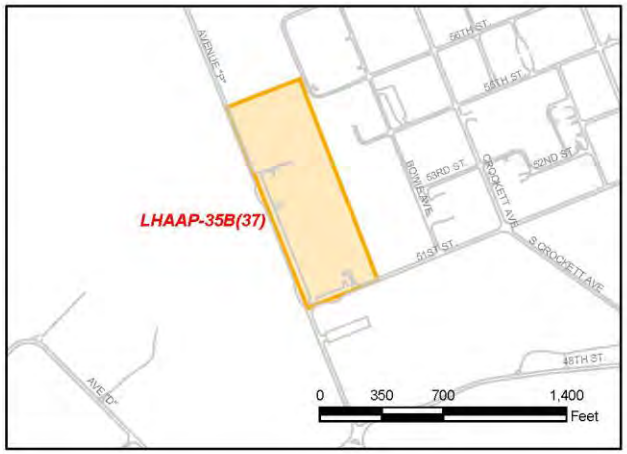
The Army shall not, without USEPA and TCEQ concurrence, make a significant modification to, or terminate a LUC, or make a land use change inconsistent with the LUC objectives and use assumptions of the selected remedy. Likewise, the Army shall seek prior USEPA and TCEQ concurrence before commencing actions that may impact remedy integrity. In the case of an emergency action, the Army shall obtain prior USEPA and TCEQ concurrence as appropriate to the exigencies of the situation.

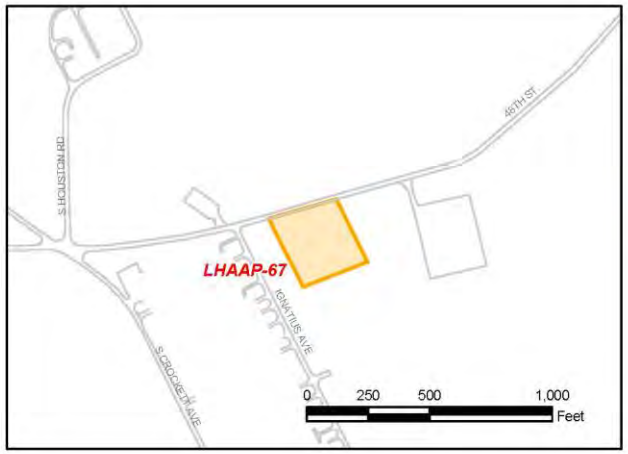
The LUCs shall remain in effect until such time as the Army, TCEQ and USEPA agree that the concentrations of COCs have met cleanup levels. When this occurs, the LUCs will be terminated as needed. The decision to terminate LUCs will be documented consistent with the NCP process for post-ROD changes, potentially including an explanation of significant differences or a remedial action completion report. If the property has been transferred and a determination by the Army, TCEQ and USEPA has been made to terminate one or more of the LUCs, the Army shall provide to the owner of the property an appropriate release for recordation pertaining to the site and will also timely advise other local stakeholders of the action.

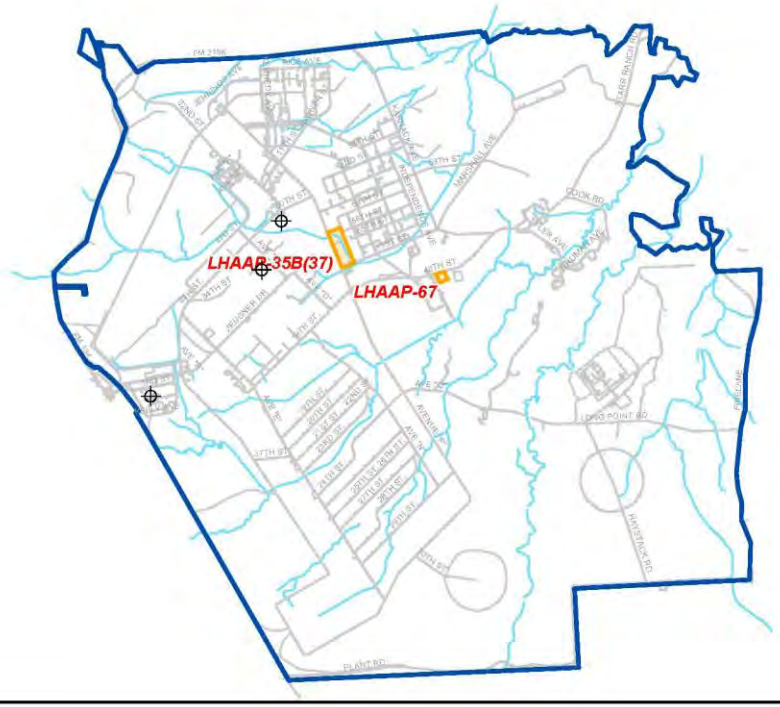
6.3 Monitored Natural Attenuation Implementation Actions

Implementation actions include installation of additional monitoring wells, plugging and abandonment of monitoring wells not designated for long-term monitoring, implementation of a groundwater monitoring plan, monitoring, and reporting. The project schedule and cost summary for implementation actions are provided in **Appendix H**. Groundwater monitoring will be conducted to monitor the effectiveness of MNA in reducing contaminant concentrations over time. Monitoring will also be conducted to evaluate plume migration and ensure that chlorinated solvents-contaminated groundwater does not impact nearby surface water at unacceptable levels. Surface water sampling will be conducted to confirm contaminated groundwater is not migrating to surface water. The Groundwater Monitoring Plan, attached as **Appendix A**, describes the wells, their locations, analytical parameters, the frequency of the monitoring, surface water sampling, and presents a list of the monitored constituents and their respective MCLs. Groundwater monitoring and surface water sampling conducted at LHAAP-35B(37) and LHAAP-67 will follow the Health and Safety Plan (**Appendix E**), the Contractor Quality Control Plan (**Appendix F**), the Chemical Data Acquisition Plan (**Appendix G**), Field Activities (**Appendix C**) and Field Procedures (**Appendix D**) as contained in the appendices of the Remedial Design LHAAP-35B(37) and LHAAP-67.

Annual reports will be prepared for any year in which sampling occurs to document the monitoring program. The first year's annual report will include a review of the first four quarters of data, which include natural attenuation parameters and provide an evaluation for the evidence of MNA as a remedial method and a review of the first year's surface water sample data. The TCEQ provides guidance for MNA as a remedial action in *Monitored Natural Attenuation Demonstrations* (Texas Natural Resource Conservation Commission [TNRCC], RG-366/TRRP-33, October 2001). Although LHAAP is being addressed under the Risk Reduction Standards rather than Texas Risk Reduction Program (TRRP), this guidance is comparable to USEPA guidance and may be used as a guideline for the evaluation of the groundwater data. TRRP guidance specifies recommended lines of evidence to document the occurrence of natural attenuation at a site. For the first annual report, primary and secondary lines of evidence will be evaluated to document that attenuation is occurring at LHAAP-35B(37) and LHAAP-67. The primary line







LEGEND

- Approximate LHAAP Boundary
- Road
- Stream
- Site
- LHAAP Water Supply Well

LEGEND

- Road
- Stream
- Site
- Approximate LHAAP Boundary
- LHAAP Water Supply Well

OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	FILE PATH
Houston, TX	B. Lu 10/12/07	N. Olson 10/31/07	P. Srivastav 10/31/07	T:\GIS\Longhorn\MXD\ST35B67\RODISiteLocs.mxd

Shaw

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

FIGURE 2-2
SITE LOCATION MAP
REMEDIAL DESIGN
LHAAP-35B(37) AND LHAAP-67, GROUP 4
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

LHAAP-67, 67-2

NOTICE OF LAND USE CONTROLS AND NONRESIDENTIAL LAND USE AT LHAAP-67 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

2014-000013308

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

NOTICE

8 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 12/09/2014 10:42 AM **Document Number:** 2014-000013308 **Receipt No:** 1415412 **Amount:** $ 50.00 **By:** Pam Rockwell, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

AECOM
ATTN: AMANDA LAGARDE (FEDEX ENV)
112 E PECAN ST., SUITE 400
SAN ANTONIO, TX 78205

STATE OF TEXAS HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF LAND USE CONTROL AT LHAAP-67

KNOW ALL MEN BY THESE PRESENTS THAT:

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

I

The U.S. Army, Department of Defense, has performed remedial activities at the land described herein. The remediation site is in a former industrial area, located on the Former Longhorn Army Ammunition Plant (LHAAP) and is designated as LHAAP-67 (Underground Storage Tank Farm Area). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Remedial activities at LHAAP-67 were performed in accordance with the FFA requirements.

The LHAAP-67 site, when operational, consisted of seven aboveground storage tanks used for storage of No. 2 fuel oil, kerosene, and solvents. The tanks were surrounded by earthen dikes designed to contain potential spills. A Record of Decision (ROD) for LHAAP-67 was signed by the U.S. Army and USEPA with TCEQ concurrence in 2010 establishing the final remedy which consists of a land use control (LUC) in conjunction with monitored natural attenuation (MNA). The site was not remediated to levels suitable for unrestricted use. The LUC at LHAAP-67 is required to prevent human exposure to contaminated groundwater. Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at the Marshall Public

Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-67 parcel is a 4 acre tract, more or less, located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A. Within the LHAAP-67 parcel is designated a LUC boundary which is a 6.088-acre tract, more or less, as described in Exhibit A. The LUC boundary is also presented in the attached Figure 1.

Future use of the parcel is intended as a national wildlife refuge consistent with non-residential use. For purposes of this certification, residential use includes, but is not limited to, single family or multifamily residences; child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.The United States Department of the Army has undertaken careful environmental study of the LHAAP-67 site and concluded that the LUC set forth below is required to ensure protection of human health and the environment.

(1) Groundwater Restriction. The groundwater use restriction boundary consists of the 6.088-acre tract, more or less. Groundwater underlying this land is contaminated with trichloroethene (TCE), 1,1-dichloroethene (1,1-DCE), 1,2-dichloroethane (1,2-DCA), 1,1,1-trichloroethane (1,1,1-TCA), and 1,1,2-trichloroethane (1,1,2-TCA), and other volatile organic compounds (VOCs) and shall not be accessed or used for any purpose without the prior written approval of the U.S. Army, the USEPA, and the TCEQ. A LUC restricting the use of groundwater has been established for the protection of human health. The U.S. Army will notify the Texas Department of Licensing and Regulation of the groundwater restriction which includes prohibition of water well installation for any purpose other than environmental monitoring and testing without prior approval by the U.S. Army, the USEPA, and the TCEQ. A restriction against the residential use of groundwater will remain in effect until the levels of the COCs in groundwater and soil allow unrestricted use and unlimited exposure (UUUE).

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 20 th day of November, 2014.

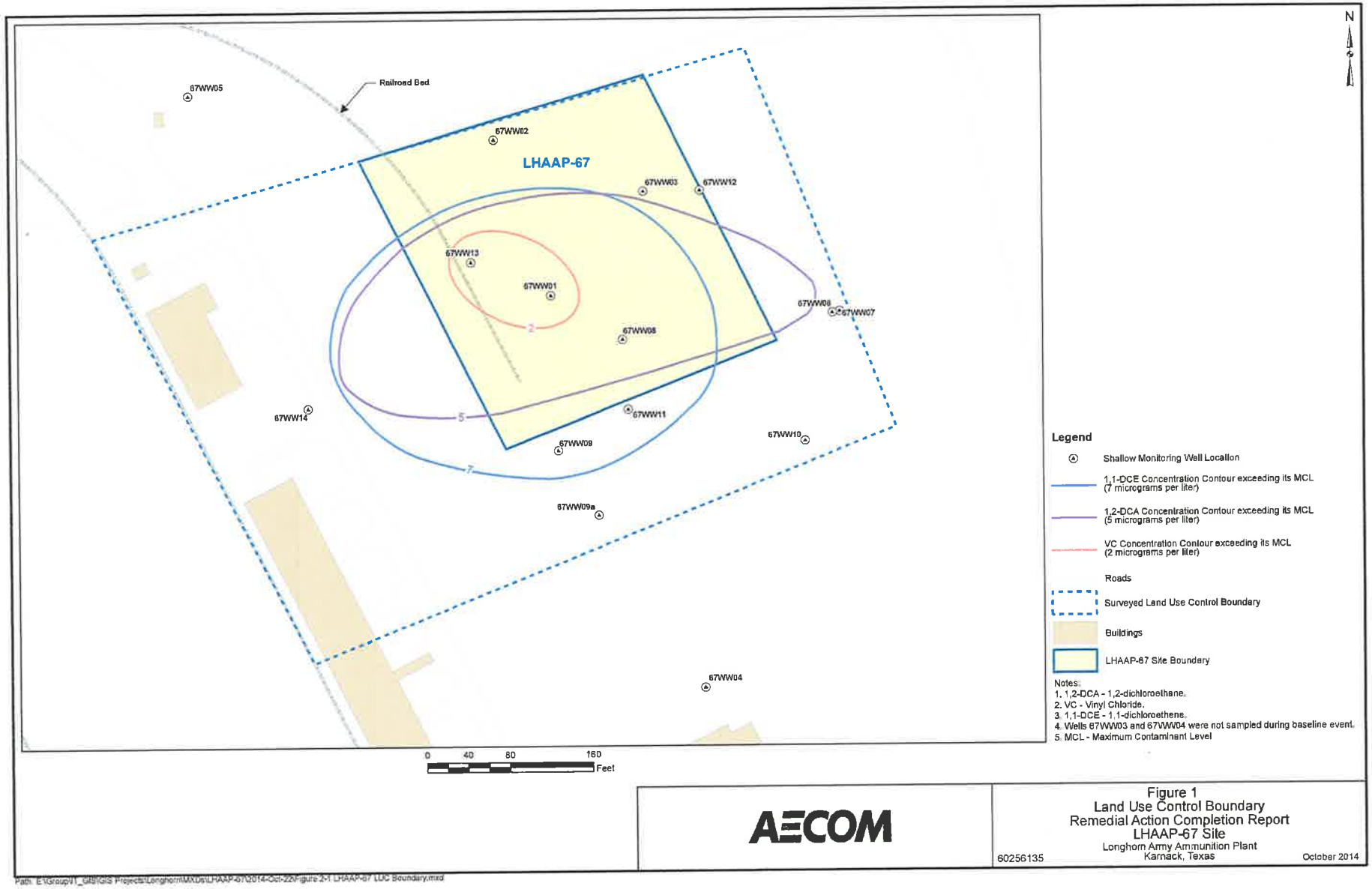
BEFORE ME, on this the 20 th day of November, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 20 day of November, 2014.

ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 03-17-2015

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

EXHIBIT A
SURVEY PLAT



AECOM

Figure 1
Land Use Control Boundary
Remedial Action Completion Report
LHAAP-67 Site
Longhorn Army Ammunition Plant
Karnack, Texas

60256135 October 2014

Path: E:\Group\1_GIS\GIS Projects\Longhorn\MXDs\LHAAP-67\2014-Oct-22\Figure 2-1 LHAAP-67 LUC Boundary.mxd

COUNTY CLERK'S MEMO
PORTIONS OF THIS
DOCUMENT NOT
REPRODUCIBLE
WHEN RECORDED

FIELD NOTES DESCRIPTION OF
"LHAAP-67" LAND USE CONTROL AREA
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, "LHAAP-67" Land Use Control Area being 6.088 acres of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), "LHAAP-67" Land Use Control Area being more particularly described as follows :

Surveyor's Note: All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9998636625, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "IGNATIUS-1" (N=6957090.304 feet E=3311081.788 feet) and "IGNATIUS-2" (N=6955582.752 feet E=3311851.704 feet). Said traverse indicates a surface distance of 1693.005 feet between said monuments. The computed land area is based on grid distances. As used herein, the abbreviation I.R.O.P.C. indicates 1/2" iron rebar with orange plastic cap engraved "Fidler" & "RPLS 3940" .

Commencing at monument "IGNATIUS-1" referenced above,

THENCE S 32deg49'15"W 145.39' to an I.R.O.P.C. set for the N.W.C. of this tract and this POINT OF BEGINNING,

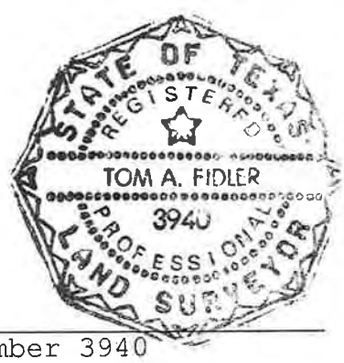
THENCE N 74deg08'33"E 654.97' along the N.B.L. of this tract to an I.R.O.P.C. set for this tract's N.E.C. ,

THENCE S 21deg34'17"E 390.25' along the E.B.L. of this tract to an I.R.O.P.C. set for this tract's S.E.C. ,

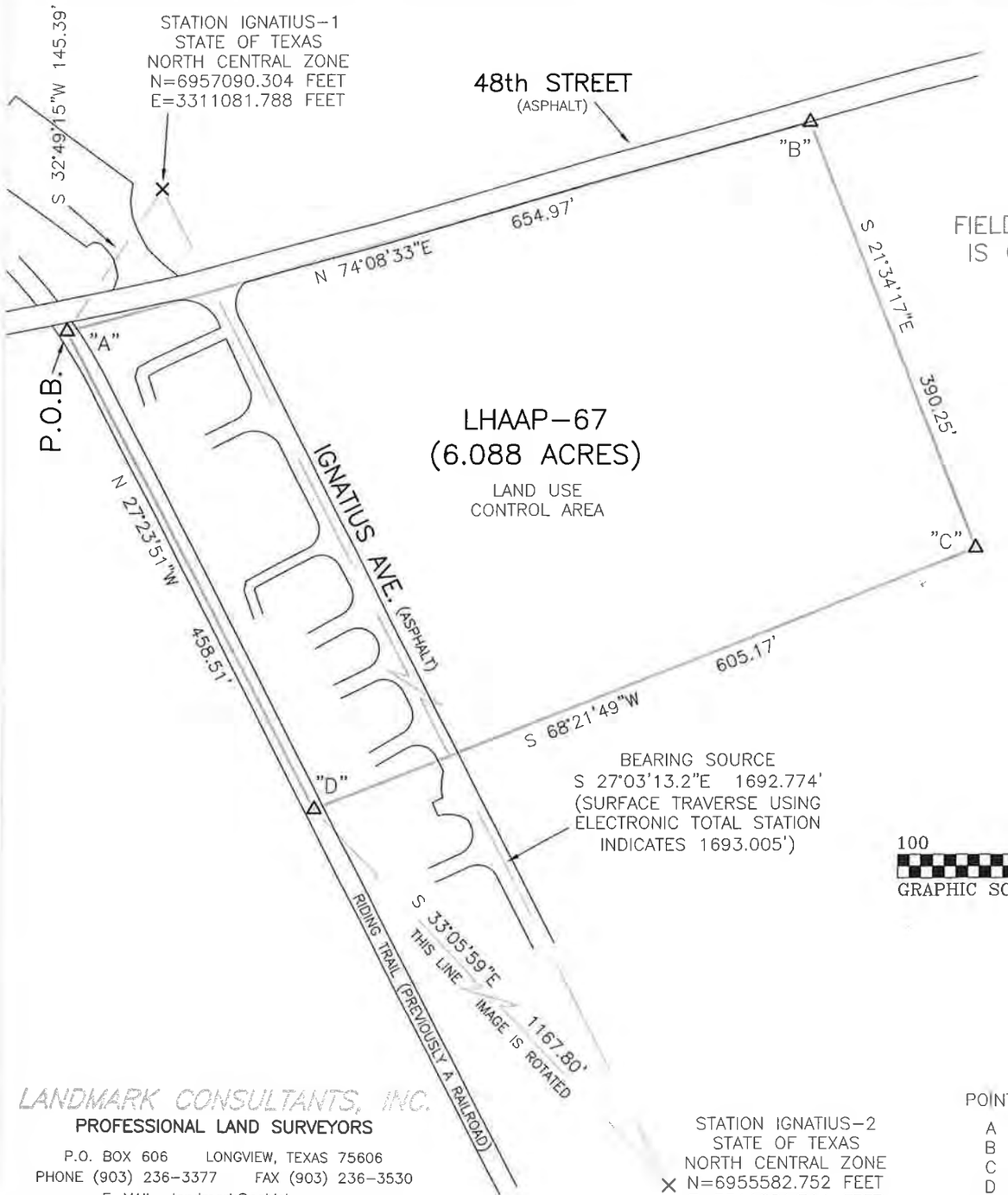
THENCE S 68deg21'49"W 605.17' along the S.B.L. of this tract to an I.R.O.P.C. set for this tract's S.W.C., from which monument "IGNATIUS-2" referenced above bears S 33deg05'59"E 1167.80' ,

THENCE N 27deg23'51"W 458.51' along the W.B.L. of this tract to this POINT OF BEGINNING, containing 6.088 acres, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940



I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in October, 2014.

Witness my hand and seal this the 16th day of October, 2014.

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEET

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998636625 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS IGNATIUS-1 & IGNATIUS-2. THE COMPUTED LAND AREA IS BASED ON GRID DISTANCES.

SCALE 1"=100'

100 0 100 200 300

GRAPHIC SCALE – FEET

LEGEND

- X TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- O CONCRETE NAIL IN BOTTLE CAP (SET IN ASPHALT)
- △ 1/2" IRON REBAR WITH ORANGE PLASTIC CAP ENGRAVED "FIDLER" & "RPLS 3940" (SET)
- BOUNDARY LINE OF LAND USE CONTROL AREA

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

STATION IGNATIUS-2
STATE OF TEXAS
NORTH CENTRAL ZONE
X N=6955582.752 FEET
E=3311851.704 FEET

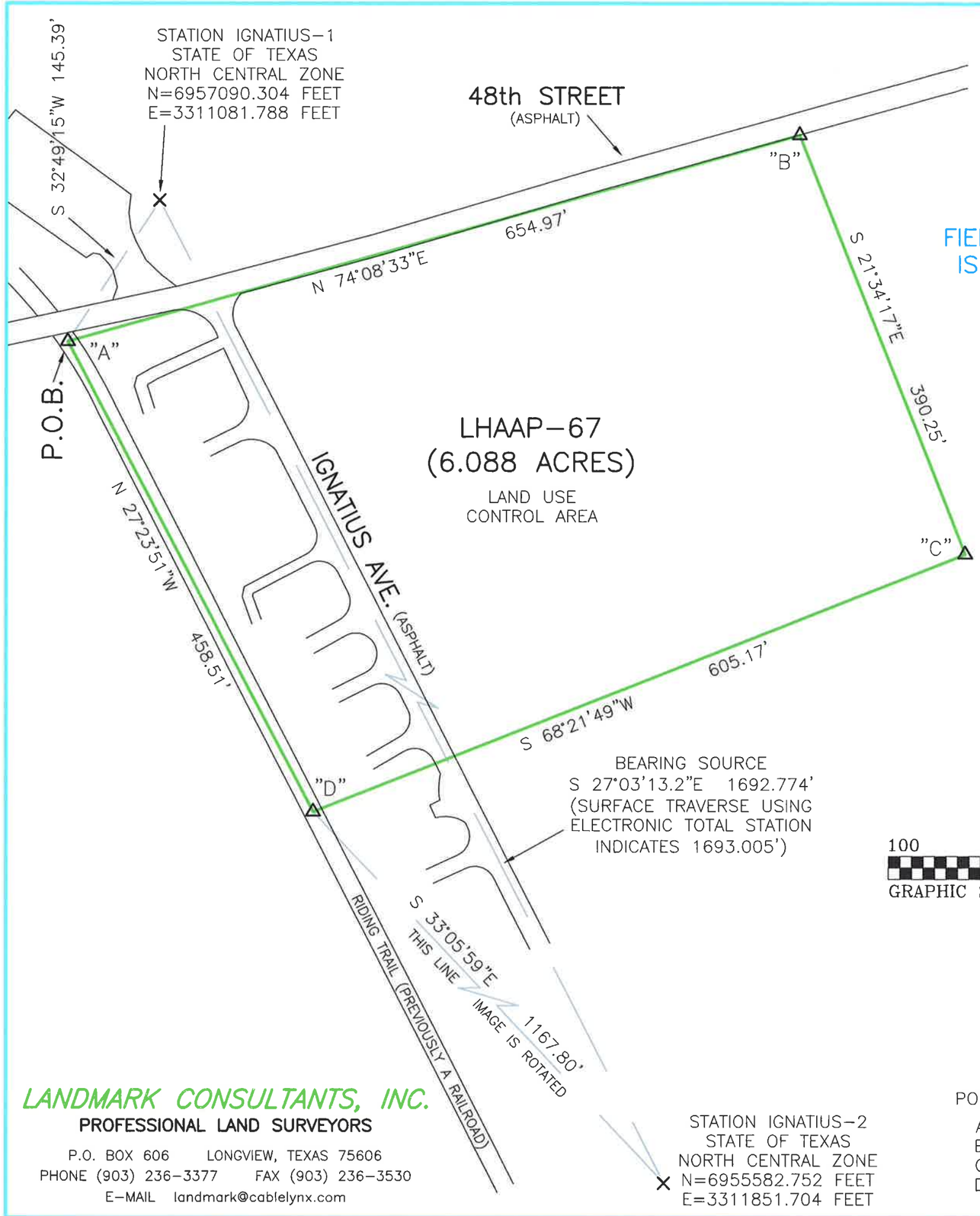
COORDINATE TABLE

POINT	NORTH	EAST
A	6956968.123	3311002.985
B	6957147.091	3311633.031
C	6956784.178	3311776.509
D	6956561.041	3311213.974

LHAAP-67 L.U.C.A.
(6.088 ACRES)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	H.PTS H.LEG
10/16/2014	0605063H.DWG	DRAWN BY JTJ

01149647



I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in October, 2014.

Witness my hand and seal this the 16th day of October, 2014.

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEET

STATE OF TEXAS
REGISTERED
TOM A. FIDLER
3940
PROFESSIONAL
LAND SURVEYOR

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

SCALE 1"=100'

100 0 100 200 300
GRAPHIC SCALE - FEET

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9998636625 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS IGNATIUS-1 & IGNATIUS-2. THE COMPUTED LAND AREA IS BASED ON GRID DISTANCES.

LEGEND

- X TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
- o CONCRETE NAIL IN BOTTLE CAP (SET IN ASPHALT)
- △ 1/2" IRON REBAR WITH ORANGE PLASTIC CAP ENGRAVED "FIDLER" & "RPLS 3940" (SET)
- BOUNDARY LINE OF LAND USE CONTROL AREA

COORDINATE TABLE

POINT	NORTH	EAST
A	6956968.123	3311002.985
B	6957147.091	3311633.031
C	6956784.178	3311776.509
D	6956561.041	3311213.974

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

LHAAP-67 L.U.C.A.
(6.088 ACRES)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	H.PTS H.LEG
10/16/2014	0605063H.DWG	DRAWN BY JTJ

LHAAP-67, 67-3

LAND USE CONTROL COMPLIANCE INSPECTION FORM

September 14, 2015

Sample Annual Land Use Control Compliance Certification Documentation

In accordance with the Remedial Design dated 8/1/11 for LHAAP-67, a certification of site was conducted by _____ [indicate transferee] on _____.

A summary of land use control mechanisms is as follows:

- Groundwater restriction - A restriction against use of groundwater will remain in effect until the levels of the COCs in groundwater and soil allow unrestricted use and unlimited exposure (UUUE). [Indicate whether groundwater restrictions are still required at LHAAP-67]

A summary of compliance with land use and restriction covenants is as follows:

- No use of groundwater, installation of new groundwater wells, or tampering with existing wells at LHAAP-67.

I, the undersigned, do document that the certification was performed as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief.

Date: _____

Name/Title: _____

Signature: _____

Annual compliance certification forms shall be completed no later than March 1 of each year for the previous calendar year.

LHAAP-68

NOTICE OF NONRESIDENTIAL LAND USE AT LHAAP-68 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

2010-000005560

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

7 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 04/27/2010 04:08 PM **Document Number:** 2010-000005560 **Receipt No:** 1006195 **Amount:** $ 36.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT
COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW E & I
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

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

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. The site, LHAAP-68, is located near the service station in the maintenance shops and power area of the former Longhorn Army Ammunition Plant (LHAAP). LHAAP-68 consisted of two mobile 600-gallon storage tanks on trucks that were parked on the asphalt surface at the service station of the maintenance complex. LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as the Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. Although there are many sites at LHAAP that are specifically NPL listed, LHAAP-68 is not itself considered an NPL site. Environmental activities at LHAAP-68 progressed through the site investigation, at which point it was agreed by the Army and the TCEQ as the lead regulatory agency that no significant releases had occurred and the site could be closed under Texas Administrative Code (TAC) Risk Reduction Rule Standard 2.

LHAAP-68 is located at the maintenance complex next to the service station. Two mobile 600-gallon storage tanks on trucks were parked on the asphalt surface with no curb or other containment present. The mobile storage tanks contained No. 2 diesel and gasoline fuel. In 2006, six soil samples were collected, two from each of three borings that were installed at the site, and analyzed for semi volatile organic compounds, volatile organic compounds, and total petroleum hydrocarbons. Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday

through Friday 8:00 a.m. to 5:00 p.m. or the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The LHAAP-68 parcel is 426 square foot, more or less, or 0.00977 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the LHAAP-68 site and USEPA and TCEQ concluded that no further investigation or action is required for LHAAP-68. Contaminants in soil samples from LHAAP-68 meet non-residential soil criteria in accordance with 30TAC§335.560(b).

Limited monitoring of LHAAP-68 will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of LHAAP-68 is consistent with the non-residential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; and nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951
or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-BDO (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 10 th day of March, 2010.

BEFORE ME, on this the 10 th day of March, personally appeared Rose M. Zeiler, of United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 10 day of March, 2010.

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

ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 3-17-2011

FIELD NOTES DESCRIPTION OF
"LHAAP-68" TRACT
CADDO LAKE NATIONAL WILDLIFE REFUGE
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, tract "LHAAP-68" being located within the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract "LHAAP-68" being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.999861727, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "X-11" (N=6960733.698 feet E=3304750.367 feet) and "C-21" (N=6956579.781 feet E=3308499.969 feet). Said traverse indicates a surface distance of 5596.714 feet between said monuments. The computed land area is based on surface distances.

Commencing at monument "X-11" referenced above,

THENCE S 42deg04'17.4"E 428.46' to a point, from which point monument "C-21" referenced above bears S 42deg04'17.4"E 5167.48',

THENCE S 47deg55'43"W 686.07' to a concrete nail (with head dimple) set in asphalt for the Northmost corner of this tract and this description's POINT OF BEGINNING,

THENCE S 44deg35'24"E 41.58' along the Northeast B.L. of this tract to an "X" set (chisled in concrete) for this tract's Eastmost corner,

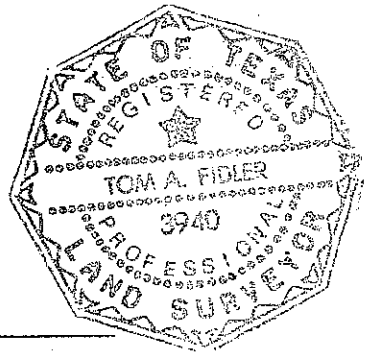
THENCE S 41deg38'18"W 9.34' along the Southeast B.L. of this tract to an "X" set (chisled in concrete) for this tract's Southmost corner,

THENCE N 46deg59'28"W 41.90' along the Southwest B.L. of this tract to a concrete nail (with head dimple) set in asphalt for this tract's Westmost corner,

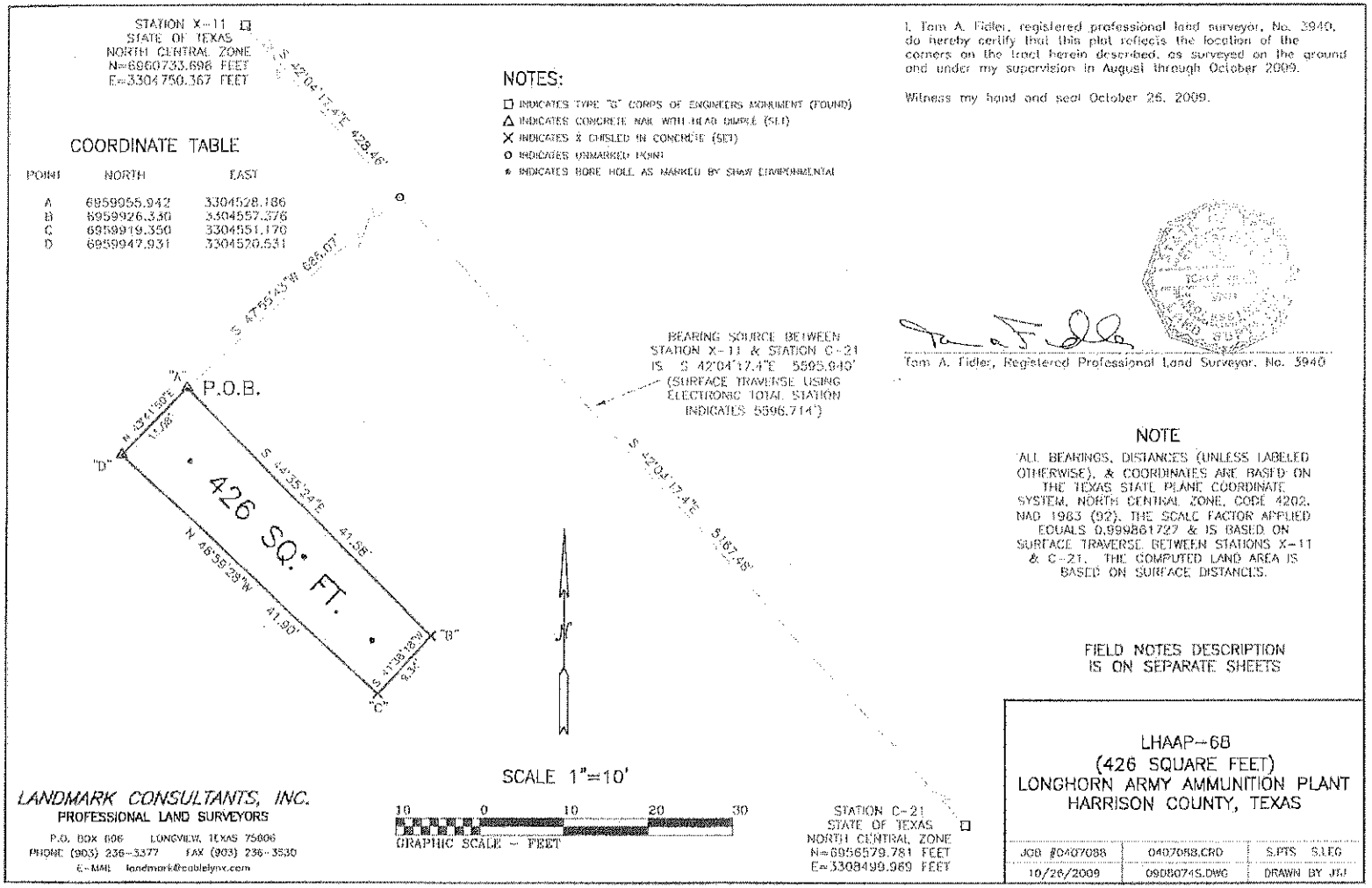
THENCE N 43deg41'50"E 11.08' along the Northwest B.L. of this

tract to this POINT OF BEGINNING. This tract contains 426 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940



COORDINATE TABLE

POINT	NORTH	EAST
A	6959955.942	3304528.186
B	6959926.330	3304557.376
C	6959919.350	3304551.170
D	6959947.931	3304520.531

NOTES:

- □ INDICATES TYPE "B" CORPS OF ENGINEERS MONUMENT (FOUND)
- △ INDICATES CONCRETE NAIL WITH LEAD DIMPLE (SET)
- X INDICATES X CHISLED IN CONCRETE (SET)
- O INDICATES UNMARKED POINT
- * INDICATES BORE HOLE AS MARKED BY SHAW ENVIRONMENTAL

I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in August through October 2009.

Witness my hand and seal October 26, 2009.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.999861727 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS X-11 & C-21. THE COMPUTED LAND AREA IS BASED ON SURFACE DISTANCES.

FIELD NOTES DESCRIPTION IS ON SEPARATE SHEETS

LANDMARK CONSULTANTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-5377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com

LHAAP-68
(426 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #0407088	0407088.CRD	S.PTS S.LEG
10/26/2009	09080745.DWG	DRAWN BY JTF

PISTOL RANGE

NOTICE OF NONRESIDENTIAL LAND USE AT PISTOL RANGE FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

September 14, 2015

2012-000000705

DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT

MISCELLANEOUS

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 01/19/2012 10:41 AM **Document Number:** 2012-000000705 **Receipt No:** 1200645 **Amount:** $ 32.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

SHAW ENVIRONMENTAL & INFRASTRUCTION GROUP
1401 ENCLAVE PARKWAY, SUITE 250

HOUSTON, TX 77077

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF NONRESIDENTIAL LAND USE

KNOW ALL MEN BY THESE PRESENTS THAT:

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

I

The U.S. Army, Department of Defense, has performed a remediation of the land described herein. The site, the former Pistol Range is located at the former Longhorn Army Ammunition Plant (LHAAP). LHAAP was placed on the National Priorities List (NPL) during August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA), and TCEQ (formerly known as Texas Water Commission) entered into an agreement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA) became effective on December 30, 1991. The former Pistol Range is an NPL site and a removal action was performed in 2009 in accordance with the FFA requirements. As a result of the removal action, the lead agency has determined that no further CERCLA action is necessary at the former Pistol Range to protect public health, welfare or the environment.

The former Pistol Range is located in the southeastern portion of LHAAP, approximately 280 feet south of Avenue Q at the end of Robert Avenue. The site is the eastern portion of a rectangular field and is approximately 110 feet north to south by 150 feet east to west. The former Pistol Range was known to have been used by LHAAP security personnel for small arms target qualification and recertification. The former Pistol Range was established in the 1950s and was used intermittently through 2004. A no further action Record of Decision for the former Pistol Range was signed by USEPA in 2010

establishing no remedy was required. Further information may be found in the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E, 12100 Park 35 Circle, Austin, Texas, 78753, (512) 239-2900, Monday through Friday 8:00 a.m. to 5:00 p.m. or in the Administrative Record available at the Marshall Public Library, 300 S. Alamo Blvd, Marshall, Texas 75670, (903) 935-4465, Monday through Thursday 10:00 a.m. to 8 p.m., Friday and Saturday 10:00 a.m. to 5:30 p.m.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public of the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

The former Pistol Range is a 0.3879 acre tract located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in Exhibit A.

The United States Department of the Army has undertaken careful environmental study of the former Pistol Range and USEPA and TCEQ concluded that no further investigation or action is required.

Limited monitoring of the former Pistol Range will take place in the form of Letters of Certification from the Army or the Transferee to TCEQ every five years to document that the use of the former Pistol Range is consistent with the nonresidential use scenarios evaluated in the risk assessment. Future use of the parcel is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences; child care facilities; nursing home or assisted living facilities; and any type of educational purpose for children/young adults in grades kindergarten through 12.

III

The owner of the site is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post Office Box 220
Ratcliff, AR 72951

or

Assistant Chief of Staff for Installation Management
ATTN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington D.C. 20310-0600

Rose M. Zeiler
Longhorn AAP Site Manager

EXECUTED this the 21 th day of July, 2011.

BEFORE ME, on this the 21 th day of July, personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 21 day of July, 2011.

ANGELA HUMPHRIES
Notary Public State of Texas
COMM. EXP. 03-17-2015

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

FIELD NOTES DESCRIPTION OF
FORMER PISTOL RANGE
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

The herein described tract of land is located in Harrison County, Texas, near the town of Karnack, being 16,897 square feet of land out of the Longhorn Ordance Works Reservation (also known as the Longhorn Army Ammunition Plant, Karnack, Texas), said tract being more particularly described as follows :

Surveyor's Note : All bearings and distances herein (unless labeled surface distance) are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92). The scale factor applied equals 0.9999146277, and is based on surface traverse using electronic total station between type "G" Corps of Engineers monuments "C-19-2" (N=6952844.320 feet E=3312839.019 feet) and "3-95" (N=6952411.298 feet E=3314136.438 feet). Said traverse indicates a surface distance of 1367.890 feet between said monuments. The computed land area is based on grid (State Plane) distances.

Commencing at monument "3-95" referenced above,

(As used herein, the abbreviation I.R.C. indicates 1/2" iron rod with R.P.L.S. #3940 orange plastic cap)

THENCE S 45deg51'27"E 855.98' to an I.R.C. set for the S.W.C. of this tract and this POINT OF BEGINNING,

THENCE N 00deg00'20"W 107.99' along the W.B.L. of this tract to an I.R.C. set for this tract's N.W.C. ,

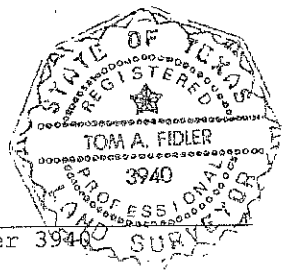
THENCE N 89deg59'47"E 155.96' along the N.B.L. of this tract to an I.R.C. set for this tract's N.E.C. ,

THENCE S 00deg32'56"E 107.99' along the E.B.L. of this tract to an I.R.C. set for this tract's S.E.C. ,

THENCE S 89deg59'43"W 156.98' along the S.B.L. of this tract to this POINT OF BEGINNING.

This tract contains 16,897 square feet, more or less.

I, Tom A. Fidler, registered professional land surveyor No. 3940 in the State of Texas, do hereby certify that this field notes description is the result of a survey made on the ground and under my supervision.



Tom A. Fidler, R.P.L.S. Number 3940

STATION C-19-2
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6952844.320 FEET
E=3312839.019 FEET

BEARING SOURCE BETWEEN
STATION C-19-2 & STATION 3-95
IS S 71°32'35.6"E 1367.773'
(SURFACE TRAVERSE USING
ELECTRONIC TOTAL STATION
INDICATES 1367.890')

STATION 3-95
STATE OF TEXAS
NORTH CENTRAL ZONE
N=6952411.298 FEET
E=3314136.438 FEET

S 45°51'27"E
855.86'

COORDINATE TABLE

POINT	NORTH	EAST
A	6951923.143	3314750.686
B	6951815.153	3314750.697
C	6951815.166	3314907.681
D	6951923.153	3314906.647

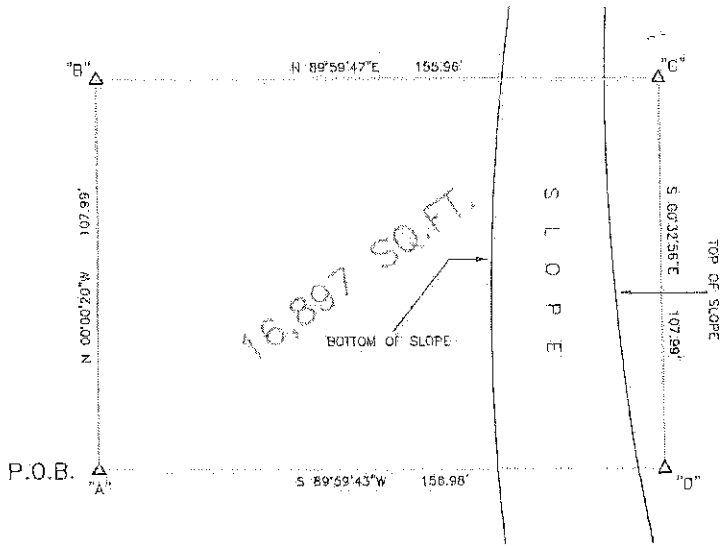
LEGEND

□ INDICATES TYPE "G" CORPS OF ENGINEERS MONUMENT (FOUND)
△ INDICATES 1/2" IRON ROD WITH R.P.L.S. #3940 CAP (SET).

NOTE

ALL BEARINGS, DISTANCES (UNLESS LABELED OTHERWISE), & COORDINATES ARE BASED ON THE TEXAS STATE PLANE COORDINATE SYSTEM, NORTH CENTRAL ZONE, CODE 4202, NAD 1983 (92). THE SCALE FACTOR APPLIED EQUALS 0.9999146277 & IS BASED ON SURFACE TRAVERSE BETWEEN STATIONS C-19-2 AND 3-95. THE COMPUTED LAND AREA IS BASED ON GRID DISTANCES.

LANDMARK SURVEY PARTS, INC.
PROFESSIONAL LAND SURVEYORS
P.O. BOX 606 LONGVIEW, TEXAS 75606
PHONE (903) 236-3377 FAX (903) 236-3530
E-MAIL landmark@cablelynx.com



I, Tom A. Fidler, registered professional land surveyor, No. 3940, do hereby certify that this plat reflects the location of the corners on the tract herein described, as surveyed on the ground and under my supervision in April 2011.

Witness my hand and seal May 2, 2011.

Tom A. Fidler, Registered Professional Land Surveyor, No. 3940

SCALE 1"=30'

30 0 30 60 90
GRAPHIC SCALE - FEET

FIELD NOTES DESCRIPTION
IS ON SEPARATE SHEETS

FORMER PISTOL RANGE
(16,897 SQUARE FEET)
LONGHORN ARMY AMMUNITION PLANT
HARRISON COUNTY, TEXAS

JOB #1104040	0407088.CRD	L.PTS L.LEG
MAY 2, 2011	1103025L.DWG	DRAWN BY JTJ

LHAAP-001-R-01/LHAAP-003-R-01South Test Area (LHAAP-001-R-01) and Ground Signal Test Area (LHAAP-003-R-01), MMRP-1

LONG TERM MANAGEMENT INSPECTION AND MAINTENANCE CHECKLIST

October 15, 2018

LTM Inspection and Maintenance Checklist

General Information	
Project Name	LTM Inspection and Maintenance, LHAAP-001-R and LHAAP-003-R MMRP, Longhorn Army Ammunition Plant, Karnack, TX
Contractor	
Inspector's Name	
Inspector's Title	
Inspector's Signature	
Inspector's Contact Number	
Inspection Date	
Type of Inspection	☐ Quarterly ☐ Semiannual ☐ Annual ☐ Prior to forecast rain ☐ After rain event ☐ Other_____

	Description	Yes	No	N/A	**Comments** (Attach photos/location sketches)	**Corrective Action** (Attach photos)
A. Perimeter Signage						
A.1	Are there any damaged signs?					
A.2	Are there any missing signs?					
A.3	Are all signs legible?					
A.4	Is perimeter boundary mowed?					

A.5	Are signs visible from one sign to the next sign?					
B. LUC Boundary						
B.1	Is the LUC Boundary identifiable?					
C. Dig and Intrusive Activities restriction						
C.1	Any observed digging activities or similar intrusive activities within the site boundaries?					

Note: Annual compliance inspections shall be conducted no later than March 1 of each year for the previous calendar year and filed onsite.

LHAAP-001-R-01/LHAAP-003-R-01
South Test Area (LHAAP-001-R-01) and Ground Signal Test Area (LHAAP-003-R-01), MMRP-2
LUCs FROM FINAL REMEDIAL DESIGN

October 15, 2018

FINAL
LAND USE CONTROL REMEDIAL DESIGN/ REMEDIAL ACTION CONSTRUCTION REPORT LHAAP-001-R-01 AND LHAAP-003-R-01 LONGHORN ARMY AMMUNITION PLANT

May 2018

Contract Number: W9128F-13-D-0012
Task Order Number: W912BV17F0150

Performance Based Remediation (PBR)
Longhorn Army Ammunition Plant
Karnack, Texas

Prepared For:

Longhorn Army Ammunition Plant
Karnack, Texas

Under Contract To:

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

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TABLE OF CONTENTS

Acronyms and Abbreviations iii

1 Introduction 1-1

1.1 Facility Background 1-1
1.2 Munitions Response Sites LHAAP-001-R and LHAAP-003-R Site Descriptions 1-1
1.3 Land Use Control Remedial Action Objective 1-3
1.4 Land Use Control Remedial Action 1-4

2 Site Characteristics 2-1

2.1 Geology and Hydrogeology 2-1
2.2 Current and Future Land Use 2-2
2.3 Nature and Extent of MEC 2-2
2.3.1 LHAAP-001-R 2-2
2.3.2 LHAAP-003-R 2-4

3 Land Use Control Remedial Design/Remedial Action Construction 3-1

3.1 LUC Implementation (Completed) 3-1
3.2 Maintenance and Monitoring 3-2
3.2.1 Maintenance of Existing MEC Warning Signs 3-2
3.2.2 Administrative Maintenance 3-3
3.3 Reporting of LUC Inspection and Monitoring 3-4
3.3.1 Notice of Planned Property Conveyances 3-4
3.3.2 Opportunity to Review Text of Intended LUCs 3-4
3.3.3 Notification Should Action(s) which Interfere with LUC Effectiveness be Discovered Subsequent to Conveyance 3-5
3.3.4 LUC Enforcement 3-5
3.3.5 Modification or Termination of LUCs 3-5

4 References 4-1

Figures

Figure 1-1 LHAAP Site Map
Figure 1-2 LHAAP-001-R and LHAAP-003-R Site Location Map with LUC Boundaries
Figure 3-1 Danger UXO Warning Sign

Attachment

Attachment 1 - Initial Notice of Land Use Controls Including 2008 LUC Boundary Maps for LHAAP-001-R and LHAAP-003-R
Attachment 2 - Initial Notice of Land Use Controls for Four Environmental Sites at Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas Transmittal Letters

Attachment 3 - Notice of Land Use Controls Including Final LUC Boundary Maps for LHAAP-001-R and LHAAP-003-R
Attachment 4 - Notice of Land Use Controls for Two Environmental Sites at Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas Transmittal Letters

Appendices

Appendix A LTM Inspection and Maintenance Checklist
Appendix B LUC Compliance Certification Form
Appendix C Recordation of Land Use Controls for LHAAP-001-R and LHAAP-003-R

ACRONYMS AND ABBREVIATIONS

ARAR	Applicable or Relevant and Appropriate Requirement
bgs	below ground surface
BIP	Blow-in-place
CD	Cultural debris
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CTT	Closed, Transferring, and Transferred
DNT	Dinitrotoluene
DoD	Department of Defense
ECP	Environmental Condition of Property
EE/CA	Engineering Evaluation/Cost Analysis
e2M	Engineering-Environmental Management
FFA	Federal Facility Agreement
GW-Ind	Groundwater-Industrial
HMX	1,3,5,7-Tetranitro-1,3,5,7-tetrazocane
IRP	Installation Restoration Program
LHAAP	Longhorn Army Ammunition Plant
LUC	Land use control
µg/kg	Micrograms per kilogram
µg/L	Micrograms per liter
MC	Munitions constituent
MCL	Maximum Contaminant Level
MD	Munitions debris
MEC	Munitions and Explosives of Concern
mm	Millimeter
MMRP	Military Munitions Response Program
MOA	Memorandum of Agreement
MPPEH	Material potentially presenting explosive hazard
MRS	Munitions response site
MSC	Medium Specific Concentration
NCP	National Contingency Plan
NFA	No Further Action
NPL	National Priorities List
OB/OD	Open burn/open detonation
O&M	Operation and maintenance
PCL	Protective Concentration Level
RACR	Remedial Action Completion Report
RAO	Remedial action objective
RD	Remedial design
RDX	1,3,5-Trinitro-1,3,5-triazinane
ROD	Record of Decision

SARA	Superfund Amendments and Reauthorization Act
§	Section
SI	Site Inspection
STEP	Solutions to Environmental Problems
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
TNT	Trinitrotoluene
TRRP	Texas Risk Reduction Program
U.S.	United States
USACE	U.S. Army Corps of Engineers
U.S.C	United States Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
UU/UE	Unlimited Use/Unlimited Exposure
UXO	Unexploded Ordnance
WP	White phosphorus

3 LAND USE CONTROL REMEDIAL DESIGN/REMEDIAL ACTION CONSTRUCTION

The remedial action objective for LHAAP-001-R and LHAAP-003-R is protection of human health and safety from explosive hazards that may have remained at the sites after the MEC removal action. The duration for the LUCs specified in the MEC ROD for this purpose must remain in place until it is demonstrated that the MEC no longer presents a threat to public/human safety.

This section describes the LUC RD/RAC for LHAAP-001-R and LHAAP-003-R. Per the Final ROD, the LUCs' performance objectives are to:

- Prohibit the development and use of the property for residential housing, elementary and secondary schools, child care facilities, and playgrounds.
- Restrict land use to nonresidential
- Prohibit intrusive activities such as digging or any other activity which could result in explosive safety risk.
- Maintain existing MEC warning signs at the perimeter of each site to physically demarcate controlled areas.

The implementation, maintenance, and inspection requirements associated with each of the performance objectives that comprise this LUC RD/RAC are described below. The actions taken to implement the LUC objectives during the remedial action phase, as well as ongoing maintenance, monitoring, and reporting requirements are presented in Section 3.1 below. Upon regulatory review and concurrence with the final LUC RD/RACR, it will be distributed as part of the Comprehensive LUC Management Plan.

For portions of LHAAP-001-R and LHAAP-003-R subject to LUCs that are not owned by the Army, the Army will monitor and report on the implementation, maintenance, and enforcement of LUCs, and coordinate with federal, state, and local governments and owners and occupants of properties subject to LUCs. The Army remains responsible for ensuring that the remedy remains protective of human health and safety.

3.1 LUC Implementation (Completed)

The actions required to implement the LUCs for LHAAP-001-R and LHAAP-003-R are described below. An initial notice of LUCs, was completed on December 8, 2016 (**Attachments 1 and 2**), within 90 days of ROD signature as required. The notice of LUCs including the final LUC boundary maps and description of the LUCs were completed on May 9, 2018 (**Attachments 3 and 4**). The preliminary LUC boundaries presented in the initial notice are considered the final LUC boundaries presented in the notice of final LUCs and are presented on **Figure 1-2.** The following actions were undertaken to implement LUCs for LHAAP-001-R and LHAAP-003-R:

- Finalize the boundaries of the LUCs as part of the remedial action (completed). The preliminary LUC boundaries are considered the final LUC boundaries, as referenced on **Figure 1-2**.
- Survey the LUC boundaries (completed). The boundaries were finalized based on USEPA and TCEQ concurrence, and the LUC boundaries were surveyed by a State of Texas licensed surveyor. A legal description of the surveyed area accompanies the survey plat.
- Record the LUCs in Harrison County. The LUC plats and legal descriptions and LUC restriction language was recorded in the Harrison County Courthouse in accordance with Title 30 TAC §335.566 on April 19, 2018 (**Appendix C**).
- Provide notice of LUCs with finalization of the RD/RACR (completed).
    - Prepare the notice of land use restrictions including prohibiting development/use for residential housing, elementary and secondary schools, child care facilities and play grounds; prohibit intrusive activities, and maintenance of existing MEC warning signs along the perimeter of each site to physically demarcate controlled areas. The notice consists of a brief description of the LUCs and a figure depicting the LUC boundaries.
    - Transmit the notice to federal, state, and local governments involved at LHAAP-001-R and LHAAP-003-R and owners and occupants of the property subject to restrictions and LUCs. The notices have been sent to federal, state, and local officials including: State Representatives, the Harrison County Judge, Harrison County Historical Courthouse, the City of Uncertain Mayor, and Caddo Lake and Leigh Water Supply Corporations' Presidents. Notice has also been sent to the Caddo Lake National Wildlife Refuge Manager, as a representative of the USFWS, the future transferee of the property.

3.2 Maintenance and Monitoring

Components of the final remedy at LHAAP-001-R and LHAAP-003-R require repair and maintenance and those activities are described in this section, along with other routine maintenance activities. The following subsections present the maintenance and monitoring requirements of the final remedy.

3.2.1 Maintenance of Existing MEC Warning Signs

MEC warning signs have been installed at the perimeter of LHAAP-001-R and LHAAP-003-R (64 signs at each site), that serve as a physical demarcation of the controlled areas. The signs have visibility from one sign to the next with a maximum spacing of 100 feet. The signs include warning of potential presence of MEC and state the restriction against intrusive activities.

These signs will be visually inspected annually, or as needed, to ensure they remain intact, undamaged, and visible from one sign to the next. Maintenance will be conducted, as needed, and may include the following activities:

- Mowing and brush clearing around MEC warning signs to ensure that they are visible from one sign location to the next sign location.
- Rehanging/affixing MEC warning signs or replacing MEC warning sign(s), if they become damaged or illegible. Figure 3-1 presents an example of the Unexploded Ordnance (UXO) Danger signs that are required. The specifications for sign replacement are found in Appendix N of the MEC Removal Action report (EODT, 2009).
- Repairing existing MEC warning sign posts, which may require the reestablishment of the concrete base or post replacement.

The Inspection and Maintenance Checklist is provided in **Appendix A.** Repairs will also be documented via photographs and field notes.

3.2.2 Administrative Maintenance

Administrative maintenance required to ensure LUCs remain in place and effective include:

- Annual field inspections of LHAAP-001-R and LHAAP-003-R to confirm that no violations of the LUCs have occurred. Documentation of the inspection will be included on the Inspection and Maintenance Checklist (see **Appendix A**).
- Annual certifications that no LUC-restricted activities have been authorized and that LHAAP-001-R and LHAAP-003-R conditions and use are consistent with the LUCs. The Annual LUC Compliance Certification Form is presented in **Appendix B**.
- Periodic transmittal of a LUC Notice to federal, State, and local authorities and to owners and occupants of LHAAP-001-R and LHAAP-003-R. The notice will include the land use restrictions referenced in the ROD, a written description of the LUCs, and a figure depicting the LUC boundaries. The transmittal will coincide with each Five Year Review and will be documented in the report.
- The final LUC RD/RACR will be added to the Comprehensive LUC Management Plan and the plan will be provided to the owner or occupant of LHAAP-001-R and LHAAP-003-R. This update to the Comprehensive LUC Management Plan will be completed during the next annual update, which will be in the fourth quarter of 2018.

The U.S. Army will address LUC problems within its control that are likely to impact remedy integrity and shall address problems as soon as practicable.

3.3 Reporting of LUC Inspection and Monitoring

Beginning with finalization of this RD/RACR and approval of the Inspection and Maintenance forms and the Annual Certification Form, the U.S. Army will undertake inspections and certify continued compliance with the LUC objectives. The U.S. Army, or the transferee after transfer, will retain the LUC Inspection and Certification documents in the project files for incorporation into the Five Year Review reports, and these documents will be made available to USEPA and TCEQ upon request. In addition, should any violations be found during the certification, the U.S. Army will provide to USEPA and TCEQ, along with the document, a separate written explanation indicating the specific violations found and what efforts or measures have or will be taken to correct those violations. The need to continue inspections and certifications will be revisited during each Five Year Review.

3.3.1 Notice of Planned Property Conveyances

Upon transfer of Army-owned property, the Army will provide written notice of the LUCs to the transferee of the potential presence of MEC and any land use restrictions referenced in the ROD. Within 15 days of transfer, the U.S. Army will provide written notice to USEPA and TCEQ of the division of implementation, maintenance, and enforcement responsibilities unless such information has already been provided in the LUC RD/RACR. The notice will describe the mechanism by which the LUC will continue to be implemented, maintained, inspected, reported, and enforced. Upon transfer, such responsibilities may shift to the transferee via appropriate provisions placed in the Environmental Condition of Property (ECP) or other environmental document for transfer. Although the U.S. Army may transfer responsibility for various implementation actions, the U.S. Army will also retain ultimate responsibility for the remedy integrity. This means that the U.S. Army is responsible for addressing substantive violations of the LUC performance objectives that would undermine the U.S. Army's CERCLA remedy. The U.S. Army also will be responsible for incorporating RD information and outlining the transferee's LUC obligations into property transfer documentation. In the event property is transferred out of Federal control, the LUCs relating to property restrictions shall be recorded in the deed and shall be enforceable by the U.S. and the state of Texas.

3.3.2 Opportunity to Review Text of Intended LUCs

The U.S. Army provided a copy of the land use restriction notification to TCEQ for review and approval prior to its recordation in Harrison County. The USEPA also received a copy for review. The U.S. Army will produce an ECP or other environmental document for transfer of LHAAP-001-R and LHAAP-003-R, but before executing transfer, the U.S. Army will provide the USEPA and TCEQ with a copy of the ECP or other environmental document for transfer so that they may have reasonable opportunity, before transfer, to review all LUC-related provisions.

3.3.3 Notification Should Action(s) which Interfere with LUC Effectiveness be Discovered Subsequent to Conveyance

Should the U.S. Army discover, after conveyance of the site, any activity on the property inconsistent with the LUC performance objectives, the U.S. Army shall notify the USEPA and TCEQ within 72 hours of such discovery. Consistent with Section 4.3.4 below, the U.S. Army will then work with the USEPA, TCEQ, and the transferee to correct the problem(s) discovered. This reporting requirement does not preclude the U.S. Army from taking immediate action pursuant to its CERCLA authorities to prevent any perceived risk(s) to human health and safety.

3.3.4 LUC Enforcement

Should the LUC remedy reflected in this LUC RD/RACR fail, the U.S. Army will coordinate with the USEPA and TCEQ to ensure that appropriate actions are taken to reestablish its protectiveness. These actions may range from informal resolutions with the USFWS or its lessee, to the institution of judicial action against non-federal third parties. Alternatively, should the circumstances warrant such, the U.S. Army could choose to exercise its response authorities under CERCLA. Should the U.S. Army become aware that any future owner or user of the property has violated any LUC requirement over which a local agency may have independent jurisdiction, the U.S. Army may notify those agencies of such violation(s) and work cooperatively with them to re-achieve owner/user compliance with the LUC.

3.3.5 Modification or Termination of LUCs

The LUCs shall remain in effect until such time as the U.S. Army and USEPA agree that it has been demonstrated that MEC no longer presents a threat to public/human safety, allowing unrestricted property use. When this occurs, the LUCs will be terminated, as needed. The decision to terminate the LUC will be documented consistent with the National Contingency Plan (NCP) process for post-ROD changes, potentially including an explanation of significant differences or a RACR. If the property has been transferred and a determination by the U.S. Army and USEPA has been made to terminate the LUC, the U.S. Army shall provide to the owner of the property an appropriate release for recordation pertaining to the site and will also timely advise other local stakeholders of the action.

SOUTH TEST AREA (LHAAP-001-R-01) AND GROUND SIGNAL TEST AREA (LHAAP-003-R-01), MMRP-3 NOTICE OF LAND USE CONTROLS AND NONRESIDENTIAL LAND USE AT LHAAP-001-R-01 AND LHAAP-003-R-01 FILED IN PUBLIC RECORDS OF HARRISON COUNTY, TEXAS (INCLUDING SURVEY PLAT)

Date October 4, 2019

DATE

DAIM-ODB-LO

John Doe
1234 Any Street
Anywhere, TX 56789

Re: Notice of Land Use Controls for two environmental sites at Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas

The final Land Use Control (LUC) Remedial Design (RD)/Remedial Action Construction Report (RACR) for two sites at LHAAP was completed in 2018. The two sites are: LHAAP-001-R South Test Area/South Bomb Area and LHAAP-003-R Ground Signal Test Area.

The attached information is provided to fulfill a requirement of the LUC RD/RACR to give notice of the groundwater and soil (surface and subsurface) contamination and any land use restrictions referenced in the ROD. The selected remedy of land use controls has been implemented at both sites. The notices are being sent to federal, state and local governments involved at these sites and the owners and occupants of the properties subject to the use restrictions and land use controls.

The point of contact for this action is the undersigned. I may be contacted at 479-635-0110, or by email at rose.m.zeiler.civ@mail.mil.

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Three Enclosures
Copies furnished:
R. Mayer, USEPA Region 6, Dallas, TX
A. Palmie, TCEQ, Austin, TX
Administrative Record

EXAMPLE

2018-000004040

*****DO NOT REMOVE THIS PAGE – IT IS A PART OF THIS INSTRUMENT*****

NOTICE

6 Pages

FILED AND RECORDED – OPR	CLERKS NOTES
On: 04/19/2018 02:27 PM **Document Number:** 2018-000004040 **Receipt No:** 1804258 **Amount:** $ 42.00 **By:** Ann Turner, **Deputy** **Patsy Cox, County Clerk** **Harrison County, Texas**	

COUNTY COURT COUNTY OF HARRISON, TEXAS

STATE OF TEXAS
COUNTY OF HARRISON
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the Official Public Records of Harrison County, Texas.

Patsy Cox

Patsy Cox, Harrison County Clerk

Record and Return To:

KIM NEMMERS
4085 ASPEN LANE

EVERGREEN, CO 80439

STATE OF TEXAS

HARRISON COUNTY

INDUSTRIAL SOLID WASTE
NOTICE OF LAND USE CONTROLS

KNOW ALL MEN BY THESE PRESENTS THAT:
Pursuant to the Rules of the Texas Commission on Environmental Quality (TCEQ) pertaining to Industrial Solid Waste Management, this document is hereby filed in the Public Records of Harrison County, Texas in compliance with the recordation requirements of said rules:

I

The U.S. Army, Department of Defense, has performed a removal of munitions and explosives of concern on the land described herein. Longhorn Army Ammunition Plant (LHAAP) Munition Response Sites (MRSs) LHAAP-001-R (South Test Area/Bomb Test Area) and LHAAP-003-R (Ground Signal Test Area) are former military test areas located in the southern and southeastern portions of LHAAP, respectively. LHAAP was placed on the National Priorities List (NPL) in August 1990. After its listing on the NPL, the U.S. Army, United States Environmental Protection Agency (USEPA) and the TCEQ entered into an agreement under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 120 for remedial activities. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991. MRSs LHAAP-001-R and LHAAP-003-R are co-located with NPL sites LHAAP-27 and LHAAP-54, respectively and are also considered NPL sites. Remedial activities at these sites were performed in accordance with the FFA requirements.

MRS LHAAP-01-R was constructed in 1954 and was used for testing photoflash bombs produced at the facility until approximately 1956. During the late 1950s, illuminating signal devises were also demilitarized within pits excavated in the vicinity of the test pad. During the 1960s, leaking production items may have been demilitarized by detonation. LHAAP-001-R was identified as an MRS based on the visual confirmation of MEC.

MRS LHAAP-003-R was used intermittently in April 1963 for aerial and on-ground testing and destruction of a variety of devices, including pyrotechnic signal devices, red phosphorus smoke wedges, infrared flares, illuminating mortar shells and cartridges, button bombs and various types of explosive simulators. The site was used intermittently over a 20-year period for testing and burn-out of rocket motors. From late 1988 through 1991, the site was used for the burn-out of Pershing missile rocket motors and, occasionally, leaking white phosphorus munitions were burned at the site as a demilitarization activity. LHAAP-003-R was identified as an MRS based on the reported presence of MEC.

Non-time critical removal actions (NTCRAs) for MEC removal were conducted at both sites in 2008. A Final Record of Decision (ROD) for LHAAP-001-R and LHAAP-003-R was issued in August 2016, which documents the final selected remedy for the sites, including the implementation of Land Use Controls (LUCs) designed to promote ongoing protection of human safety against potential explosive hazards that may have remained at the sites following the MEC removal actions. The LUCs' performance objectives are to prohibit residential use, to restrict land use to non-residential, and to prohibit intrusive activities such as digging or any other activity which could result in explosive safety risks.

Further information may be found by examination of the Notice of Registration No. 30990 files, which are available for inspection upon request at TCEQ, Central File Room Customer Service Center, Building E (Room 103. first floor) 12100 Park 35 Circle, Austin, Texas 78753, (512) 239-2900, Monday through Friday 8:00 am to 5:00 pm, or the Administrative Record available at the Marshall Public Library, 300 South Alamo Boulevard, Marshall, Texas 75670, (903) 935-4465, Monday, Tuesday and Thursday 9:30AM – 7:30PM, Wednesday and Friday 9:30AM – 5:30PM, and Saturday 9:30AM – 3:30PM.

The TCEQ requires certain persons to provide recordation in the real property records to notify the public on the conditions of the land and/or the occurrence of remediation. This notification is not a representation or warranty by the TCEQ of the suitability of this land for any purpose.

II

MRS LHAAP-001-R covers an area of approximately 72.14 acre-tract, more or less, located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in **Exhibit A**. The entire LHAAP-001-R parcel is within a LUC boundary which is described in **Exhibit A**.

MRS LHAAP-003-R covers an area of approximately 79.53 acre-tract, more or less, located in Harrison County, Texas, near the town of Karnack, being more particularly described with survey plat and metes and bounds established in **Exhibit B**. The entire LHAAP-003-R parcel is within a LUC boundary which is described in **Exhibit B**.

The United States Department of the Army has undertaken careful environmental study of MRSs LHAAP-001-R and LHAAP-003-R and the USEPA and TCEQ concluded that LUCs should remain in place until it is demonstrated that MEC no longer presents an explosive hazard.

Future use of these sites is intended as a national wildlife refuge consistent with industrial or recreational activities and not for residential purposes. The LUCs placed on the property to ensure appropriate future use include:

(1) Use must remain non-residential as described above. For purposes of this certification, residential use includes, but is not limited to, single family or multi-family residences, child care facilities, nursing home or assisted living facilities, and any type of educational purpose for children/young adults in grades kindergarten through 12. This LUC will remain in place until it is demonstrated that the MEC no longer present a threat to human safety/health.

(2) No intrusive activity shall be permitted, which includes digging or any other activity which could result in explosive safety risks, without prior consent. This LUC will remain in place until it is demonstrated that the MEC no longer present an explosive hazard. Intrusive subsurface activities may occur provided that the Army and the EPA approve such intrusive subsurface activities before they are commenced and provided that they are undertaken by qualified personnel who are trained in explosives safety measures.

III

The owner of these sites is the Department of the Army, and its address where more specific information may be obtained is as follows:

ATTN: DAIM-ODB-LO (R. Zeiler)
Post office Box 220
Ratcliff, AR 72951
Or
Assistant Chief of Staff for Installation Management
ATN: DAIM-ODB (T. Lederle)
600 Army Pentagon
Washington, D.C. 20310-0600

Rose M. Zeiler
Longhorn AP Site Manager

EXECUTED this the 19th day of April, 2018.

BEFORE ME, on this 19th day of April personally appeared Rose M. Zeiler, of the United States Army, United States Department of Defense, known to me to be the person and agent of said agency whose name is subscribed to the foregoing instrument, and she acknowledged to me that she executed the same for the purposes and in the capacity therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 19th day of April, 2018.

JENNIFER LESTER
Notary Public State of Texas
COMM. EXP. 1/3/2019
NO. 128484987

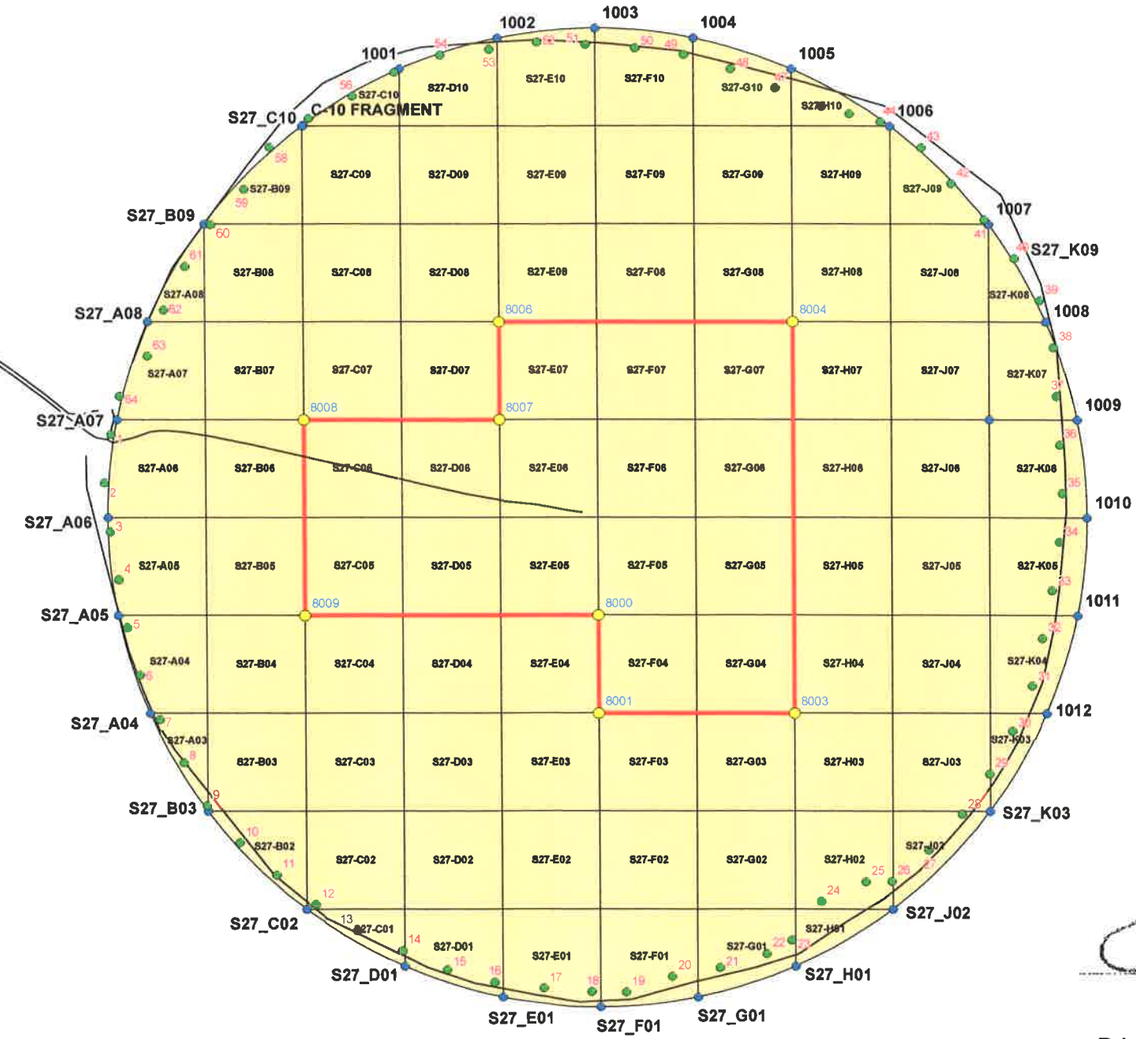
Notary Public in and for the State of Texas,
County of Harrison

Exhibit A
LHAAP-001-R, South Test Area/South Bomb Area
Longhorn Army Ammunition Plant, Karnack, Texas

DESCRIP	NORTHING	EASTING
SIGN 01	3613016.8	393564.7
SIGN 02	3612986.7	393560.5
SIGN 03	3612956.4	393563.9
SIGN 04	3612926.3	393568.9
SIGN 05	3612896.4	393574.2
SIGN 06	3612866.9	393581.7
SIGN 07	3612839.1	393594.1
SIGN 08	3612812.3	393608.5
SIGN 09	3612785.6	393622.9
SIGN 10	3612762.6	393643.0
SIGN 11	3612742.6	393666.0
SIGN 12	3612724.3	393690.2
SIGN 13	3612708.3	393716.2
SIGN 14	3612695.4	393743.6
SIGN 15	3612683.8	393771.9
SIGN 16	3612676.9	393801.4
SIGN 17	3612672.1	393831.6
SIGN 18	3612670.0	393862.0
SIGN 19	3612669.6	393893.3
SIGN 20	3612679.6	393912.1
SIGN 21	3612684.9	393942.1
SIGN 22	3612693.6	393971.2
SIGN 23	3612701.9	393987.0
SIGN 24	3612726.1	394005.4
SIGN 25	3612736.3	394033.3
SIGN 26	3612738.6	394049.3
SIGN 27	3612758.1	394072.6
SIGN 28	3612780.3	394093.5
SIGN 29	3612805.5	394110.5
SIGN 30	3612832.3	394124.9
SIGN 31	3612860.1	394137.3
SIGN 32	3612889.8	394143.8
SIGN 33	3612918.7	394149.8
SIGN 34	3612949.8	394154.5
SIGN 35	3612980.2	394156.4
SIGN 36	3613010.6	394154.7
SIGN 37	3613040.9	394152.8
SIGN 38	3613071.3	394151.2
SIGN 39	3613100.5	394142.6
SIGN 40	3613126.7	394127.2
SIGN 41	3613150.7	394108.5
SIGN 42	3613173.2	394088.0
SIGN 43	3613195.6	394069.6
SIGN 44	3613211.6	394044.1
SIGN 45	3613216.5	394024.9
SIGN 46	3613221.1	394007.6
SIGN 47	3613232.4	393979.3
SIGN 48	3613244.4	393951.4
SIGN 49	3613253.3	393922.2
SIGN 50	3613257.5	393892.0
SIGN 51	3613259.5	393861.7
SIGN 52	3613261.2	393831.2
SIGN 53	3613256.6	393801.1
SIGN 54	3613253.2	393770.8
SIGN 55	3613242.5	393742.2
SIGN 56	3613227.5	393715.6
SIGN 57	3613213.7	393688.6
SIGN 58	3613195.8	393664.0
SIGN 59	3613189.5	393648.3
SIGN 60	3613147.5	393627.4
SIGN 61	3613121.6	393611.4
SIGN 62	3613094.3	393597.9
SIGN 63	3613065.7	393587.4
SIGN 64	3613040.5	393570.2

DESCRIP	NORTHING	EASTING
8000	3612904.2	393867.3
8001	3612843.2	393867.3
8003	3612843.2	393989.2
8004	3613087.0	393989.2
8006	3613087.1	393806.4
8007	3613026.1	393806.4
8008	3613026.1	393684.4
8009	3612904.2	393684.4

DESCRIP	NORTHING	EASTING
1001	393745.4	3613244.5
1002	393806.4	3613263.8
1003	393867.3	3613269.9
1004	393928.3	3613263.8
1005	393989.2	3613244.5
1006	394050.1	3613209.0
1007	394111.0	3613148.0
1008	394146.5	3613087.0
1009	394165.8	3613026.1
1010	394171.9	3612965.1
1011	394165.8	3612904.2
1012	394146.5	3612843.2
C-10 FRAGMENT	393685.2	3613209.4
S27_A04	393588.0	3612843.2
S27_A05	393568.7	3612904.2
S27_A06	393562.5	3612965.1
S27_A07	393568.6	3613026.1
S27_A08	393587.9	3613087.1
S27_B03	393623.8	3612782.3
S27_B09	393623.8	3613148.0
S27_C02	393684.6	3612721.3
S27_C10	393684.4	3613209.0
S27_D01	393745.4	3612665.9
S27_E01	393806.4	3612666.6
S27_F01	393867.3	3612660.5
S27_G01	393928.3	3612666.7
S27_H01	393989.3	3612686.0
S27_J02	394049.9	3612721.3
S27_K03	394110.9	3612782.3
S27_K07	394111.2	3613026.1
S27_K09	394111.2	3613147.9



Legend

- OBOD Corners
- UXO Sign
- Boundary Stakes
- Roads
- OBOD
- Investigated Grids

0 150 300 600
Feet

Datum: NAD83 UTM
Monument: Longhorn Army Ammunition Plant
Monument BG-1 with coordinates
NORTHING-3614801.46,
EASTING-395385.09

STATE OF TEXAS
REGISTERED
DAVID R COLLINS
1954
PROFESSIONAL
LAND SURVEYOR

I, David R. Collins, Registered Professional Land Surveyor No. 1954, do hereby certify that this plat correctly represents the results of a survey made under my supervision August 4 through September 23, 2008.

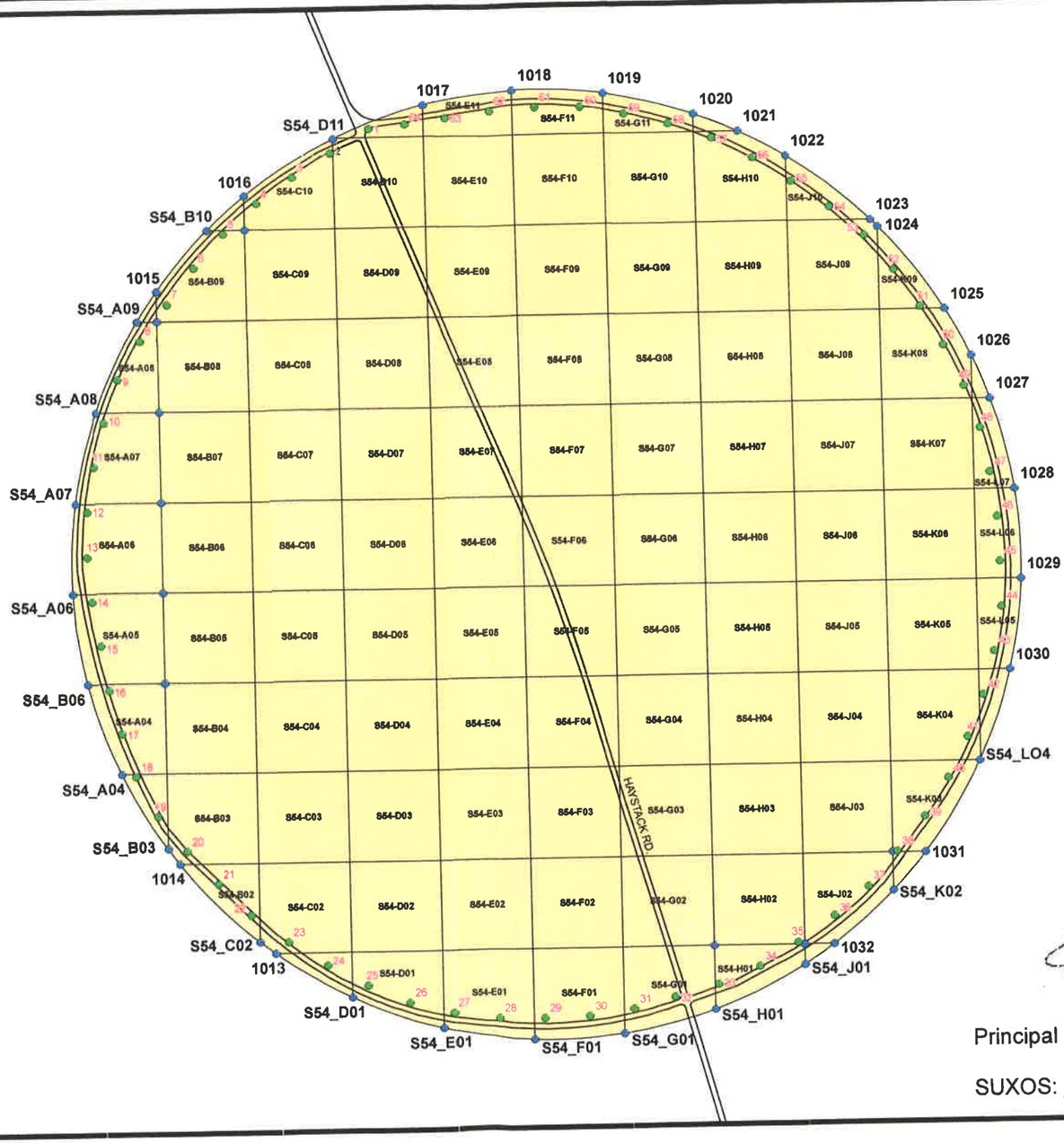
Principal of the firm: _____

SUXOS: _____

Exhibit B
LHAAP-003-R, Ground Signal Test Area
Longhorn Army Ammunition Plant, Karnack, Texas

DESCRIP	NORTH	EAST
SIGN 1	3614179.4	395143.2
SIGN 10	3613984.2	394959.8
SIGN 11	3613954.6	394952.4
SIGN 12	3613924.6	394947.4
SIGN 13	3613894.1	394947
SIGN 14	3613863.7	394949.6
SIGN 15	3613833.8	394956.1
SIGN 16	3613803.8	394959.8
SIGN 17	3613774.4	394967.8
SIGN 18	3613745.2	394976.7
SIGN 19	3613718.3	394991.2
SIGN 2	3614163.4	395117.3
SIGN 20	3613694.6	395010.3
SIGN 21	3613672.4	395031.1
SIGN 22	3613651.1	395052.8
SIGN 23	3613632.6	395077
SIGN 24	3613616.8	395103.1
SIGN 25	3613602.8	395130
SIGN 26	3613591	395158.1
SIGN 27	3613583.5	395187.5
SIGN 28	3613579.1	395217.8
SIGN 29	3613578.7	395248.2
SIGN 3	3614147.8	395091.2
SIGN 30	3613579.8	395278.7
SIGN 31	3613584.2	395308.8
SIGN 32	3613591.4	395336.3
SIGN 33	3613599.6	395365.6
SIGN 34	3613611	395393.8
SIGN 35	3613626.8	395419.8
SIGN 36	3613644.2	395444.8
SIGN 37	3613663.5	395469.2
SIGN 38	3613686.5	395488.2
SIGN 39	3613710.2	395507.8
SIGN 4	3614130.2	395066.2
SIGN 40	3613735.9	395523.8
SIGN 41	3613763	395537.5
SIGN 42	3613791.2	395546.8
SIGN 43	3613820.6	395556.7
SIGN 44	3613850.5	395562.3
SIGN 45	3613880.9	395562.2
SIGN 46	3613911.3	395561
SIGN 47	3613941.4	395556.7
SIGN 48	3613971.3	395550.8
SIGN 49	3613999.9	395540.6
SIGN 5	3614110.1	395043.4
SIGN 50	3614027.4	395527.6
SIGN 51	3614053.7	395512.2
SIGN 52	3614076.9	395498.2
SIGN 53	3614102.3	395478.8
SIGN 54	3614122	395452.6
SIGN 55	3614139.3	395427.5
SIGN 56	3614155.8	395401.9
SIGN 57	3614169.5	395374.8
SIGN 58	3614179.6	395346
SIGN 59	3614186.8	395316.6
SIGN 6	3614087.5	395032.9
SIGN 60	3614191.9	395286.4
SIGN 61	3614192.1	395255.9
SIGN 62	3614190.3	395225.5
SIGN 63	3614185.9	395195.4
SIGN 64	3614182	395167.9
SIGN 7	3614063.3	395004.4
SIGN 8	3614039.1	394988.8
SIGN 9	3614013.1	394969.9

DESCRIP	NORTHIN	EASTING
1013	395068.8	3613625.2
1014	395005.1	3613686.2
1015	394997.4	3614072.1
1016	395058.4	3614135.6
1017	395180.3	3614195.0
1018	395241.3	3614203.9
1019	395302.2	3614200.9
1020	395363.2	3614185.9
1021	395392.4	3614173.9
1022	395424.1	3614156.7
1023	395480.2	3614112.9
1024	395485.1	3614108.0
1025	395528.9	3614061.9
1026	395546.1	3614020.2
1027	395558.0	3613991.0
1028	395573.1	3613930.0
1029	395576.0	3613869.1
1030	395567.2	3613808.1
1031	395507.7	3613686.2
1032	395444.2	3613625.2
S54_A04	394967.3	3613747.1
S54_A06	394936.8	3613869.1
S54_A07	394939.8	3613930.0
S54_A08	394954.8	3613991.0
S54_A09	394983.9	3614051.9
S54_B03	394997.4	3613998.4
S54_B06	394997.4	3613808.1
S54_B06	394997.4	3613869.1
S54_B07	394997.4	3613930.0
S54_B08	394997.4	3613991.0
S54_B09	394997.4	3614051.9
S54_B10	395032.6	3614112.9
S54_C02	395068.4	3613633.0
S54_C10	395058.4	3614112.9
S54_D01	395119.3	3613696.1
S54_D11	395119.4	3614173.3
S54_E01	395180.3	3613573.5
S54_F01	395241.3	3613564.6
S54_G01	395302.2	3613567.6
S54_H01	395363.2	3613582.6
S54_H02	395363.1	3613625.2
S54_J01	395424.1	3613611.8
S54_J02	395424.1	3613625.2
S54_K02	395485.1	3613680.5
S54_K03	395485.1	3613686.2
S54_LO4	395545.5	3613747.1



Legend
- UXO Signs
- Boundary Stakes
- Roads
- Investigated Grids

0 150 300 600
Feet

Datum: NAD83 UTM
Monument: Longhorn Army Ammunition Plant
Monument BG-1 with coordinates
NORTHING-3614801.46,
EASTING-395385.09

STATE OF TEXAS
REGISTERED
DAVID R COLLINS
1954
PROFESSIONAL
LAND SURVEYOR

I, David R. Collins, Registered Professional Land Surveyor No. 1954, do hereby certify that this plat correctly represents the results of a survey made under my supervision August 4 through September 28, 2008.

Principal of the firm: _____

SUXOS: _____

South Test Area (LHAAP-001-R-01) and Ground Signal Test Area (LHAAP-003-R-01), MMRP-4

LAND USE CONTROL COMPLIANCE INSPECTION FORM

October 15, 2018

LAND USE CONTROL COMPLIANCE CERTIFICATION FORM

In accordance with the LUC Plan dated _____ for LHAAP-001-R and LHAAP-003-R, an inspection of the sites was conducted by _____ on _____.

A summary of land use control mechanisms is as follows:

- Land use restrictions - restrict land use to non-residential.
- Integrity of LUC signage by ensuring signs are present, legible and have visibility from one sign to the next.

A summary of compliance with land use and restriction covenants is as follows:

- The posted signs are properly maintained at LHAAP-001-R and LHAAP-003-R.
- No digging or intrusive activities have taken place within the boundaries identified for LHAAP-001-R and LHAAP-003-R.
- No land use other than non-residential.
- Pamphlets and safety awareness video are being used to educate visitors.

I, the undersigned, do document that the inspections were performed as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief.

Date: _____

Name: _____

Signature: _____

Completed annual compliance inspections shall be conducted no later than March 1 of each year for the previous calendar year and filed on site.

APPENDIX A

GSA TRANSFER LETTERS

GSA Public Buildings Service
Tel: (817) 978-3856
Fax: (817) 978-2063
melvin.freeman@gsa.gov

February 21, 2014

Mr. Thomas E. Lederle
Chief, ACSIM BRAC Division
600 Army Pentagon
Washington D.C. 20310-0600

Dear Mr. Lederle:

Your report of excess dated July 29, 2002, covered 8,492.02 acres of land (later corrected to 8,416 acres), more or less, and improvements at the Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas. GSA Control No. 7-D-TX-0692.

As set forth in the enclosed letter, an additional 50.54 acres of land, more or less, of the LHAAP property known as Tract No. 7 – Landfill 12 Area, described in Attachment 1 of the transfer letter has been transferred without reimbursement to the U.S. Department of the Interior, Fish and Wildlife Service (FWS) under the authority of 16 U.S.C. 667b. Additional transfers will be made when approvals are obtained from the Army on lands currently not suitable for transfer. Future requests for transfers will identify requested land by legal description or map overlay.

Upon finalization of transfer of the total land requested by FWS, a complete boundary legal description will be provided by FWS identifying all former Army land that had been transferred. Any map overlays used in the interim to identify previously transferred land will be voided for use to identify former Army land at LHAAP subsequently controlled by FWS.

Custody and accountability of the property identified by legal description in Attachment 1 to the transfer letter, together with any necessary documentation, should be transferred to FWS by your agency as soon as practicable. We will appreciate your prompt advice as to the date such action is accomplished. We understand that the FWS, Region 2 Acting Regional Director, Ms. Joy Nicholopoulos, P.O. Box 1306, Albuquerque, NM 87103 will represent the FWS in this matter.

Please acknowledge receipt of this communication in the space provided on the enclosed copy of this letter and return it to this office. You may contact Veronica Capron Vorva, Realty Specialist at telephone 817-978-4246 if there are questions.

U.S. General Services Administration
Real Property Utilization and Disposal
Division (7PZ)
819 Taylor Street, Room 11A30
Fort Worth, TX 76102-6112

Sincerely,

Melvin E. Freeman, Director
Real Property Utilization and Disposal
Division (7PZ)

Enclosures

Receipt acknowledged:

Name THOMAS E LEDERLE

Title Chief, ACSIM BRAC DIV

Date 03/07/2014

cc: Ms. Joy Nicholopoulos, Acting Regional Director
U.S. Fish and Wildlife Service, Region 2
Division of Realty
P.O. Box 1306
Albuquerque, NM 87103-1306

GSA Public Buildings Service
Tel (817) 978-3856
Fax (817) 978-2063
melvin.freeman@gsa.gov

February 21, 2014

Joy Nicholopoulos, Acting Regional Director
U.S. Fish and Wildlife Service, Region 2
Division of Realty
P.O. Box 1306
Albuquerque, NM 87103-1306

RE: Transfer of 50.54 acres of land at the Longhorn Army Ammunition Plant, Harrison County, Texas

Dear Ms. Nicholopoulos:

Your letter of April 27, 2004, requested transfer to the U.S. Department of the Interior, Fish and Wildlife Service (FWS), under the authority of P.L. 80-537, 16 U.S.C. 667b, a total of 8,404 acres of land (later corrected to 8,416 acres, more or less), at the Longhorn Army Ammunition Plant (LHAAP), City of Karnack, Harrison County, State of Texas, together with all the improvements found on the real estate, and all related personal property located thereon (hereinafter referred to as the "Property"), reported July 29, 2002, as excess to the needs of the U.S. Army. The first transfer of 5,031.75 acres was accepted into primary jurisdiction by FWS on April 30, 2004. It was agreed that as parcels met the specifications of transfer, additional parcels would be transferred by means of a letter request, a map, and a legal description to GSA.

All the rights to be transferred herein have heretofore been declared excess to the needs of the United States Department of the Army. The respective interests to be transferred hereby have been reported to the General Services Administration (GSA) and have been determined to be excess for disposal pursuant to P.L. 107-217, (40 U.S.C. §§550, et. seq.) as amended.

In accordance with your subsequent letter of February 4, 2014, an additional 50.54 acres, more or less, known as Tract No. 7 – Landfill 12 Area (hereinafter referred to as the "Property") are now suitable for transfer to add to the 6,364.35 acres, more or less, previously transferred on nine separate occasions. A true and complete legal description of Tract No. 7 – Landfill 12 Area is included in **Attachment 1**.

Accordingly, pursuant to 40 U.S.C. 501, et seq. and Public Law 80-537, 16 U.S.C. 667b, and acting under authority delegated to me, I hereby transfer 50.54 acres, more

U.S. General Services Administration
Real Property Utilization and Disposal
Division (7PZ)
819 Taylor Street, Room 11A30
Fort Worth, TX 76102-6112

or less, as described in **Attachment 1** to the custody and accountability of the U.S. Department of Interior, Fish and Wildlife Service.

Additional transfers covering the remainder of the real estate comprising the LHAAP will be made when approvals are obtained from the Army on lands currently not suitable for transfer. Future requests for other transfers will specifically identify such requested land by legal description and/or map overlay.

This transfer is expressly made subject to all environmental notices, exceptions, restrictions, agreements, and covenants affecting the Property identified in the Environmental Condition of Property V, Longhorn Army Ammunition Plant, Karnack, Texas, dated September 2007 and revised December 6, 2013, (hereinafter referred to as the "ECOP V") which is incorporated herein by reference and amends the "ECOP" previously described in and made a part of the original transfer of April 26, 2004, and subsequent transfers, and the "ECOP II" dated October 2004, "ECOP III" dated August 2005, and "ECOP IV" dated March 2007 to the extent and only to the extent the same are valid and affect the Property conveyed herein. FWS covenants and agrees that the Property is hereby transferred subject to the use restrictions and covenants which run with the land as identified in Attachment 2 of the ECOP V previously described. FWS further covenants and agrees that in the event that the Property, or any part thereof, is sold, conveyed, transferred, leased, or otherwise disposed of, the following notices, covenants, and restrictions shall be inserted in any instrument of conveyance.

Upon finalization of transfer of the total land requested by FWS, a complete boundary legal description will be provided by FWS identifying all former Army land that had been transferred. Any map overlays used in the interim to identify previously transferred land will be voided for use to identify former Army land at LHAAP subsequently controlled by FWS.

The property transferred is subject to compliance by the FWS with the provisions of the National Environmental Policy Act of 1969, as amended, including the preparation of an environmental impact statement if required. The Property is transferred subject to compliance by the FWS with Section 106 of the National Historic Preservation Act of 1966, and Executive Order 11593.

Mr. Thomas E. Lederle, Chief, ACSIM BRAC Division, U.S. Army, 600 Army Pentagon, Washington D.C. 20310 will act for the U.S. Army in arranging for the transfer of custody and accountability of the Property and in other matters related to the transfer.

A copy of our letter of same date to the U.S. Army is enclosed for your information. It is requested that you acknowledge receipt of this communication on the enclosed copy of this letter in the space provided, return it to this office, and that such steps as necessary be taken by your Agency to consummate the transaction.

Sincerely,

Melvin E. Freeman

Melvin E. Freeman, Director
Real Property Utilization and Disposal
Division (7PZ)

Enclosures

Receipt acknowledged:

Name Robert R. Brewer

Title Realty Officer

Date 3-3-2014

cc: Mr. Thomas E. Lederle
Chief, ACSIM BRAC Division
600 Army Pentagon
Washington D.C. 20310-0600

UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
DIVISION OF REALTY

TRACT REPORT

OF THE

UNITED STAES OF AMERICA

TRACT (100q)

CONTAINING 50.54 ACRES

CADDO LAKE NATIONAL WILDLIFE REFUGE

HARRRISON COUNTY, TEXAS

Report Prepared By

Louis J. duBois, Jr.
Land Surveyor

January 2014

Tract Description of the
United States of America Tract (100q)
Caddo Lake National Wildlife Refuge
Harrison County, Texas

The hereinafter described tract of land is located in Harrison County, Texas, near the town of Karnack, tract (100q) being 50.54 acres of land out of the Longhorn Ordnance Works Reservation, also known as the Longhorn Army Ammunition Plant, Karnack, Texas, said 50.54 acres of land being that certain 50.54 acre tract described as Parcel No. 7 – Landfill 12 Area excepted from United States of America tract (100a) as surveyed by Entz Engineering and Associates, Inc. & Huffman Surveying Company, A Joint Venture, of Muskogee, Oklahoma, delineated on a map tracing designated "United States of America Tracts (100a,b)" bearing the date of May, 2004, of record in the files of the United States Department of the Interior, Fish and Wildlife Service, Region 2, Albuquerque, New Mexico, said tract (100q) being more particularly described by metes and bounds as follows:

SURVEYOR'S NOTE:

All bearings and distances are based on the Texas State Plane Coordinate System, North Central Zone, Code 4202, NAD 1983 (92), Survey Feet. The average Combined Scale Factor applied equals 0.99988410; Convergence equals 02° 21' 53". The computed land area is based on surface distances.

Parcel No. 7 - Landfill 12 Area

BEGINNING at the southwest corner of the Landfill 12 Area, described as Parcel No. 7, said point being described as "Landfill 12 Area Point No. 1" and having a coordinate value of N=6953300.238, E=3311087.540;

THENCE, along the boundary line of said Parcel No. 7,

N. 03°15'36" W., 1741.41 feet

to a point for a corner of this tract, said point being described as "Landfill 12 Area Point No. 2";

THENCE, along the boundary line of said Parcel No. 7,

N. 62°03'32" E., 1151.75 feet

to a point for a corner of this tract, said point being described as "Landfill 12 Area Point No. 3";

THENCE, along the boundary line of said Parcel No. 7,

S. 15°55'59" E., 1311.85 feet

to a point for a corner of this tract, said point being described as "Landfill 12 Area Point No. 4";

THENCE, along the boundary line of said Parcel No. 7,

S. 35°09'33" W., 1306.48 feet

to a point for a corner of this tract, said point being described as "Landfill 12 Area Point No. 5";

THENCE, along the boundary line of said Parcel No. 7,

N. 84°25'54" W., 528.74 feet

to the **POINT OF BEGINNING**, and containing 50.54 acres, more or less.

Bounded on the north, east, south and west by USA tract (100a).

The hereinbefore-described tract of land is delineated on a plat designated "United States of America Tract (100q)" bearing the date of January 15, 2014, of record in the files of the United States Department of the Interior, Fish and Wildlife Service.

GSA Public Buildings Service
Tel: (817) 978-3856
Fax: (817) 978-2063
melvin.freeman@gsa.gov

January 29, 2015

Mr. Thomas E. Lederle
Chief, ACSIM BRAC Division
600 Army Pentagon
Washington D.C. 20310-0600

Dear Mr. Lederle:

Your report of excess dated July 29, 2002, covered 8,492.02 acres of land (later corrected to 8,416 acres), more or less, and improvements at the Longhorn Army Ammunition Plant (LHAAP), Karnack, Texas. GSA Control No. 7-D-TX-0692.

As set forth in the enclosed letter, an additional 109.91 acres of land, more or less, in five parcels of the LHAAP property, described in Attachment 1 and Attachment 2 of the transfer letter, including: three portions of the "Production Area Parcel," consisting of Tract 100r, containing 31.73 acres in and around the Former Acid Storage Area, Tract 100s, containing 18.80 acres in and around the Former TNT Waste Disposal Plant, and Tract 100t, containing 3.82 acres in and around the Former Sewage Treatment Plant; the "Y-Area Parcel," Tract 100u, containing 17.24 acres; and a portion of the 40.37 acre "Static Test Area Parcel," Tract 100v, containing 38.32 acres, have been transferred without reimbursement to the U.S. Department of the Interior, Fish and Wildlife Service (FWS) under the authority of 16 U.S.C. 667b. Additional transfers will be made when approvals are obtained from the Army on lands currently not suitable for transfer. Future requests for transfers will identify requested land by legal description or map overlay.

Upon finalization of transfer of the total land requested by FWS, a complete boundary legal description will be provided by FWS identifying all former Army land that had been transferred. Any map overlays used in the interim to identify previously transferred land will be voided for use to identify former Army land at LHAAP subsequently controlled by FWS.

Custody and accountability of the property identified by legal description in Attachment 1 and Attachment 2 to the transfer letter, together with any necessary documentation, should be transferred to FWS by your agency as soon as practicable. We will appreciate your prompt advice as to the date such action is accomplished. We understand that the FWS, Region 2 Acting Regional Director, Ms. Joy Nicholopoulos, P.O. Box 1306, Albuquerque, NM 87103 will represent the FWS in this matter.

U.S. General Services Administration
Real Property Utilization and Disposal Division (7PZ)
819 Taylor Street, Room 11A30
Fort Worth, TX 76102-6112

Please acknowledge receipt of this communication in the space provided on the enclosed copy of this letter and return it to this office. You may contact Veronica Vorva, Realty Specialist, at telephone 817-978-4246 if there are questions.

Sincerely,

Melvin E. Freeman

Melvin E. Freeman, Director
Real Property Utilization and Disposal
Division (7PZ)

Enclosures

Receipt acknowledged:

Name THOMAS E LEDERLE

Title Chief, ACSIM BRAC DIV

Date 20 APR 2015

cc: Ms. Joy Nicholopoulos, Acting Regional Director
U.S. Fish and Wildlife Service, Region 2
Division of Realty
P.O. Box 1306
Albuquerque, NM 87103-1306

GSA Public Buildings Service
Tel: (817) 978-3856
Fax: (817) 978-2063
melvin.freeman@gsa.gov

January 29, 2015

Joy Nicholopoulos, Acting Regional Director
U.S. Fish and Wildlife Service, Region 2
Division of Realty
P.O. Box 1306
Albuquerque, NM 87103-1306

RE: Transfer of 109.91 acres of land at the Longhorn Army Ammunition Plant, Karnack, Harrison County, Texas

Dear Ms. Nicholopoulos:

Your letter of April 27, 2004, requested transfer to the U.S. Department of the Interior, Fish and Wildlife Service (FWS), under the authority of P.L. 80-537, 16 U.S.C. 667b, a total of 8,404 acres of land (later corrected to 8,416 acres, more or less), at the Longhorn Army Ammunition Plant (LHAAP), City of Karnack, Harrison County, State of Texas, together with all the improvements found on the real estate, and all related personal property located thereon (hereinafter referred to as the "Property"), reported July 29, 2002, as excess to the needs of the U.S. Army. The first transfer of 5,031.75 acres was accepted into primary jurisdiction by FWS on April 30, 2004. It was agreed that as parcels met the specifications of transfer, additional parcels would be transferred by means of a letter request, a map, and a legal description to GSA.

All the rights to be transferred herein have heretofore been declared excess to the needs of the United States Department of the Army. The respective interests to be transferred hereby have been reported to the General Services Administration (GSA) and have been determined to be excess for disposal pursuant to P.L. 107-217, (40 U.S.C. §§550, et. seq.) as amended.

In accordance with your subsequent letter of December 2, 2014, an additional 109.91 acres, more or less, in five parcels of the LHAAP property including: three portions of the "Production Area Parcel," consisting of Tract 100r, containing 31.73 acres in and around the Former Acid Storage Area, Tract 100s, containing 18.80 acres in and around the Former TNT Waste Disposal Plant, and Tract 100t, containing 3.82 acres in and around the Former Sewage Treatment Plant; the "Y-Area Parcel," Tract 100u, containing 17.24 acres; and a portion of the 40.37 acre "Static Test Area Parcel," Tract 100v, containing 38.32 acres (hereinafter referred to as the "Properties") is now suitable

U.S. General Services Administration
Real Property Utilization and Disposal
Division (7PZ)
819 Taylor Street, Room 11A30
Fort Worth, TX 76102-6112

for transfer to add to the 6,414.89 acres, more or less, previously transferred on ten separate occasions. True and complete legal descriptions of the Properties are included in **Attachment 1** and **Attachment 2**.

Accordingly, pursuant to 40 U.S.C. 501, et seq. and Public Law 80-537, 16 U.S.C. 667b, and acting under authority delegated to me, I hereby transfer 109.91 acres, more or less, as described in **Attachment 1** and **Attachment 2** to the custody and accountability of the U.S. Department of Interior, Fish and Wildlife Service.

Additional transfers covering the remainder of the real estate comprising the LHAAP will be made when approvals are obtained from the Army on lands currently not suitable for transfer. Future requests for other transfers will specifically identify such requested land by legal description and/or map overlay.

This transfer is expressly made subject to all environmental notices, exceptions, restrictions, agreements, and covenants affecting the Property identified in the Environmental Condition of Property VI, Longhorn Army Ammunition Plant, Karnack, Texas, dated January 2014, (hereinafter referred to as the "ECOP VI") which is incorporated herein by reference and amends the "ECOP" previously described in and made a part of the original transfer of April 26, 2004, and subsequent transfers, and the "ECOP II" dated October 2004, "ECOP III" dated August 2005, "ECOP IV" dated March 2007, and "ECOP V" dated September 2007 and revised December 6, 2013 to the extent and only to the extent the same are valid and affect the Property conveyed herein. FWS covenants and agrees that the Property is hereby transferred subject to the use restrictions and covenants which run with the land as identified in Attachment 3 of the ECOP VI previously described. FWS further covenants and agrees that in the event that the Property, or any part thereof, is sold, conveyed, transferred, leased, or otherwise disposed of, the following notices, covenants, and restrictions shall be inserted in any instrument of conveyance.

Upon finalization of transfer of the total land requested by FWS, a complete boundary legal description will be provided by FWS identifying all former Army land that had been transferred. Any map overlays used in the interim to identify previously transferred land will be voided for use to identify former Army land at LHAAP subsequently controlled by FWS.

The property transferred is subject to compliance by the FWS with the provisions of the National Environmental Policy Act of 1969, as amended, including the preparation of an environmental impact statement if required. The Property is transferred subject to compliance by the FWS with Section 106 of the National Historic Preservation Act of 1966, and Executive Order 11593.

Mr. Thomas E. Lederle, Chief, ACSIM BRAC Division, U.S. Army, 600 Army Pentagon, Washington D.C. 20310 will act for the U.S. Army in arranging for the transfer of custody and accountability of the Property and in other matters related to the transfer.

A copy of our letter of same date to the U.S. Army is enclosed for your information. It is requested that you acknowledge receipt of this communication on the enclosed copy of this letter in the space provided, return it to this office, and that such steps as necessary be taken by your Agency to consummate the transaction.

Sincerely,

Melvin E. Freeman, Director
Real Property Utilization and Disposal
Division (7PZ)

Enclosures

Receipt acknowledged:

Name David Allard

Title Realty Specialist

Date 2/2/2015

cc: Mr. Thomas E. Lederle
Chief, ACSIM BRAC Division
600 Army Pentagon
Washington D.C. 20310-0600

Subject: Final Minutes, Quarterly Restoration Advisory Board (RAB) Meeting
Longhorn Army Ammunition Plant (LHAAP)
Location of Meeting: Karnack Community Center
Date of Meeting: November 16, 2022, 6:00 PM Central Standard Time (CST)

Meeting Participants:

Army BRAC:	Rose M. Zeiler
USACE:	Chelsea Montoya
USAEC:	Lena Sierocinski, Michael Bowlby
Bhate:	Kimberly Nemmers, Zachary Beck
APTIM:	Bill Foss
HDR, Inc.	Philip Werner, Amita Patel
MMG-TLI JV:	Jonathon Tallman (via phone)
USEPA Region 6:	Brian Follin
TCEQ:	April Palmie (via phone)
RAB:	Present: Nigel Shivers, Sharon McAvoy, Deon Hall, and Judy VanDeventer Absent: Charles Dixon, Tom Walker, John Fortune, and Richard LeTourneau
Public:	Robert Speight, Daniele Connell, Joy Young, Mike Madl (Arcadis), Dana Schmidt (Arcadis)

A color copy of the slide presentation and handouts (see list at end of meeting minutes) were provided for meeting attendees.

Welcome and Introduction

Ms. Judy VanDeventer welcomed everyone to the RAB Meeting and called the meeting to order, which Mr. Deon Hall seconded. New attendees introduced themselves. Ms. Rose Zeiler introduced the contractors presenting at the RAB including Bhate Environmental Associates, Inc. (Bhate); APTIM Federal Services (APTIM); MMG-TLI Joint Venture; and HDR, Inc. (HDR). Mr. Mike Madl and Ms. Dana Schmidt were then introduced, by Ms. Zeiler, as the contractors selected to complete the Preliminary Assessment for per- and polyfluoroalkyl substances (PFAS), which is an emerging contaminant. Ms. VanDeventer asked where the PFAS might be present. Mr. Michael Bowlby stated that the PFAS is typically associated with fire fighting foam so the areas where the foam may have been used, disposed, or stored are the primary focus. Chrome plating is another area where PFAS products may have been used so those areas are also evaluated. Ms. Schmidt discussed the Preliminary Assessment and Site Assessment process including review of historical documents, use of areas (e.g., fire stations) and collection of soil and groundwater samples for analysis. Ms. Schmidt said that a report will then be prepared with the analytical results from the samples in addition to the other data gathered. Ms. Zeiler said that the information will be used to determine if PFAS is an issue at LHAAP. Ms.

VanDeventer asked if the Fire Station was the only site being assessed. Ms. Schmidt mentioned some of the other areas being assessed but clarified that the Powerhouse (a building at LHAAP [Building 401], located northwest of and adjacent to LHAAP-04) was not identified as a possible PFAS site. Ms. Zeiler said that if PFAS is detected then additional investigation and assessment will be considered for the next phase of the process. Mr. Brian Follin then explained that the investigation of PFAS is following the same process used at other federal facilities. Mr. Bowlby explained that active and inactive Army installations across the U.S. are undergoing the same assessment to assess whether PFAS is present, and, if so, to conduct additional investigation.

Membership Update

Ms. Zeiler, with Army Base Realignment and Closure (BRAC), asked if there were any members of the public interested in joining the RAB. She provided an overview of the membership process, stating that anyone in the public can become a RAB member. Ms. Zeiler further explained that there is an application available on the public website for LHAAP. Ms. VanDeventer stated that she had a couple of people who may be interested in becoming a RAB member. Ms. Zeiler encouraged participation of the public attending the RAB regardless of whether they are part of the board. She explained that the RAB meets three times a year.

Minutes (June 2022 RAB Meeting)

Ms. Zeiler verified that there were no comments or changes to the June meeting minutes. Motion to approve the June 2022 RAB meeting minutes was provided by Ms. VanDeventer with Mr. Hall seconding the motion.

Documents in Progress

Ms. Kimberly Nemmers, with Bhate Environmental Associates, Inc. (Bhate), introduced the three contractors performing work at LHAAP. She explained which sites each of the contractors are managing. Ms. Nemmers explained that work at LHAAP-18/24, which Bhate oversees as an interim remedy, overlaps with HDR, Inc., who is developing the final remedial design.

Ms. Nemmers then presented the documents and field work completed in the past 3 months. She explained that Remedial Action-Operation (RA-O) is the performance groundwater monitoring at LHAAP. Sites with RA-O have remedies in place, such that the groundwater monitoring is completed to evaluate those remedies. An annual report is then produced to document the monitoring. Ms. Nemmers then explained that the next 3 months included continued groundwater monitoring to ensure compliance at the sites within the Bhate contract.

LHAAP-04

Mr. Bill Foss, with APTIM Federal Services, presented the remedial design (RD) implemented at LHAAP-04. He explained the history of the site, the remedy implementation, and the ongoing sampling performance. Mr. Foss explained that the site was in Year 4 of RA-O sampling. Prior to the implementation of the RD, he specified that perchlorate had been detected at greater than 5 times the established protective concentration limit. Mr. Foss explained that monitoring wells, which never had contamination, are no longer sampled. He also pointed out that total organic

carbon is no longer analyzed for the groundwater. However, Mr. Foss said that field parameters such as oxidation reduction potential are still collected for the site. He further explained that reducing conditions had recently been observed again, but the lack of rainfall in 2022 may have been a contributing factor. Mr. Foss stated that six monitoring wells within the former perchlorate plume area and one downgradient monitoring well will continue to be sampled on a semiannual basis.

Groundwater Treatment Plant (GWTP) Update

Ms. Nemmers provided an overview of the GWTP, which currently treats groundwater from LHAAP-18/24 and recently started processing groundwater from LHAAP-17. She presented a handout depicting a graph of the amount of treated groundwater discharged each month. She explained that the amount of treated groundwater varies based on rainfall and where the groundwater can be discharged.

Surface Water

Ms. Nemmers said that the surface water is sampled quarterly, but there was no surface water flow in the Bayou during the third quarter such that samples could not be collected. She pointed everyone to the handout for the surface water sampling with the surface water results to date.

LHAAP-18/24

Ms. Amita Patel with HDR, Inc., presented the RD for Longhorn Site LHAAP-18/24. She explained that additional investigation had been completed to support the RD. Ms. Patel outlined the selected remedy which includes enhancement of the existing groundwater extraction and treatment system, enhanced in-situ bioremediation (EISB), thermal treatment to remove dense non-aqueous phase liquid (DNAPL), maintenance of the existing cap over the Unlined Evaporation Pond, unsaturated soil excavation and off-site disposal, land use controls (LUCs), monitored natural attenuation (MNA), and long-term monitoring (LTM).

Ms. Patel explained that the remedy will be implemented in a phased approach. The first phase will include soil excavation and disposal from three different areas (approximately 4,000 cubic yards) to remove the source areas with elevated concentrations that may act as a continual source of contamination to the groundwater. She stated that the shallow aquifer zone is observed to have clay, silt, and sands with DNAPL in the soils within the containment area. The DNAPL will be removed using in situ thermal desorption (ISTD) treatment that warms up the ground with an extraction system to remove the contaminated vapor from the soil. She also described the three pilot tests planned to evaluate in situ bioremediation. Based on the pilot tests, bioremediation of the groundwater will be implemented. Two pilot tests will involve injection in a grid formation like what was used at LHAAP-04. The one pilot test will be in biobarrier wall configuration, which she explained provides treatment as groundwater passes through. Ms. Patel said that the remedy developed is an aggressive approach with treatment within the containment and also outside of the containment area. She said that the EISB implementation is the second phase and includes about 4,000 linear feet of shallow zone biobarriers and 1700 liner feet of deeper Wilcox Formation biobarriers. She also mentioned that

with the treatment of 60 to 70-percent of the onsite area in the grid formation, the GWTP will be shut down as part of the third phase. Ms. VanDeventer asked about replacement of the GWTP. Ms. Patel said that the once the groundwater monitoring phase is started after the RD is implemented, the GWTP will no longer be required. Ms. Zeiler clarified that the completed phases of the remedy will allow us to shutdown the GWTP, but that groundwater monitoring will continue to ensure the remedy is protective.

LHAAP-29

Ms. Patel discussed the RD for LHAAP-29, which includes many of the same remediation technologies as LHAAP-18/24. She explained that the selected remedy for LHAAP 29 also includes removal and off-site disposal of contaminated soil, flushing, inspection, and plugging of the transite trinitrotoluene (TNT) wastewater line and the vitrified clay cooling water lines, and excavation and off-site disposal of the wooden TNT wastewater line and associated impacted soil. Soil sampling will be completed under the removed lines to ensure no contamination has left behind. ISTD of the intermediate groundwater zone to remove DNAPL will then be implemented, followed by MNA in the shallow groundwater zone and for the intermediate groundwater zones. When asked by Ms. Zeiler about any questions related to the treatment technologies, no questions were requested.

LHAAP-47

Mr. Philip Werner, with HDR, Inc., stated that the Final Record of Decision (ROD) was placed in the Administrative Record (AR) in August 2022. He also stated that LUC notifications were sent via a letter to required State and local representatives and that the ROD notice was published in both the Shreveport Times and Marshall News Messenger. Mr. Werner explained that LUC notification was also sent to the Texas Department of Licensing and Regulations (TDLR) to provide the groundwater use restrictions to drillers.

Referring to the LHAAP-47 Responsiveness Summary handout, Mr. Werner explained that public comments to the Proposed Plan were reviewed and compiled into categories. The Proposed Plan was finalized for LHAAP-47 in December 2012 and then revised and again finalized in June 2021. Mr. Werner then detailed the purpose of the Responsiveness Summary, which is to hear community concerns about the preferred alternative at LHAAP-47, demonstrate how the public's input is considered in the selection of the remedy, and provide a formal mechanism for a response to public comments.

Mr. Werner then discussed the development of comment categories based on the public input. The comment categories included the use of thermal treatment technology, metals, and the need to develop a quantifiable criterion to address cleanup of metals and perchlorate in groundwater. Additional comment categories included surface water modeling, time to complete cleanup, natural attenuation, and estimation of hydraulic conductivity. He explained that the public comments have resulted in the pre-design investigation now including a pump test (instead of a slug test) to better determine conductivity as well as updating the surface water model. The Responsiveness Summary incorporates both 2013 and 2021 public meeting comments.

Mr. Werner presented the LUCs that are being implemented under the ROD along with the LUC boundary. He explained that groundwater use will be prohibited with the exception of environmental monitoring. He said that the land cannot be used for residential purposes. He also stated that the integrity of all current or future remedial or monitoring systems must be maintained, such as the ISTD treatment system. Mr. Werner explained that ISTD treatment was evaluated for several of the remedial alternatives at LHAAP-47.

Mr. Werner asked for comments on the Responsiveness Summary, but none were provided. He then asked RAB members and the public to think about the Responsiveness Summary and to e-mail Ms. Zeiler with any comments or input.

LHAAP-17

Mr. Jonathon Tallman, with MMG-TLI Joint Venture, discussed the Time Critical Removal Action (TCRA) completed at LHAAP-17. He outlined the major work elements and 96 munitions and explosives of concern (MEC) items were disposed through on-site detonations. Mr. Tallman explained that there were over 400 targets identified with soil being sifted and soil being disposed off-site. He stated confirmation samples were collected following excavations, but additional removal action is likely to be required at the site.

Ms. Nemmers then presented the groundwater extraction system installed at LHAAP-17 in August 2022. She stated that the system pumps water to a 2,500-gallon tank that then discharges to a pipe along the road. The water treatment system piping then ties into the water piping system from LHAAP-18/24 for treatment at the GWTP. She explained that a radio controller transmits the volume information to the GWTP via the existing programmable logic control (PLC) system. Ms. Nemmers said that the system is currently pumping about 1,500 gallons per day to the GWTP. She said that the perchlorate in the influent to the GWTP has increased significantly. Ms. Nemmers explained that the extraction system is clearly pulling water to the extraction wells as observed by the decrease in perchlorate concentrations in the monitoring wells at the edge of the plume. The concentration of perchlorate detected in groundwater from one of the extraction wells (17WW06) has increased. She then explained that this change in concentration in 17WW06 is typical of extraction systems and will eventually hit a tipping point and decrease, which is the goal of the system. She then showed a map of how the system is laid out.

Metals Discussion

Ms. Zeiler explained that the metals discussion was postponed until the next RAB meeting to allow more time for the Army's review of documents. Ms. Zeiler said that groundwater remedies are evaluated via a Five-Year Review (FYR) to determine if the remedies are protective of human health and the environment. That includes a review of metals data collected from groundwater during the previous 5 years where required by the ROD. Ms. VanDeventer asked if the recommendations would be presented at a future RAB meeting and for details on the distribution of the FYR. Ms. Zeiler said the FYR is posted to the AR and the recommendations are reviewed and implemented, as appropriate, at the sites. She gave examples of these implementations at various sites that included installation of wells and EISB, including LHAAP-12, LHAAP-37, LHAAP-67, and LHAAP-58. Mr. Foss pointed out that a round of metals sampling was just performed at

LHAAP-16 in support of the upcoming FYR. Ms. Zeiler concurred and indicated that the data evaluated in the FYR includes past and present data.

Transfer Update

Ms. Zeiler discussed that LHAAP-03, LHAAP-37, LHAAP-46, and LHAAP-50 are planned for transfer from the Army to the United States Fish and Wildlife Service, in addition to the old Oil and Gas Pad. She said that these sites/areas account for approximately 171 acres. With the exception of the Oil and Gas Pad, each of the sites has a groundwater plume.

Next RAB Meeting Schedule and Closing Remarks

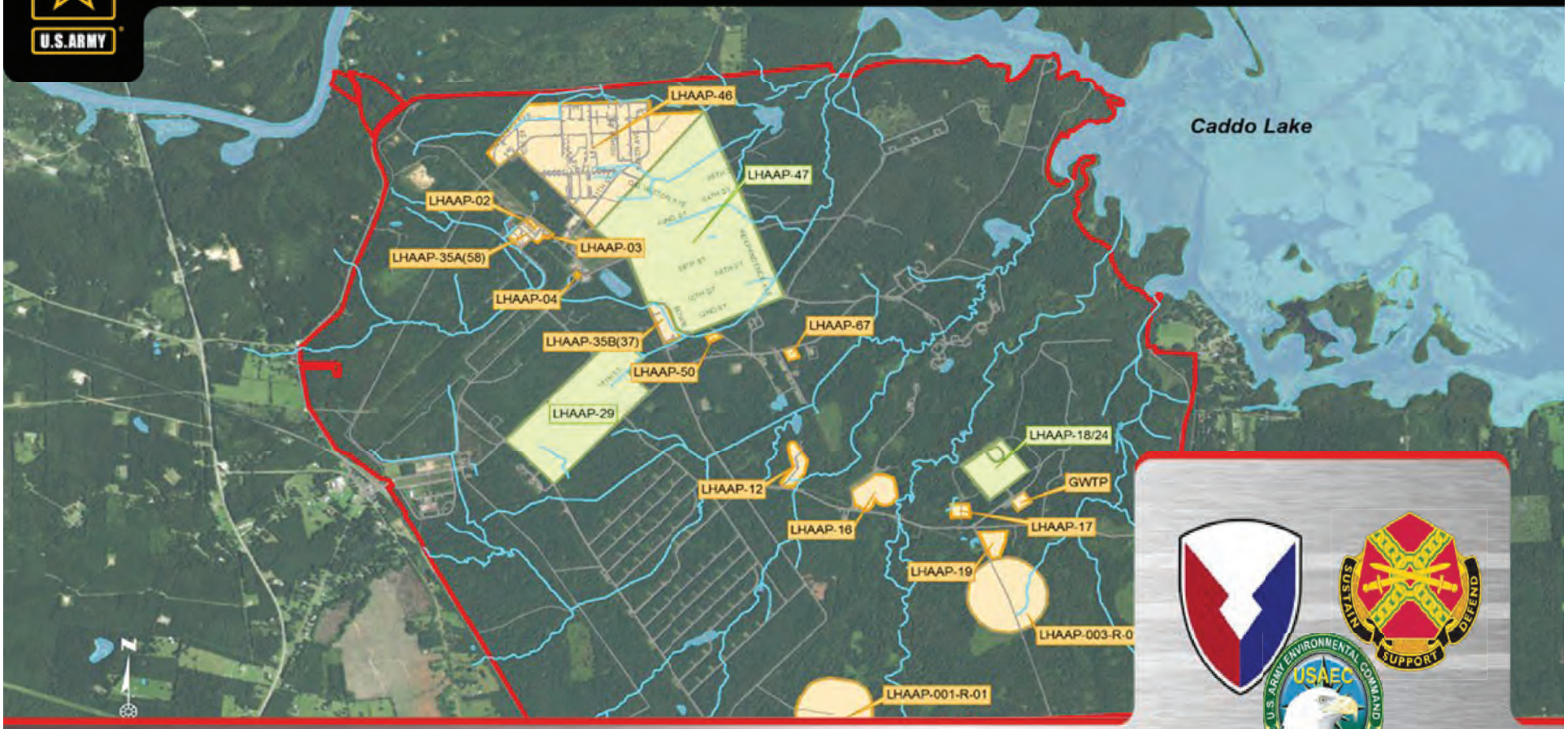
Ms. Zeiler stated that the FYR requires a site inspection, in which the attendance of the regulatory personnel is strongly encouraged. Since this inspection must be completed in early 2023, she asked if the RAB meeting could be scheduled 1 week earlier allowing the RAB and the FYR site inspections to be completed during the same site visit. Ms. Zeiler said that the next RAB meeting was proposed for February 8, 2023, which will still occur on a Wednesday. There were no objections from RAB members regarding the proposed RAB meeting date. Ms. Zeiler stated that the RAB will be informed of the RAB meeting date – whether the 8th or the 15th – when a final decision has been made.

Adjourn

Mr. Hall made a motion to adjourn, which was seconded by Ms. VanDeventer. The meeting adjourned at 7:07 pm CST.

November 2022 Meeting Attachments and Handouts:

- Color copy of Bhate presentation slides
- GWTP – Processed Groundwater Volumes Handout
- Surface Water Sampling Handout
- LHAAP-47 Responsiveness Summary



Longhorn Army Ammunition Plant (LHAAP) Quarterly Restoration Advisory Board Meeting

16 November 2022

US Army Environmental Command (USAEC)

Abbreviations and Acronyms

#	Number
µg/L	Micrograms per liter
bgs	Below ground surface
DERP	Defense Environmental Restoration Program
DNAPL	Dense Non-aqueous Phase Liquid
EISB	Enhanced In-Situ Bioremediation
EPA	Environmental Protection Agency
GPW	Goose Prairie Creek Water Sample
GWP-Res	Residential Groundwater Use Protection
GWTP	Groundwater Treatment Plant
HBW	Harrison Bayou Water Sample
ISB	In-Situ Bioremediation
ISTD	In-Situ Thermal Desorption
J	Estimated laboratory value
LHAAP	Longhorn Army Ammunition Plant
LTM	Long term monitoring
LUCs	Land Use Controls
MC	Methylene Chloride
MEC	Munitions and explosives of concern
mg/L	Milligrams per liter
MNA	Monitored Natural Attenuation
MSC	Medium-Specific Concentration
mV	millivolts
NV	No value
PCL	Protective Concentration Level
PLC	Programmable logic control
RAB	Restoration Advisory Board
PDI	Pre-Design Investigation
RA(O)	Remedial Action Operation
ROD	Record of Decision
TCE	Trichloroethene
TCEQ	Texas Commission on Environmental Quality
TNT	Trinitrotoluene
TOI	Target of Interest
TRRP	Texas Risk Reduction Program
TTT	Thermal Treatment Technology
UEP	Unlined Evaporative Pond

AGENDA – November 16, 2022 at 6 p.m.

- 6:00 - Welcome and Introduction
- 6:05 - Open Items
  - Ongoing Outreach/Website
  - Restoration Advisory Board (RAB) Administrative Issues
    - a) Membership Update
    - b) Minutes (June 2022 RAB Meeting)
- 6:10 - Community Involvement Plan Update
- 6:20 - Defense Environmental Restoration Program (DERP) Update
  - Documents and Field Work Completed since last RAB
  - Three Month Look ahead
  - LHAAP-04
  - Groundwater Treatment Plant Update
- 6:30 - Other DERP Update
  - LHAAP-18/24, -29, and -47 Status
  - LHAAP-47 Responsiveness summary for LHAAP-47
  - LHAAP-17 Status
- 6:45 - Metals discussion
- 6:50 - Transfer Update
- 6:55 - Next RAB Meeting Schedule and Closing Remarks

The Army wants you to be informed

- The Army is committed to protecting human health and the environment; key to that commitment is engaging the community and increasing public participation in environmental restoration at the Longhorn Army Ammunition Plant (LHAAP)
- You are encouraged to:
  - Attend RAB Meetings and/or become a member of the RAB
  - Visit the Longhorn environmental website at www.longhornaap.com.
- The website is regularly updated to indicate the upcoming field events at each site including groundwater sampling, monitoring well installations, soil sampling, or remediation activities.
  - Make suggestions for improving communication – the Army welcomes and appreciates community feedback
- There are three contractors working at LHAAP: Bhate/APTIM; HDR, Inc.; and MMG-TLI Joint Venture. The work conducted by these contractors will be presented in the following slides in that order.

Administrative Issues

- Restoration Advisory Board (RAB) Membership Update
    - Persons interested in being new members
- Minutes (June 2022 RAB Meeting)

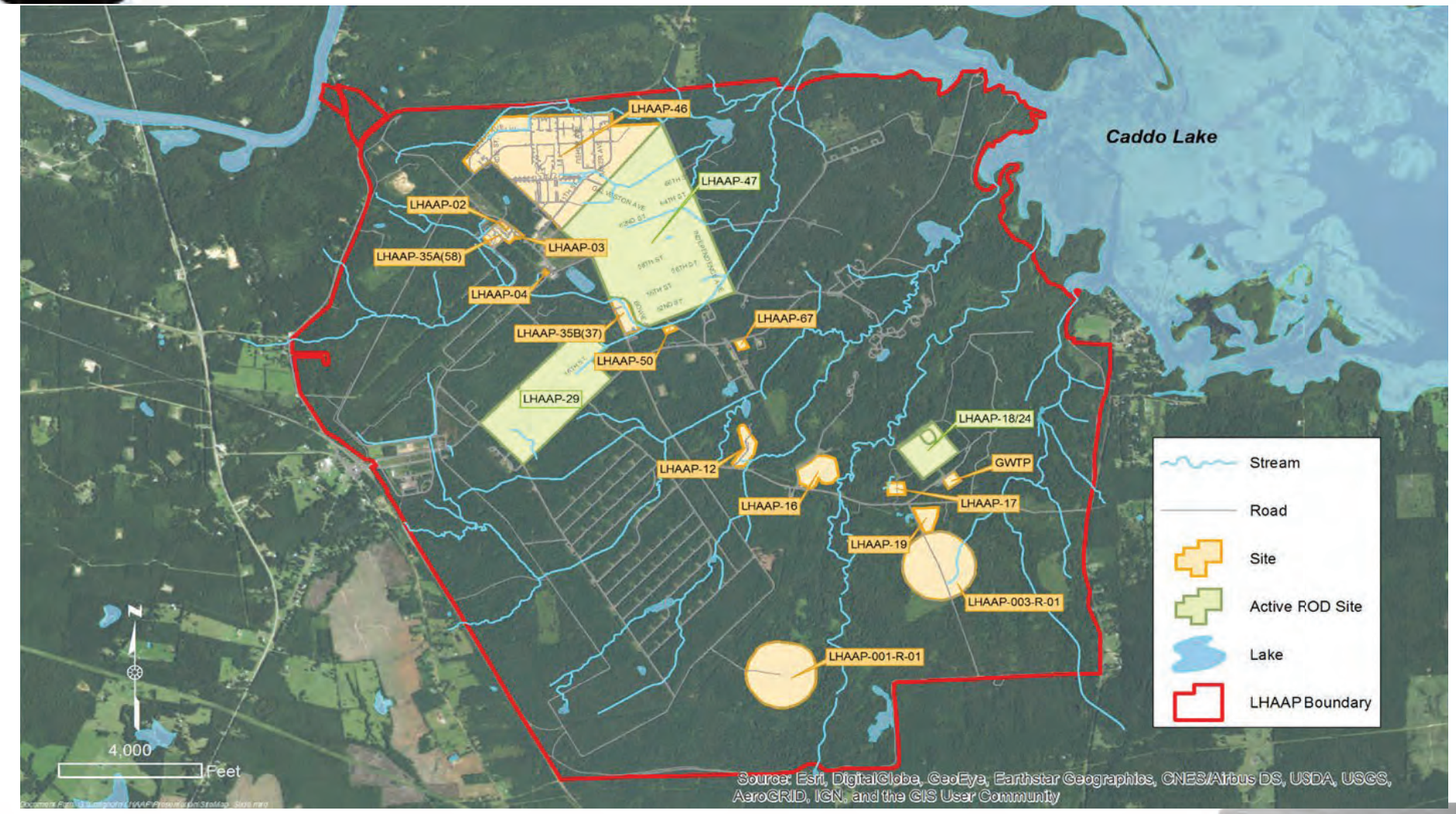
Community Involvement

- Community Involvement Plan Update

LHAAP Environmental Contractors

- Bhate/APTIM: LHAAP-02, -03, -04, -12, -16, -37, -46, -50, -58, -67, -001-R-01, -001-R-03, and -18/24 (interim remedy)
- HDR: LHAAP-18/24, -29, and -47
- MMG-TLI Joint Venture: LHAAP-17

Bhate/APTIM


Caddo Lake
LHAAP-46
LHAAP-47
LHAAP-02
LHAAP-03
LHAAP-35A(58)
LHAAP-04
LHAAP-35B(37)
LHAAP-50
LHAAP-67
LHAAP-29
LHAAP-18/24
GWTP
LHAAP-12
LHAAP-16
LHAAP-17
LHAAP-19
LHAAP-003-R-01
LHAAP-001-R-01
Stream
Road
Site
Active ROD Site
Lake
LHAAP Boundary
N
4,000
Feet
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Document in Progress

- LHAAP-04: Year 3 Annual Remedial Action Operation (RA[O]) Report – In Progress
- LHAAP-16: Year 2 Annual RA(O) Report – In Regulatory Review
- LHAAP-37: Year 5 Annual RA(O) Report – In Progress
- LHAAP-46: Year 8 Annual RA(O) Report – In Progress
- LHAAP-50: Year 8 Annual RA(O) Report – In Regulatory Review
- LHAAP-58: Year 8 Annual RA(O) Report – In Progress
- Groundwater Treatment Plant (GWTP): Quarterly Evaluation Report: 2nd Quarter (April – June 2022) – In Regulatory Review
- GWTP: Quarterly Evaluation Report: 3rd Quarter (July-September 2022) – In Progress

Completed Field Work Since Last RAB Meeting

- LHAAP-04: Year 3 Semi-Annual Sampling Event #2 (August 2022)
- LHAAP-16: Year 3 Semi-Annual Sampling Event #1 (June/July 2022)
- LHAAP-50: Year 3 First Semiannual Remedial Action Operation (RA[O]) Sampling (October 2022)
- LHAAP-58: Semi-annual RA(O) Sampling (June 2022)
- LHAAP-18/24: Semi-annual RA(O) Sampling (August 2022)
- Surface Water: 3rd Quarter Sampling (August 2022)

3 Month Look Ahead-Documents by Bhate Team

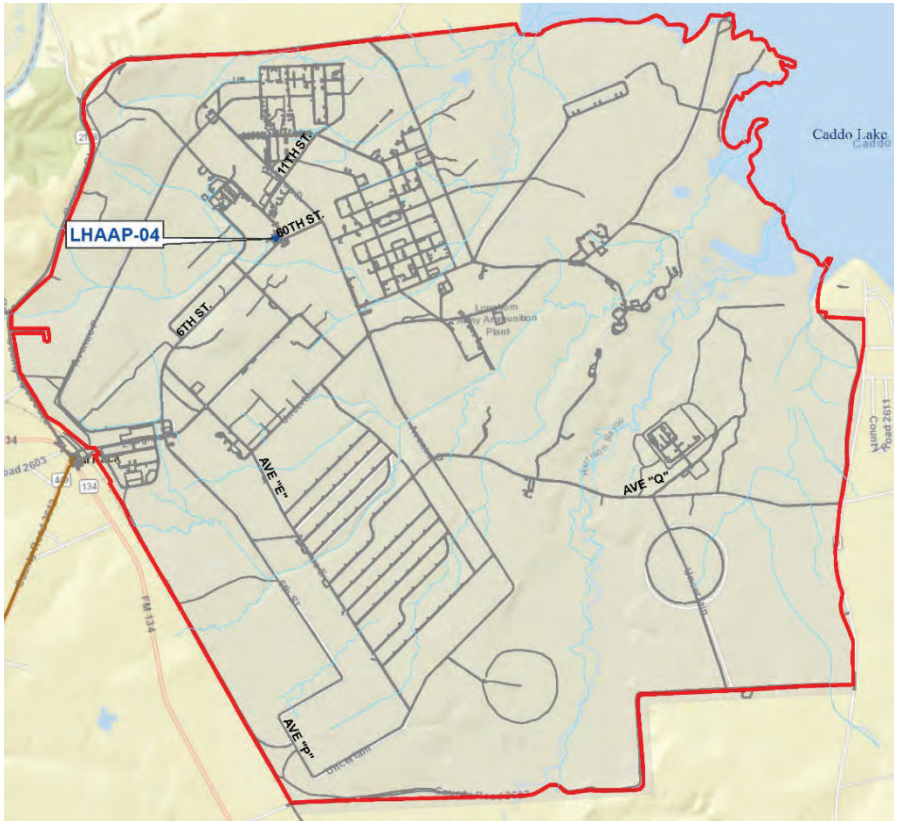
- LHAAP-04: Draft Remedial Action Operation (RA[O]) Report to Regulators
- LHAAP-37: Draft Year 5 RA(O) Report to Regulators
- LHAAP-46: Draft Year 8 RA(O) Report to Regulators
- LHAAP-50: Draft Final Year 8 RA(O) Report to Regulators
- LHAAP-58: Draft Final Year 8 RA(O) Report to Regulators
- Groundwater Treatment Plant (GWTP) and LHAAP-18/24: Quarterly Evaluation Report 3rd Quarter (July – September 2022) to Regulators

3 Month Look Ahead-Field Work by Bhate Team

- LHAAP-12: 2022 Annual Sampling (December 2022)
- LHAAP-16: Year 3 Semi-Annual Sampling Event #2 (January 2023)
- LHAAP-37: Year 6 Annual Sampling (November 2022)
- LHAAP-58: Year 8 Semi-Annual Sampling Event #2 (December 2022)
- LHAAP-67: Year 9 Annual Sampling (November 2022)
- LHAAP-18/24: Semi-annual Groundwater Sampling (December 2022)
- Surface Water: Fourth Quarter Sampling (October - December 2022 depending on rainfall)

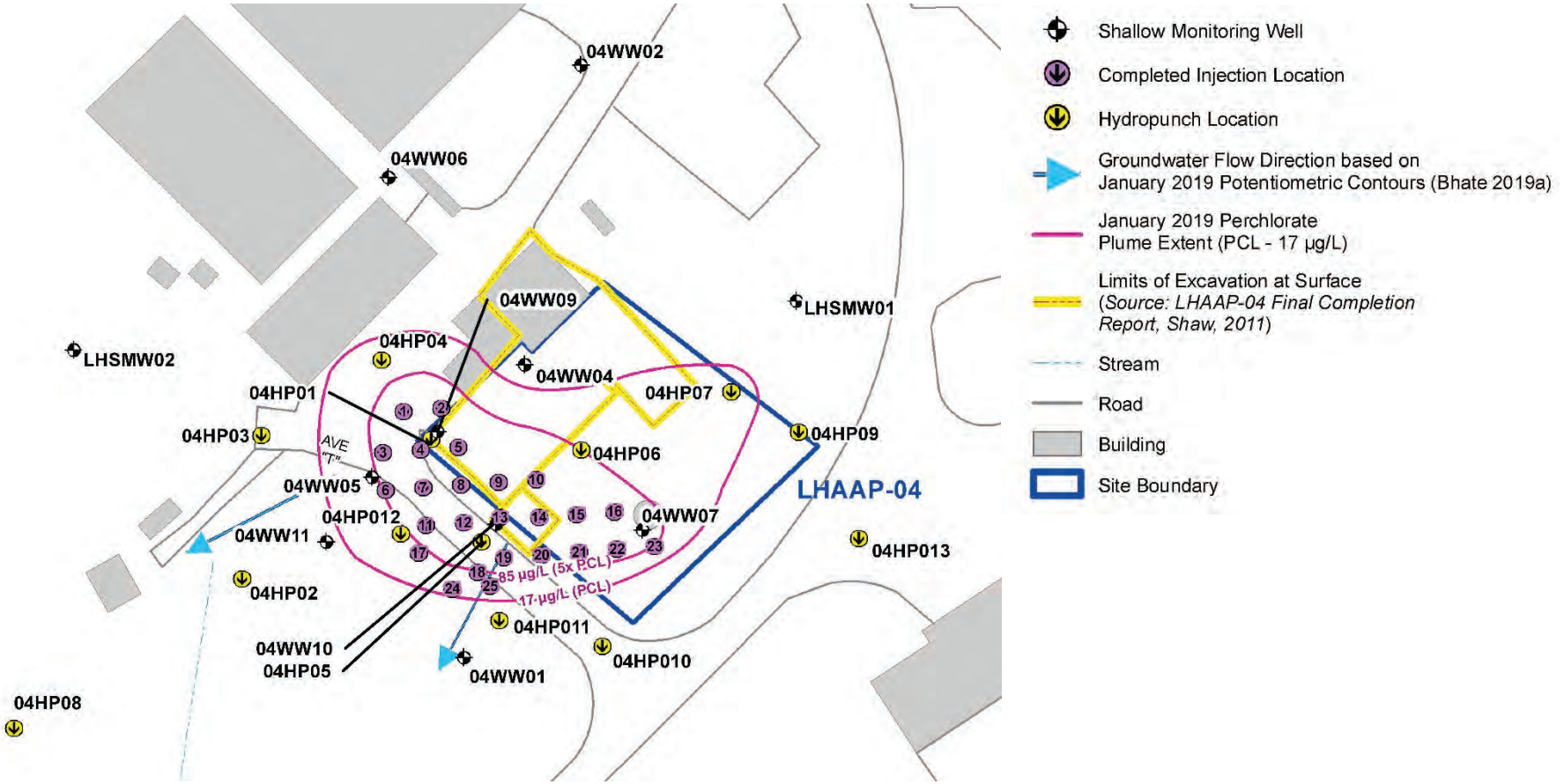
LHAAP-04 Update

- Former Pilot Wastewater Treatment Plant, located near the former Fire Station
- Demolition of structures and disposal of associated wastes in 1997
- Soil contaminated with mercury and perchlorate excavated in 2009
- In-Situ Bioremediation (ISB) and Land Use Controls (LUCs) implemented for groundwater in November 2019
- Quarterly sampling for two years beginning in February 2020
- Monitoring network revised July 2022 for semiannual sampling



LHAAP-04 Update

- 2019 Plume and Injection Locations



LHAAP-04 Update

Location Code			04WW01										
Sample Date			1/22/2019	2/4/2020	5/4/2020	8/10/2020	11/4/2020	3/10/2021	5/24/2021	8/4/2021	11/4/2021	2/1/2022	8/2/2022
Analyte	Units	PCL	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Perchlorate													
Perchlorate	µg/L	17	< 2	19	< 0.05	0.561 J	0.246 J	< 0.05	< 0.05	< 0.5	< 0.2	< 0.2	< 0.05
Field Parameters													
Dissolved Oxygen	mg/L	NV	0.15	0.03	0.04	0.05	0.03	0.02	0.03	0.41	0.38	0.65	0.03
Oxidation-Reduction Potential	mV	NV	327	-52	-135	-191	-115	-219	-152	-100	-50	52	-104

Location Code			04WW07										
Sample Date			1/22/2019	2/4/2020	5/5/2020	8/11/2020	11/4/2020	3/11/2021	5/25/2021	8/5/2021	11/9/2021	2/2/2022	8/2/2022
Analyte	Units	PCL	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Perchlorate													
Perchlorate	µg/L	17	110	86	3.51	0.557 J	< 0.05	0.169	< 0.05	< 0.5	< 0.2	< 0.2	< 0.05
Field Parameters													
Dissolved Oxygen	mg/L	NV	1.83	0.05	2.12	0.04	0.03	0.04	0.02	0.46	3.46	0.67	0.31
Oxidation-Reduction Potential	mV	NV	338	-260	-314	-112	-105	-436	-311	-158	-34	150	-148

Location Code			04WW10										
Sample Date			1/22/2019	2/4/2020	5/5/2020	8/11/2020	11/4/2020	3/11/2021	5/25/2021	8/5/2021	11/9/2021	2/2/2022	8/2/2022
Analyte	Units	PCL	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Perchlorate													
Perchlorate	µg/L	17	10,000	< 2	< 0.05	0.339 J+	0.0888 J	< 0.05	< 0.05	< 0.05	< 0.2	< 0.2	< 0.05
Field Parameters													
Dissolved Oxygen	mg/L	NV	3.59	5.54	2.72	1.03	0.11	0.04	0.15	0.7	1.64	0.63	0.47
Oxidation-Reduction Potential	mV	NV	333	-79	-286	-47	-62	-159	-77	-38	-35	68	-24

LHAAP-04 Update

Location Code			04WW05									
Sample Date			1/22/2019	2/4/2020	5/5/2020	8/11/2020	11/4/2020	3/10/2021	5/25/2021	8/5/2021	11/9/2021	2/2/2022	8/2/2022
Analyte	Units	PCL	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Perchlorate													
Perchlorate	µg/L	17	**78**	< 2	< 0.05	0.399 J	< 0.05	< 0.05	< 0.05	< 0.5	< 0.2	0.28	< 0.05
Field Parameters													
Dissolved Oxygen	mg/L	NV	1.62	0.09	0.22	0.14	0.15	0.08	0.08	0.48	0.52	0.76	0.1
Oxidation-Reduction Potential	mV	NV	163	-88	-90	-66	-36	-320	-60	-16	-4	127	-70

Location Code			04WW09									
Sample Date			1/22/2019	2/4/2020	5/5/2020	8/11/2020	11/4/2020	3/11/2021	5/25/2021	8/5/2021	11/9/2021	2/2/2022	8/2/2022
Analyte	Units	PCL	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Perchlorate													
Perchlorate	µg/L	17	**2,100**	**18**	11.1	3.92	2.02	< 0.05	< 0.5	< 0.5	< 0.2	< 1	< 0.05
Field Parameters													
Dissolved Oxygen	mg/L	NV	5.78	0.08	0.04	0.03	0.02	0.09	0.04	0.33	0.22	0.43	0.13
Oxidation-Reduction Potential	mV	NV	326	-74	-16	-87	-91	-21	-246	-127	-85	23	-134

Notes:

Blue highlighting indicates concentrations above the PCL.

< The analyte was not detected above the laboratory reporting limit shown.

J - Estimated: The concentration shown is estimated

J+ - The concentration shown is an estimate with a high bias

µg/L - micrograms per liter

mg/L - milligrams per liter

NV - No PCL value has been established for the analyte.

PCL - Texas Risk Reduction Program Tier 1 Groundwater Residential Protective Concentration Level.

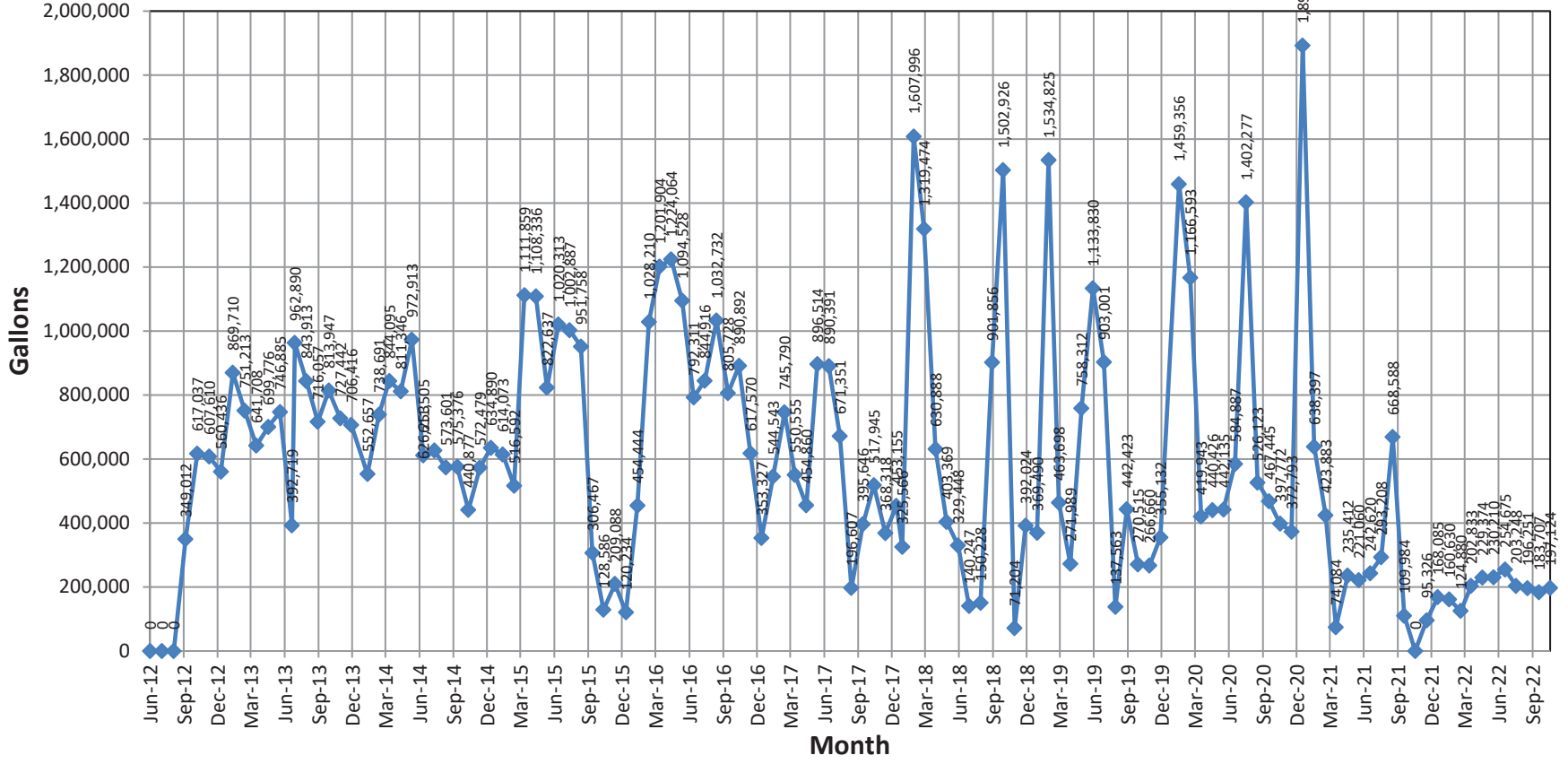
mV - millivolts

LHAAP-04 Update

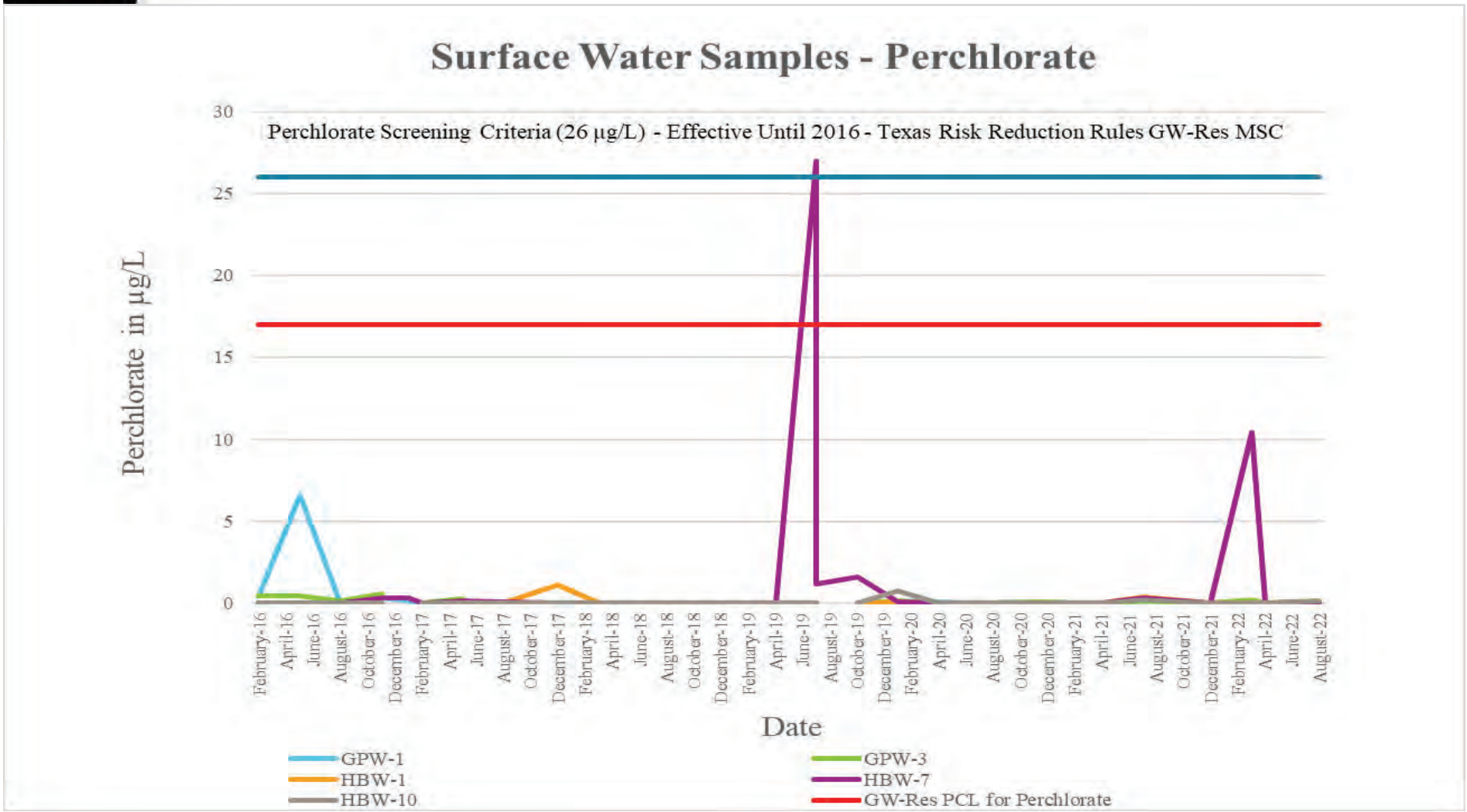
- Perchlorate has remained below the cleanup goal for nine consecutive sampling events since February 2020
- Dissolved Oxygen and Oxidation Reduction Potential were increasing over time prior to the August 2022 sampling event, when these field screening parameters were observed to have decreased
- Reduction of sampling network approved by Regulators in July 2022
- Semi-annual sampling will continue at six formerly contaminated monitoring wells and one downgradient location
- Laboratory analysis for perchlorate and geochemical parameters as field measurements

GWTP Update

Treated Groundwater Discharged Monthly from June 2012 through September 2022

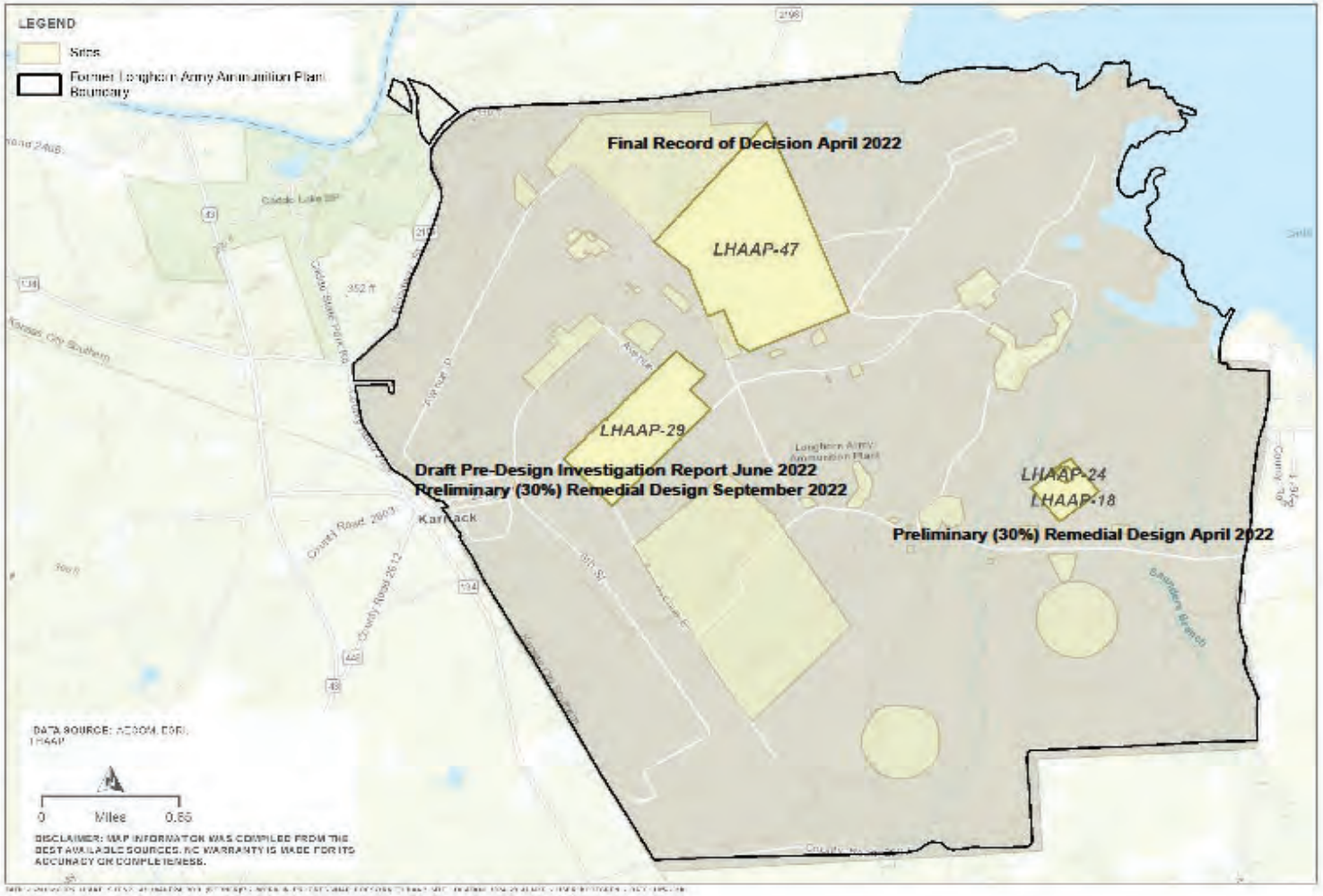


Surface Water Sample Results



Note: Surface water at HBW-7 had a detection of 27 µg/L from a sample collected on 11 July 2019. Surface water at HBW-7 was resampled 19 days later (30 July 2019) with a detection of 1.2 J µg/L.

HDR Update


LEGEND
Sites
Former Longhorn Army Ammunition Plant Boundary
Final Record of Decision April 2022
LHAAP-47
LHAAP-29
Draft Pre-Design Investigation Report June 2022
Preliminary (30%) Remedial Design September 2022
LHAAP-24
LHAAP-18
Preliminary (30%) Remedial Design April 2022
Karnack
0
Miles
0.65
DISCLAIMER: MAP INFORMATION WAS COMPILED FROM THE BEST AVAILABLE SOURCES. NO WARRANTY IS MADE FOR ITS ACCURACY OR COMPLETENESS.

LHAAP-18/24, -29, and -47 Document Status, HDR

- LHAAP-18/24: Draft Intermediate (60%) Remedial Design submitted August 2022
- LHAAP-29: Draft Final Pre-Design Investigation (PDI) Report submitted September 2022
- LHAAP-29: Draft Preliminary (30%) Remedial Design submitted July 2022
- LHAAP-47: Final Record of Decision (ROD) Submitted to Administrative Record August 2022

LHAAP-18/24 Preliminary (60%) Remedial Design

Selected Remedy

- Enhancement of the existing groundwater extraction and treatment system
- Enhanced In-Situ Bioremediation (EISB) in Shallow Zone and Wilcox Formation groundwater both inside and outside the containment area
- Thermal treatment to remove Dense Non-aqueous Phase Liquid (DNAPL)
- Maintenance of the existing cap over the Unlined Evaporative Pond (UEP)
- Unsaturated soil excavation and off-site disposal
- LUCs, Monitored Natural Attenuation (MNA), and long-term monitoring (LTM)

Design Approach

Phase I:

- Soil Excavation
- In-Situ Thermal Desorption (ISTD) to remove DNAPL
- Implementation of three EISB field pilot tests

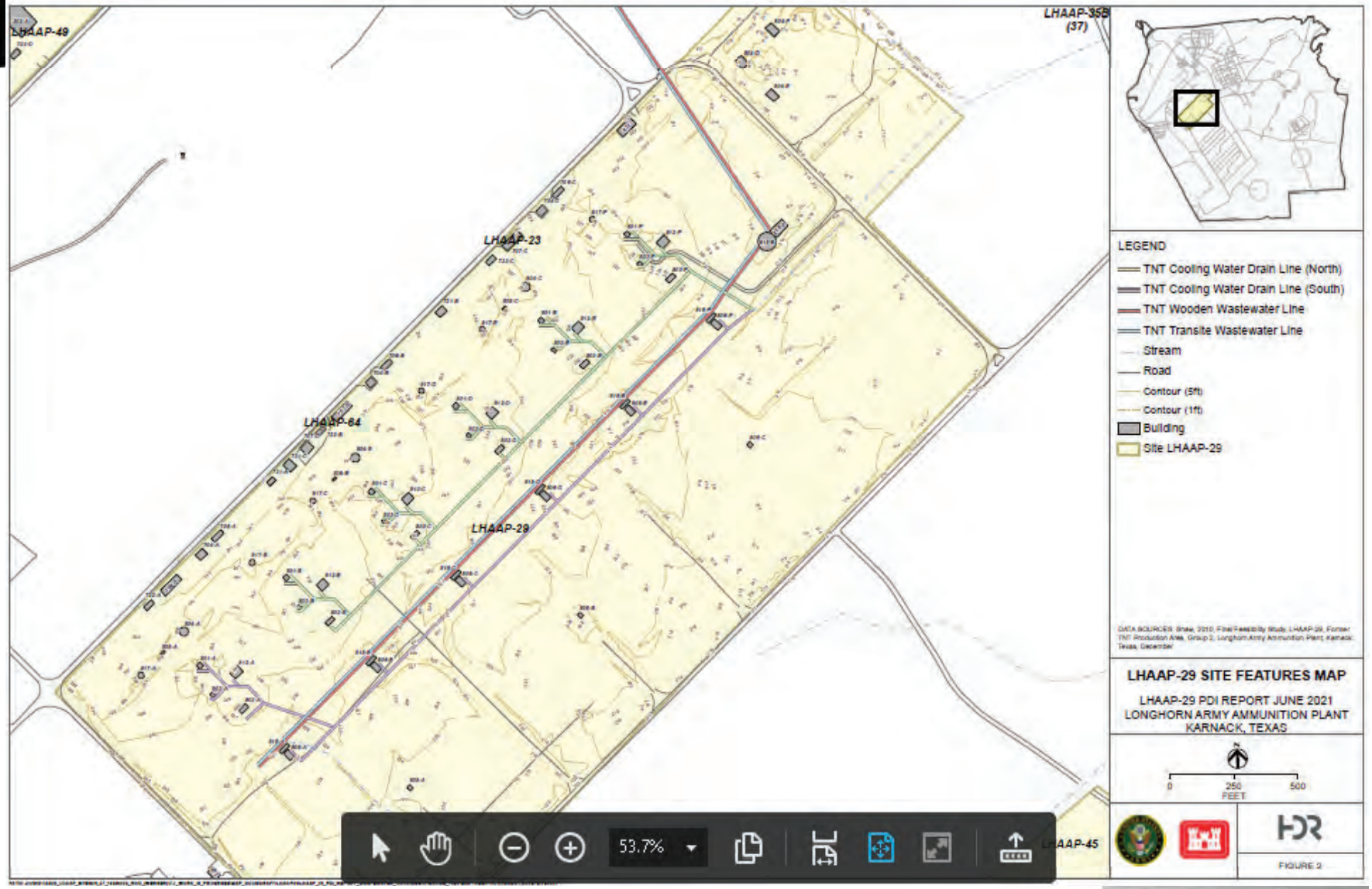
Phase II:

- EISB within ISTD areas
- EISB in most contaminated portion of source areas (Shallow & Wilcox)
- EISB Barrier Wall in the Shallow Zone & Wilcox Formation

Phase III:

- Phased Shut down of GWTP
- MNA

Site Map LHAAP-29



Status of LHAAP-29 PDI Reporting

- Draft Final Pre-Design Investigation (PDI) Report submitted to Regulators September 2022.
- Final PDI Report to be submitted November 2022.
- Second round of PDI field investigation performed March 2022 to fill data gaps identified during initial investigation.
- Areas of investigation:
    - Former Building 812-F
    - Cooling Water Outfall/Ditch
    - North trinitrotoluene (TNT) Cooling Water Line
    - South TNT Cooling Water Line
    - Transite TNT Wastewater Line
- Total of 87 boreholes advanced across LHAAP-29, collection of 98 soil samples for explosives testing.

LHAAP-29 Draft Intermediate (60%) Remedial Design

- LHAAP-29 Draft Intermediate (60%) Remedial Design
- Selected Remedy:
  - Contaminated soil removal with off-site disposal.
  - Flushing, inspection, and plugging of the transite trinitrotoluene (TNT) wastewater line and the vitrified clay cooling water lines.
  - Excavation and off-site disposal of the wooden TNT wastewater line and impacted soil.
  - In-Situ Thermal Desorption (ISTD) treatment of the intermediate groundwater zone Dense Non-aqueous Phase Liquid plume
  - Monitored Natural Attenuation in the shallow groundwater zone plumes and for the intermediate groundwater plume following ISTD.
  - Land Use Controls for soil and groundwater.

LHAAP-47 Record of Decision

- Final LHAAP-47 Record of Decision placed in Administrative Record August 2022.
- Notification Letters sent August 2022.
- LUC Notifications to Texas Department of Licensing and Regulation submitted August 2022.
- Media Release Notice of Availability of the Final Record of Decision for LHAAP-47 in Shreveport Times and Marshall News Messenger, September 2022.

LHAAP-47 Record of Decision Responsiveness Summary

- The Responsiveness Summary serves three purposes.
  - First, it provides the U. S. Army, USEPA, and TCEQ with information about community concerns with the preferred alternative at LHAAP-47 as presented in the Proposed Plan.
  - Second, it shows how the public's comments were considered in the decision-making process for selection of the remedy.
  - Third, it provides a formal mechanism for the U.S. Army to respond to public comments.

LHAAP-47 Record of Decision Responsiveness Summary

- Responsiveness Summary: Review (*Handouts Provided Have the Full Summary*)
  - Written and verbal questions/comments addressed Revised Proposed during the public comment period and public meetings.
- Comment Categories:
  - Thermal Treatment Technology (TTT): Implementation at Other Sites; Schedule/Timeline for implementing at other Longhorn sites; Power Source for TTT; Temperature Required for TTT to Work on Groundwater.
  - Metals (Arsenic): Maximum Cleanup Level (MCL)/Background Study; Testing at Building 46A; Need to Develop Explicit/Quantifiable Criteria to Address Cleanup of Metals.
  - Perchlorate Cleanup Levels in Groundwater.

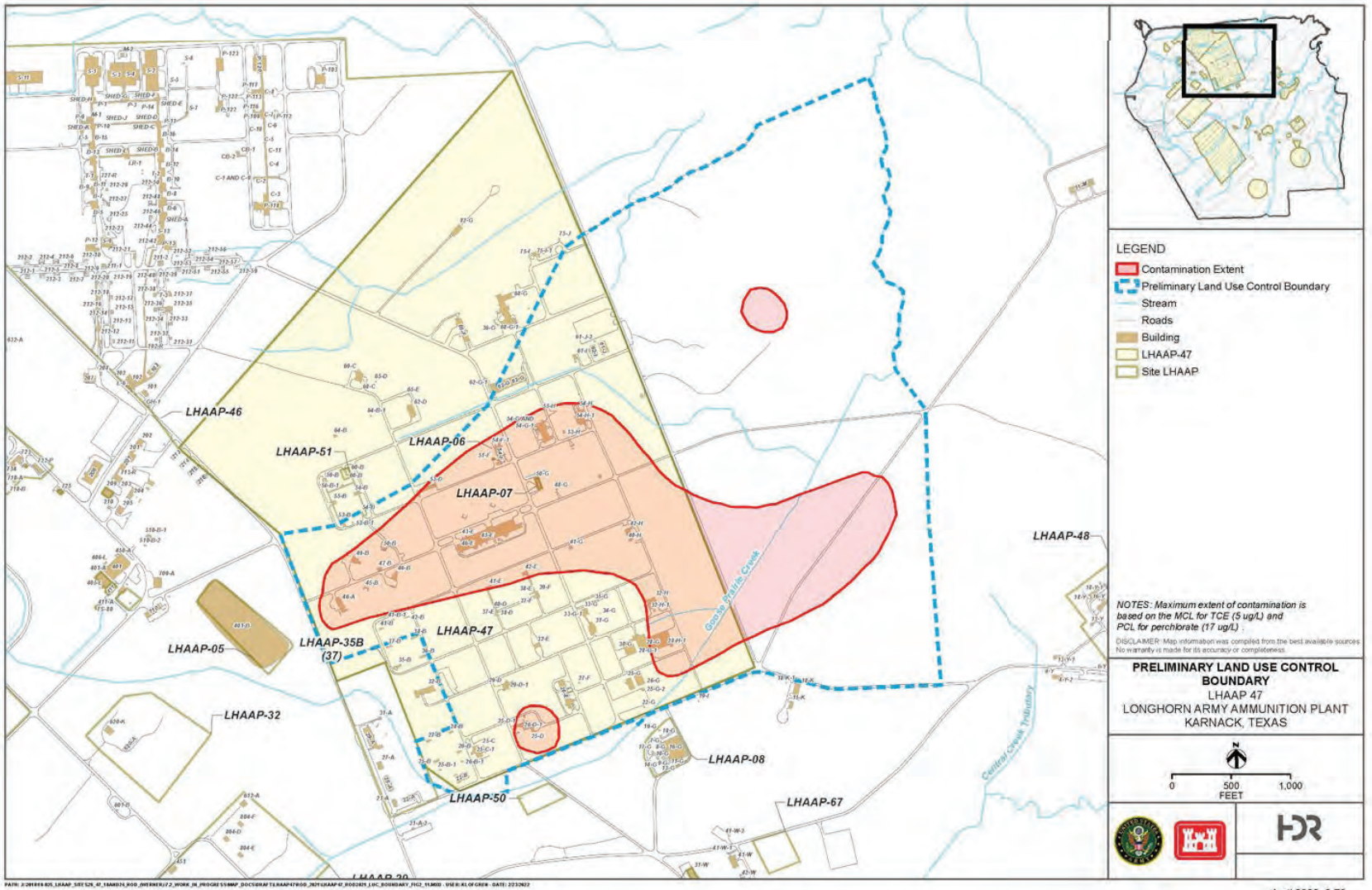
LHAAP-47 Record of Decision Responsiveness Summary

- Comment Categories (cont.d):
  - Surface Water Modeling: Effect of Groundwater Contaminants on Surface Water in Goose Prairie (Reassess).
  - Time to Complete Cleanup: Evaluation of Alternative that Would Shorten Cleanup Time.
  - Natural Attenuation: Effectiveness of Natural Attenuation on Trichloroethene in Groundwater; Use of Quantifiable Criteria to Determine Natural Attenuation is Reducing Contaminant Concentrations at an Acceptable Rate; Estimation of Natural Attenuation Rates (Use of Half-lives that Do Not Meet USEPA Criteria).
  - Estimation of Hydraulic Conductivity: Use of Slug Test Data vs. Pump Test Data.

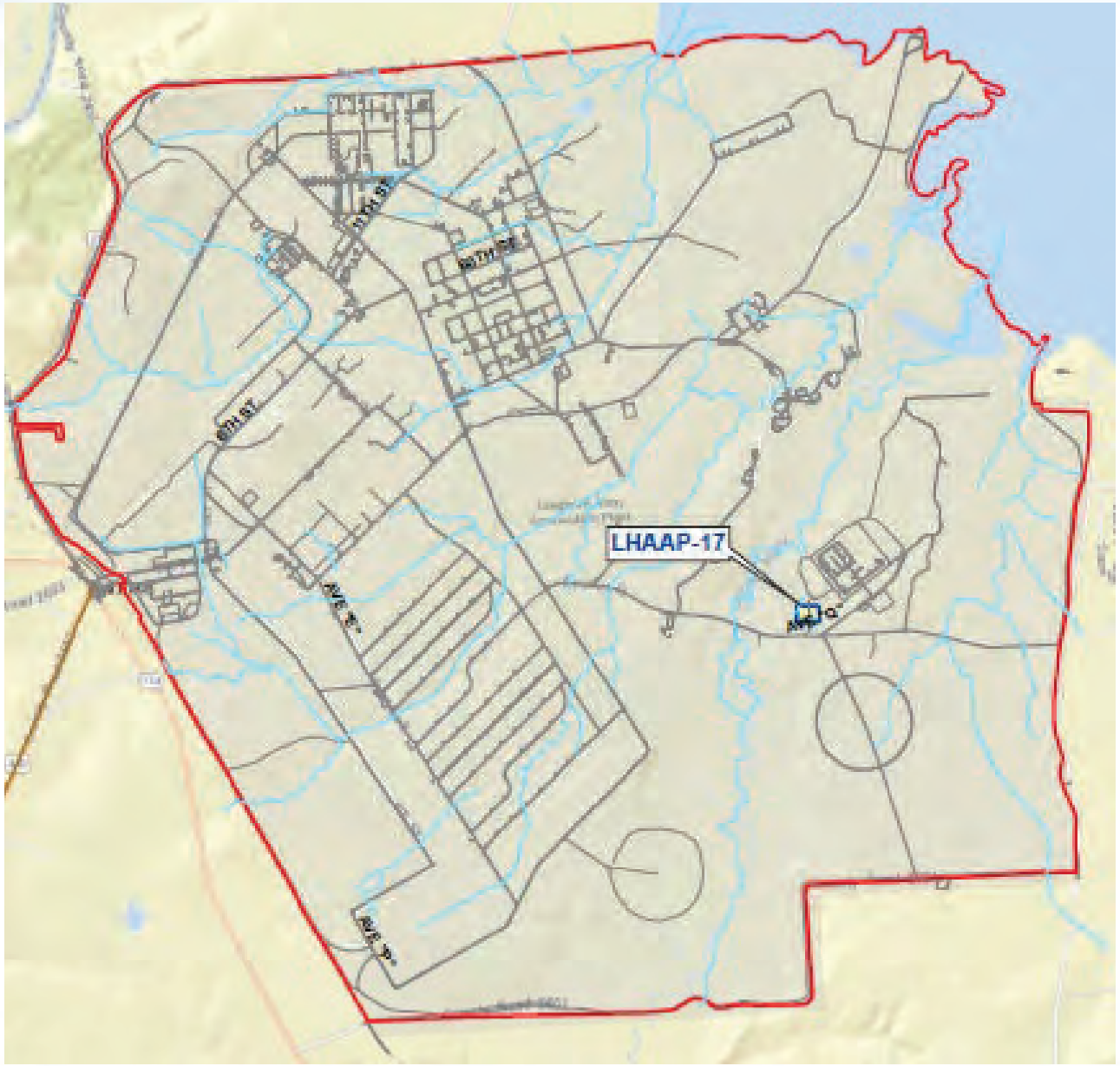
LHAAP-47 Record of Decision

- Land Use Controls:
  - Groundwater use prohibited (except for environmental monitoring and testing).
  - Nonresidential land use.
  - Integrity of any current or future remedial or monitoring systems shall be maintained.

LHAAP-47 Record of Decision



MMG-TLI Joint Venture Update



LHAAP-17 Time Critical Removal Action

- Major Work Elements:
  - Civil survey, Vegetation removal & Erosion control repair
  - Robotic sifting of all pre-existing soil piles to remove potential Munitions and Explosives of Concern (MEC)
  - Confirmation sampling and analysis to confirm excavation extents
  - Backfilling in areas previously determined clean
  - Off-site disposal of sifted soils
  - Complete excavations and receive regulatory approval to backfill all areas
  - Complete geophysical survey across the site to identify subsurface anomalies (i.e., targets) that may be MEC
  - Dig/remove identified targets
  - Install the groundwater extraction system components and site restoration

LHAAP-17

- Status:
  - All soil piles have been sifted and disposed of off-site
  - Over 4,048 cubic yards of soil have been excavated and approximately 2,500 cubic yards of this material have been sifted and transported for off-site disposal
  - All excavations with validated confirmation samples are complete and backfilled
  - 96 Munitions and Explosives of Concern (MEC) items have been disposed of through on-site detonations
  - An estimated 41,000 pounds of Non-Munitions Related debris and 18,700 pounds of Munitions Debris have been inspected and transported off-site for recycling/disposal
  - Groundwater extraction system installation is complete and operating per the design

LHAAP-17 Groundwater Extraction System Installation

- Groundwater extraction system installation was initiated in May 2022.
- Extraction system components include:
  - Overhead electrical power lines
  - Extraction system shed which houses a 2,500 gallon double walled storage tank, air compressor, transfer pump, and the programmable logic control (PLC) system
  - PLC system allows the extraction of groundwater to be automated and integrated into the groundwater treatment plant (GWTP) system
  - Underground groundwater conveyance piping connecting extraction wells to the system shed, and the system shed to the GWTP
  - Each extraction well is equipped with a submersible air diaphragm extraction pump
- Groundwater extraction began on 5 August 2022.
- As of 30 September 2022, approximately 121,400 gallons of groundwater has been extracted and pumped to the GWTP for treatment.

LHAAP-17 Groundwater Extraction System Installation

Other Discussion RAB Discussions

- Metals Discussion
- Transfer Update

Next RAB Meeting Schedule & Closing Remarks

- Schedule Next Restoration Advisory Board Meeting
  - o 15 February 2023
- Other Issues/Remarks
- Thank you for coming

Groundwater Treatment Plant - Processed Groundwater Volumes

The amount of groundwater treated is determined by measuring the number of gallons of processed water discharged.

Processed Water Discharged Data (in gallons)

Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08
1,041,491	848,356	804,822	792,148	665,883	818,872	791,306	568,812	776,904	748,377	690,052	617,199

Oct-08	Nov-08	Dec-08	Jan-09	Feb-09	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	Sep-09
655,059	619,274	726,118	552,299	598,144	433,800	488,807	526,958	387,644	0	414,853	735,716

Oct-09	Nov-09	Dec-09	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10
808,322	636,306	727,492	391,898	695,343	802,656	894,731	962,121	1,257,977	1,314,924	1,041,495	1,136,547

Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11
956,567	705,805	849,712	811,679	668,281	1,090,348	817,325	900,338	916,552	784,369	652,524	733,456

Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12
748,102	658,250	684,903	865,453	725,000*	730,000*	980,000*	630,000*	0	0	0	349,012

Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13
617,037	607,610	560,436	869,710	751,213	641,708	699,776	746,885	392,719	962,890	843,913	716,057

Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14
813,974	727,442	706,416	552,657	738,691	844,095	811,346	972,913	611,505	626,253	573,601	575,376

Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15
440,877	572,479	634,890	614,073	516,592	1,111,859	1,108,336	822,637	1,020,313	1,002,887	951,758	306,467

Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16
128,586	209,088	120,234	454,444	1,028,210	1,201,904	1,224,064	1,094,528	792,311	844,916	1,032,732	805,728

Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17
890,892	617,570	353,327	544,543	745,790	550,555	454,860	896,514	890,391	528,538	195,198	961,324

Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul - 18	Aug-18	Sep-18
517,945	368,318	453,155	325,566	1,607,996	1,319,474	630,888	403,369	329,448	140,247	150,228	901,856

Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul - 19	Aug-19	Sep-19
1,502,926	71,204	392,024	369,490	1,534,825	463,698	271,989	758,312	1,133,830	1,415,203	493,063	442,423

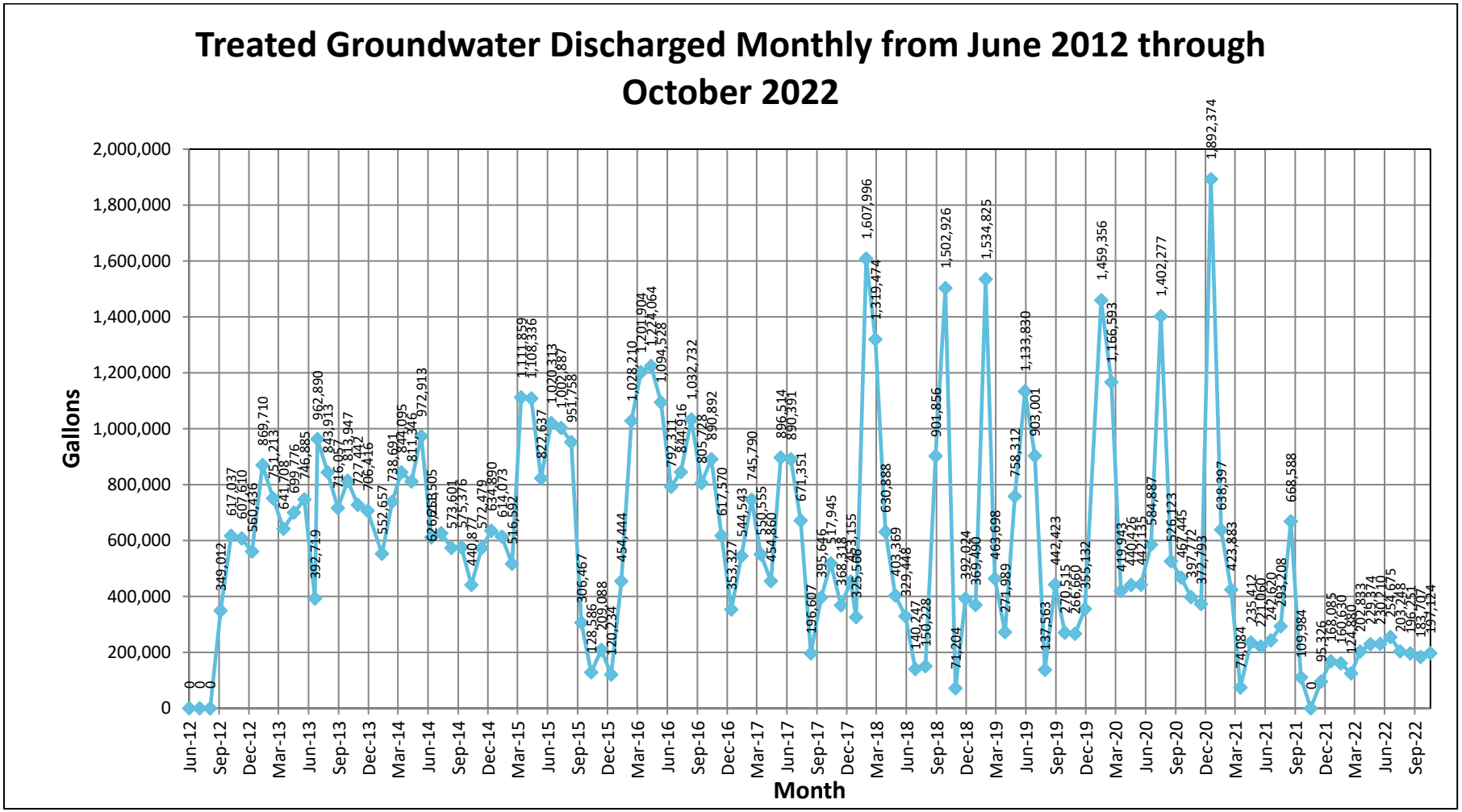
Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20
270,515	288,683	355,132	1,459,356	1,166,593	419,943	440,426	442,135	584,887	1,402,277	539,526	467,445

Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21
397,772	372,793	1,832,274	638,397	423,883	74,084	235,412	1,121,060	242,620	293,208	668,588	109,984

Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22
0	95,326	439,585	322,130	124,880	202,833	229,374	230,210	254,675	203,248	196,251	183,707

Oct-22
197,124

*Indicates Estimate



Water Discharge Location and Volume (Gallons)

Month	Total Combined to Harrison Bayou	LHAAP-18/24 Sprinklers	GWTP To INF Pond	INF Pond to Harrison Bayou	Contract Hauled Off-Site
Dec-16	0	236,688	0	0	0
Jan-17	0	0	0	0	0
Feb-17	0	0	0	0	14,355
Mar-17	127,242	0	0	0	14,400
Apr-17	113,038	0	236,821	0	0
May-17	0	0	534,155	0	0
Jun-17	958,404	0	294,550	490,574	0
Jul-17	0	0	528,538	0	0
Aug-17	0	0	195,197	0	0
Sep-17	651,434	0	309,980	651,434	0
Oct-17	0	0	517,945	0	0
Nov-17	0	0	368,318	0	0
Dec-17	560,350	0	453,155	560,350	0
Jan-18	325,566	0	253,177	325,566	0
Feb-18	1,607,996	0	62,017	1,430,634	0
Mar-18	1,319,474	0	0	870,816	0
Apr-18	630,888	0	0	630,888	0
May-18	403,369	0	0	403,369	0
Jun-18	193,669	0	135,779	0	0
Jul -18	0	0	140,247	0	0
Aug -18	49,409	0	100,819	0	0
Sep-18	585,397	0	316,459	524,484	0
Oct-18	1,409,106	0	93,820	1,016,285	0
Nov-18	71,204	0	0	0	0
Dec-18	392,024	0	0	0	0
Jan-19	369,490	0	0	369,490	0
Feb-19	1,534,825	0	0	1,326,485	0
Mar-19	463,698	0	0	83,250	0
Apr-19	271,989	0	0	0	0
May-19	758,312	0	0	253,817	0
Jun-19	1,133,830	0	0	847,918	0
Jul-19	1,415,203	0	0	903,001	0
Aug-19	374,629	0	118,434	0	0
Sep-19	0	0	442,423	0	0
Oct-19	0	0	270,515	0	0
Nov-19	115,503	0	173,180	0	0

Month	Total Combined to Harrison Bayou	LHAAP-18/24 Sprinklers	GWTP To INF Pond	INF Pond to Harrison Bayou	Contract Hauled Off-Site
Dec-19	318,248	0	36,884	0	0
Jan-20	1,459,396	0	0	1,115,183	0
Feb-20	1,166,593	0	0	741,954	0
Mar-20	419,943	0	0	0	0
Apr-20	440,426	0	0	0	0
May-20	442,135	0	0	0	0
June-20	584,887	0	0	0	0
July-20	1,402,277	0	0	984,393	0
Aug-20	216,197	0	323,359	0	0
Sep-20	0	0	467,445	0	0
Oct-20	0	0	397,772	0	0
Nov-20	0	0	372,793	0	0
Dec-20	1,832,274	0	60,199	1,571,432	0
Jan-21	638,397	0	0	383,318	0
Feb-21	423,883	0	0	259,875	0
Mar-21	74,084	0	0	74,084	0
Apr-21	235,412	0	0	0	0
May-21	1,121,060	0	0	900,000	0
Jun-21	242,620	0	0	0	0
Jul-21	293,208	0	0	243,675	0
Aug-21	668,588	0	0	561,527	0
Sep-21	0	0	109,984	0	0
Oct-21	0	0	0	0	0
Nov-21	0	0	95,326	0	0
Dec-21	271,500	0	168,085	271,500	0
Jan-22	161,500	0	160,630	161,500	0
Feb-22	0	0	124,880	0	0
Mar-22	190,898	0	11,935	0	0
Apr-22	229,374	0	0	0	0
May-22	230,210	0	0	0	0
June-22	254,675	0	0	0	0
July-22	0	0	203,248	0	0
Aug-22	34,115	0	162,136	0	0
Sept-22	83,312	0	100,395	0	0
Oct-22	0	0	197,124	0	0

Harrison Bayou and Goose Prairie Creek – Perchlorate Data

Surface water samples are collected quarterly from each location in Harrison Bayou and Goose Prairie Creek, unless the sampling location is dry.

Surface Water Sample Data (in micrograms per liter)

Quarter	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st
Creek Sample ID	**Jul 1999**	**Sep 1999**	**Feb 2000**	**Apr 2000**	**Aug 2000**	**Dec 2000**	**Feb 2001**	**Apr 2001**	**July 2001**	**Oct 2001**	**Jan 2002**
GPW-1	<1.0 U	-	4	<4.0 U	<4.0 U	<4.0 U	-	2.65	<4.0 U	<4.0 U	<4.0 U
GPW-3	<1.0 U	<4.0 U	17	8	<4.0 U	<4.0 U	-	2.28	<4.0 U	<4.0 U	<4.0 U
HBW-1	-	<8.0 U	310	23	-	-	<4.0 U	-	<4.0 U	<4.0 U	<4.0 U
HBW-7	-	<8.0 U	370	110	-	-	<4.0 U	-	<4.0 U	<4.0 U	<4.0 U
HBW-10	-	<8.0 U	905	650	<4.0 U	-	<4.0 U	-	<4.0 U	-	-

Quarter	2nd	3rd	4th	1st	2nd	3rd	3rd	4th	2nd	3rd	4th
Creek Sample ID	**June 2002**	**Sept 2002**	**Dec 2002**	**Feb 2003**	**June 2003**	**Aug 2003**	**July 2004**	**Dec 2006**	**May 2007**	**Aug 2007**	**Dec 2007**
GPW-1	<4.0 U	<4.0 U	18.3	18.6	59.9	-	2.25	-	<1.0 U	<1.0 U	10.7
GPW-3	<4.0 U	<4.0 U	5.49	12.6	14.7	-	2.2	-	<1.0 U	<1.0 U	7.48
HBW-1	<4.0 U	<4.0 U	<4.0 U	-	<4.0 U	99.3	<0.2 U	<1.0 U	<1.0 U	122	<1.0 U
HBW-7	<4.0 U	<4.0 U	<4.0 U	-	<4.0 U	<4.0 U	<0.2 U	<1.0 U	<1.0 U	1.02	<1.0 U
HBW-10	<4.0 U	<4.0 U	<4.0 U	-	<4.0 U	-	<0.2 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U

Quarter	1st	2nd	3rd	4th	2nd	3rd	3rd	3rd	4th	1st	2nd
Creek Sample ID	**Mar 2008**	**Jun 2008**	**Sep 2008**	**Dec 2008**	**May 2009**	**Jul 2009**	**Aug 2009**	**Sep 2009**	**Dec 2009**	**Mar 2010**	**Jun 2010**
GPW-1	27	<0.5 U	<0.5 U	<0.22 U	16	<4 U	NS	<1.2 U	3.7	1.3 J	<0.6 U
GPW-3	21.9	9.42	1.1	<0.22 U	8.9	<4 U	NS	<0.6 U	2.8	1.8 J	<0.6 U
HBW-1	<0.5 U	<0.5 U	<0.5 U	<0.22 U	<0.55 U	<4 U	NS	<1.5 U	<0.275 U	1.5 U	<0.6 U
HBW-7	<0.5 U	<0.5 U	<0.5 U	<0.22 U	<0.55 U	<4 U	24	<1.2 U	<0.275 U	1.5 U	<0.6 U
HBW-10	<0.5 U	<0.5 U	<0.5 U	<0.22 U	<0.55 U	<4 U	NS	<1.5 U	<0.275 U	1.2 U	<0.6 U

Quarter	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st
Creek Sample ID	**Sep 2010**	**Dec 2010**	**Mar 2011**	**Jun 2011**	**Sep 2011**	**Dec 2011**	**Mar 2012**	**Jun 2012**	**Not Applicable**	**Jan & Feb 2013**	**Mar 2013**
GPW-1	Dry	<0.1 U	8.7	Dry	Dry	1.76	0.163 J	Dry	NS	1.65	0.735
GPW-3	Dry	0.199 J	0.673	Dry	Dry	1.31	0.261	Dry	NS	1.74	0.754
HBW-1	Dry	<0.1 U	<0.2 U	Dry	Dry	<0.1 U	<0.1 U	Dry	NS	<0.2 U	<0.2 U
HBW-7	Dry	<0.1 U	<0.2 U	Dry	Dry	0.171 J	<0.1 U	Dry	NS	<0.2 U	<0.2 U
HBW-10	Dry	<0.1 U	<0.2 U	Dry	Dry	<0.1 U	<0.1 U	Dry	NS	<0.2 U	<0.2 U

Quarter	2nd	3rd	4th	1st	2nd	3nd	4th	1st	2nd	3rd	4th
Creek Sample ID	**Jun 2013**	**Sept 2013**	**Dec 2013**	**Feb 2014**	**May 2014**	**Aug 2014**	**Nov 2014**	**Feb 2015**	**May 2015**	**Aug 2015**	**Nov 2015**
GPW-1	Dry	<0.2 U	Dry	0.766	Dry	Dry	0.244 J	0.311 J	0.156 J	Dry	0.142 J
GPW-3	Dry	<0.2 U	Dry	1.15	Dry	Dry	0.276 J	0.344 J	Dry	Dry	0.311 J
HBW-1	<0.2 U	<0.2 U	Dry	<0.2 U	Dry	Dry	<0.2 U	<0.2 U	Dry	Dry	<0.2 U
HBW-7	<0.2 U	<0.2 U	Dry	0.201 J	Dry	Dry	<0.2 U	0.124 J	Dry	Dry	<0.2 U
HBW-10	<0.2 U	<0.2 U	Dry	<0.2 U	Dry	Dry	<0.2 U	<0.2 U	Dry	Dry	<0.2 U

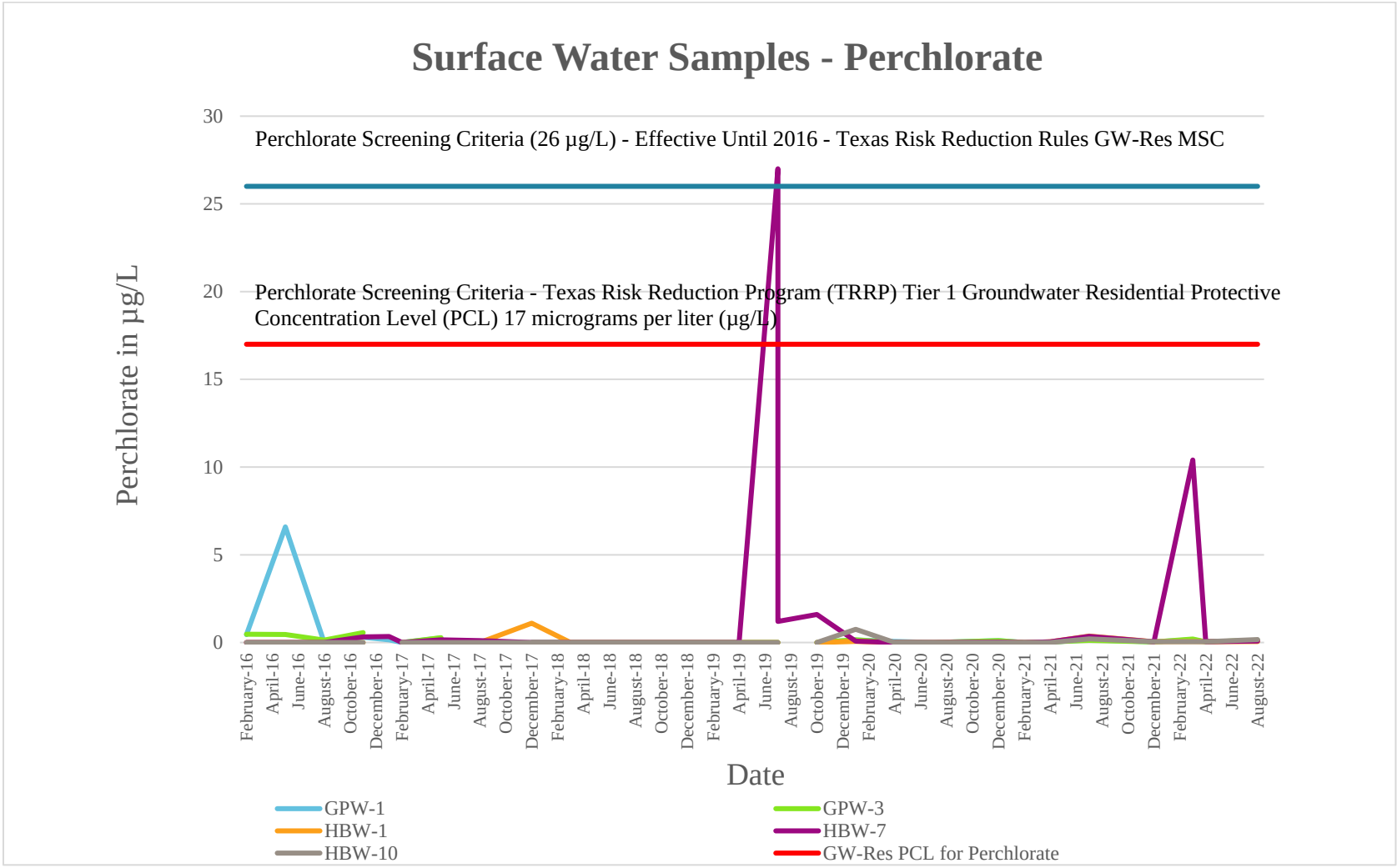
Quarter	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd
Creek Sample ID	**Feb 2016**	**May 2016**	**Aug 2016**	**Nov 2016**	**Feb 2017**	**May 2017**	**Aug 2017**	**Dec 2017**	**Mar 2018**	**Jun 2018**	**Aug 2018**
GPW-1	0.447	6.59	<0.2 U	0.301 J	<1 U	0.263	Dry	<2.0 U	<2.0 U	Dry	<2.0 U
GPW-3	0.474	0.457	0.141	0.563	<1 U	0.274	Dry	<2.0 U	<2.0 U	Dry	<2.0 U
HBW-1	<0.2 U	<0.2 U	<0.2 U	<0.2 U	<1 U	<0.2 U	<0.2 U	1.1 J	<2.0 U	Dry	<2.0 U
HBW-7	<0.2 U	<0.2 U	<0.2 U	0.318 J	<1 U	0.155	<0.2 U	<2.0 U	<2.0 U	Dry	<2.0 U
HBW-10	<0.2 U	<0.2 U	<0.2 U	<0.2 U	<1 U	<0.2 U	0.111 J	<2.0 U	<2.0 U	Dry	<2.0 U

NS – not sampled U – non-detect J – Estimated Dry – no surface water

Quarter	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st
Creek Sample ID	**Oct 2018**	**Jan 2019**	**Apr 2019**	**Jul 2019**	**Oct 2019**	**Jan 2020**	**Apr 2020**	**Jul 2020**	**Dec 2020**	**Feb 2021**
GPW-1	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	0.163	0.0589 J	<0.05 U	0.110	<0.05 U
GPW-3	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	0.156	0.0662 J	0.0326 J	0.108	<0.05 U
HBW-1	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	0.0600 J	<0.05 U	<0.05 U	0.0374 J	<0.05 U
HBW-7	<2.0 U	<2.0 U	<2.0 U	27 (initial)/ 1.2 J (resample)	1.6 J	0.0761 J	<0.05 U	0.0318 J	0.0265 J	<0.05 U
HBW-10	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	0.0782 J	<0.05 U	<0.05 U	<0.05 U	<0.05 U

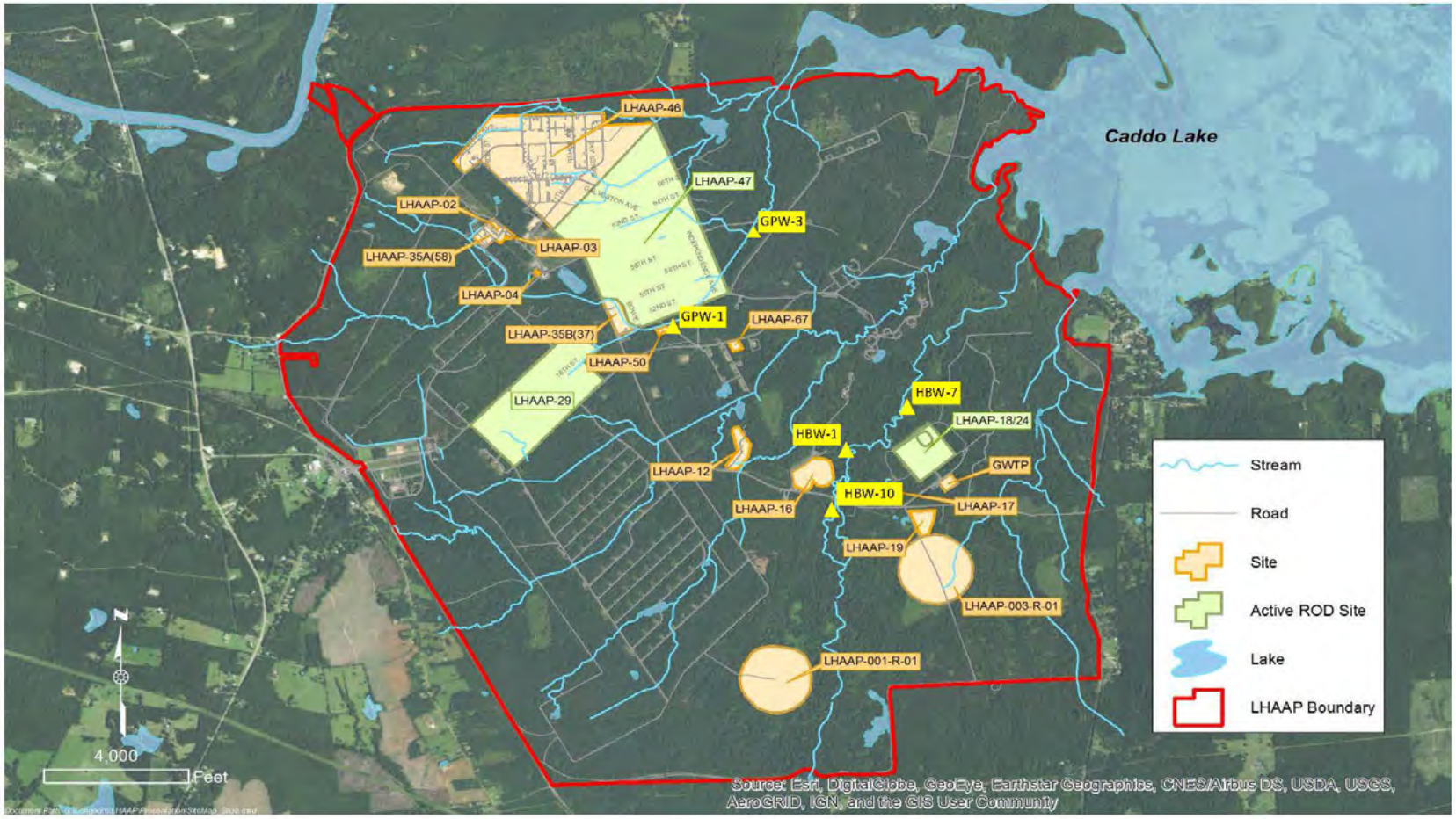
Quarter	2nd	3rd	4th	1st	2nd	3rd
Creek Sample ID	**Apr 2021**	**Jul 2021**	**Dec 2021**	**Mar 2022**	**Apr 2022**	**Aug 2022**
GPW-1	0.0268 J	0.154	0.0394 J	0.162	0.042 J	0.104
GPW-3	0.0321 J	0.122	0.0344 J	0.198	0.0384 J	0.132
HBW-1	0.0410 J	0.369	0.050 U	0.052 J	<0.05 U	0.0540 J
HBW-7	0.0373 J	0.348	0.0359 J	10.4	0.0493 J	0.0880 J
HBW-10	<0.05 U	0.207	0.0464 J	<0.05 U	<0.05 U	0.171

NS – not sampled U – non-detect J – Estimated Dry – no surface water



Note: Surface water at HBW-7 had a detection of 27 µg/L from a sample collected on 11 July 2019. Surface water at HBW-7 was resampled 19 days later (30 July 2019) with a detection of 1.2 J µg/L.

Longhorn Army Ammuntion Plant Creek Sampling Locations



DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 536
CONWAY, AR 72058

January 23, 2023

DAIN-ISE

Ms. April Palmie
Texas Commission on Environmental Quality
Superfund Section, MC-136
12100 Park 35 Circle, Bldg D
Austin, TX 78753

Re: Final Year 5 Long-Term Management Report for LHAAP-001-R-01 and LHAAP-003-R-01 Longhorn Army Ammunition Plant, Karnack Texas

Dear Ms. Palmie,

An electronic copy of the above referenced document has been added to the project portal's "Documents" folder at the following address for your record: (https://docs.cbifederalservices.com/sites/501032/regulators/Shared%20Documents/Forms/AllItems.aspx). An electronic copy of this letter and download instructions for the electronic file have been sent via email.

The document was prepared by Bhate Environmental Associates, Inc., (Bhate) team, on behalf of the Army as part of Bhate's Performance Based Remediation contract for the facility. I ask that Kim Nemmers, Bhate's Project Manager, be copied on any communications related to the project.

The point of contact for this action is the undersigned. I may be contacted at 571-403-3232, or by email at rose.m.zeiler.ctr@army.mil.

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Copies furnished:
B. Follin, USEPA Region 6, Dallas, TX (1 digital copy)
P. Bruckwicki, Caddo Lake NWR, TX (1 Hard Copy and 1 CD)
C. Montoya, USACE, Fort Worth, TX District (Transmittal Letter via email)
A. Williams, USACE, Fort Worth, TX District (1 digital copy)
L. Sierocinski, USAEC, San Antonio, TX (1 digital copy)
M. Bowlby, USAEC, San Antonio, TX (1 digital copy)
K. Nemmers, Bhate, Lakewood, CO (1 digital copy)

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

January 23, 2023

DAIN-ISE

Mr. Brian Follin
U.S. Environmental Protection Agency
1201 Elm Street, Suite 500
Dallas, TX 75270-2002

Re: Final Year 5 Long-Term Management Report for LHAAP-001-R-01 and LHAAP-003-R-01 Longhorn Army Ammunition Plant, Karnack Texas

Dear Ms. Poulos,

An electronic copy of the above referenced document has been added to the project portal's "Documents" folder at the following address for your record: (https://docs.cbifederalservices.com/sites/501032/regulators/Shared%20Documents/Forms/AllItems.aspx). An electronic copy of this letter and download instructions for the electronic file have been sent via email.

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Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

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P. Bruckwicki, Caddo Lake NWR, TX (1 Hard Copy and 1 CD)
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L. Sierocinski, USAEC, San Antonio, TX (1 digital copy)
M. Bowlby, USAEC, San Antonio, TX (1 digital copy)
K. Nemmers, Bhate, Lakewood, CO (1 digital copy)

FINAL
YEAR 5 LONG-TERM MANAGEMENT REPORT FOR LHAAP-001-R-01 AND LHAAP-003-R-01 LONGHORN ARMY AMMUNITION PLANT

January 2023

Contract Number: W9128F-13-D-0012
Task Order Number: W912BV17F0150

Performance Based Remediation (PBR)
Longhorn Army Ammunition Plant
Karnack, Texas

Prepared For:

Longhorn Army Ammunition Plant
Karnack, Texas

Under Contract To:

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

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TABLE OF CONTENTS

Acronyms and Abbreviations iii

1 Introduction 1-1

1.1 Facility Background 1-1
1.2 Munitions Response Sites LHAAP-001-R-01 and LHAAP-003-R-01 Site Descriptions 1-1
1.3 Land Use Controls 1-2
1.4 Land Use Control Remedial Action Objective 1-3
1.5 Land Use Control Selected Remedy 1-3

2 Land Use Control Monitoring 2-1

2.1 Maintenance of Existing MEC Warning Signs 2-1
2.2 Monitoring Activities 2-2

3 Conclusions 3-1

4 References 4-1

Figures

Figure 1-1 LHAAP Site Map
Figure 1-2 LHAAP-001-R-01 Site Location Map with LUC Boundaries
Figure 1-3 LHAAP-003-R-01 Site Location Map with LUC Boundaries

Appendices

Appendix A LTM Inspection and Maintenance Checklist and Land Use Control Compliance Certification Form
Appendix B Photograph Log

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ACRONYMS AND ABBREVIATIONS

§	Section
EODT	EOD Technology, Inc.
IRP	Installation Restoration Program
LHAAP	Longhorn Army Ammunition Plant
LTM	Long-Term Management
LUC(s)	Land use control(s)
MEC	Munitions and explosives of concern
MMRP	Military Munitions Response Program
RAO	Remedial action objective
ROD	Record of Decision
Shaw	Shaw Environmental & Infrastructure, Inc.
U.S.	United States
USFWS	U.S. Fish and Wildlife Service
WP	White phosphorus

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1 INTRODUCTION

This document presents the monitoring of land use controls (LUCs) associated with the remedy set forth in the Final Longhorn Army Ammunition Plant (LHAAP) Record of Decision (ROD) (Shaw Environmental & Infrastructure, Inc. [Shaw], August 2016) for Military Munitions Response Program (MMRP) sites LHAAP-001-R-01 (South Test Area/Bomb Test Area) and LHAAP-003-R-01 (Ground Signal Test Area). This Year 5 Long-Term Monitoring (LTM) Report was prepared for the United States (U.S.) Army under the Worldwide Environmental Remediation Services Contract No. W9128F-13-D-0012 managed by the U.S. Army Corps of Engineers, Tulsa District.

1.1 Facility Background

The LHAAP is an inactive, government-owned, formerly contractor-operated and maintained industrial facility located in central-east Texas, in the northeastern corner of Harrison County. The facility occupies approximately 1,200 of its former 8,416 acres located between State Highway 43 in Karnack, Texas, and the southwestern shore of Caddo Lake, as shown on **Figure 1-1**. The LHAAP was listed as a National Priorities List site on August 9, 1990, due to threatened releases of hazardous substances, pollutants, or contaminants. The U.S. Environmental Protection Agency (USEPA), the Texas Water Commission (now the Texas Commission on Environmental Quality), and the U.S. Army signed a Federal Facility Agreement on December 30, 1991, to address the contamination at LHAAP.

1.2 Munitions Response Sites LHAAP-001-R-01 and LHAAP-003-R-01 Site Descriptions

Munitions response site LHAAP-001-R-01 (South Test Area/Bomb Test Area) is co-located with Installation Restoration Program (IRP) site LHAAP-27 and is situated in the southern portion of LHAAP and covers an area of approximately 79 acres (**Figure 1-2**). Site LHAAP-001-R-01 was constructed in 1954 and used for testing photoflash bombs produced at the facility until approximately 1956. During the late 1950s, illuminating signal devices were also demilitarized within pits excavated in the vicinity of the test pad. During the 1960s, leaking production items may have been demilitarized by detonation. Leaking white phosphorus (WP) munitions were supposedly disposed of, although no primary source documentation concerning this effort has been located. In 1984, a LHAAP Contamination Survey indicated that the area had been relatively inactive since the early 1960s and no disposal or testing activities have been carried out in this area since that time. LHAAP-001-R-01 was identified as a munitions and explosives of concern (MEC) area based on the visual confirmation of MEC.

Site LHAAP-003-R-01 (Ground Signal Test Area), is co-located with IRP site LHAAP-54 and is situated in the southeastern portion of LHAAP and covers an area of approximately 80 acres (**Figure 1-3**). Site LHAAP-003-R-01 was used intermittently in April 1963 for aerial and on-ground

testing and destruction of a variety of devices, including pyrotechnic signal devices, red phosphorus smoke wedges, infrared flares, illuminating mortar shells and cartridges, button bombs, and various types of explosive simulators. The site was also used intermittently over a 20-year period for testing and burn-out of rocket motors. From late 1988 through 1991, the site was also used for the burn-out of Pershing missile rocket motors. Occasionally, leaking WP munitions were burned at the site as a demilitarization activity. LHAAP-003-R-01 was identified as a MEC area based on the reported presence of MEC.

1.3 Land Use Controls

Following the 2008 non-time critical removal action surface clearance activities, LUCs were prepared and constructed for both sites (EOD Technology, Inc. [EODT], September 2009). LUCs were designed and constructed to promote ongoing protection of human safety against potential explosive hazards that may remain at the MMRP sites. The LUCs' performance objectives are to prohibit the development and use of the property for residential housing, elementary and secondary schools, child care facilities, and playgrounds; and to prohibit intrusive activities such as digging or any other activity which could result in explosive safety risks (Shaw, August 2016). The boundary of the LUCs encloses the site boundaries shown on **Figures 1-2 and 1-3**.

The 2008 LUCs included:

- Restriction against intrusive activities, including digging. A legal description survey and plat of the LUC boundaries and locations of MEC warning signs was prepared in accordance with 30 Texas Administrative Code Section (§) 335.569, Appendix III, for recordation in the Harrison County Clerk's Office.
- Placement of MEC warning signage along the perimeter of LHAAP-001-R-01 and LHAAP-003-R-01 to serve as the physical demarcation of the controlled areas. The signs have visibility from one sign to the next, with a maximum spacing of 100 feet. The signs include warning of the potential presence of MEC, state the restriction against intrusive activities, and provide a contact number.
- Education program for future refuge visitors, staff, and volunteers. The program includes informational pamphlets and a safety video warning of the potential presence of MEC and presenting examples of MEC that were or may be found at the sites.

The LUC to prohibit residential land use will remain in place until it is demonstrated that the MEC no longer presents a threat to public/human safety. A LUC to prohibit intrusive subsurface activities, including digging, will remain in place until it is demonstrated that the MEC no longer presents an explosive hazard. However, intrusive subsurface activities may occur provided that the Army and the USEPA approve such intrusive subsurface activities before they are commenced and provided that they are undertaken by qualified personnel who are trained in explosives safety measures.

The Final ROD for LHAAP-001-R-01 and LHAAP-003-R-01 was issued in August 2016 and documents the final selected remedy for the sites (Shaw, August 2016). The ROD found that although the removal actions provided an effective solution for reducing risk of exposure by reducing the potential for any direct contact with MEC or material potentially presenting explosive hazard, there is the potential that some MEC remains. A summary of the LUC remedial action objective (RAO) and the selected remedy for LHAAP-001-R-01 and LHAAP-003-R-01, identified in the Final ROD, is presented in the following sections.

1.4 Land Use Control Remedial Action Objective

The LUC RAO developed for LHAAP-001-R-01 and LHAAP-003-R-01, as outlined in the ROD (Shaw, August 2016) is:

- Protection of human health and safety from explosive hazards that may have remained at the sites after the MEC removal action.

1.5 Land Use Control Selected Remedy

The LUC selected remedy for MEC at LHAAP-001-R-01 and LHAAP-003-R-01 is comprised of the following elements:

- LUC to prohibit residential use
- LUC to restrict land use to non-residential
- LUC to restrict intrusive activities (e.g., digging)
- Signage to convey MEC warning
- Educational Program

The Educational Program materials, including pamphlets and video, were delivered to the U.S. Fish and Wildlife Service in hard copy and electronic form as part of the Site-Specific Final Report for the MEC Removal Action (EODT, September 2009). There is no recurring requirement associated with this LUC and it will not be discussed further in this document.

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2 LAND USE CONTROL MONITORING

The RAO for LHAAP-001-R-01 and LHAAP-003-R-01 is protection of human health and safety from explosive hazards that may have remained at the sites after the MEC removal action. The duration for the LUCs specified in the MEC ROD for this purpose must remain in place until it is demonstrated that the MEC no longer presents a threat to public/human safety. Per the Final ROD, the LUCs' performance objectives are to:

- Prohibit the development and use of the property for residential housing, elementary and secondary schools, child care facilities, and playgrounds.
- Restrict land use to non-residential.
- Prohibit intrusive activities such as digging or any other activity which could result in explosive safety risk.
- Maintain existing MEC warning signs at the perimeter of each site to physically demarcate controlled areas.

For portions of LHAAP-001-R-01 and LHAAP-003-R-01 subject to LUCs that are not owned by the Army, the Army will monitor and report on the implementation, maintenance, and enforcement of LUCs, and coordinate with federal, state, and local governments and owners and occupants of properties subject to LUCs. The Army remains responsible for ensuring that the remedy remains protective of human health and safety. This section presents the maintenance and monitoring of the LUCs at both sites in accordance with the Final LUC Remedial Design/Remedial Action Construction Report (U.S. Army, May 2018).

2.1 Maintenance of Existing MEC Warning Signs

MEC warning signs have been installed at the perimeter of LHAAP-001-R-01 and LHAAP-003-R-01 (64 signs at each site), that serve as a physical demarcation of the controlled areas. The signs have visibility from one sign to the next with a maximum spacing of 100 feet. The signs include warning of potential presence of MEC and state the restriction against intrusive activities. **Figures 1-2 and 1-3** present the location of the MEC warning signs. These signs are required to be visually inspected annually, or as needed, to ensure they remain intact, undamaged, and visible from one sign to the next. Maintenance is conducted, as needed, and may include the following activities:

- Mowing and brush clearing around MEC warning signs to ensure that they are visible from one sign location to the next sign location.
- Rehanging/affixing MEC warning sign(s) or replacing MEC warning sign(s), if they become damaged or illegible.
- Repairing existing MEC warning signposts, which may require the reestablishment of the concrete base or post replacement.

2.2 Monitoring Activities

The LTM Inspection and Maintenance Checklists for both LHAAP-001-R-01 and LHAAP-003-R-01, completed on 6 October 2022, are provided in **Appendix A**. No repairs were required. The 64 signs at LHAAP-001-R-01 as well as the 64 signs at LHAAP-003-R-01 were present and undamaged. The checklists are the same as included in the LUC Remedial Design/Remedial Action Construction Report (U.S. Army, May 2018).

Appendix A also contains the annual certification from the remedial design to document that no LUC-restricted activities have been authorized and that LHAAP-001-R-01 and LHAAP-003-R-01 conditions and use are consistent with the LUCs. **Appendix B** contains a photograph log of the LUCs at each site.

3 CONCLUSIONS

The LUCs are being maintained and managed in accordance with the ROD and the LUC Remedial Design/Remedial Action Construction Report as follows:

- Neither site is being developed or used for residential housing, elementary and secondary schools, child care facilities, and playgrounds.
- Land use is non-residential.
- No digging or any other activity which could result in explosive safety risk was noted during the LUC inspections completed.
- Existing MEC warning signs at the perimeter of each site to physically demarcate controlled areas are being maintained per the ROD.

Mowing and brush clearing around MEC warning signs was completed on October 5 and 6, 2022. The MEC warning signs are visible from one sign location to the next sign location. No repairs to signage were needed for either site during the LUC inspections and all 64 signs at each site were present.

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4 REFERENCES

EODT. September 2009. *Final Site-Specific Final Report for the MEC Removal Action at the Former Longhorn Army Ammunition Plant LHAAP-001-R (Site 27) and LHAAP-003-R (Site 54) Karnack, Texas*.

Shaw. August 2016. *Final Record of Decision LHAAP-001-R (South Test Area/Bomb Test Area) and LHAAP-003-R (Ground Signal Test Area) Longhorn Army Ammunition Plant, Karnack, Texas*.

U.S. Army. May 2018. *Final Land Use Control Remedial Design/Remedial Action Construction Report LHAAP-001-R-01 and LHAAP-003-R-01, Longhorn Army Ammunition Plant.*

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FIGURES

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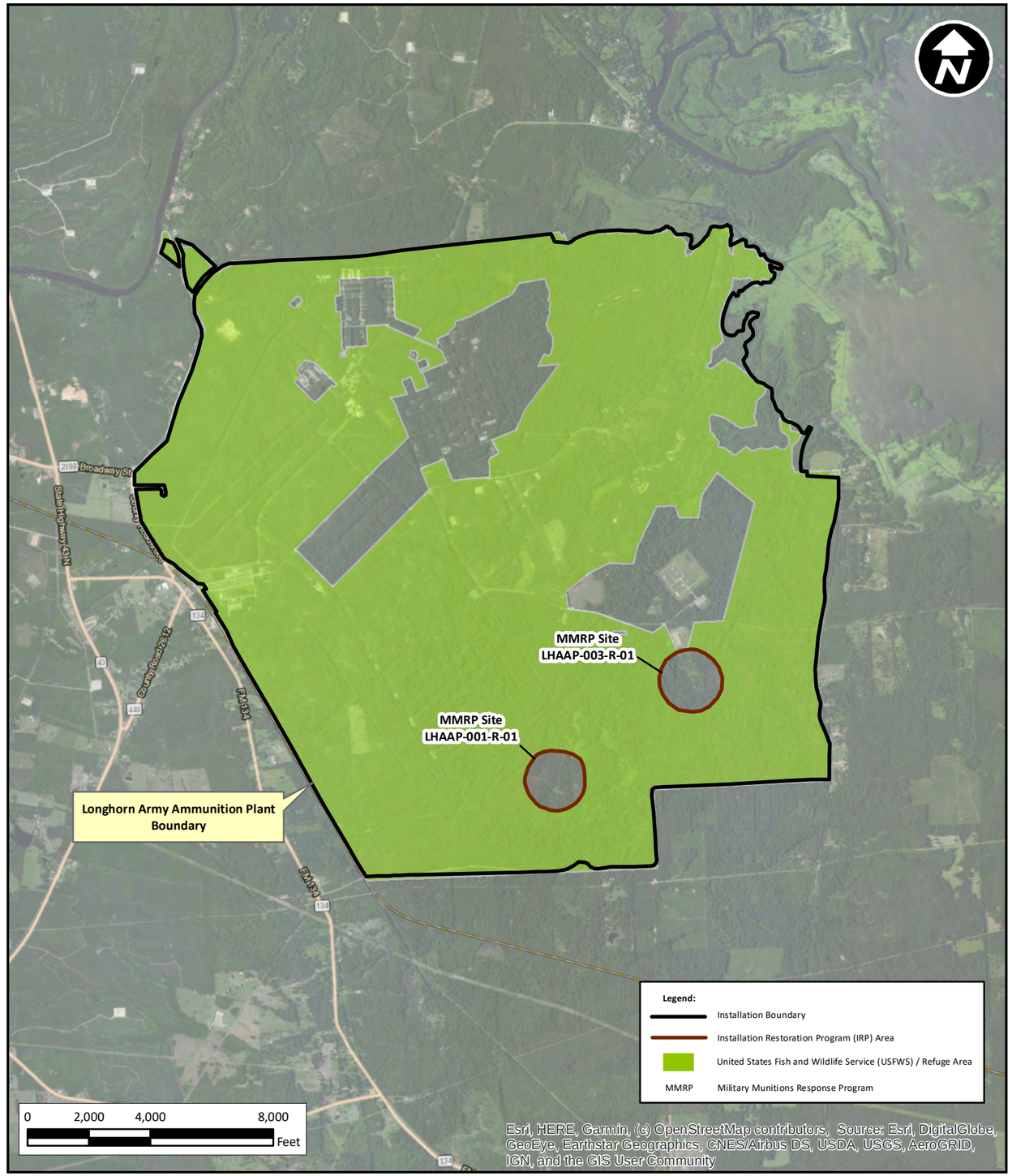
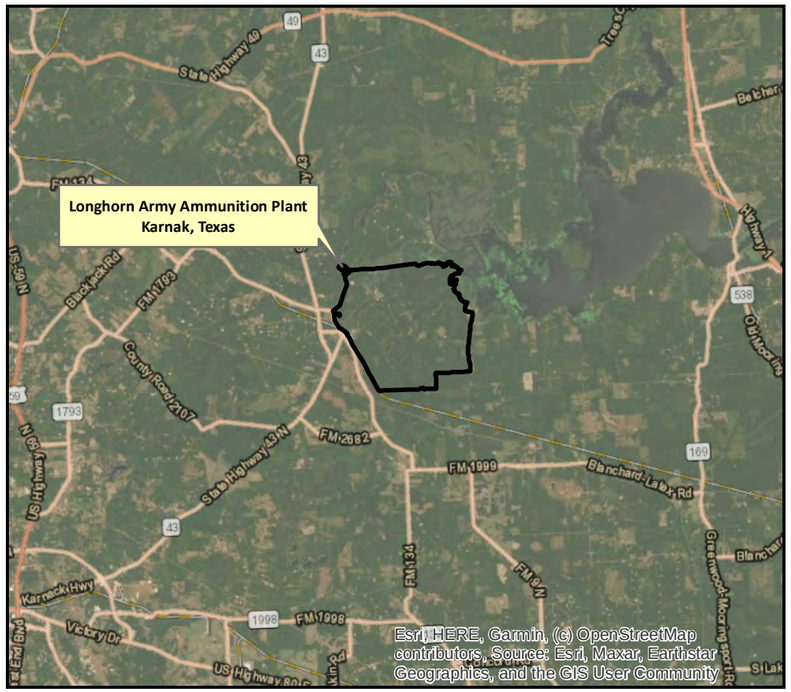
Figures





LHAAP Site Map

Figure 1-1

Year 5 Land Use Control Monitoring Report for
LHAAP-001-R-01 AND LHAAP-003-R-01
Longhorn Army Ammunition Plant
Karnack, Texas

DRAWN BY: MRM

DATE: 10/18/2022

SCALE: As Shown

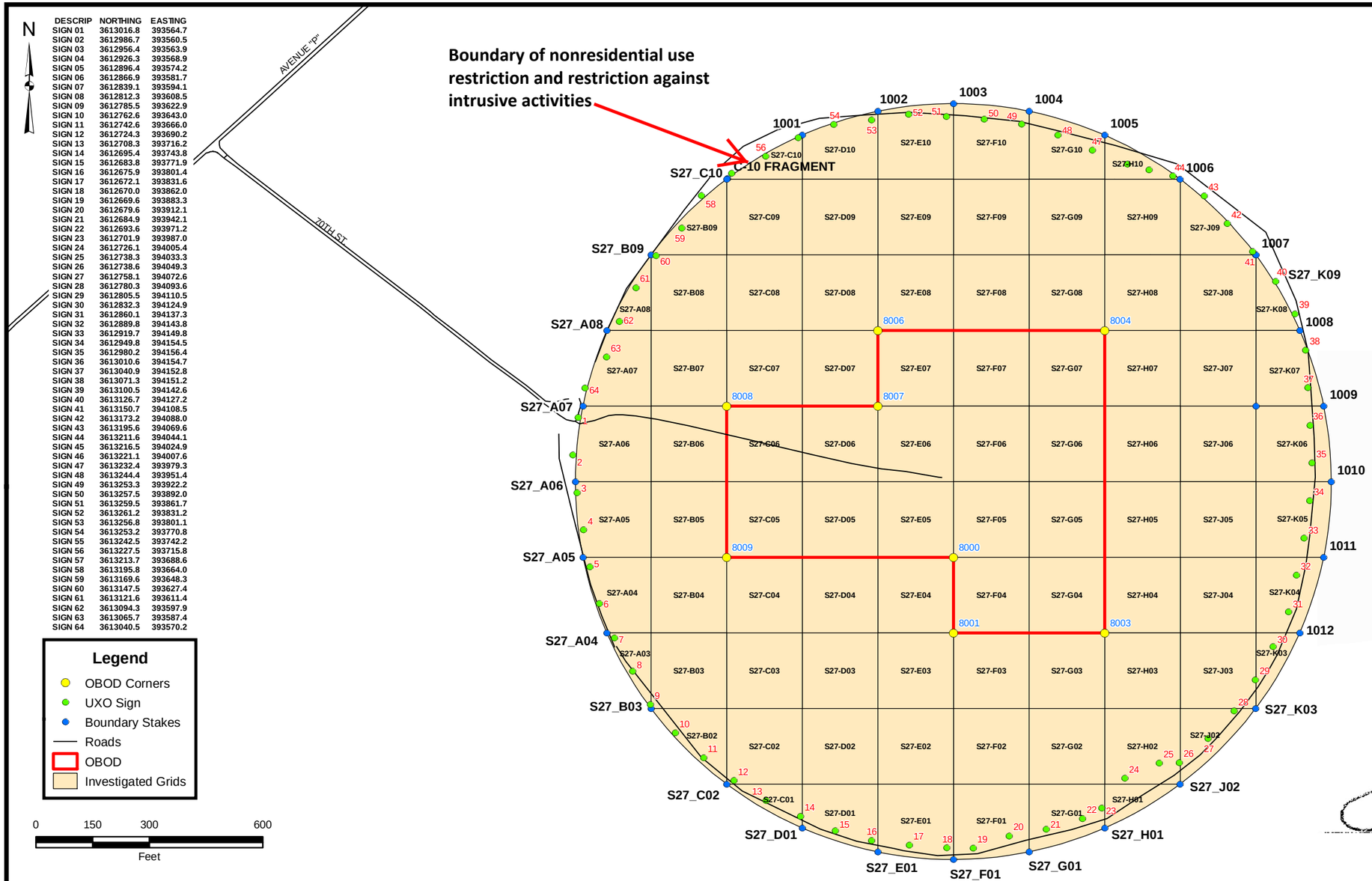
PROJECT NO: NWO1312.0150.014.0001.04

bhate

www.bhate.com

Figure 1-2. LHAAP-001-R-01 Site Location Map with LUC Boundaries
Longhorn Army Ammunition Plant, Karnack, Texas

DESCRIP	NORTHING	EASTING
SIGN 01	3613016.8	393564.7
SIGN 02	3612986.7	393560.5
SIGN 03	3612956.4	393563.9
SIGN 04	3612926.3	393568.9
SIGN 05	3612896.4	393574.2
SIGN 06	3612866.9	393581.7
SIGN 07	3612839.1	393594.1
SIGN 08	3612812.3	393608.5
SIGN 09	3612785.5	393622.9
SIGN 10	3612762.6	393643.0
SIGN 11	3612742.6	393666.0
SIGN 12	3612724.3	393690.2
SIGN 13	3612708.3	393716.2
SIGN 14	3612695.4	393743.8
SIGN 15	3612683.8	393771.9
SIGN 16	3612675.9	393801.4
SIGN 17	3612672.1	393831.6
SIGN 18	3612670.0	393862.0
SIGN 19	3612669.6	393883.3
SIGN 20	3612679.6	393912.1
SIGN 21	3612684.9	393942.1
SIGN 22	3612693.6	393971.2
SIGN 23	3612701.9	393987.0
SIGN 24	3612726.1	394005.4
SIGN 25	3612738.3	394033.3
SIGN 26	3612738.6	394049.3
SIGN 27	3612758.1	394072.6
SIGN 28	3612780.3	394093.6
SIGN 29	3612805.5	394110.5
SIGN 30	3612832.3	394124.9
SIGN 31	3612860.1	394137.3
SIGN 32	3612889.8	394143.8
SIGN 33	3612919.7	394149.8
SIGN 34	3612949.8	394154.5
SIGN 35	3612980.2	394156.4
SIGN 36	3613010.6	394154.7
SIGN 37	3613040.9	394152.8
SIGN 38	3613071.3	394151.2
SIGN 39	3613100.5	394142.6
SIGN 40	3613126.7	394127.2
SIGN 41	3613150.7	394108.5
SIGN 42	3613173.2	394088.0
SIGN 43	3613195.6	394069.6
SIGN 44	3613211.6	394044.1
SIGN 45	3613216.5	394024.9
SIGN 46	3613221.1	394007.6
SIGN 47	3613232.4	393979.3
SIGN 48	3613244.4	393951.4
SIGN 49	3613253.3	393922.2
SIGN 50	3613257.5	393892.0
SIGN 51	3613259.5	393861.7
SIGN 52	3613261.2	393831.2
SIGN 53	3613256.8	393801.1
SIGN 54	3613253.2	393770.8
SIGN 55	3613242.5	393742.2
SIGN 56	3613227.5	393715.8
SIGN 57	3613213.7	393688.6
SIGN 58	3613195.8	393664.0
SIGN 59	3613169.6	393648.3
SIGN 60	3613147.5	393627.4
SIGN 61	3613121.6	393611.4
SIGN 62	3613094.3	393597.9
SIGN 63	3613065.7	393587.4
SIGN 64	3613040.5	393570.2



DESCRIP	NORTHING	EASTING
8000	3612904.2	393867.3
8001	3612843.2	393867.3
8003	3612843.2	393989.2
8004	3613087.0	393989.2
8006	3613087.1	393806.4
8007	3613026.1	393806.4
8008	3613026.1	393684.4
8009	3612904.2	393684.4

DESCRIP	NORTHING	EASTING
1001	393745.4	3613244.5
1002	393806.4	3613263.8
1003	393867.3	3613269.9
1004	393928.3	3613263.8
1005	393989.2	3613244.5
1006	394050.1	3613209.0
1007	394111.0	3613148.0
1008	394146.5	3613087.0
1009	394165.8	3613026.1
1010	394171.9	3612965.1
1011	394165.8	3612904.2
1012	394146.5	3612843.2
C-10 FRAGMENT	393685.2	3613209.4
S27_A04	393588.0	3612843.2
S27_A05	393568.7	3612904.2
S27_A06	393562.5	3612965.1
S27_A07	393568.6	3613026.1
S27_A08	393587.9	3613087.1
S27_B03	393623.5	3612782.3
S27_B09	393623.5	3613148.0
S27_C02	393684.6	3612721.3
S27_C10	393684.4	3613209.0
S27_D01	393745.4	3612685.9
S27_E01	393806.4	3612666.6
S27_F01	393867.3	3612660.5
S27_G01	393928.3	3612666.7
S27_H01	393989.3	3612686.0
S27_J02	394049.9	3612721.3
S27_K03	394110.9	3612782.3
S27_K07	394111.2	3613026.1
S27_K09	394111.2	3613147.9

I, David R. Collins, Registered Professional Land Surveyor No. 1954, do hereby certify that this plat correctly represents the results of a survey made under my supervision August 4 through September 23, 2008.

Datum: NAD83 UTM
Monument: Longhorn Army Ammunition Plant Monument BG-1 with coordinates NORTHING-3614801.46, EASTING-395385.09

Principal of the firm: _____

SUXOS: _____

Figure 1-3. LHAAP-003-R-01 Site Location Map with LUC Boundaries
Longhorn Army Ammunition Plant, Karnack, Texas

DESCRIP	NORTH	EAST	DESCRIP	NORTHIN	EASTING
SIGN 1	3614179.4	395143.2	1013	395068.6	3613625.2
SIGN 10	3613984.2	394959.8	1014	395005.1	3613686.2
SIGN 11	3613954.6	394952.4	1015	394997.4	3614072.1
SIGN 12	3613924.6	394947.4	1016	395058.4	3614135.6
SIGN 13	3613894.1	394947	1017	395180.3	3614195.0
SIGN 14	3613863.7	394949.6	1018	395241.3	3614203.9
SIGN 15	3613833.8	394955.1	1019	395302.2	3614200.9
SIGN 16	3613803.8	394959.8	1020	395363.2	3614185.9
SIGN 17	3613774.4	394967.8	1021	395392.4	3614173.9
SIGN 18	3613745.2	394976.7	1022	395424.1	3614156.7
SIGN 19	3613718.3	394991.2	1023	395480.2	3614112.9
SIGN 2	3614163.4	395117.3	1024	395485.1	3614108.0
SIGN 20	3613694.6	395010.3	1025	395528.9	3614051.9
SIGN 21	3613672.4	395031.1	1026	395546.1	3614020.2
SIGN 22	3613651.1	395052.8	1027	395558.0	3613991.0
SIGN 23	3613632.6	395077	1028	395573.1	3613930.0
SIGN 24	3613616.8	395103.1	1029	395576.0	3613869.1
SIGN 25	3613602.8	395130	1030	395567.2	3613808.1
SIGN 26	3613591	395158.1	1031	395507.7	3613686.2
SIGN 27	3613583.5	395187.6	1032	395444.2	3613625.2
SIGN 28	3613579.1	395217.8	S54_A04	394967.3	3613747.1
SIGN 29	3613578.7	395248.2	S54_A06	394936.8	3613869.1
SIGN 3	3614147.8	395091.2	S54_A07	394939.8	3613930.0
SIGN 30	3613579.6	395278.7	S54_A08	394954.8	3613991.0
SIGN 31	3613584.2	395308.8	S54_A09	394983.9	3614051.9
SIGN 32	3613591.4	395336.3	S54_B03	394997.4	3613696.4
SIGN 33	3613599.5	395365.6	S54_B06	394997.4	3613808.1
SIGN 34	3613611	395393.8	S54_B06	394945.7	3613808.1
SIGN 35	3613626.8	395419.8	S54_B06	394997.4	3613869.1
SIGN 36	3613644.2	395444.8	S54_B07	394997.4	3613930.0
SIGN 37	3613663.6	395468.2	S54_B08	394997.4	3613991.0
SIGN 38	3613686.5	395488.2	S54_B09	394997.4	3614051.9
SIGN 39	3613710.2	395507.5	S54_B10	395032.6	3614112.9
SIGN 4	3614130.2	395066.2	S54_C02	395058.4	3613633.0
SIGN 40	3613735.9	395523.8	S54_C10	395058.4	3614112.9
SIGN 41	3613763	395537.5	S54_D01	395119.3	3613595.1
SIGN 42	3613791.2	395548.8	S54_D11	395119.4	3614173.3
SIGN 43	3613820.6	395556.7	S54_E01	395180.3	3613573.5
SIGN 44	3613850.5	395562.3	S54_F01	395241.3	3613564.6
SIGN 45	3613880.9	395562.2	S54_G01	395302.2	3613567.6
SIGN 46	3613911.3	395561	S54_H01	395363.2	3613582.6
SIGN 47	3613941.4	395556.7	S54_H02	395363.1	3613625.2
SIGN 48	3613971.3	395550.8	S54_J01	395424.1	3613611.8
SIGN 49	3613999.9	395540.5	S54_J02	395424.1	3613625.2
SIGN 5	3614110.1	395043.4	S54_K02	395485.1	3613660.5
SIGN 50	3614027.4	395527.5	S54_K03	395485.1	3613686.2
SIGN 51	3614053.7	395512.2	S54_LO4	395545.5	3613747.1
SIGN 52	3614078.9	395495.2			
SIGN 53	3614102.3	395475.8			
SIGN 54	3614122	395452.6			
SIGN 55	3614139.3	395427.5			
SIGN 56	3614155.8	395401.9			
SIGN 57	3614169.5	395374.8			
SIGN 58	3614179.6	395346			
SIGN 59	3614186.8	395316.5			
SIGN 6	3614087.5	395022.9			
SIGN 60	3614191.9	395286.4			
SIGN 61	3614192.1	395255.9			
SIGN 62	3614190.3	395225.5			
SIGN 63	3614185.9	395195.4			
SIGN 64	3614182	395167.9			
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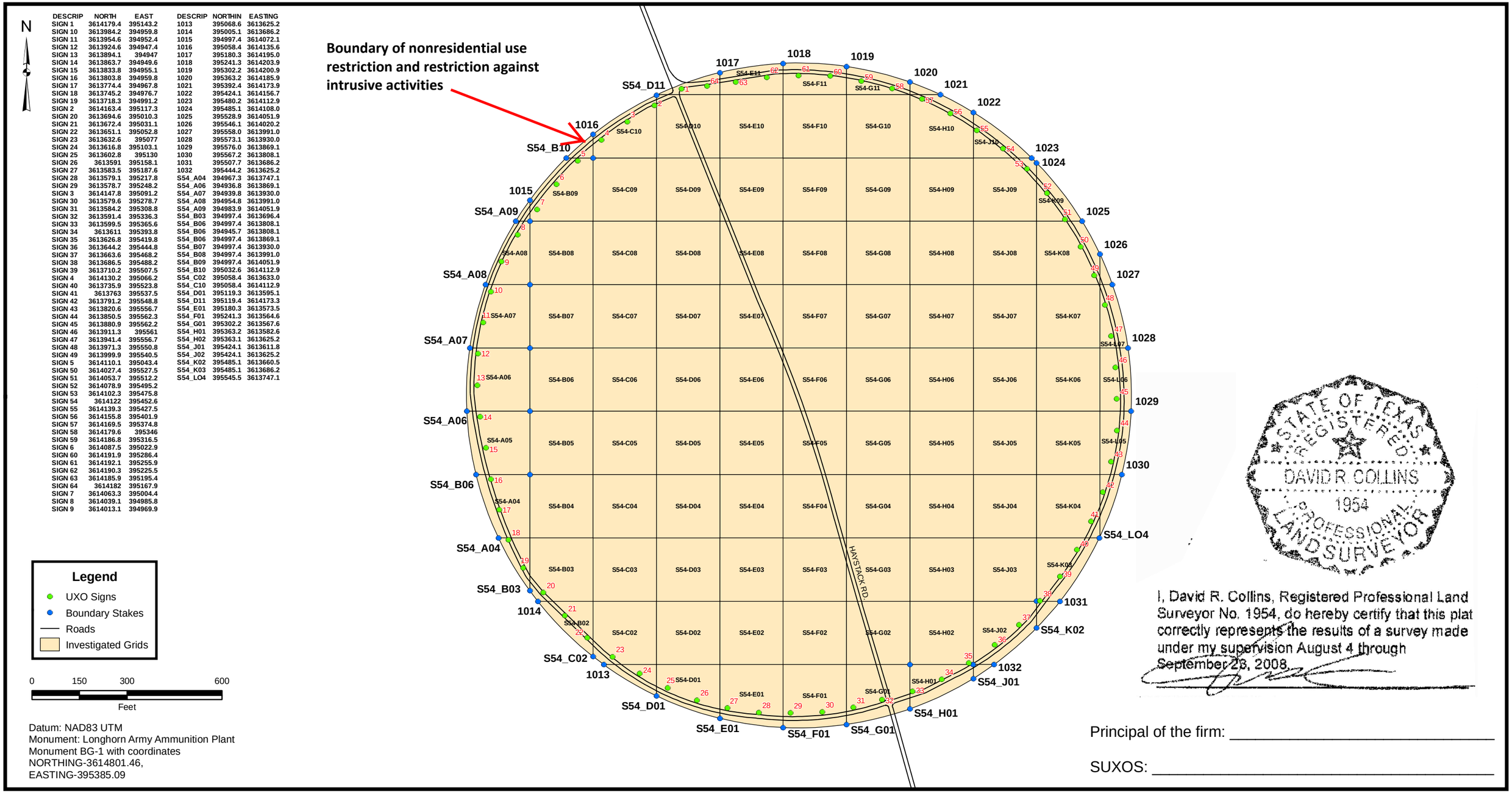

Legend

- UXO Signs
- Boundary Stakes
- Roads
- Investigated Grids

0 150 300 600

Feet

Datum: NAD83 UTM
Monument: Longhorn Army Ammunition Plant
Monument BG-1 with coordinates
NORTHING-3614801.46,
EASTING-395385.09

STATE OF TEXAS
REGISTERED
DAVID R. COLLINS
1954
PROFESSIONAL
LAND SURVEYOR

I, David R. Collins, Registered Professional Land Surveyor No. 1954, do hereby certify that this plat correctly represents the results of a survey made under my supervision August 4 through September 28, 2008.

Principal of the firm: _____

SUXOS: _____

APPENDIX A

LTM INSPECTION AND MAINTENANCE CHECKLIST AND LAND USE CONTROL COMPLIANCE CERTIFICATION FORM

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LTM Inspection and Maintenance Checklist

General Information	
Project Name	LTM Inspection and Maintenance, LHAAP-001-R and LHAAP-003-R MMRP, Longhorn Army Ammunition Plant, Karnack, TX
Contractor	BHATE ENVIRONMENTAL
Inspector's Name	Scott Beesinger
Inspector's Title	Senior Field Tech
Inspector's Signature	Scott Beesinger
Inspector's Contact Number	(903) 930-6193
Inspection Date	10/6/22
Type of Inspection	☐ Quarterly ☐ Semiannual ☒ Annual ☐ Prior to forecast rain ☐ After rain event ☐ Other_____

	Description	Yes	No	N/A	Comments (Attach photos/location sketches)	Corrective Action (Attach photos)
A. Perimeter Signage						
A.1	Are there any damaged signs?		X			
A.2	Are there any missing signs?		X			
A.3	Are all signs legible?	X				
A.4	Is perimeter boundary mowed?	X				

A.5	Are signs visible from one sign to the next sign?	X				
B. LUC Boundary						
B.1	Is the LUC Boundary identifiable?	X				
C. Dig and Intrusive Activities restriction						
C.1	Any observed digging activities or similar intrusive activities within the site boundaries?		X			

Note: Annual compliance inspections shall be conducted no later than March 1 of each year for the previous calendar year and filed onsite.

LAND USE CONTROL COMPLIANCE CERTIFICATION FORM

In accordance with the LUC Plan dated MAY 2018 for LHAAP-001-R and LHAAP-003-R, an inspection of the sites was conducted by BHATE ENVIRONMENTAL on 10/6/22.

A summary of land use control mechanisms is as follows:

- Land use restrictions - restrict land use to non-residential.
- Integrity of LUC signage by ensuring signs are present, legible and have visibility from one sign to the next.

A summary of compliance with land use and restriction covenants is as follows:

- The posted signs are properly maintained at LHAAP-001-R and LHAAP-003-R.
- No digging or intrusive activities have taken place within the boundaries identified for LHAAP-001-R and LHAAP-003-R.
- No land use other than non-residential.
- Pamphlets and safety awareness video are being used to educate visitors.

I, the undersigned, do document that the inspections were performed as indicated above, and that the above information is true and correct to the best of my knowledge, information, and belief.

Date: OCTOBER 16, 2022

Name: Scott Beesinger

Signature: Scott Beesinger

Completed annual compliance inspections shall be conducted no later than March 1 of each year for the previous calendar year and filed on site.

APPENDIX B
PHOTOGRAPH LOG

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Longhorn Army Ammunition Plant Sites LHAAP-001-R-01 and LHAAP-003-R-01
Photograph Log October 2022

Photo 1: LHAAP-001-R-01 Signage in place and readable

Photo 2: LHAAP-001-R-01 Pathway around the site on the north side

Longhorn Army Ammunition Plant Sites LHAAP-001-R-01 and LHAAP-003-R-01
Photograph Log October 2022

Photo 3: LHAAP-001-R-01 Signage in place and readable

Photo 4: LHAAP-001-R-01 Pathway around the site on the northeast side

Longhorn Army Ammunition Plant Sites LHAAP-001-R-01 and LHAAP-003-R-01
Photograph Log October 2022

Photo 5: LHAAP-003-R-01 Signage in place and readable

Photo 6: LHAAP-003-R-01 Pathway around the site on the northeast side

Longhorn Army Ammunition Plant Sites LHAAP-001-R-01 and LHAAP-003-R-01
Photograph Log October 2022

Photo 7: LHAAP-003-R-01 Signage in place and readable

Photo 8: LHAAP-003-R-01 Pathway around the site on the northeast side

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

January 25, 2022

DAIN-ODB-LO

Ms. April Palmie
Texas Commission on Environmental Quality
Superfund Section, MC-136
12100 Park 35 Circle, Bldg D
Austin, TX 78753

Re: Draft Final Year 7 Annual Remedial Action Operation Report (September 2020 - August 2021), LHAAP-35A (58) Shops Area, Longhorn Army Ammunition Plant, Karnack, Texas, January 2022

Dear Ms. Palmie,

An electronic copy of the above referenced document has been added to the project portal's "Documents" folder for your review. An electronic copy of this letter and download instructions for the electronic file have been sent via email. The document includes revisions based upon the Texas Commission on Environmental Quality (TCEQ) comments on the Draft version received December 17, 2020, and the Environmental Protection Agency's (EPA) comments on the Draft version received on December 20, 2020. A response to the TCEQ and EPA comments on the Draft version of the document is included with this Draft Final. In accordance with the FFA, the Draft Final will be considered Final after 30 days without further comment.

The document was prepared by the Bhate Environmental Associates, Inc., (Bhate) team, on behalf of the Army as part of Bhate's Performance Based Remediation contract for the facility. I ask that Kim Nemmers, Bhate's Project Manager, be copied on any communications related to the project.

The point of contact for this action is the undersigned. I may be contacted at 479-635-0110, or by email at rose.m.zeiler.ctr@army.mil.

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Electronic Copies furnished:
B. Follin, USEPA Region 6, Dallas, TX
P. Bruckwicki, USFWS, Caddo Lake NWR, TX (1 hard copy and 1 CD)
C. Montoya USACE, Tulsa District, OK
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DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

January 25, 2022

DAIN-ODB-LO

Mr. Brian Follin
U.S. Environmental Protection Agency
1201 Elm Street, Suite 500
Dallas, TX 75270-2002

Re: Draft Final Year 7 Annual Remedial Action Operation Report (September 2020 - August 2021), LHAAP-35A (58) Shops Area, Longhorn Army Ammunition Plant, Karnack, Texas, January 2022

Dear Mr. Follin,

An electronic copy of the above referenced document has been added to the project portal's "Documents" folder for your review. An electronic copy of this letter and download instructions for the electronic file have been sent via email. The document includes revisions based upon the Texas Commission on Environmental Quality (TCEQ) comments on the Draft version received December 17, 2020, and the Environmental Protection Agency's (EPA) comments on the Draft version received on December 20, 2020. A response to the TCEQ and EPA comments on the Draft version of the document is included with this Draft Final. In accordance with the FFA, the Draft Final will be considered Final after 30 days without further comment.

The document was prepared by the Bhate Environmental Associates, Inc., (Bhate) team, on behalf of the Army as part of Bhate's Performance Based Remediation contract for the facility. I ask that Kim Nemmers, Bhate's Project Manager, be copied on any communications related to the project.

The point of contact for this action is the undersigned. I may be contacted at 479-635-0110, or by email at rose.m.zeiler.ctr@army.mil.

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Electronic Copies furnished:
A. Palmie, TCEQ, Austin, TX
P. Bruckwicki, USFWS, Caddo Lake NWR, TX (1 hard copy and 1 CD)
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L. Sierocinski, USAEC, San Antonio, TX
K. Nemmers, Bhate, Lakewood, CO

Responses to Comments on
Draft 7th Annual Remedial Action Operations (September 2020 – August 2021) at LHAAP-35A(58), Shops Area
Longhorn Ammunition Plant, Karnack, Texas
29 October 2021

1. Respondent Concurs (C), Does Not Concur (D), Takes Exception (E), or Delete (X).
2. Commenter Agrees (A) with response or Does not Agree (D) with response.

Comment #	Section/ Paragraph	Comment (December 20, 2021)	C, D, E or X[1]	Response (January 25, 2022)	A or D[2]	Comment	C, D, E or X[1]	Response	A or D[2]
				Reviewer: Brian Follin, USEPA Region 6 **Respondent:** Kim Nemmers, Bhate					
1	Section 1.4	It would be best to keep groundwater level measurements in the same units for comparison. The authors use “bgs” and “amsl.” Also, would change “groundwater surface measurements” to “groundwater level measurements” to avoid confusion with other surface water measurements. Continued arsenic monitoring is recommended for 03WW01, 35AWW08, and 35AWW09 in eastern plume but mention other wells where concentrations were above MCL (03WW01, 1004TW001, 1004TW006, 35AWW08, 35AWW20, and LHSMW07). 1004TW001 and 1004TW006 were later designated in figure 6 as removed from the RAO which seems odd if arsenic concentrations were above MCL.	C, E	Note that the document uses feet (ft) below ground surface (bgs) to describe depths, while groundwater elevations (with a surveyed measuring point) are referred to as feet above mean sea level (amsl). Where a surveyed measuring point is available, the elevation will be added to the text to reduce confusion. The second to last paragraph on Page 1-5 will be revised to state: “*Based on groundwater level measurements…*”. Note that the conceptual model (Section 1.4) is discussing the historic arsenic detections and previous recommendations. Additional text will be added in regards to historic arsenic sampling, detections, and monitoirng recommendations.					
2	Section 2.2.1	Section title indicates Eastern Plume Monitoring but lists wells in both eastern and western plume. Six wells were also mentioned in the subsequent section entitled “western plume monitoring.” Would be better to take out 6 wells listed in western plume monitoring from the list in the eastern plume monitoring. Several shallow monitoring sites are shown on figure 2 that are not listed in this section for sampling (35AWW04, 1004TW006, 1004TW001, LHSMW03, LHSMW04, LHSMW05, 35AWW03, 35AWW07, 35AWW07R). LHSMW04 is addressed later as being dry. I am guessing this map shows any existing wells in the area that may have been sampled in the past. To clarify things, I would either have the map just show wells sampled in Year 7 or make a halo around the wells that are pertinent exclusively to Year 7 sampling. Figure 6 does show that 35AWW04, 1004TW006, 1004TW001, LHSMW03, 35AWW03, 35AWW07R were removed from RAO but no mention of this in text. LHSMW05 and 35AWW07 do not seem to be shown on figure 6.	C	Concur. Although there are 6 wells sampled for both the eastern and western plume monitoring, the 6 wells included in the western plume monitoring program will be removed from Section 2.2.1 Easter Plume Monitoring. Figure 2 will be revised to highlight the wells sampled during the Year 7 RA(O) sampling. Figure 6 already displays LHSMW05 and 35AWW07R. Monitoring well 35AWW07R is a replacement well for 35AWW07. No additional revisions to Figure 6 are required.					
3	Section 2.3.1	2nd paragraph indicates 23 wells sampled for COCs but 21 wells were indicated in the shallow zone in section 2.2.1 Are the 23 wells both the shallow and intermediate? Would keep at 21 wells since section is just for shallow wells and next section talks about the 2 intermediate wells.	C	Concur. The text will be revised as requested.					

Responses to Comments on
Draft 7th Annual Remedial Action Operations (September 2020 – August 2021) at LHAAP-35A(58), Shops Area
Longhorn Ammunition Plant, Karnack, Texas
29 October 2021

1. Respondent Concurs (C), Does Not Concur (D), Takes Exception (E), or Delete (X).
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4	Section 2.3.3	03WW01, 35AWW01, 35AWW08, and LHSMW06 were sampled in Dec 2020 for arsenic and 03WW01, 35AWW01, 35AWW08, 35AWW09, 35AWW20, and LHSMW06 were sampled in June 2021 for arsenic. Is there a reason why the same wells were not sampled for arsenic in both sampling times? Wondering why wells 35AWW01 and LHSMW06 were sampled for arsenic since they were not mentioned in section 1.4 as locations of concern for arsenic.	C	Concur. Based on recommendations presented in the 4th Annual RA(O) Report arsenic monitoring is completed in the eastern plume monitoring wells 03WW01, 35AWW08, and 35AWW09 and in the western plume monitoring wells 35AWW20 and LHSMW06. 03WW01 is included as outlined in the ESD for LHAAP-03 (Bhate/APTIM, July 2018). Monitoring of arsenic at 35AWW01 is included as this well is an intermediate groundwater well evaluated for MNA. Additional background information will be added to Section 1.4. Additionally, the first paragraph of Section 2.3.3 will be revised to state: "*During the Year 7 RA(O) monitoring period, arsenic analysis was completed in select monitoring wells in accordance with the Revised Technical Memorandum, Steps to Remedy-in-Place for LHAAP-03/LHAAP-58 (AECOM, November 2012); the ESD for LHAAP-03 groundwater and LUCs (Bhate/APTIM, July 2018); the 2013 RAWP (AECOM, August 2013); and the 4th Annual RA (O) Report (Bhate/APTIM, October 2018). The 4th Annual RA (O) Report recommended continued arsenic monitoring in eastern plume monitoring wells 03WW01, 35AWW08, and 35AWW09 and western plume monitoring wells 35AWW20 and LHSMW06. 03WW01 is included as outlined in the ESD for LHAAP-03 (Bhate/APTIM, July 2018). In December 2020, groundwater from the following monitoring wells was analyzed for arsenic: 03WW01, 35AWW01, 35AWW08, and LHSMW06. Arsenic monitoring was erroneously omitted at 35AWW09 and 35AWW20 in December 2020. In June 2021, groundwater from the six monitoring wells was analyzed for arsenic: 03WW01, 35AWW01, 35AWW08, 35AWW09, 35AWW20, and LHSMW06. Monitoring of arsenic at 35AWW01 is included as this well is an intermediate groundwater well evaluated for MNA.*"					
5	Section 2.5	Figure 6 indicates 35AWW04, 1004TW006, 1004TW001, LHSMW03, 35AWW03, 35AWW07R were removed from RAO but only 35AWW02, 35AWW03, 1004TW0001, and 1004TW0006 are listed as being removed from monitoring.	C	Concur. Since Section 2.5 is discussing abandonment and not removal of wells from monitoring, Section 2.5 will be revised to state: "*No additional wells are recommended for abandonment beyond those previously recommended in the Year 2 RA(O) Report (AECOM, May 2016), which included 35AWW02, 35AWW03, and 1004TW0001.*"					

Responses to Comments on
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2. Commenter Agrees (A) with response or Does not Agree (D) with response.

6	Section 3	To clarify… did EISB injections take place in the eastern plume in 2013, but EISB injections took place in the western plume in 2018? Why wasn't 35AWW14 included in quarterly monitoring events if it is listed as a well near injection site when other wells near the injection site were included?	C	EISB injections were conducted near 35AWW14 in 2018. However, as described in the Revised Final Remedial Action Work Plan Contingency Remedy for Western Plume (Bhate, January 2018), 35AWW14 was outside of the EISB target area and not included in the performance monitoring. Therefore, the first two sentences of the second paragraph of Section 3 will be revised for clarity to state: "*The EISB target area within the western groundwater plume is located within the vicinity of wells 35AWW06, 35AWW20, and LHSMW07 (Bhate, January 2018). EISB injections were also implemented near monitoring wells 35AWW11, 35AWW14, and 35AWW23.*"					
7	Section 3.1.1	"The current low concentrations of PCE and TCE are likely responsible for the corresponding low concentrations of cis-1,2-DCE and VC generated as degradation daughter products."—This statement is somewhat confusing, but I think what the authors are trying to say is that daughter product concentrations are relatively low simply because there is a limited quantity of parent compounds to act as source material. This may be a bit of an oversimplification because there may be any number of factors contributing to the low concentrations of daughter products, but the statement could also use some rewording to improve clarity.	C	The last sentence of Section 3.1.1 will be revised to state: "*In part, the low concentrations of degradation daughter products cis-1,2-DCE and VC present during the reporting period are a result of the minimal amount of parent compounds remaining at the site.*"					
8	Section 5	I think it is interesting that what was previously considered to be 2 plumes now looks like 3 hot spots (with declining concentrations). Also agree to the importance of sampling downgradient at 35AWW04 or drilling a new well if 35AWW04 is dry in order to monitor downgradient extent. For clarification in table 7, I would indicate semiannual sampling in Year 7 was for both the eastern and western plumes and indicate what was sampled in the eastern plume during Year 6.	C	Concur. The headers of Table 7 will be revised as requested.					
		END of USEPA Comments							

Responses to Comments on
Draft 7th Annual Remedial Action Operations (September 2020 – August 2021) at LHAAP-35A(58), Shops Area
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Reviewer: April Palmie, TCEQ **Respondent:** Kim Nemmers, Bhate									
1	Tables	In future reports, please change display of the current analytical data so that each page includes about 20-25% fewer rows and columns for improved readability.	C	Concur. In future reports, the analytical data tables will be printed at a larger scale to improve readability.					
2	Figure 9	Please split Figure 9 into two figures if you want to compare past and present. Alternatively, you could remove the historic plume extent. That figure was helpful but isn't necessary every year. For next year, please have the current plume extent as a full-page figure. My preference is plume extent and concentrations on the same figures but, with the current display style, that would be very cluttered.	C	Concur. In future reports, Figure 9 will be split into two figures with one showing the historical plume extents and one figure showing the current reporting period plume extents.					
3	Figures/ General	General figure note - We have many figure styles in the RAOs and other reports from current Army contractors. Personally, I find this style is the least user-friendly. Between the background image (which adds little value), the layout of the title blocks and legend, and the relative size of the text within the figure, these figures really don't display well. For perspective, I use two 24-inch monitors. Please consider modifying the style.	C, E	In future reports 8.5 x 11 figures will be generated with larger font sizes for readability. However, it is recommended that the background aerial image is retained as it provides important information.					
		END of TCEQ Comments							

DRAFT FINAL
YEAR 7 ANNUAL REMEDIAL ACTION OPERATION REPORT (SEPTEMBER 2020 - AUGUST 2021)
LHAAP-35A (58) SHOPS AREA
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

January 2022

Prepared For:

U.S. Army Corps of Engineers
Tulsa District
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Contract No: W9128F-13-D-0012
Delivery Order No: W912BV17F0150
Bhate Project No.: NWO1312.0150.012.0001.03

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YEAR 7 ANNUAL REMEDIAL ACTION OPERATION REPORT (SEPTEMBER 2020-AUGUST 2021) LHAAP-35A (58) SHOPS AREA LONGHORN ARMY AMMUNITION PLANT KARNACK, TEXAS

TABLE OF CONTENTS

Acronyms and Abbreviations v

1 Introduction 1-1

1.1 Remedial Action Objectives 1-2
1.2 Performance Objectives 1-2
1.3 Site Description 1-3
1.4 Conceptual Site Model 1-4

2 Site Activities At LHAAP-35A (58) 2-1

2.1 Annual LUC Compliance Inspection, Maintenance, and Repairs 2-1
2.1.1 Annual LUC Compliance Inspection 2-1
2.1.2 Well Field Operation & Maintenance 2-1
2.2 Groundwater Monitoring for RA(O) 2-2
2.2.1 Eastern Plume Monitoring 2-2
2.2.2 Western Plume Monitoring 2-2
2.2.3 Sampling Procedures and Analysis 2-2
2.2.4 Groundwater Elevation and Flow Direction 2-3
2.2.5 Vertical Gradient 2-4
2.3 Groundwater Analytical Results 2-4
2.3.1 Shallow Zone 2-4
2.3.2 Intermediate Zone 2-5
2.3.3 Arsenic Monitoring 2-5
2.4 Surface Water Sampling 2-6
2.5 Well Abandonment 2-6

3 Performance Monitoring of EISB 3-1

3.1 Analysis of VOCs 3-1
3.1.1 Eastern Plume 3-1
3.1.2 Western Plume 3-2
3.2 Analysis of Field Parameters 3-3
3.3 TOC Levels 3-4
3.3.1 Eastern Plume 3-4
3.3.2 Western Plume 3-4

3.4 Analysis of Anions 3-5
3.4.1 Eastern Plume 3-5
3.4.2 Western Plume 3-5
3.5 Dissolved Gases 3-5
3.5.1 Eastern Plume 3-5
3.5.2 Western Plume 3-6
3.6 Dechlorinating Bacteria 3-6
3.6.1 Eastern Plume 3-6
3.6.2 Western Plume 3-6
3.7 EISB Performance Monitoring Summary 3-7

4 Natural Attenuation Evaluation 4-1

4.1 First Line of Evidence: Change in COC Concentrations over Time and with Distance 4-1
4.1.1 Eastern Plume 4-3
4.1.2 Western Plume 4-4
4.1.3 Plume Stability 4-5
4.2 Second Line of Evidence: Geochemical Indicators 4-7
4.2.1 Eastern Plume 4-7
4.2.2 Western Plume 4-10
4.3 Third Line of Evidence: Predictive Modeling and Microbial Analysis 4-13
4.3.1 Eastern Plume 4-13
4.3.2 Western Plume 4-13

5 Conclusions and Recommendations 5-1

6 References 6-1

Figures

Figure 1 Longhorn Army Ammunition Plant Location and Site Vicinity Map
Figure 2 Monitoring Well Location Map
Figure 3 Conceptual Site Model
Figure 4 December 2020 Shallow Potentiometric Map
Figure 5 June 2021 Shallow Potentiometric Map
Figure 6 COC Exceedances in Shallow Groundwater (December 2020 - June 2021)
Figure 7 COC Exceedances in Intermediate Groundwater (December 2020 and June 2021)
Figure 8 COC Concentration Trends
Figure 9 Lateral Extent of Plume Comparison (October 2016 and June 2021)

Tables

Table 1 Groundwater Elevation Data
Table 2 Eastern Plume Semi-Annual Analytical Data, December 2020 and June 2021
Table 3 Western Plume Analytical Data, December 2020, and June 2021
Table 4 Historical Monitoring Well COC Concentrations
Table 5 Enhanced In-Situ Bioremediation Performance Data Summary - Eastern Plume

Table 6 Enhanced In-Situ Bioremediation Performance Data Summary - Western Plume
Table 7 Year 8 RA(O) Groundwater Monitoring Plan

Appendices

Appendix A Annual Land Use Control Compliance Certification Document
Appendix B Photographic Log
Appendix C Well Inspection Forms
Appendix D Technical Memorandum - Monitored Natural Attenuation Monitoring Parameters
Appendix E Monitoring Well Sample Collection Forms
Appendix F Laboratory Analytical Results (Provided Electronically)
Appendix G Mann-Kendall Trend Test Results

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ACRONYMS AND ABBREVIATIONS

<	Less than
>	Greater than
%	Percent
AECOM	AECOM Technical Services, Inc.
amsl	Above mean sea level
APTIM	APTIM Federal Services, LLC
bgs	Below ground surface
Bhate	Bhate Environmental Associates, Inc.
COC(s)	Contaminant(s) of concern
CSM	Conceptual site model
DCA	Dichloroethane
DCE	Dichloroethene
DHBt	Dehalobacter
DHC	Dehalococcoides
DO	Dissolved oxygen
EISB	Enhanced In-situ Bioremediation
ESD	Explanation of Significant Differences
ft	Feet (or foot)
HPLC	High Performance Liquid Chromatography
IWWP	Installation-Wide Work Plan
J	Data qualifier denoting an estimated concentration
LHAAP	Longhorn Army Ammunition Plant
LUC(s)	Land Use Control(s)
MC	Methylene chloride
MCL(s)	Maximum contaminant level(s)
µg/L	Micrograms per liter
mg/L	Milligrams per liter
mL	Milliliter

MNA	Monitored Natural Attenuation
MSC	Medium-specific concentration
mV	Millivolts
No.	Number
ORP	Oxidation-reduction potential
PCE	Tetrachloroethene
PCBs	Polychlorinated biphenyls
pH	Potential of hydrogen
RA(O)(s)	Remedial Action Operation(s)
RAO(s)	Remedial Action Objective(s)
RACR	Remedial Action Completion Report
RAWP	Remedial Action Work Plan
RD	Remedial Design
ROD	Record of Decision
s.u.	Standard units
Shaw	Shaw Environmental, Inc.
SVOC(s)	Semi-volatile Organic Compound(s)
TCA	Trichloroethane
TCE	Trichloroethene
TM	Technical Memorandum
TOC	Total Organic Carbon
U.S.	United States
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
VC	Vinyl chloride
VFA	Volatile Fatty Acids
VOC(s)	Volatile Organic Compound(s)

1 INTRODUCTION

The United States (U.S.) Army Corps of Engineers (USACE), Tulsa District, contracted Bhate Environmental Associates, Inc. (Bhate), to perform remedial actions at multiple sites at the former Longhorn Army Ammunition Plant (LHAAP) in Karnack, Texas, under the Huntsville District's Architect-Engineer Indefinite Delivery Contract Number (No.) W9128F-13-D-0012, Delivery Order No. W912BV17F0150. Bhate is performing groundwater and surface water monitoring as part of Remedial Action Operation (RA[O]) for the Enhanced In-situ Bioremediation (EISB) and Monitored Natural Attenuation (MNA) groundwater remedy at LHAAP-35A (58). Remedial activities are required under the Record of Decision (ROD) issued for LHAAP-35A (58) in September 2010 (Shaw Environmental, Inc. [Shaw], September 2010).

The Remedial Action Work Plan (RAWP) for the entire site was prepared in August 2013 in accordance with the ROD and was implemented in September 2013 (AECOM Technical Services, Inc. [AECOM], August 2013). Within the eastern plume, EISB was performed in September 2013. The MNA remedy for the western plume at this site, as presented in the ROD, calls for an evaluation of the remedy after 2 years of implementation. The ROD also provides for implementation of a contingency remedy to enhance MNA if it is found to be ineffective. RA(O) implementation for the western plume was conducted between October 2013 and October 2015 and the Year 2 RA(O) report was finalized in May 2016 (AECOM, May 2016). After 2 years of MNA, the Year 2 RA(O) report concluded that MNA was ineffective and implementation of a contingency remedy was appropriate. A RAWP for the contingency remedy for the western plume was developed and finalized (Bhate, January 2018). The contingency remedy for the western plume is EISB injections, which was implemented in March and April 2018, as documented in the Remedial Action Completion Report (RACR) (Bhate, August 2018).

Groundwater monitoring at LHAAP-35A (58) was conducted quarterly following EISB injections at the eastern plume for 2 years but is now semi-annual. The contingency remedy within the western plume required that quarterly sampling be completed in select performance monitoring wells for 2 years which was completed in March 2020. Therefore, as with the eastern plume, groundwater monitoring is now completed semi-annually in the western plume. This RA(O) report documents Year 7 of RA(O) implementation and summarizes the Land Use Control (LUC) compliance inspection; monitoring well inspection, maintenance, and repair activities; results of groundwater and surface water sampling completed in December 2020 and June 2021; and an evaluation of EISB and MNA based on those two sampling events.

LHAAP is located in east-central Texas in the northeastern corner of Harrison County between State Highway 43 in Karnack, Texas, and the western shore of Caddo Lake (**Figure 1**). The nearest cities are Marshall, Texas, approximately 14 miles to the southwest, and Shreveport, Louisiana, approximately 40 miles to the east. Caddo Lake is a large freshwater lake that bounds LHAAP to the north and east. The eastern fence of the LHAAP installation is 3.5 miles from the Texas-Louisiana border (AECOM, May 2016).

1.1 Remedial Action Objectives

The Remedial Action Objectives (RAOs) for LHAAP-35A (58), consistent with the reasonably anticipated future use of the site as a national wildlife refuge, as presented in the ROD (Shaw, September 2010) are:

- Protection of human health by preventing human exposure to the contaminated groundwater;
- Protection of human health and the environment by preventing contaminated groundwater from migrating into nearby surface water; and,
- Returning groundwater to its potential beneficial use as a drinking water source, wherever practicable.

An Explanation of Significant Differences (ESD) was prepared and finalized for LHAAP-35A (58), Shops Area, Group 4 (Bhate/APTIM Federal Services, LLC [APTIM], July 2018) to formalize that the LUCs and groundwater monitoring required for LHAAP-03, a small site entirely contained in the LHAAP-35A (58) eastern Volatile Organic Compound (VOC) plume and LUC boundaries, will be captured under LHAAP-35A (58). The 2018 ESD (Bhate/APTIM, July 2018) specified that well 03WW01 be sampled for arsenic within the LHAAP-35A (58) RA(O) and clarifies that LUCs will remain in place until the levels of the contaminants of concern (COCs) in soil and groundwater allow for unrestricted use and unlimited exposure.

1.2 Performance Objectives

The LHAAP-35A (58) site has groundwater plumes in two distinct areas: 1) eastern plume and 2) western plume. The current remedies selected for the two areas are: LUC; EISB in the area of highest levels of contamination; and MNA for the remainder of the plume, beyond the influence of the EISB treatment area. EISB was implemented as a contingency remedy within the western plume in 2018 as presented in the Final ESD ROD (Bhate, March 2018) and documented in the RACR for the Western Plume Contingency Remedy at LHAAP-35A (58) Shops Area (Bhate, August 2018). EISB was previously conducted in the eastern plume in 2013.

The performance objectives at LHAAP-35A (58) consist of two components: physical inspections and groundwater/surface water monitoring. As a component of the LUC implementation, a civil survey of the LUC boundary was conducted in November 2014 and recorded in the Harrison County Courthouse in March 2015 (AECOM, May 2016). Physical inspections are conducted annually to confirm compliance with the LUC objectives. These objectives include preventing human exposure to groundwater contamination at levels that pose an unacceptable risk to a future maintenance worker and ensuring that there is no withdrawal or use of groundwater from the site for anything other than environmental monitoring and testing until the cleanup levels (maximum contaminant levels [MCLs]) are attained. Groundwater monitoring conducted at the site since October 2013 was included in the facility-wide fourth Longhorn Five-Year Review Report, completed in 2019 (USACE, June 2019).

Groundwater and surface water monitoring is being performed to demonstrate that EISB in conjunction with MNA of the eastern and western plumes are effective remedies to:

- Detect changes in environmental conditions that may reduce the efficacy of the remedial processes,
- Identify potentially toxic and/or mobile transformation products,
- Verify that the plumes are not expanding,
- Verify that no unacceptable impacts to downgradient receptors are occurring, such as discharges of contaminated groundwater to surface water,
- Detect new releases of contaminants to the environment that could impact the effectiveness of the remedies, and
- Verify attainment of the RAOs.

Groundwater monitoring completed as part of the Year 7 RA(O) activities consisted of two semi-annual groundwater sampling events, one conducted in December 2020 and one conducted in June 2021 as specified in the Eastern Plume RAWP (AECOM, August 2013) and the Western Plume RAWP (Bhate, January 2018). Semi-annual surface water sampling at 35ASW03, located adjacent to the western groundwater plume in a ditch that runs parallel to 4th Street, was not performed in December 2020, as groundwater elevations were below the elevation of the ditch. However, semi-annual surface water sampling at 35ASW03 was performed in June 2021 as discussed in **Section 2.4**.

1.3 Site Description

The LHAAP-35A (58) site, also known as the Shops Area, is located in the north-central portion of LHAAP and currently covers an area of approximately 11 acres (**Figure 1**) (Shaw, September 2010). The surface features include asphalt-paved roads, a parking area, and areas that are wooded and overgrown with grasses and other vegetation (**Figure 2**). The topography is relatively flat with the surface drainage flowing into the tributaries of Goose Prairie Creek, which eventually discharges into Caddo Lake.

The Shops Area was established in 1942 as part of the installation's initial construction (Shaw, September 2011). The facility was used to provide plant-operated laundry, automotive, woodworking, metalworking, painting, refrigeration, and electrical services. The site was active throughout the LHAAP's mission and was deactivated along with the rest of the installation in 1996-1997. The LHAAP-35A (58) site boundary has changed over the years. Earlier investigations for LHAAP-35A (58) were performed in areas to the south that are no longer included within the site boundary (AECOM, May 2016).

The following sites were located within the historical LHAAP-35A (58) site boundary, but are not included within the current site boundary:

- LHAAP-04, former Pilot Wastewater Treatment Plant;
- LHAAP-56, a vehicle wash rack and oil/water separator, Building 744-A;
- LHAAP-59, Storage Building 725;
- LHAAP-60, Building 411;

- LHAAP-61, Water Treatment Plant; and
- LHAAP-66, 405-L Transformer Yard.

LHAAP-60, Building 411, which is located within the historical site boundary of LHAAP-35A (58) is included within the LUC boundary for LHAAP-04.

The current site boundary for LHAAP-35A (58) encompasses the following sites:

- LHAAP-02, vacuum truck overnight parking;
- LHAAP-03, the Paint Shop Building 722 (waste collection);
- LHAAP-60, Former Storage Building 714;
- LHAAP-68, a mobile storage tank parking area; and
- LHAAP-69, service station with underground storage tanks.

The following sites are located within the LUC boundary (groundwater use restrictions area) for LHAAP-35A (58):

- LHAAP-02, vacuum truck overnight parking;
- LHAAP-03, the Paint Shop Building 722 (waste collection);
- LHAAP-56, a vehicle wash rack and oil/water separator, Building 744-A;
- LHAAP-59, Storage Building 725;
- LHAAP-60, Building 411;
- LHAAP-60, Former Storage Building 714;
- LHAAP-65, Former Building 209 (flammable materials storehouse);
- LHAAP-68, a mobile storage tank parking area; and
- LHAAP-69, service station with underground storage tanks.

1.4 Conceptual Site Model

Much of the following conceptual site model (CSM) information has previously been presented in the 2nd Annual RA(O) Report (January 2015 – October 2015) (AECOM, May 2016). **Figure 3** presents the CSM from the ROD (Shaw, September 2010). Between 1992 and 2008, multiple investigations were conducted in a phased approach to evaluate the nature and extent of contamination at the LHAAP-35A (58) site. The findings from these investigations were that the shallow zone groundwater was impacted with VOCs, while the soil and former sump/waste rack sump areas (LHAAP-56) posed no unacceptable threat to human health or the environment (Shaw, September 2011). **Figure 2** shows the locations of all the shallow, intermediate, and deep zone monitoring wells, as well as surface water sampling locations, present at the site. The sources of contamination at LHAAP-35A (58) were surface spills associated with the various support services that occurred in the area. The spills resulted in minor soil contamination and

the COCs released to the surface soil subsequently migrated downward through leaching to the groundwater.

Overland flow does not appear to be a complete pathway for migration of contaminants to surface water, as none of the COCs (VOCs, Semi-volatile Organic Compounds [SVOCs], explosives, pesticides, or polychlorinated biphenyls [PCBs]) were detected in water samples from the on-site ditch. Likewise, no VOCs, SVOCs, explosives, or pesticides were detected in samples of the ditch sediment. Some metals were detected in surface water and sediment at concentrations in the naturally occurring background range.

Investigation results indicate that the shallow zone groundwater is impacted with VOCs, but soil and former sump/waste rack areas pose no unacceptable risk to human health or the environment (Shaw, September 2011). The nearest surface water body to LHAAP-35A (58) is a ditch that runs parallel to 4th Street on the western boundary of the site and flows to the southeast. The depth of groundwater in wells adjacent to the ditch is well below the bottom of the ditch at 18 to 25 feet (ft) below ground surface (bgs) (e.g., in wells 35AWW16, 35AWW18, and LHSMW07).

The potentially complete exposure pathways are groundwater use as drinking water and potential migration of impacted groundwater into surface water. Shallow groundwater is not used as drinking water at the refuge and this potential exposure pathway is eliminated from any hypothetical future receptor because LUCs are in place that prohibit the use of groundwater for any purpose other than for environmental monitoring and testing. **Figure 2** shows the groundwater use restrictions area established for this site.

The hydrogeology beneath the site, as presented in the Draft Final RACR (AECOM, October 2015), consists of three water-bearing zones identified as shallow, intermediate, and deep. The shallow zone extends to approximately 40 ft bgs. The lithology of the shallow zone is characterized by discontinuous layers of fine grained soils consisting of interbedded silt, sand, and clay. According to the groundwater gauging data conducted in October 2013 (First Performance Monitoring Sampling Event), groundwater elevations in the shallow zone in October 2013 ranged from 184.21 ft above mean sea level (amsl) to 202.32 ft amsl.

Data from boring log 35AWW02, which was drilled in the deep zone to a depth of 140 ft bgs (75.06 ft amsl), and 35AWW05, which was drilled in the intermediate zone to a depth of 72 ft bgs (147.01 ft amsl), indicate the soils in the intermediate and deep zones consist mostly of clay with the occasional presence of silt and sand layers. The occurrence of predominantly clay soil beneath the shallow zone impedes the vertical migration of groundwater, which is corroborated by the difference in groundwater elevations between the shallow zone and the intermediate and deep zones (AECOM, May 2016). Based on groundwater level measurements obtained in October 2013, groundwater elevation for the intermediate zone was approximately 178 ft above amsl, and the elevation of deep zone groundwater was 175.75 ft above amsl.

Based on previous investigations, the shallow groundwater COCs at LHAAP-35A (58) are tetrachloroethene (PCE); trichloroethene (TCE); 1,1,2-trichloroethane (TCA); 1,1-dichloroethene (DCE); 1,2-dichloroethane (1,2-DCA); cis-1,2-DCE; trans-1,2-DCE; vinyl chloride (VC); methylene

chloride (MC); and benzene. In addition, low concentrations of 1,1-DCA were detected in the shallow zone groundwater, but were below the groundwater medium-specific concentration (MSC); therefore, 1,1-DCA is not considered a groundwater COC at this site. No COCs were detected in samples collected from the intermediate and deep groundwater zones.

Although arsenic has not been designated as a COC, it is included in the shallow zone groundwater monitoring program in accordance with the Revised Technical Memorandum, Steps to Remedy-in-Place for LHAAP-03/LHAAP-58 (AECOM, November 2012); the ESD for LHAAP-03 groundwater and LUCs (Bhate/APTIM, July 2018); and the 2013 RAWP (AECOM, August 2013). Four quarters of arsenic monitoring were completed to be compliant with the Eastern Plume RAWP (AECOM, August 2013). However, per the Year 2 RA(O) Report (AECOM, May 2016), arsenic monitoring was recommended for additional wells located within the eastern plume (03WW01, 35AWW08, and 35AWW09). Continuation of the arsenic sampling program during the period of implementation and monitoring of EISB effectiveness within the western plume was also recommended based upon the recommendation to implement EISB for the western plume.

Arsenic was reported at concentrations above the MCL of 0.010 milligrams per liter (mg/L) during the Year 1 RA(O) monitoring period and during the July 2015 sampling event of the Year 2 RA(O) monitoring period in wells 03WW01, 1004TW001, 1004TW006, 35AWW08, 35AWW20, and LHSMW07 (AECOM, May 2016). Background concentrations of arsenic at Site LHAAP-58 were reported up to 0.0621 mg/L in November 2008 for perimeter well 110 in a filtered sample that was collected on December 16, 2004 (Shaw, June 2007).

In November 2017, monitoring wells 35AWW08 (0.148 mg/L) and 03WW01 (0.035 mg/L) exceeded the MCL of 0.010 mg/L. The eight other monitoring wells sampled did not have arsenic detected in the groundwater above the MCL. In July 2018, monitoring well 03WW01 was not analyzed for arsenic. The detected arsenic in July 2018 at monitoring well 35AWW08 decreased to 0.122 mg/L. Arsenic concentrations detected in samples below the MCL in November 2017 ranged from nondetect in monitoring wells LHSMW06 (shallow monitoring well) and 35AWW01 (intermediate monitoring well) and 0.000850 J mg/L in monitoring well 1004TW001 (recommended for removal from monitoring program in Year 3 RA(O) Report). The arsenic detections below the MCL in July 2018 ranged from 0.000648 J mg/L in intermediate monitoring well 35AWW01 to 0.00198 J mg/L in shallow monitoring well 35AWW09.

As presented in Section 1.1, sampling at well 03WW01 will continue to be conducted per the ESD for LHAAP-35A (58) that requires the groundwater underlying LHAAP-03 be included with the LHAAP-35A (58) groundwater remedy. Based on historic arsenic results and the ESD (Bhate/APTIM, July 2018), the Year 4 RA(O) Report recommended to continue monitoring arsenic in eastern plume monitoring wells 03WW01, 35AWW08, and 35AWW09 and western plume monitoring wells 35AWW20 and LHSMW06.

2 SITE ACTIVITIES AT LHAAP-35A (58)

2.1 Annual LUC Compliance Inspection, Maintenance, and Repairs

2.1.1 Annual LUC Compliance Inspection

The objectives of the LUCs at LHAAP-35A (58) are to prevent human exposure to groundwater contamination presenting an unacceptable risk to human health, and to ensure that there is no withdrawal or use of groundwater beneath the site for any purpose other than environmental monitoring and testing until the cleanup levels are attained (AECOM, August 2013). The ESD for LHAAP-03 groundwater and LUCs formally changed the duration of the LUCs, which will remain in effect until COC concentrations in groundwater and soil are reduced to levels that allow unrestricted use and unlimited exposure (Bhate/APTIM, July 2018).

As shown on **Figure 2**, the sites that are included in the LUC boundary under LHAAP-58 include LHAAP-02, LHAAP-03, LHAAP-35A, LHAAP-56, LHAAP-59, LHAAP-60D, LHAAP-65, LHAAP-68, and LHAAP-69. Notices of the groundwater use restrictions accompany all property transfer documents and were recorded at the Harrison County Courthouse in March 2015 in accordance with the Texas Administrative Code Title 30, §335.566. Additional details regarding the implementation of the LUCs are presented in the RACR (AECOM, October 2015).

The annual LUC compliance inspection was conducted for LHAAP-35A (58) on June 23, 2021. The Annual Land Use Control Compliance Certification Documentation form for the Year 7 RA(O) period is presented in **Appendix A**. No compliance issues or concerns were noted during the June 2021 annual inspection.

2.1.2 Well Field Operation & Maintenance

Inspections of the conditions/integrity of monitoring wells were conducted in June 2021 and were documented in a photographic log (**Appendix B**) and during each sampling event with the information recorded on the field sampling forms. No significant maintenance items were observed during the June 2021 inspection. However, similar to the previous Year 6 inspection, there are hinges on several monitoring wells noted to have rust observed at varying degrees (35AWW10, 35AWW12, 35AWW17, 35AWW19, and 35AWW21). The hinges have not worsened since Year 6. The hinges will continue to be watched to see if they continue to worsen, which will require replacement or repair. Additionally, monitoring well LHSMW06 was noted as needing paint. The painting of LHSMW06 will be completed in the upcoming reporting period. Mowing the area to control brush and weeds was conducted on a routine basis and as needed to allow access to the wells, typically before sampling events. During the Year 7 annual reporting period, mowing was conducted prior to the groundwater sampling events in December 2020 and June 2021. **Appendix B** provides photos of the June 2021 monitoring well conditions and **Appendix C** provides the Well Inspection Forms, which contain information about the individual well surface conditions observed during each of the Year 7 sampling events conducted in December 2020 and June 2021.

2.2 Groundwater Monitoring for RA(O)

Groundwater monitoring at LHAAP-35A (58) was conducted quarterly following EISB injections at the eastern plume for 2 years but is now conducted on semi-annual basis. The contingency remedy implemented within the western plume required that quarterly sampling be conducted at select performance monitoring wells for 2 years, which was completed in March 2020. Therefore, as with the eastern plume, groundwater monitoring is now conducted semi-annually at the western plume. During the Year 7 RA(O), groundwater sampling was completed semi-annually in December 2020 and June 2021.

2.2.1 Eastern Plume Monitoring

In accordance with the RAWP (AECOM, August 2013), the following shallow zone wells located within the eastern and western plumes were sampled in December 2020 and June 2021: 03WW01, 35AWW08, 35AWW09, 35AWW10, 35AWW12, 35AWW13, 35AWW14, 35AWW15, 35AWW16, 35AWW17, 35AWW18, 35AWW21, 35AWW22, 35AWW24, and LHSMW06. Monitoring well LHSMW04 was dry in both December 2020 and June 2021 and therefore was not sampled during the Year 7 RA(O). LHSMW04 was also dry in October 2016, November 2017, July 2018, December 2018, December 2019, and June 2020. Intermediate groundwater zone well 35AWW01 was also sampled in December 2020 and June 2021. Well 35AWW02 (**Figure 2**), which is the only well screened in the deep groundwater zone, was not included in the sampling program, in accordance with the RAWP (AECOM, August 2013). Therefore, this monitoring well was not gauged or sampled during the Year 7 RA(O) sampling events.

2.2.2 Western Plume Monitoring

Six shallow wells located within the western plume were required to be sampled quarterly for 2 years post injection. Per the Western Plume RAWP (Bhate, January 2018), the wells include 35AWW06, 35AWW11, 35AWW19, 35AWW20, 35AWW23, and LHSMW07. The eighth and final quarterly event was completed in March 2020. Therefore, western plume monitoring only is required to be sampled semi-annually during the Year 7 RA(O). Although, not considered performance monitoring wells for the Western Plume RAWP, LHSMW06, 35AWW15, and 35AWW18 which are sampled as part of the eastern plume monitoring, also help define the western plume. Intermediate groundwater zone well 35AWW05 was also sampled in December 2020 and June 2021.

2.2.3 Sampling Procedures and Analysis

Before collecting groundwater samples, the wells were gauged using a water level probe and the depth to water was recorded to the nearest 0.01 ft from the top of casing. During the Year 7 RA(O) period, 23 monitoring wells were gauged for depth to water in December 2020 and June 2021. Groundwater samples were collected using the low-flow sampling technique described in the Groundwater Sampling Procedures in the Installation-Wide Work Plan (IWWP) (Bhate, May 2018). After water quality parameters stabilized and were within acceptable ranges, samples were collected at the same low flow rate.

The MNA analyte list was modified for the Year 7 sampling events to follow the recommendations put forth in the Final Technical Memorandum (TM) - MNA Parameters (Bhate/APTIM, February 2019) (**Appendix D**). The TM modified the MNA analyte list for consistency across several sites and to reduce redundant or non-essential parameters. Analytes eliminated in the Year 7 RA(O) sampling events were alkalinity; nitrite; sulfide; total iron; dissolved iron and manganese; and total phosphorous. Groundwater samples collected from each well during Year 7 (December 2020 and June 2021) were analyzed by ALS Environmental for VOCs (SW8260C). Select wells were also analyzed by ALS Environmental for dissolved gases (RSK-175); Total Organic Carbon (TOC) (SM5310C); total arsenic (SW6020A); chloride, nitrate, and sulfate (SW9056A); Volatile Fatty Acids (VFAs) (High Performance Liquid Chromatography [HPLC]-METACIDS); and/or dechlorinating bacteria (dehalococcoides [DHC]/dehalobacter [DHBt]) (CENSUS). A Hach kit was used to complete ferrous iron screening in the field.

The LHAAP-35A (58) monitoring wells are shown on **Figure 2**. **Table 1** presents the monitoring wells that were gauged during the Year 7 RA(O) period. Each of the monitoring wells were secure and sampled with no technical issues encountered.

During the 7 years of RA(O) sampling, only monitoring well LHSMW04, located to the east of the eastern groundwater plume, has been periodically dry. However, the absence of data from this well has had no effect on evaluating EISB or MNA. Monitoring well LHSMW04 is located between 35AWW09 and 35AWW12 and the sampling results for these two wells provide ample data to evaluate this area.

Groundwater Sample Collection Forms are presented in **Appendix E**. Chain of custody forms, laboratory reports, and quality control summary reports are presented with the laboratory results in **Appendix F**.

2.2.4 Groundwater Elevation and Flow Direction

2.2.4.1 Shallow Groundwater Zone

Groundwater levels for the Year 7 RA(O) were measured in December 2020 and June 2021. The groundwater flow direction in the shallow water bearing unit during the Year 7 RA(O) monitoring period at LHAAP-35A (58) is interpreted to the southeast in the western portion of the site and to the east-southeast in the eastern portion of the site (see **Figures 4 and 5**). This corresponds well with the flow directions presented in the Remedial Design (RD) document (Shaw, September 2011), which was interpreted to the southeast in the westernmost area, and to the east for the remainder of the site. Groundwater elevation data are presented in **Table 1**.

The shallow zone groundwater elevations increased across the site in all the shallow wells between December 2020 and June 2021, with the exception of 35AWW23, which had a slightly decreased groundwater elevation. The greatest elevation increase, 3.10 ft, occurred in shallow monitoring well 35AWW10. A total of eight shallow zone groundwater wells had increases greater than (>) 1 ft.

2.2.4.2 Intermediate Groundwater Zone

Wells 35AWW01 and 35AWW05 (**Figure 2**), which are completed in the intermediate groundwater zone, had groundwater elevations increased between December 2020 and June 2021, by 0.25 ft and 0.46 ft respectively. A potentiometric surface map cannot be constructed to determine the groundwater flow direction based upon two monitoring wells. The groundwater elevations are presented in **Table 1**.

2.2.5 Vertical Gradient

There are two pairs of shallow and intermediate zone co-located wells, which include monitoring wells 35AWW08 (shallow) and 35AWW01 (intermediate), and LHSMW07 (shallow) and 35AWW05 (intermediate). During the Year 7 RA(O) monitoring period, the elevation difference between wells 35AWW08 and 35AWW01 was 15.09 ft in December 2020 and 15.14 ft in June 2021. During the Year 7 RA(O) monitoring period, the elevation differences between wells LHSMW07 and 35AWW05 was 28.69 ft in December 2020 and 29.54 ft in June 2021. These elevation differences are consistent with those observed in the first 6 years of RA(O) monitoring. This difference in elevation between the shallow groundwater zone and the intermediate groundwater zone indicates that there is hydraulic separation between these two water bearing zones. Because the potentiometric level of the shallow zone groundwater is higher than the potentiometric level of the intermediate zone groundwater, a downward vertical gradient appears to exist at this site.

2.3 Groundwater Analytical Results

2.3.1 Shallow Zone

The COCs for shallow zone groundwater are PCE, TCE, cis-1,2-DCE; trans-1,2-DCE; MC; VC; 1,1,2-TCA; 1,2-DCA; 1,1-DCE; and benzene (AECOM, May 2016). Analytical results for the December 2020 and the June 2021 semi-annual samples in the eastern plume are presented in **Table 2**. The analytical results for the December 2020 and June 2021 sampling events from the western plume are presented in **Table 3**. **Figure 6** presents the analytical data for COCs that exceeded MCLs during December 2020 and/or June 2021.

Twenty-one shallow zone wells were sampled for COCs during the Year 7 RA(O), not including well LHSMW04, which was dry during the Year 7 RA(O) sampling events. Select wells were also sampled for MNA parameters per the RAWP (AECOM, August 2013) and the TM - MNA Parameters (Bhate/APTIM, February 2019).

During the December 2020 event, wells 03WW01, 35AWW06, 35AWW08, 35AWW09, 35AWW14, 35AWW18, 35AWW19, 35AWW20, 35AWW23, LHSMW06, and LHSMW07 had one or more COCs reported at concentrations above the laboratory detection limits. Monitoring wells 03WW01, 35AWW08, 35AWW09, 35AWW14, 35AWW18, 35AWW20, LHSMW06, and LHSMW07 had concentrations of COCs exceeding the MCLs, which are shown on **Figure 6**.

During the June 2021 event, monitoring wells 03WW01, 35AWW06, 35AWW08, 35AWW09, 35AWW14, 35AWW18, 35AWW19, 35AWW20, 35AWW23, LHSMW06, and LHSMW07 had one or more COCs listed above reported at concentrations above laboratory detection limits.

Monitoring wells 03WW01, 35AWW08, 35AWW09, 35AWW14, 35AWW18, 35AWW20, LHSMW06, and LHSMW07 had concentrations of COCs exceeding the MCLs, which are posted on **Figure 6**.

Groundwater monitoring well sampling forms were completed for each well sampled and are included in **Appendix E**. The laboratory analytical results are included in **Appendix F**.

2.3.2 Intermediate Zone

Wells 35AWW01 (eastern plume) and 35AWW05 (western plume) (**Figure 7**), which are completed in the intermediate groundwater zone, were sampled during the Year 7 RA(O) monitoring period. Analytical results for both intermediate groundwater zone wells were below laboratory detection limits for all analytes. The laboratory analytical results are shown in **Table 2** (35AWW01) and **Table 3** (35AWW05). Groundwater monitoring well sampling forms were completed for each well sampled and are included in **Appendix E**. The laboratory analytical reports are included in **Appendix F**. **Figure 7** shows that neither well had concentrations of COCs exceeding the MCLs.

2.3.3 Arsenic Monitoring

During the Year 7 RA(O) monitoring period, arsenic analysis was completed in select monitoring wells in accordance with the Revised Technical Memorandum, Steps to Remedy-in-Place for LHAAP-03/LHAAP-58 (AECOM, November 2012); the ESD for LHAAP-03 groundwater and LUCs (Bhate/APTIM, July 2018); the 2013 RAWP (AECOM, August 2013); and the 4th Annual RA (O) Report (Bhate/APTIM, October 2018). The 4th Annual RA (O) Report recommended continued arsenic monitoring in eastern plume monitoring wells 03WW01, 35AWW08, and 35AWW09 and western plume monitoring wells 35AWW20 and LHSMW06. 03WW01 is included as outlined in the ESD for LHAAP-03 (Bhate/APTIM, July 2018). In December 2020, groundwater from the following monitoring wells was analyzed for arsenic: 03WW01, 35AWW01, 35AWW08, and LHSMW06. Arsenic monitoring was erroneously omitted at 35AWW09 and 35AWW20 in December 2020. In June 2021, groundwater from the six monitoring wells was analyzed for arsenic: 03WW01, 35AWW01, 35AWW08, 35AWW09, 35AWW20, and LHSMW06. Monitoring of arsenic at 35AWW01 is included as this well is an intermediate groundwater well evaluated for MNA. Analytical results for the December 2020 and the June 2021 semi-annual samples in the eastern plume are presented in **Table 2**. The analytical results for the December 2020 and June 2021 sampling events from the western plume are presented in **Table 3**.

In December 2020, monitoring wells 03WW01 had an arsenic concentration 0.0152 mg/L and 35AWW08 had an arsenic concentration of 0.0244 mg/L. Both concentrations exceeded the MCL of 0.010 mg/L but were below the site background level of 0.0621 mg/L. The other three monitoring wells sampled did not have arsenic detected in the groundwater above the MCL. In June 2021, arsenic was detected above the MCL in 03WW01 (0.0169 J mg/L) but below the site background level of 0.0621 mg/L (Shaw, June 2007). The other five wells sampled for arsenic in June 2021 had concentrations below the MCL and the site background level. Therefore, the presence of arsenic in site groundwater cannot be attributed solely to reductive conditions

caused by EISB. Groundwater monitoring well sampling forms were completed for each well sampled and are included in **Appendix E**. The laboratory analytical reports are included in **Appendix F**.

2.4 Surface Water Sampling

The Eastern Plume RAWP (AECOM, August 2013) specifies that surface water monitoring for COCs (1,1,2-TCA; 1,1-DCA; 1,1-DCE; 1,2-dichloroethane; benzene; cis-1,2-DCE; TCE; PCE; and VC) be performed at surface water sample location 35ASW03, which is located in a ditch that runs parallel to 4th Street, on the western boundary of the site, adjacent to the western groundwater plume. **Figure 2** shows the surface water sampling location.

The Draft Final RACR for LHAAP-35A (58) (AECOM, October 2015) states that "*the water level in 35AWW18 will be gauged for comparison with the ditch bottom elevation at 35BSW03*." The surveyed bottom of the ditch at the lowest point is 213.58 ft amsl. The gauged water levels in the nearest upgradient monitoring well 35AWW18 in December 2020 and June 2021 were 197.80 ft amsl and 198.12 ft amsl, respectively.

No surface water was present at location 35ASW03 in the December 2020 sampling event. As recommended in the Year 2 RA(O) Report (AECOM, May 2016), surface water sampling will occur only if the groundwater elevation is at or above the bottom of the ditch. The groundwater surface in June 2021 was below the base of the ditch and groundwater was not discharging to surface water in the ditch. However, since surface water was present during the June 2021 sampling event, a sample was collected at 35ASW03 as verification that no VOCs were present in surface water. No VOCs were detected at 35ASW03 in June 2021 (**Table 2**).

Surface water samples are collected to evaluate the potential effect of the plume on surface water. Therefore, it is not likely that the groundwater at LHAAP-58 is or will contribute to the nearby surface water.

2.5 Well Abandonment

No additional wells are recommended for abandonment beyond those previously recommended in the Year 2 RA(O) Report (AECOM, May 2016), which included 35AWW02, 35AWW03, and 1004TW0001. As noted in the Year 3 RA(O) Report (Bhate, April 2018), well 1004TW006 was recommended for abandonment but could not be located.

3 PERFORMANCE MONITORING OF EISB

The EISB target area within the eastern groundwater plume is located within the vicinity of wells 03WW01 and 35AWW08. **Figure 6** presents the 2013 injection locations within the eastern groundwater plume. Well 35AWW10 is considered an upgradient clean well and well 35AWW09 is located downgradient of the EISB area, but within the eastern groundwater plume. Groundwater monitoring was performed in August 2013 prior to EISB implementation (baseline event), in October 2013 after the EISB injections, quarterly for 2 years and has been semi-annual since October 2016. The EISB performance in the eastern groundwater plume and key parameters are discussed below and much of the information is provided in **Tables 2, 4, and 5**.

The EISB target area within the western groundwater plume is located within the vicinity of wells 35AWW06, 35AWW20, and LHSMW07 (Bhate, January 2018). EISB injections were also implemented near monitoring wells 35AWW11, 35AWW14, and 35AWW23. **Figure 6** presents the EISB injection point locations within the western groundwater plume. Monitoring well 35AWW15 is considered an upgradient clean well and 35AWW24 is located downgradient of the EISB treatment area and defines the downgradient edge of the western groundwater plume. Within the western groundwater plume, a total of six monitoring wells (LHSMW07, 35AWW06, 35AWW11, 35AWW19, 35AWW20, 35AWW23) have been evaluated via a total of 8 quarterly performance monitoring events, over the 2 years following injections, to assess the EISB in the western plume (Bhate, January 2018). The quarterly groundwater performance monitoring was completed in March 2020 when monitoring was reduced to semi-annual. The first semi-annual sampling event was completed in June 2020 in the Year 6 monitoring period. This Year 7 RA(O) report presents the results of the semi-annual sampling events conducted in December 2020 and June 2021. The EISB performance in the western groundwater plume and key parameters are discussed below. Information pertinent to the discussion is provided in **Tables 3, 4, and 6**.

The monitoring program is intended to track the biologic degradation of the chlorinated solvents from PCE through VC and finally to ethene (PCE to TCE to cis-1,2-DCE to VC and finally ethene), while also monitoring the in-situ conditions for favorable biologic activity. Analytes eliminated in March and June 2019, per the Draft TM – MNA Parameters (Bhate/APTIM, January 2019), were alkalinity; nitrite; sulfide; total iron; dissolved iron and manganese; and total phosphorous.

3.1 Analysis of VOCs

VOCs that exceeded the MCL during the December 2020 or June 2021 sampling event are posted on **Figure 6**.

3.1.1 Eastern Plume

Major reductions in PCE concentration have been observed in the eastern two monitoring wells, 03WW01 and 35AWW08, located within the influence of the EISB treatment area. Well 35AWW09 is located outside the treatment area and is discussed in Section 4.

Between August 2013 (baseline sampling event) and June 2021, PCE concentrations reported for well 35AWW08 have decreased from 1,640 micrograms per liter (µg/L) to non-detect, with

concentrations below the MCL during July 2018, December 2018, June 2019, December 2019, and December 2020; PCE was non-detect at an elevated limit of detection (less than [<] 25 µg/L) in June 2021 (**Table 4**). The elevated limit of detection was a result of a dilution due to the foamy nature of the sample. This difference in PCE concentrations in well 35AWW08 is a decrease of approximately 99.5 percent (%). PCE concentrations in well 35AWW08 remained below the MCL of 5 µg/L in the four semi-annual sampling events from July 2018 through December 2019. However, in the June 2020 sampling, PCE was detected above the MCL at a concentration of 6.7 µg/L.

From August 2013 to June 2021, PCE concentrations in well 03WW01 decreased from 368 µg/L to 11 µg/L (**Table 4**). This is a decrease of approximately 97.0 % of PCE in well 03WW01. Until June 2021, PCE concentrations in well 03WW01 had remained below the MCL of 5 µg/L since October 2016, except for the December 2018 sampling event when a concentration of 15 µg/L was reported.

TCE, a degradation product of PCE, initially decreased between August 2013 and October 2013 (following EISB injections), but subsequently increased (due to reduction of PCE into TCE) indicating the occurrence of early stages of dechlorination (**Table 4**). In monitoring well 03WW01, TCE dropped below the MCL of 5 µg/L in October 2016 and has remained below the MCL through June 2021, except for reported concentrations above the MCL of 5.7 µg/L in December 2018 and 24 µg/L in December 2020.

The maximum detected TCE concentration in both the December 2020 and June 2021 sampling events was in well 35AWW09 in December 2020 at a concentration of 140 µg/L. Over the last four sampling events, TCE at 35AWW09 has remained relatively consistent from December 2019 (160 µg/L) through June 2021 (130 J [laboratory qualifier denoting an estimated result] µg/L) (**Table 4**).

The concentrations of cis-1,2-DCE remained below the MCL of 70 µg/L in the eastern plume monitoring wells (**Table 4**) during the December 2020 and June 2021 sampling events. VC was detected in well 03WW01 at 1.6 µg/L below the MCL (2 µg/L) in June 2021. VC was detected above the MCL of 2 µg/L in well 35AWW08 during both the December 2020 and June 2021 sampling events at concentrations of 6.1 J µg/L and 24 J µg/L, respectively. In part, the low concentrations of degradation daughter products cis-1,2-DCE and VC present during the reporting period are a result of the minimal amount of parent compounds remaining at the site.

3.1.2 Western Plume

PCE was not detected above the MCL of 5 µg/L in the western plume wells during the Year 7 RA(O) sampling events (**Table 3**). PCE has not been detected above the MCL in the western plume since December 2008 when it was detected at monitoring 35AWW06 (**Table 4**).

In December 2020, well 35AWW20 had reported concentrations of TCE; 1,2-DCA; VC; 1,1,2-TCA; 1,1-DCE; and benzene above MCLs (**Table 3**). During Year 7 TCE increased at 35AWW20 from 91 µg/L in December 2020 to 190 µg/L in June 2021. This increase in TCE corresponds to a 1.63 foot increase in groundwater elevation over the same time period. Although there was an increase in TCE during the reporting period at 35AWW20, there is an overall decrease of 66.7% in TCE

from 570 µg/L in December 2018 to 190 µg/L in June 2021. TCE has remained below the MCL in well 35AWW23 since June 2019 and was not detected in June 2021. TCE was detected above the MCL in LHSMW06 in December 2020 and June 2021 at concentrations of 14 µg/L and 19 µg/L, respectively.

The TCE daughter product cis-1,2-DCE was detected in well 35AWW20 above the MCL in September 2019 (110 µg/L), December 2019 (70 J µg/L), March 2020 (71 µg/L), and in June 2020 (87 µg/L) (**Table 4**). The daughter product VC has remained elevated at well 35AWW20 with concentrations during the Year 7 RA(O) of 1,800 µg/L in December 2020 and 780 µg/L in June 2021. Note that VC increased between March 2019 (54 µg/L) to as high as 2,800 µg/L in December 2019. This significant increase and then decrease in VC could be a result of the degradation of cis-1,2-DCE and/or 1,1-DCE. VC was also detected above the MCL of 2 µg/L in well LHSMW06 in the December 2020 sampling event at 4.8 µg/L and at 3.2 µg/L in the June 2021 sampling event. The TCE and 1,1-DCE concentrations in monitoring well 35AWW14, located in an area downgradient of LHSMW06, have increased from below the respective MCLs in October 2013 to above the MCLs in October 2016, and remained above the MCLs through June 2021.

In December 2020 and June 2021, 1,1,2-TCA was detected above the MCL (5 µg/L) in well 35AWW20 with a concentration of 73 µg/L; 1,1,2-TCA was not detected in any other western plume wells sampled during the Year 7 RA(O) (**Table 2**). A daughter product of both 1,1,2,-TCA and TCE, 1,1-DCE, was detected above the MCL (7 µg/L) in three wells (35AWW20, LHSMW06, and LHSMW07) during the Year 7 RA(O) reporting period. Concentrations of 1,1-DCE in western plume well LHSMW06 exceeded the MCL (7 µg/L) during each sampling event while exhibiting a slight decrease during the reporting period from 14 µg/L in December 2020 to 11 µg/L in June 2021. Concentrations of 1,1-DCE at LHSMW07 also exceeded the MCL (7 µg/L) during each sampling event while exhibiting a decrease during the reporting period from 42 µg/L in December 2020 to 12 µg/L in June 2021.

Detections of 1,1-DCE at LHSMW07 during the reporting period may be attributable to the reduction of parent compounds TCE and 1,1,2-TCA in the western plume near LHSMW07 and upgradient well 35AWW20. However, 1,1-DCE has decreased in LHSMW07 from November 2017, prior to the western plume contingency implementation, when the concentration of 1,1-DCE was 600 µg/L (**Table 4**). Concentrations of 1,1-DCE in western plume well 35AWW20 remained elevated during the Year 7 RA(O) reporting period with a concentration of 950 µg/L in December 2020 and 1,600 µg/L in June 2021. 1,1-DCE has decreased 59% at 35AWW20 from 3,900 µg/L in September 2019 to 1,600 µg/L in June 2021.

All COCs remain below the respective MCLs in upgradient well 35AWW11 and downgradient wells 35AWW06, 35AWW11, 35AWW19, 35AWW23, and 35AWW24.

3.2 Analysis of Field Parameters

The field parameters (potential of hydrogen [pH], dissolved oxygen [DO], oxidation-reduction potential [ORP], temperature, and specific conductivity) were measured in the LHAAP-35A (58) wells during the Year 7 RA(O) monitoring events. **Table 5** contains the Year 7 RA(O) field

parameters for wells 03WW01 and 35AWW08 which are located in the eastern plume. Anaerobic conditions were observed in both wells, with DO <0.5 mg/L and negative ORP. During the reporting period, pH was within the range of 6.0 to 8.5 standard units (s.u.) generally required to support microbial populations responsible for reductive dechlorination, but below the optimal range of 6.8 to 7.5 standard units (s.u). The pH in these two wells initially decreased between January 2014 and October 2014, potentially related to substrate fermentation and organic acid production. However, since October 2014, and continuing through this Year 7 monitoring period, the pH in wells within both the eastern and western plumes has generally increased, indicating a self-buffering capacity of the aquifer.

Table 6 contains the Year 7 RA(O) field parameters for wells located in the western plume. While DO was <0.5 mg/L for all wells located within the EISB treatment area, ORP was 94 and 84 millivolts (mV) in 35AWW20 where the highest concentrations of COCs were observed during December 2020 and June 2021, respectively. Downgradient of 35AWW20, the ORP was negative in wells 35AWW23 (-129 mV) and LHSMW07 (-144 mV) in June 2021. During the reporting period, pH was within the range of 6.0 to 8.5 s.u. generally required to support microbial populations responsible for reductive dechlorination, with the exception of wells 35AWW11, 35AWW19, and 35AWW24 where COCs remain below MCLs.

3.3 TOC Levels

TOC is an indicator of the presence of carbon substrate. The background level of TOC is typically less than 10 mg/L. Therefore, TOC present above the background level are indicative of the presence of substrates in groundwater near the sampled monitoring well.

3.3.1 Eastern Plume

After injection of the carbon substrate in October 2013, there was an initial spike of the TOC levels in both wells (03WW01 and 35AWW08), indicating effective substrate distribution from the injection points to the impacted zone. TOC levels have since decreased. Over the course of the Year 7 monitoring period, the TOC levels have continued to decrease, which is expected as the carbon substrate is consumed and due to migration away from the injection area.

The most recent residual TOC levels (June 2021) of 103 mg/L in 03WW01 and 119 mg/L in 35AWW08 indicate that TOC remains at sufficiently high concentrations to support reductive dechlorination, albeit at lower amounts compared to the period immediately after injection in October 2013 (**Table 5**). The June 2021 TOC levels in nearby wells such as 35AWW09 (7.68 mg/L [duplicate result]) and 35AWW10 (4.69 mg/L) (**Table 2**), are not conducive to reductive dechlorination, and indicate that the carbon substrate has not migrated outside of the 2013 treatment zone.

3.3.2 Western Plume

Within the western plume, TOC increased in the sampled monitoring wells following the March/April 2018 contingency EISB injections when compared to the baseline sampling results (March 2018), within the influence of the injection points with the exception of 35AWW19. The greatest increases were observed in 35AWW06 and 35AWW11. The June 2021 data indicate the

highest TOC in the western plume is observed at well 35AWW20 at 20.5 mg/L (**Table 6**). Historically, EISB injections increased TOC in 35AWW20 to a maximum of 53 mg/L in September 2018, indicating distribution of electron donor in this area was successful but not ideal.

3.4 Analysis of Anions

Although sulfate reduction occurs through competing reactions to reductive dechlorination, the decrease in sulfate concentration is indicative of reducing aquifer conditions. Nitrate is not naturally-occurring in either plume area; therefore nitrate is also not observed as an artifact of reductive dechlorination.

3.4.1 Eastern Plume

Decreased sulfate concentrations in October 2014 through October 2016 in the two EISB wells (03WW01 and 35AWW08) relative to levels in nearby wells outside of the EISB treatment (35AWW09 and 35AWW10), indicate the development of reducing conditions conducive to reductive dechlorination occurred following initial injections. Sulfate concentrations in 03WW01 reduced from an August 2013 baseline concentration of 534 mg/L to non-detectable levels (<0.5 mg/L) in October 2016. Since then, sulfate concentrations increased in monitoring well 03WW01 to 180 mg/L in June 2021, which is likely due to untreated groundwater moving through the eastern plume. In monitoring well 35AWW08, data trends show that sulfate was reduced from a baseline concentration of 1,480 mg/L to < 10 mg/L in October 2016 as a result of EISB and remain low (**Table 5**). Note that the largest reductions in COC concentrations occur at the same time the largest reductions in sulfate concentrations are observed.

3.4.2 Western Plume

Following the EISB injections, sulfate decreased in each of the wells influenced by the EISB injections by approximately 50%, with the exception of well 35AWW19 and 35AWW24 where sulfate reduction was observed to a lesser extent, presumably due to poor distribution of TOC in areas where COCs are historically below MCLs. In June 2021, sulfate concentrations at the center of the western plume in 35AWW20 remain slightly depressed at 955 mg/L compared to pre-injection sulfate concentration of 2,150 mg/L in November 2017 (**Table 6**). Sulfate concentrations have returned to pre-injection levels in impacted well LHSMW07 (1,760 mg/L). While sulfate concentrations >20 mg/L can be a potential cause for concern for reductive dechlorination, there is evidence that it is not inhibitory at this site where cis-1,2-DCE and VC daughter products are generated.

3.5 Dissolved Gases

3.5.1 Eastern Plume

Approximately 2 years after implementation of EISB, methane concentrations peaked, indicating methanogenesis indicative of reductive dechlorination occurred. The methane concentration during the Year 7 monitoring period in 03WW01 decreased from 1,700 µg/L in December 2020 to 420 µg/L in June 2021 (**Table 5**). The methane concentration in 35AWW08 increased from

non-detectable levels (< 1.0 µg/L) in December 2018 to 1,600 µg/L in June 2021. Methane concentrations are still representative of reducing conditions due to methanogenesis and the reduction of carbon dioxide.

Concurrently, carbon dioxide levels remain elevated in both 03WW01 and 35AWW08, supporting the continued metabolism of the carbon substrate. Ethene was detected in June 2021 at 35AWW08 (33 µg/L), indicating that complete dechlorination is occurring. However, ethene may volatilize quickly through the vadose zone and is not retained by groundwater for long periods

3.5.2 Western Plume

Methane following the EISB treatment of the western plume increased within 6 to 9 months of implementation. In June 2021, methane concentrations increased in 35AWW20, the well with the highest COC concentrations in the western plume, to 1,500 µg/L, the highest concentration reported to date. Carbon dioxide levels have remained relatively consistent in all western plume wells, regardless of the degree of contamination (**Table 6**). Ethene has increased in 35AWW20 from 1.3 µg/L in June 2019 to 11 µg/L in June 2021. Ethene production is one line of evidence that complete reduction of the COCs is occurring, although ethene may volatilize quickly through the vadose zone and is not retained by groundwater for long periods.

3.6 Dechlorinating Bacteria

3.6.1 Eastern Plume

Bacterial cultures containing DHC species, the bacteria responsible for degrading cis-1,2-DCE to VC, were introduced during the bioaugmentation event in October 2013. During the Year 3 RA(O) sampling event (October 2016), DHC species spiked to the highest levels yet observed, to 9,460,000 cells/milliliter (mL) in 03WW01 and to 25,600,000 cells/mL in 35AWW08, indicating effective distribution of the introduced culture within the eastern plume per the RAWP. Since the Year 3 RA(O) sampling event, DHC concentrations have generally decreased, which is anticipated as the concentration of chlorinated VOCs decreases to below 50 µg/L. Concentrations of DHC in the Year 7 RA(O) in June 2021 were 196 cells/mL in 03WW01 and 122,000 cells/mL in 35AWW08 (**Table 5**). DHC species counts are still adequate for the continued degradation of PCE/TCE to VC.

3.6.2 Western Plume

The DHBt population increased significantly, within 3 to 6 months, after injection in the western plume in each of the monitoring wells influenced by the EISB treatment. DHC increased within 6 months to a year in most of the monitoring wells, but not to the degree DHBt populations increased. The critical performance monitoring well in the western plume, 35AWW20, indicated an increasing trend of DHC population to 115,000 cells/mL through June 2020. Since, June 2020 the DHC population has tampered off to 72,000 cells/mL in June 2021. DHBt populations have a decreasing trend at 35AWW20 from a maximum of 5,970,000 cells/mL in July 2018 to 13,400 cells/mL in June 2021 (**Table 6**). BAV1 vinyl chloride reductase populations have increased at 35AWW20 to 55,800 cells/mL in June 2021, which is the highest cell count to date.

The increase in dechlorinating bacteria populations corresponds with the reduction of TCE and increase in VC in well 35AWW20 over this period of time, indicating reductive dechlorination is not stalling at cis-1,2-DCE even though the observed concentrations of cis-1,2-DCE are relatively stable. The DHC and the BAV1 vinyl chloride reductase populations at the current count should be sufficient to reduce VC to ethene completely via reductive dechlorination.

3.7 EISB Performance Monitoring Summary

In summary, the EISB treatment has been effective in reducing the VOC concentrations (PCE by as much as 99.7%) and the conditions are still conducive for continued reductive dechlorination. Although biologic activity has slowed and substrate mass is decreasing, the COC mass requiring treatment is also greatly diminished. Reductions of VOCs (**Figure 8**) and increases in carbon dioxide, methane, and ethene (**Tables 5** and **6**) have been observed throughout both the eastern and western plume areas. The individual COC lateral extents comparing October 2016 MCL exceedances and those documented in June 2021 show a greatly contracted plume footprint (**Figure 9**). Combining the reduction in maximum concentrations and the reduction in areal extent indicate significant remediation progress.

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4 NATURAL ATTENUATION EVALUATION

This section presents the results of the natural attenuation evaluation in accordance with the three lines of evidence discussed in the Final Remedial Design (Shaw, September 2011) for LHAAP-35A (58) groundwater COCs. The discussion below pertains only to the shallow aquifer where COCs are detected above cleanup levels. Analytes eliminated starting in 2019, per the Draft TM – MNA Parameters (Bhate/APTIM, February 2019) were alkalinity, nitrite, sulfide, total iron, dissolved manganese, total phosphorous, and dissolved iron (lab analysis).

Per the August 2013 RAWP (AECOM, August 2013), 18 shallow monitoring wells were included in the MNA monitoring program for VOCs (35AWW06, 35AWW08, 35AWW10, 35AWW11, 35AWW12, 35AWW13, 35AWW14, 35AWW15, 35AWW16, 35AWW17, 35AWW18, 35AWW19, 35AWW20, 35AWW21, 35AWW22, LHSMW04, LHSMW06, and LHSMW07). Well 35AWW01 is the intermediate groundwater well evaluated for MNA. Note that LHSMW04 was not sampled because it was dry. However, following the 2018 EISB treatment within the western plume, wells 35AWW20, LHSMW07, and 35AWW19 are performance monitoring wells for the contingency remedy.

4.1 First Line of Evidence: Change in COC Concentrations over Time and with Distance

Natural attenuation is the combination of multiple mechanisms, including biodegradation, volatilization, dilution, advection, and absorption that reduce contaminant concentrations. The decrease of COC concentrations over time and distance in the absence of any other treatment is evidence of natural attenuation (AECOM, May 2016). The change in groundwater COC concentrations over time and with distance was evaluated at LHAAP-35A (58). COC exceedances for the Year 7 RA(O) monitoring period are presented on **Figure 6**.

The only wells where COCs were detected above their respective MCLs during the Year 7 RA(O) groundwater sampling events are 03WW01, 35AWW08, 35AWW09, 35AWW14, 35AWW18, 35AWW20, LHSMW06, and LHSMW07 (**Tables 2 and 3 and Figure 6**). Monitoring well 35AWW11 had a COC exceedance in December 2020 but was below the respective MCLs for all COCs in June 2021 (**Table 3**).

The Draft Final RACR for LHAAP-35A (58) (AECOM, October 2015) states that historical groundwater data indicates that monitoring wells 35AWW20 and LHSMW07 in the western plume, and wells 35AWW08 and 35AWW09 in the eastern plume, will be the primary focus of COC trend analysis as they contain the highest relative COC concentrations. Additionally, COCs exceeded MCLs in well 03WW01, located in the eastern plume, during this monitoring period and is therefore discussed herein.

Mann-Kendall analysis for the available historical data in each well (typically starting in 2008) through the end of the Year 7 RA(O) period (June 2021) was completed for various COCs for monitoring wells 03WW01, 35AWW08, 35AWW09, 35AWW20, LHSMW06, and LHSMW07. The results are presented in **Appendix G** in tables and graphs with statistical results presented on the

lower left hand side of the table. The GSI Environmental, Inc., Mann-Kendall Toolkit, Version 1.0 software was used for this analysis. Data used to generate the Mann-Kendall analysis is presented in **Table 4.** A summary table of the Mann-Kendall results is presented below.

Mann-Kendall Trend Summary

Monitoring Well	PCE	TCE	cis-1,2-DCE	1,1-DCE	VC
03WW01	**Decreasing**	**Decreasing***	**No Trend***	--	--
35AWW08	**Decreasing***	**Decreasing***	**Stable***	--	--
35AWW09	**Increasing**	**Increasing**	**Increasing***	--	--
35AWW20	--	**Decreasing**	**Decreasing**	**Decreasing**	**Increasing**
LHSMW06	--	**Increasing**	--	**Increasing**	**Increasing**
LHSMW07	--	**Stable***	--	**Decreasing**	**Increasing***

Note:
* Most recent concentrations are below MCLs

Of the analyzed parameters and wells using Mann-Kendall statistical analysis set, three monitoring wells, 03WW01 and 35AWW08 which are located within the eastern plume and 35AWW20 which is located in the western plume, showed a decreasing trend in parent compounds (PCE and/or TCE) concentrations over time.

Although PCE in 03WW01 shows an overall decreasing trend since June 2019, PCE has slightly increased over the last two years from 3.2 µg/L to 11 µg/L in June 2021. Since June 2019, TCE in 03WW01 has been below the MCL of 5 µg/L with the exception of December 2020 (24 µg/L); TCE is currently below the MCL in June 2021 (3 µg/L). PCE in 03WW01 shows a decreasing trend with a confidence factor > 99.9%. TCE in 03WW01 shows a decreasing trend with a 99.7% confidence factor. In 35AWW08, PCE is currently non-detect and below the MCL of 5 µg/L as of June 2021. PCE in 35AWW08 shows a decreasing trend with a confidence factor > 99.9%. Although TCE currently exceeds the MCL in 35AWW08 at 53 µg/L in June 2021, TCE shows a decreasing trend with a 100% confidence factor. Although PCE trends were not evaluated at 35AWW20 because it has been non-detect or below the MCL since 2013, TCE shows a decreasing trend with a confidence factor > 99.9%.

4.1.1 Eastern Plume

Figure 8 shows COC concentration profiles in wells 03WW01, 35AWW08, and 35AWW09, and the table above summarizes the Mann-Kendall trend results for these same wells.

Well 03WW01

This well is located within the September 2013 EISB area. PCE and TCE previously detected in this well at concentrations above their respective MCLs were not detected from October 2016 through July 2018. Detections in the Year 7 RA(O) were < 5.0 µg/L for PCE and 24 µg/L for TCE in December 2020 and 11 µg/L for PCE and 3.0 µg/L for TCE in June 2020. The decrease in PCE concentration is 97.0% between August 2013 and June 2021 and the decrease in TCE is 96.8% over the same time period. Degradation of TCE resulted in the maximum concentration of cis-1,2-DCE at 117 µg/L in April 2016, with a subsequent decline in the Year 7 RA(O) to 11 µg/L in June 2021.

The Mann-Kendall trend analysis in 03WW01 was conducted for PCE; TCE; and cis-1,2-DCE for analytical results from 2008 through the end of the Year 7 RA(O) period (June 2021) (**Appendix G**). The Mann-Kendall results indicate statistical evidence of a decreasing trend in concentrations for PCE (confidence factor > 99.9%) and TCE (confidence factor of 99.7%). The cis-1,2-DCE results indicate no trend; however, the detected concentrations have been below the MCL since October 2016.

Well 35AWW08

This well is located within the September 2013 EISB area. PCE concentrations decreased rapidly after the introduction of the carbon substrate and bacterial augmentation, and the PCE concentration as of June 2021 in below the detection limit. TCE concentrations increased after substrate injection and more rapidly after bioaugmentation, reaching a peak of 953 µg/L in May 2014 followed by a decrease to 53 µg/L in June 2021. The initial increase in TCE concentrations is an indication of PCE degradation.

Degradation of TCE resulted in a temporary increase in cis-1,2-DCE concentrations, especially during the Year 2 monitoring period, reaching a high of 79.6 µg/L in October 2015. In June 2021, cis-1,2-DCE was detected below the MCL at 30 µg/L.

The Mann-Kendall trend analysis in 35AWW08 was conducted for PCE; TCE; and cis-1,2-DCE for analytical results from 2008 through the end of the Year 7 RA(O) period (June 2021) (**Appendix G**). The results provide statistical evidence of a decreasing trend in concentrations for PCE (confidence factor > 99.9%) and TCE (confidence factor of 100%). The cis-1,2-DCE results indicate a stable trend with a confidence factor of 71.8%, however, concentrations are currently below the MCL.

Well 35AWW09

This well is located downgradient of the September 2013 EISB area. PCE and TCE were detected in this well at concentrations above their respective MCLs during the Year 7 RA(O) monitoring period. PCE concentrations increased from 57.6 J µg/L in October 2013 to 350 µg/L in June 2021.

Similarly, TCE concentrations exhibited a significant increase from 8.97 J µg/L in October 2013 to 130 J µg/L in June 2021. Daughter product cis-1,2-DCE was detected below the MCL at low concentrations of 1.1 and 0.89 µg/L (duplicate result) in December 2020 and June 2021, respectively. VC was not detected during either semi-annual events in the Year 7 RA(O) period.

The Mann-Kendall trend analysis in 35AWW09 was conducted for PCE; TCE; and cis-1,2-DCE for analytical results from 2008 through the end of the Year 7 RA(O) monitoring period (June 2021) (**Appendix G**). The results provide statistical evidence of an increasing trend in PCE (99.7% confidence factor) and TCE (99.7% confidence factor) concentrations. The cis-1,2-DCE results indicate an increasing trend with a confidence factor of >99.9, however, concentrations are currently below the MCL.

The cause of the increase in COCs in well 35AWW09 appears to be migration of COCs in groundwater from the upgradient contaminated area (e.g., 35AWW08 and 03WW01). The initial increase in concentrations in 35AWW09 is likely associated with continued plume migration downgradient. Concentrations observed in well 35AWW09 are similar to pre-EISB concentrations in well 03WW01 and substantially lower than observed in well 35AWW08. The influence of biodegradation associated with EISB appears to remain within the area targeted for EISB (area of monitoring wells 35AWW08 and 03WW01) with little to no influence observed in 35AWW09.

4.1.2 Western Plume

Figure 8 shows COC concentration profiles in wells 35AWW20 and LHSMW07 only, and the table above summarizes the Mann-Kendall trend results for these same wells.

Well 35AWW20

The concentrations of 1,1-DCE; cis-1,2-DCE; TCE; and VC were detected in this well above their MCLs during the quarterly Year 7 RA(O) monitoring events (**Table 3**). EISB injections were completed in the Western Plume in March and April 2018 (Bhate, August 2018). Concentrations of TCE have decreased by approximately 40.6% between November 2017 (320 µg/L) and June 2021 (190 µg/L), while the concentration of 1,1-DCE decreased by 15.8%, between November 2017 (1,900 µg/L) and June 2021 (1,600 µg/L). Conversely, as TCE has decreased, the TCE daughter product cis-1,2-DCE has slightly increased from November 2017 (53 µg/L) to June 2021 (87 µg/L), and the TCE degradation product VC significantly increased between November 2017 and June 2021 from 78 µg/L to 780 µg/L.

In addition to the above COCs, well 35AWW20 contained 1,1,2-TCA and 1,2-DCA (daughter product of degradation of 1,1,2-TCA) above the MCLs (5 µg/L for 1,1,2-TCA and also for 1,2-DCA) during the quarterly Year 7 RA(O) monitoring events (**Table 3**). Prior to EISB treatment, the COC 1,1,2-TCA fluctuated between a minimum of 48.3 µg/L in February 2014 and a maximum of 82.7 µg/L in October 2016. Additionally, the 1,1,2-TCA daughter product, 1,2-DCA, fluctuated between a minimum of 13.2 µg/L in February 2014 and a maximum of 20.3 µg/L in October 2013. During the period following EISB treatment (March 2018 through June 2021), 1,1,2-TCA fluctuated between a minimum of 38 J µg/L in March 2019 and a maximum of 88 µg/L in

December 2018, and 1,2-DCA fluctuated between a minimum of 8.7 µg/L (duplicate) in November 2017 and a maximum of 26 µg/L in December 2018 for 1,2-DCA. 1,1-DCE and VC are daughter products of reduction of both TCE and 1,1,2-TCA.

The Mann-Kendall trend analysis in 35AWW20 was conducted for TCE; cis-1,2-DCE; 1,1-DCE; and VC for analytical results from 2008 through the end of the Year 7 RA(O) period (June 2021) (**Appendix G**). The results indicate evidence of a decreasing trend over time at 35AWW20 for TCE (> 99.9% confidence factor); 1,1-DCE (> 99.9% confidence factor); and cis-1,2-DCE (confidence factor of 98.2%). Conversely, VC concentrations indicate an increasing trend over the same time period, supporting that reductive dechlorination is occurring in the vicinity of 35AWW20 (confidence factor of 99.8%).

Well LHSMW06

The COCs TCE; 1,1-DCE; and VC exceeded the MCLs in the December 2020 and June 2021 sampling events (**Table 3**). The Mann-Kendall trend analysis in LHSMW06 was conducted for TCE; 1,1-DCE; and VC for analytical results from 2008 through the end of the Year 7 RA(O) period (June 2021). The results indicate increasing trends in concentrations (with confidence factors of > 99.9%) for TCE; 1,1-DCE; and VC over time; the maximum detected concentrations of these COCs during this reporting period were 19 µg/L, 14 µg/L, and 4.8 µg/L, respectively.

Well LHSMW07

During the initial 3-year monitoring period, the COCs 1,1-DCE; TCE; and VC were detected in this well at concentrations above their respective MCLs as well as the first sampling event in Year 4 (November 2017). However, during the Year 7 RA(O) period, only 1,1-DCE exceeded its MCL in December 2020 and June 2021, with concentrations of 64 µg/L and 12 µg/L, respectively. TCE remained below the MCL of 5 µg/L.

The Mann-Kendall trend analysis in LHSMW07 was conducted for TCE; 1,1-DCE; and VC for analytical results from 2008 through the end of the Year 7 RA(O) period (June 2021). The results indicate a decreasing trend in concentrations for TCE (confidence factor of 97.8%). The results provide statistical evidence of a decreasing trend in concentrations for 1,1-DCE (confidence factor of 99.4%) and an increasing trend in VC (confidence factor of 99.9%).

For the first time in April 2014, 1,1,2-TCA was detected above the MCL of 5 µg/L at 5.68 µg/L and was also above the MCL in October 2016 at a concentration of 7.72 µg/L (Table 3). However, 1,1,2-TCA was not detected in December 2020 or June 2021 during the Year 7 RA(O) period. It was detected at a concentration of 0.73 J µg/L in September 2018, below the MCL of 5 µg/L. The daughter product of 1,1,2-TCA, 1,1-DCA, was detected below the MCL, at concentrations between 5.7 µg/L in June 2021 and 42 µg/L in December 2018.

4.1.3 Plume Stability

Figure 8 shows trends associated with key wells located in the eastern and western plume cores and leading edges. **Figure 9** compares the extent of the plumes associated with each COC in

October 2016 compared to June 2021. The stability of each plume with regards to these COCs is evaluated through these figures in conjunction with the analyses presented in the sections above.

4.1.3.1 Eastern Plume

Based on the southeasterly direction of groundwater flow over the 5-year RA(O) monitoring period, the following wells are considered to be along the groundwater flow path: 35AWW10, 35AWW08, 03WW01, 35AWW09, and 35AWW21. The COC concentrations in the upgradient well, 35AWW10, remained below detection limits during the Year 7 RA(O) events.

Figure 8 provides plots of groundwater COC concentrations and groundwater elevation changes over time in wells 35AWW08, 03WW01, and 35AWW09. Monitoring well 35AWW08 has a Mann-Kendall decreasing trend for both PCE and TCE and a stable trend for cis-1,2-DCE. TCE in 35AWW08 was detected at a concentration above the MCL in June 2021, at 53 µg/L while PCE was not detected in June 2021. Monitoring well 03WW01, which is hydraulically downgradient of 35AWW08 and upgradient of 35AWW09, has a Mann-Kendall decreasing trend for PCE and TCE and no trend for cis-1,2-DCE. PCE in 03WW01 was detected above the MCL in June 2021 at 11 µg/L, while TCE and cis-1,2-DCE were below their respective MCLs in June 2021. At 03WW01, TCE decreased from 24 µg/L in December 2020 to 3.0 µg/L in in June 2021. The TCE daughter product cis-1,2-DCE remained well below the MCL at 03WW01 during both Year 7 events.

Monitoring well 35AWW09 is located approximately 75 ft downgradient from 03WW01. There is an increasing trend in concentrations of PCE and TCE in 35AWW09. The increase in concentrations in 35AWW09 is likely associated with downgradient dissolved phase migration from higher concentration areas near well 35AWW08. A review of the data in 35AWW09 over the course of the Year 7 monitoring period does not indicate any correlation between groundwater elevations and COC concentrations.

The concentrations of COCs in downgradient wells 35AWW12 and 35AWW21 remained below the detection limits. No increased concentrations or detections of new COCs at boundary area wells 35AWW10, 35AWW13, 35AWW22, 35AWW12, and 35AWW21 occurred, therefore, the extent of the eastern plume is stable.

4.1.3.2 Western Plume

Based on the southeasterly direction of groundwater flow, the following wells can be considered to be along the groundwater flow path from 35AWW15, 35AWW20, 35AWW23, and 35AWW19, to 35AWW24 with a less dominant southerly component from LHSMW07 and 35AWW06 to 35AWW17. Groundwater also flows southeasterly from LHSMW06 and 35AWW23 to 35AWW19 and 35AWW11 to 35AWW14. The COC concentrations in upgradient well 35AWW15 have remained below detection limits throughout the Year 7 reporting period. The in-plume well (35AWW20) exhibits the highest levels of COCs, which have, based on the Mann-Kendall analysis, shown a decreasing trend for TCE; 1,1-DCE; and cis-1,2-DCE. Only VC is showing an increasing trend indicating ongoing reductive dechlorination at 35AWW20.

The 1,1-DCE concentration in monitoring well 35AWW19, located in a downgradient direction of the western plume, has decreased from above the MCL in January 2014 through December 2018,

to below the MCL in June 2021 (2.9 µg/L). Detections of 1,1-DCE in monitoring well 35AWW19 remained below the MCLs in the Year 7 RA(O) sampling events suggesting that migration of the plume is no longer occurring in this portion of the western plume. However, 1,1-DCE detected at monitoring well 35AWW18 has recently increased from 4.1 µg/L in December 2019, to above the MCL in June 2020 (18 µg/L) and has remained above the MCL through June 2021 (20 µg/L) (**Table 4**). Monitoring well 35AWW18 is downgradient of 35AWW20 indicating plume migration in a southerly direction in this portion of the western plume. Monitoring well 35AWW04, which was not sampled during this reporting period, is also downgradient of 35AWW18 along this flow path.

It should be noted that 1,1-DCE and VC were detected in cross-gradient well LHSMW06 above the MCLs (5 µg/L and 2 µg/L, respectively), in the June 2021 sampling event. Concentrations of 1,1-DCE were 14 µg/L in December 2020 and 11 µg/L in June 2021, and VC concentrations were 4.8 µg/L in December 2020 and 3.2 µg/L in June 2021. Evidence that plume expansion is not occurring is that concentrations of COCs in perimeter wells, including boundary area wells 35AWW15, 35AWW16, and 35AWW17, exhibited no detections of COCs.

4.2 Second Line of Evidence: Geochemical Indicators

Tables 2 and 3 include the geochemical indicator parameters that are useful for MNA evaluation. Some geochemical parameters are measured in the field and are recorded during sampling events. The field parameters for LHAAP-35A (58) wells include: DO, ORP, pH, conductivity, turbidity, and temperature. The other geochemical indicators analyzed in the laboratory include: alkalinity, chloride, nitrate, nitrite, iron, sulfate, sulfide, methane, ethane, ethene, TOC, phosphorous, manganese, and dechlorinating bacteria. Analytes eliminated in 2019 per the Draft TM – MNA Parameters (Bhate/APTIM, January 2019) were alkalinity, nitrite, sulfide, total iron, dissolved manganese, total phosphorous, and dissolved iron (lab analysis). TOC continues to be evaluated due to the March/April 2018 EISB treatment with the western plume.

A summary of the geochemical aquifer conditions following ERD injections in each plume area is presented in **Tables 5 and 6**. The following discussion examines the geochemical indicators recorded during the Year 7 RA(O) monitoring period.

4.2.1 Eastern Plume

- pH – Neutral pH (6.0 to 8.5 standard units) is desirable for MNA. During the Year 7 RA(O) monitoring period, groundwater was observed within this range throughout the impacted areas of the eastern plume. Minor excursions were observed outside the plume.
- Chloride – During biodegradation of chlorinated hydrocarbons in groundwater, chloride is released. This results in higher chloride concentrations in the contaminant plume as compared to background levels in upgradient wells or in un-impacted downgradient wells (United States Environmental Protection Agency [USEPA], September 1998). During the Year 7 RA(O) reporting period, chloride was only evaluated in impacted wells 03WW01, 35AWW08, and 35AWW09 and not in any background wells. Chloride levels in the shallow zone ranged between 870 mg/L (December 2020) in 03WW01, 1,430 mg/L (December

2020) in 35AWW09, to 2,480 mg/L in plume performance monitoring well 35AWW08 (December 2020) (**Table 2**). Chloride levels within eastern plume EISB treatment area wells provide evidence of biodegradation in the eastern plume. These levels can be compared to background chloride concentrations in upgradient well 35AWW10 with a chloride concentration of 6.59 mg/L in June 2019.

- Dissolved Oxygen – DO is the most thermodynamically favored electron acceptor used by microbes for biodegradation of organic carbon, whether natural or anthropogenic (USEPA, September 1998). Anaerobic bacteria generally cannot function at DO concentrations > 0.5 mg/L and hence, reductive dechlorination will not occur. In June 2021, eastern plume treatment area wells 03WW01 and 35AWW08 had DO measurements of 0.27 and 0.04 mg/L respectively. The DO levels in the treatment area are conducive to reductive dechlorination. The DO level observed in eastern plume well 35AWW09 was 0.47 mg/L (June 2021) (**Table 2**); this DO level is just below the 0.5 mg/L threshold, to support anaerobic conditions outside of the EISB treatment area (35AWW09).
- Oxidation-Reduction Potential – The ORP levels indicate how oxidative or reductive the groundwater is in the aquifer matrix and provide real-time data to determine if conditions are conducive for anaerobic biodegradation. ORP values < 50 mV indicate that the aquifer is sulfate-reducing, and values < -200 mV are required before anaerobic conditions are favorable for the biological reductive dechlorination of chlorinated ethenes. In June 2021, ORP measurements at 03WW01 (-99 mV) and 35AWW08 (-144 mV) indicated anaerobic conditions are marginally favorable for reductive dechlorination within the treatment area (**Tables 2 and 5**); however, ORP is one of many lines of evidence of reductive dechlorination. The ORP measured outside of the EISB area was 256 mV in June 2021 at well 35AWW09 (**Table 2**). This strong positive ORP indicates that conditions in the eastern plume outside of the EISB treatment area (35AWW09) are generally aerobic and not supportive of anaerobic degradation.
- Nitrate – After DO has been depleted in the microbiological treatment zone, nitrate may be used as an electron acceptor for anaerobic biodegradation of organic carbon by denitrification. In order for reductive dechlorination to occur, nitrate concentrations in the contaminated portion of the aquifer must be less than 1.0 mg/L (USEPA, September 1998). Nitrate was not detected in June 2021 at 35AWW08 or 03WW01 (**Tables 2 and 5**). Based on these observations, nitrate reduction in the shallow aquifer is not a likely mode of microbial respiration at the site, and the lack of nitrate is favorable for achieving the reducing conditions ideal for anaerobic reductive dechlorination.
- Iron – In some cases, iron (III) (ferric iron) is used as an electron acceptor during anaerobic biodegradation of organic carbon. During this process, iron (III) is reduced to iron (II) (ferrous iron), which may be soluble in water. Ferrous iron concentrations can be used as an indicator of anaerobic degradation of organic compounds. Ferrous iron was not analyzed for during the Year 7 reporting period. However, ferrous iron concentrations during the June 2020 sampling event were as follows: 1.74 mg/L in 03WW01; 3.08 mg/L in

35AWW08; and 0.43 mg/L in 35AWW09 (**Table 2**). The comparatively higher concentrations of ferrous iron in monitoring wells 03WW01 and 35AWW08 indicate active reductive conditions in the eastern plume around these wells as a result of EISB. However, ferrous iron concentrations in 35AWW09 indicate limited reductive conditions in the portion of the eastern plume outside the influence of EISB.

- Sulfate – After DO and nitrate have been depleted in the microbiological treatment zone, sulfate may be used as an electron acceptor for anaerobic biodegradation. This process is termed "sulfate reduction" and results in the production of sulfide. Concentrations of sulfate > 20 mg/L may cause competitive exclusion of dechlorination. However, in many plumes with high concentrations of sulfate, reductive dechlorination still occurs (USEPA, September 1998). Sulfate concentrations were 180 mg/L in 03WW01 (June 2021) and 148 mg/L in 35AWW08 (June 2021) (**Tables 2 and 5**). The sulfate concentration in 35AWW09, outside the influence of EISB, was 916 mg/L in June 2021 (**Table 2**). Sulfate levels were above 20 mg/L in the wells sampled within the eastern plume.
- Dissolved gases – Methanogenesis occurs in highly reducing conditions and generally occurs after oxygen, nitrate, and sulfate have been depleted. Ethane and ethene are the end products of reductive dechlorination of chlorinated VOCs, and their levels increase if complete reductive dechlorination takes place. Methane levels above 500 µg/L are considered to indicate methanogenic conditions (USEPA, September 1998). Methane concentrations in well 03WW01 have increased from pre-EISB concentrations of 3.22 µg/L in August 2013 to 420 µg/L in June 2021 (**Table 5**). Similarly, methane concentrations in 35AWW08 increased from 10.1 µg/L in August 2013 to 1,600 µg/L in June 2021 (**Table 5**). These wells are influenced by EISB and the production of methane is a strong indicator of anaerobic conditions. Ethene was detected at a concentration of 33 µg/L in 35AWW08 in June 2021. The ethene detected in June 2021 at 35AWW08 is the highest ethene detection measured to date and indicates the complete dechlorination of chlorinated COCs in this portion of the eastern plume.
- TOC – Regardless of the electron acceptor being used, organic carbon is a required source of reduced carbon and energy to sustain microbial activity. TOC is utilized as a carbon and energy source to support the reductive dechlorination of the chlorinated COCs. TOC concentrations > 20 mg/L are considered adequate to support microbial activity (USEPA, September 1998). TOC concentrations in eastern plume area wells 03WW01 and 35AWW08, influenced by injected substrate, exceeded this threshold with December 2018 concentrations of 42 mg/L and 392 mg/L respectively (**Table 5**). The TOC remained relatively stable in the June 2021 sampling event with detections for 03WW01 and 35AWW08 being 103 mg/L and 119 mg/L respectively. These concentrations indicate that sufficient TOC remains in the aquifer to support reductive dechlorination in the eastern plume. However, TOC is decreasing towards the lower end of the threshold. As expected, TOC was very low (7.68 mg/L [duplicate result] in June 2021) at 35AWW09, which is located outside of the EISB treatment zone (**Table 2**).

- Volatile fatty acids (VFA) – The presence of VFAs (**Table 2**) confirms the fermentation of carbon substrates and should be observed coincident with elevated TOC. Low levels of acetic acid (1.2 J mg/L) and lactic acid (2.1 J mg/L) were observed in well 35AWW08 during the June 2021 sampling event, confirming fermentation is occurring to some extent. Additionally, acetic acid was detected at 3.3 J mg/L from well 03WW01 during June 2021. VFAs were non-detected in 35AWW09, which is outside of the EISB treatment zone.

The qualitative assessment of geochemical indicators in the shallow groundwater zone at LHAAP-35A (58) indicates naturally occurring geochemical conditions outside the EISB treatment zone are not supportive of MNA via the biodegradation process. However, the areas influenced by the EISB treatment continue to allow for MNA.

4.2.2 Western Plume

- pH – Neutral pH (6.0 to 8.5 standard units) is desirable for MNA. During the Year 7 RA(O) monitoring period, groundwater was observed within this range throughout the impacted areas of the western plume. Minor excursions were observed outside the plume.
- Chloride – During biodegradation of chlorinated hydrocarbons in groundwater, chloride is released to groundwater. This results in higher chloride concentrations in the contaminant plume as compared to background levels in upgradient wells or in unimpacted downgradient wells (USEPA, September 1998). Prior to EISB injection, the chloride levels in the shallow zone detected in November 2017 ranged from 1,040 mg/L in 35AWW06 to 2,650 mg/L in 35AWW11 (**Table 6**). Chloride levels in 35AWW11 were slightly lower in June 2021 than the pre-EISB injection results but still elevated (1,790 mg/L) (**Table 3**). Chloride levels in the shallow zone were also elevated in LHSMW07, and remained stable over the Year 7 RA(O) sampling events from 1,650 mg/L in December 2020 to 1,760 mg/L in June 2021. Additionally, chloride levels within the other western plume EISB treatment area wells provide evidence of biodegradation in the western plume. Although, chloride was not analyzed for in background well, these June 2021 chloride levels can be compared to background chloride concentrations in downgradient wells such as 35AWW24 which had chloride concentrations below 120 mg/L in June 2021 (**Table 3**).
- Dissolved Oxygen – DO is the most thermodynamically favored electron acceptor used by microbes for biodegradation of organic carbon, whether natural or anthropogenic (USEPA, September 1998). Anaerobic bacteria generally cannot function at DO concentrations > 0.5 mg/L and hence, reductive dechlorination will not occur. The DO levels observed in western plume wells 35AWW06, 35AWW11, 35AWW19, 35AWW20, 35AWW23, 35AWW24, and LHSMW07 were < 0.5 mg/L in June 2021 (**Table 6**). These DO levels are adequate to support anaerobic conditions within the EISB treatment area.
- Oxidation-Reduction Potential – The ORP levels indicate how oxidative or reductive the groundwater is in the aquifer matrix and provide real-time data to determine if conditions are conducive for anaerobic biodegradation. ORP values < 50 mV indicate that the aquifer is sulfate-reducing, and values < -200 mV are required before anaerobic conditions are

favorable for the complete biological reductive dechlorination of chlorinated ethenes. During the monitoring period, wells located within proximity of the EISB treatment area (35AWW06, 35AWW11, 35AWW20, 35AWW23, and LHSMW07) generally exhibited a negative ORP, ranging from -144 mV at LHSMW07 (June 2021) to 94 mV at 35AWW20 (December 2020) (**Table 3**). Areas outside of the treatment area (LHSMW06, 35AWW16, 35AWW18, 35AWW19, and 35AWW24) continued to have positive ORPs which ranged from 6 mV at 35AWW18 (June 2021) to 166 mV at 35AWW24 (June 2021) (**Table 3**). These results indicate that conditions in the western plume outside of the EISB treatment area are generally aerobic and not supportive of anaerobic degradation.

- Nitrate – After DO has been depleted in the microbiological treatment zone, nitrate may be used as an electron acceptor for anaerobic biodegradation of organic carbon by denitrification. In order for reductive dechlorination to occur, nitrate concentrations in the contaminated portion of the aquifer must be < 1.0 mg/L (USEPA, September 1998). Nitrate concentrations were non-detect or below 1 mg/L in the western plume monitoring wells in each of the sampling events during the Year 7 Year monitoring period (**Table 3**). Based on these observations, nitrate reduction in the shallow aquifer is not a likely mode of microbial respiration at the site, and the lack of nitrate is favorable for achieving the reducing conditions ideal for anaerobic reductive dechlorination.
- Iron – In some cases, iron (III) (ferric iron) is used as an electron acceptor during anaerobic biodegradation of organic carbon. During this process, iron (III) is reduced to iron (II) (ferrous iron), which may be soluble in water. Ferrous iron concentrations can be used as an indicator of anaerobic degradation of organic compounds. Ferrous iron was not analyzed for during the Year 7 reporting period. However, ferrous iron concentrations in western plume wells during the Year 6 period ranged from 1.34 mg/L (35AWW20, December 2019) to 3.3 mg/L (35AWW06 [September 2019, December 2019, and June 2020], 35AWW11 [December 2019], and 35AWW23 [September 2019]) (**Table 6**). Starting in Year 6, the ferrous iron data was collected in the field to ensure a more accurate result since the reaction from ferric to ferrous iron occurs quickly if exposed to oxygen. The relatively high concentrations of ferrous iron in monitoring wells outside of the main contaminant plume areas (35AWW06) and lower within the plume areas (35AWW20) indicates active reducing conditions exist in the western plume and that ferric iron may be utilized as an electron acceptor in some areas of the plume generating elevated ferrous iron concentrations.
- Sulfate – After DO and nitrate have been depleted in the microbiological treatment zone, sulfate may be used as an electron acceptor for anaerobic biodegradation. This process is termed “sulfate reduction” and results in the production of sulfide. Concentrations of sulfate > 20 mg/L may cause competitive exclusion of dechlorination. However, in many plumes with high concentrations of sulfate, reductive dechlorination still occurs (USEPA, September 1998). Sulfate concentrations decreased significantly downgradient of the main plume in 35AWW06 from 1,560 mg/L in November 2017 to 197 mg/L in June 2021 (**Table 6**). Concentrations have fluctuated within the plume (35AWW20) decreasing from

2,150 mg/L in November 2017 to 882 mg/L in July 2018 and increasing again to 955 mg/L in June 2021 (**Table 6**).

- Dissolved gases – Methanogenesis occurs in highly reducing conditions and generally occurs after oxygen, nitrate, and sulfate have been depleted. Ethane and ethene are the end products of reductive dechlorination of chlorinated VOCs and their levels increase if complete reductive dechlorination takes place. Methane levels above 500 µg/L are considered to indicate methanogenic conditions (USEPA, September 1998). Methane concentrations above 500 µg/L in June 2021 were present in wells 35AWW06, 35AWW11, 35AWW20, 35AWW23, and LHSMW07 (**Table 3**). Ethene was detected within the western plume in wells LHSMW07 (19 µg/L) and 35AWW20 (11 µg/L) in June 2021; the two wells with highest detected VOC concentrations. This indicates complete degradation of VOCs within the wells containing the highest VOC detections in the western plume.
- Total Organic Carbon – Regardless of the electron acceptor being used, organic carbon is a required source of reduced carbon and energy to sustain microbial activity. TOC is utilized as a carbon and energy source to support the reductive dechlorination of the chlorinated COCs. TOC concentrations > 20 mg/L are considered adequate to support microbial activity (USEPA, September 1998). TOC concentrations in the western plume increased following EISB injections, which is to be expected. However, during the Year 7 reporting period all wells in the western plume, with exception of 35AWW20 (June 2021) and 35AWW23 (December 2020), had TOC concentrations below 20 mg/L (**Table 3**). Although the TOC concentration was relatively low in 35AWW20 (September 2018) after EISB injections (53 mg/L) and has declined to 20.5 mg/L (June 2021), ethene was detected, indicating that complete reductive dechlorination is occurring.
- VFAs – The presence of VFAs (**Table 3**) confirms the fermentation of carbon substrates and should be observed coincident with elevated TOC. The highest levels of acetic acid (65 mg/L) and propionic acid (2.8 mg/L) were observed in well 35AWW23 during the Year 7 reporting period in the December 2019 sampling event, confirming that some fermentation is occurring even though COC concentrations were already relatively low in this well. Where COCs were elevated, at 35AWW20, acetic acid was detected at 0.61 J mg/L in June 2021 and all other VFAs were non-detect, indicating fermentation was not occurring where remedial action was required.

The qualitative assessment of geochemical indicators in the shallow groundwater zone at LHAAP-35A (58) indicates that geochemical conditions in many areas of the plume are supportive of MNA, both within the areas influenced by the EISB treatment and also downgradient of that area.

4.3 Third Line of Evidence: Predictive Modeling and Microbial Analysis

If the first two lines of evidence for MNA are deemed inadequate or inconclusive, and/or if the need for a contingency remedy is evaluated, data from field or microcosm studies will be necessary to establish the third line of evidence for MNA.

Dechlorinating bacteria, DHC ethenogenes, and associated functional genes have been analyzed in wells within and outside the eastern and western plumes. Microbial population analyses was discontinued during the Year 7 reporting period at wells 35AWW09, 35AWW10 and 35AWW24, located outside of the EISB areas as recommended in the Year 5 RA(O) Report. It has been established that the microbial populations are limited and unaffected by the EISB injections in these areas.

4.3.1 Eastern Plume

Dechlorinating bacteria, DHC and DHBt, BAV1 VC reductase, and associated functional genes were analyzed in groundwater samples from wells 03WW01, 35AWW08, and 35AWW09, within and outside the eastern plume. Generally, the microbial population counts and the functional gene counts have been at or below the laboratory reporting limits in areas not influenced by bioaugmentation such as at 35AWW09, indicating a limited natural population of the bacteria and the absence of gene expression necessary for anaerobic biological degradation of the COCs. In June 20201 at monitoring well 35AWW08, the microbial population counts (122,000 cells/mL for DHC and 4,500 cells/mL for DHBt) have continued to decreased since June 2019 (**Table 5**).

The microbial population count in 03WW01 (196 cells/mL for DHC and 249 cells for DHBt in June 2021) was low compared to the cell counts in 35AWW08, and low compared to 03WW01 cell counts in June 2020 (26,600 cells/mL for DHC and 1,610 cells/mL for DHBt). However, the continued presence of the BAV1 VC reductase in June 2021 in 03WW01 (11 cells/mL in December 2020) and 35AWW08 (144 cells/mL in June 2021) indicates that complete reductive dechlorination can occur to allow VC to reduce to ethene over time.

4.3.2 Western Plume

Dechlorinating bacteria, DHC ethenogenes, DHBt, BAV1 VC reductase, and associated functional genes were analyzed in groundwater samples from wells within and outside the western plume in the Year 7 reporting period. Monitoring well 35AWW20 had significant changes in detections of DHC over the Year 7 reporting period. DHC increased in 35AWW20 from 7,800 cells/mL in December 2020 to 72,200 cells/mL in June 2021, while decreasing in LHSMW07 from 7,580 cells/mL in December 2020 to 4,430 cells/mL in June 2021. DHBt increased from 436 cells/mL in December 2020 to 13,400 cells/mL in June 2021. BAV1 VC reductase was detected at well 35AWW20 at 55,800 cells/mL in June 2021 at the highest count to date. An increase in VC reductase indicates that complete reductive dechlorination can occur to allow VC to reduce to ethene over time.

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5 CONCLUSIONS AND RECOMMENDATIONS

COC concentration data and geochemical indicator measurements were collected over the course of the monitoring period at LHAAP-35A (58) to evaluate the effectiveness of the EISB and MNA groundwater remedy. A tiered approach based on assessment of three lines of evidence was used to evaluate the occurrence of natural attenuation in site groundwater. The first line of evidence evaluated reductions in COC concentrations over time and with increasing distance from source areas, including evaluation of Mann-Kendall tests for trends; the second line of evidence evaluated geochemical indicators; and the third line of evidence evaluated microbial conditions in the aquifer. The results of the tiered evaluation and the conclusions are summarized below.

Data for Year 7 RA(O) were collected in December 2020 and June 2021. The groundwater flow direction at the site is interpreted to the southeast in the western portion of the site and to the east-southeast in the eastern portion of the site (**Figures 4 and 5**).

The EISB treatment in the eastern and western plume area appears to be effectively reducing the VOC concentrations, and the current groundwater conditions are conducive to continued reductions of VOCs throughout most of the site. **Figure 8** presents the graphical depiction of the trends of the COCs of various monitoring wells within LHAAP-58. With the exception of 35AWW09, the trend plots display decreasing COC trends in both the eastern and western plumes. Furthermore, **Figure 9** presents the change in the plumes from October 2016 to June 2021, which demonstrates the reduced lateral extent of the plumes.

The primary initial influence of EISB within the eastern plume was a reduction of PCE in 03WW01 and 35AWW08. TCE concentrations were observed to increase at each well after the September 2013 substrate injection, as PCE was degraded to TCE, followed by a decrease in concentration as the rate of TCE formation became lower than the rate of TCE biodegradation. Generally, cis-1,2-DCE was observed to increase in these two wells as a direct result of biodegradation of TCE. PCE; TCE; cis-1,2-DCE; and VC which had reduced to non-detect at well 03WW01 by the end of the Year 3 RA(O) (October 2016). PCE concentrations increased at 03WW01 in June 2021 to 11 µg/L, above the MCL of 5 µg/L. In December 2020, TCE concentrations increased in 03WW01 to 24 µg/L, but returned to a level below the MCL in June 2021 (3 5 µg/L). Concentrations of cis-1,2-DCE and VC were below MCLs in December 2020 and June 2021 at 11 µg/L and 1.6 µg/L, respectively. TCE and VC remained above MCL in well 35AWW08 in June 2021 at 53 and 24 J µg/L, respectively. However, based upon the presence of ethene in both wells, complete degradation is occurring.

Concentrations of PCE and TCE in 35AWW09, located within the eastern plume but outside the EISB area, have fluctuated seasonally with the December 2019 results the highest over the last 5 years. Due to aquifer geochemical conditions outside of the EISB area that are unfavorable to reductive dechlorination, additional treatment in the area of 35AWW09 may need to be considered. It should be noted that since December 2019, as groundwater elevations increased, both PCE and TCE have steadily decreased. Continued monitoring of 35AWW09 will allow for further evaluation of the COC concentration trends. The concentrations of COCs in downgradient

well 35AWW21, which is located outside the eastern plume, have remained below the detection limits. Therefore, based on the inferred east-southeastern groundwater flow path, COC levels are not migrating beyond the original plume boundaries. Since COCs have not appeared at 35AWW21, other natural attenuation properties such as dilution, dispersion, sorption, and volatilization appear to be occurring at a rate sufficient to mitigate off-site migration. Concentrations of COCs downgradient of monitoring wells 35AWW08, 03WW01, and 35AWW09 have exhibited no increase in COC concentrations or new detections of COCs. Specifically, the boundary area wells 35AWW10, 35AWW13, 35AWW22, 35AWW12, and 35AWW21 do not have increasing COC trends. Therefore, it appears that the lateral extent of the eastern plume is stable.

In the western plume, EISB treatment was completed in March and April 2018 per the Final RAWP (Bhate, January 2018). The concentrations of COCs (PCE; TCE; cis-1,2-DCE; and VC), in upgradient well 35AWW15 have remained below detection limits during this monitoring period. Concentrations of COCs in perimeter wells, 35AWW15, 35AWW16, and 35AWW17, which are located well away from the most impacted area, remain non-detect or below MCLs. Perimeter well 35AWW18 had concentrations of 1,1-DCE above the MCL during this monitoring period. As a result it is recommended to sample downgradient monitoring well 35AWW04 (if water is present) in the Year 8 RA(O). If monitoring well 35AWW04 remains dry throughout the Year 8 RA(O) period, a new shallow zone monitoring well will be considered to bound the downgradient extent of the 1,1-DCE groundwater plume. PCE concentrations in LHSMW07 and 35AWW20, wells within the influence of the EISB treatment, have remained well below the MCL (5 µg/L) since the EISB treatment was not detected in both well during the June 2021 sampling event. While TCE, 1,1-DCE, and cis-1,2-DCE exceed their respective MCLs at 35AWW20 during the current reporting period, there is an overall decrease of each COC between December 2018 and June 2021. Conversely, VC has increased at 35AWW20 from 110 µg/L in December 2018 to 1,800 µg/L in December 2020 and 780 µg/L in June 2021. TCE was detected at LHSMW07 during the reporting period but at concentrations below the MCL. Concentrations of cis-1,2-DCE have been non-detect or below MCLs since September 2018 in LHSMW07. However, VC has increased from non-detect in September 2018 to 44 µg/L in June 2020 LHSMW07. VC concentrations have significantly decreased to non-detect in June 2021.

The qualitative assessment of geochemical indicators and the absence of dechlorinating bacteria in the shallow groundwater zone (outside of the EISB zone) at LHAAP-35A (58) indicates current naturally occurring geochemical conditions are not optimal for, but may not preclude, MNA.

Groundwater monitoring to be performed at LHAAP-35A (58) on the eastern plume will be reduced to VOC analysis on an annual basis during the Year 8 RA(O) in compliance with the Eastern Plume RAWP (AECOM, August 2913). Groundwater monitoring on the western plume will continue to be performed on a semi-annual basis during the Year 8 RA(O) in compliance with the RAWP Contingency Remedy for the Western Plume (Bhate, January 2018). Additional arsenic sampling will continue on select wells. The Year 8 RA(O) groundwater monitoring plan is presented in **Table 7**. No change in land or groundwater use has occurred at the site, and current land use complies with the ROD (Bhate/APTIM, June 2018).

A surface water sample was collected at surface water sample location 35ASW03 in June 2021 during the Year 7 RA(O) monitoring period. Although not required, given that the surface water elevation was higher than the groundwater elevation of the shallow zone, the sample was collected to verify that no VOCs were present in surface water. All VOCs were non-detect at 35ASW03. Surface water sampling will be conducted in the Year 8 RA(O) when the groundwater elevation in 35AWW18 is at or above the surveyed ditch elevation.

A LUC compliance inspection was conducted on June 23, 2021. No compliance issues or concerns were noted during the annual inspection (**Appendix A**). Well conditions, are documented in the photographic log presented in **Appendix B**. The well inspection information is documented on the Well Inspection Forms (**Appendix C**). During the well inspection in June 2021 monitoring well LHSMW06 was identified as needing paint. Therefore LHSMW06 will be repainted in the upcoming Year 8 monitoring period. Mowing the well areas is conducted regularly, as part of routine maintenance at the site, particularly before sampling events.

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FIGURES

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TABLES

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APPENDIX A
ANNUAL LAND USE CONTROL COMPLIANCE CERTIFICATION DOCUMENTATION

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APPENDIX B
PHOTOGRAPHIC LOG

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APPENDIX C
WELL INSPECTION FORMS

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APPENDIX D
TECHNICAL MEMORANDUM - MONITORED NATURAL ATTENUATION MONITORING PARAMETERS

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APPENDIX E
MONITORING WELL SAMPLE COLLECTION FORMS

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APPENDIX F
LABORATORY ANALYTICAL RESULTS
(PROVIDED ON CD)

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APPENDIX G
MANN-KENDALL TREND TEST RESULTS

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FIGURES

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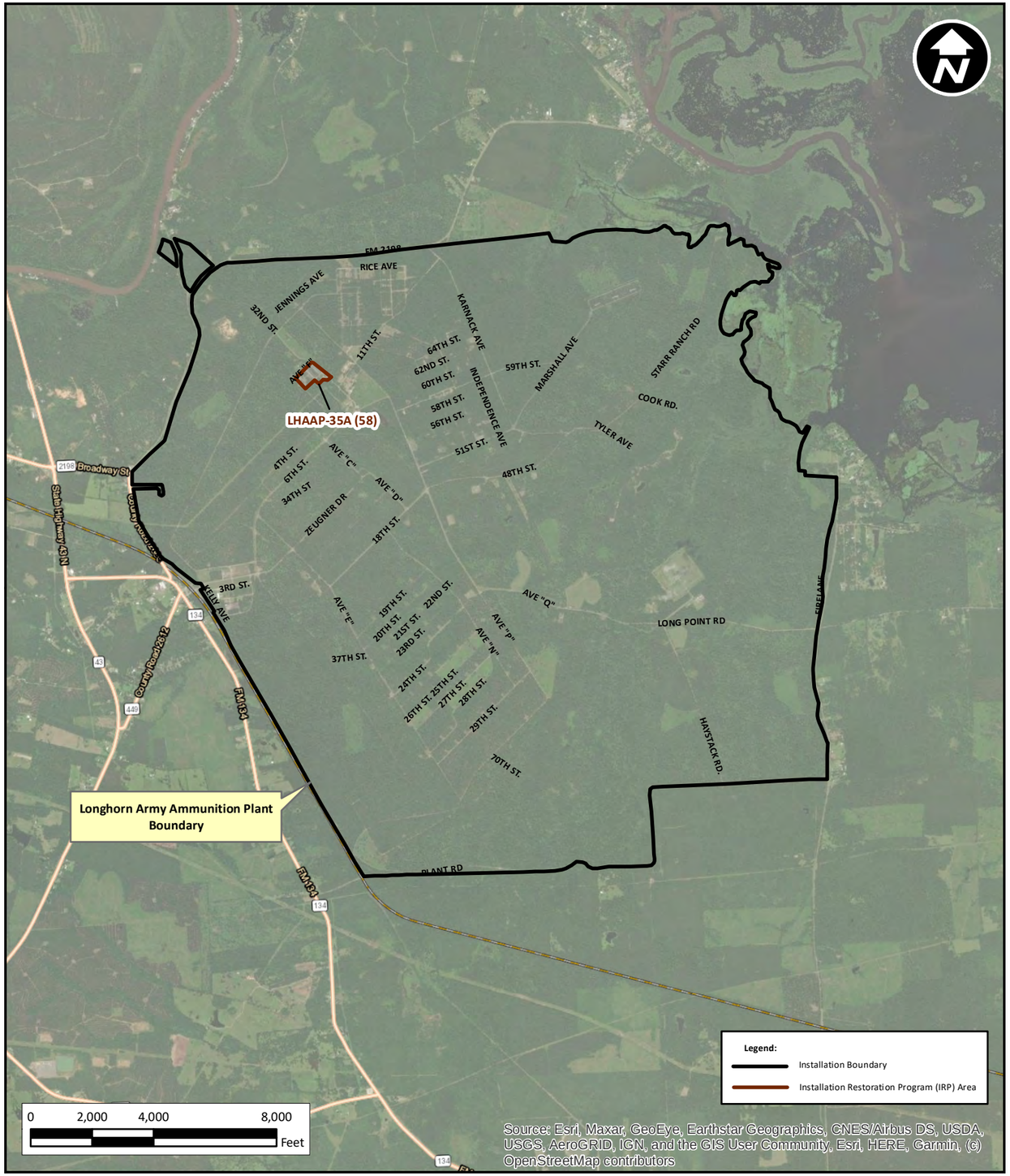

Longhorn Army Ammunition Plant
Location and Site Vicinity Map

Figure 1

Year 7 Annual Remedial Action Operation Report (December 2020 – June 2021)
LHAAP-35A (58), Shops Area
Longhorn Army Ammunition Plant
Karnack, Texas

DRAWN BY:	DATE:	SCALE:	PROJECT NO:
MRM	7/30/2021	As Shown	NWO1312.0150.012.0001.03

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Figure 2

Monitoring Well Location Map

Year 7 Annual Remedial Action Operation Report (December 2020 – June 2021)
LHAAP-35A (58), Shops Area
Longhorn Army Ammunition Plant
Karnack, Texas

DRAWN BY: MRM

DATE: 1/5/2022

SCALE: As Shown

PROJECT NO: NWO1312.0150.012.0001.03

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32ND ST.

HARRELL ST.

TACKET DR.

TWEEL ST.

LHAAP-61

LHAAP-02

LHAAP-35A (58)

10TH ST.

9TH ST.

8TH ST.

11TH ST.

6TH ST.

4TH ST.

AVE. "G"

LHAAP-03

LHAAP-60D

LHAAP-68

LHAAP-69

LHAAP-56

LHAAP-59

LHAAP-65

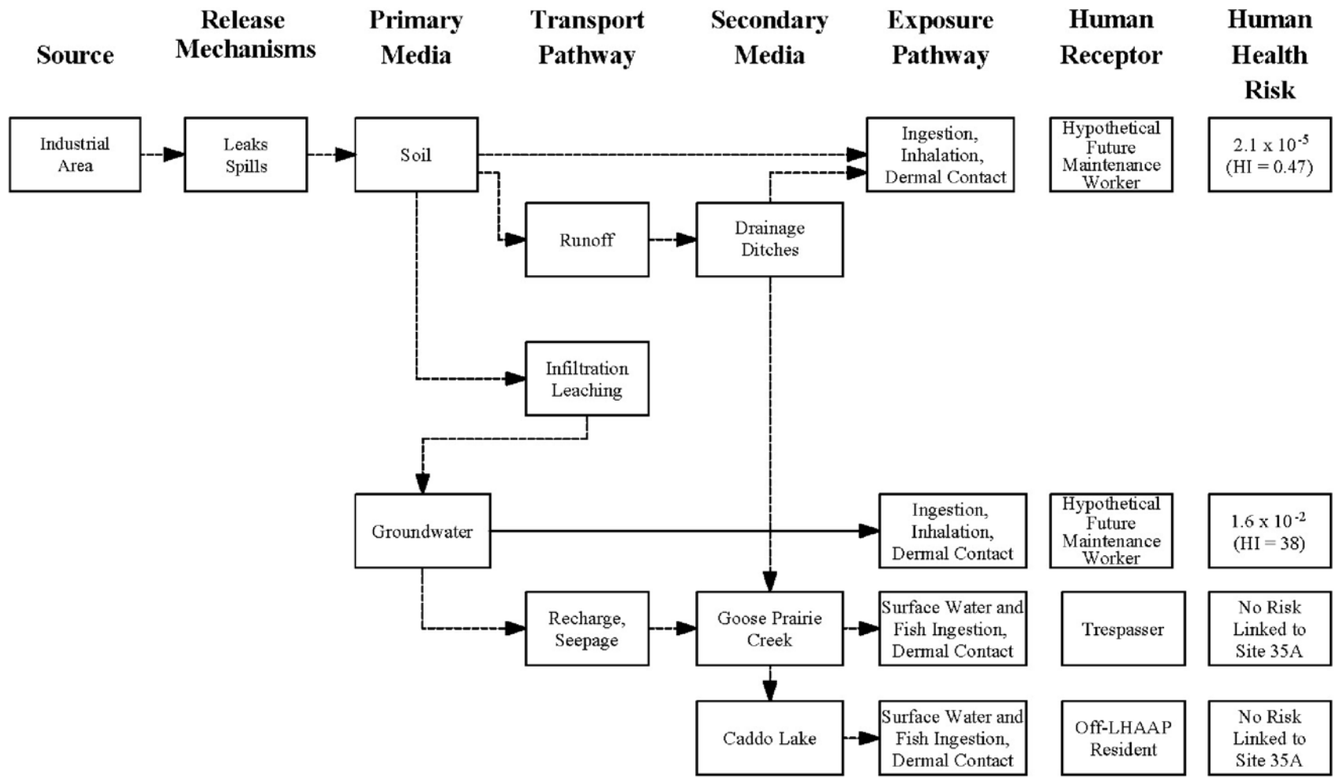
35AWW01
35AWW02
35AWW03
35AWW04
35AWW05
35AWW06
35AWW07
35AWW07R
35AWW08
35AWW09
35AWW10
35AWW11
35AWW12
35AWW13
35AWW14
35AWW15
35AWW16
35AWW17
35AWW18
35AWW19
35AWW20
35AWW21
35AWW22
35AWW23
35AWW24
03WW01
1004TW001
1004TW006
LHSMW03
LHSMW04
LHSMW05
LHSMW06
LHSMW07
35ASW03

Aerial Photography Source: Google Earth, April 2018

0 75 150 300 Feet

Legend:

- 35AWW06 — Sampled Well Locations
- Shallow Monitoring Well Location
- Shallow Temporary Monitoring Well Location
- Intermediate Monitoring Well Location
- Deep Monitoring Well Location
- Surface Water Sample Location
- Groundwater Use Restrictions Area
- Installation Restoration Program (IRP) Area
- Stream
- 401 — Building Number



Pathway considered for remediation

Pathway *not* considered for remediation

Source: Shaw, May 2010

Conceptual Site Model

Figure 3

Year 7 Annual Remedial Action Operation Report (December 2020 – June 2021)
LHAAP-35A (58), Shops Area
Longhorn Army Ammunition Plant
Karnack, Texas

DRAWN BY: MRM

DATE: 7/30/2021

SCALE: As Shown

PROJECT NO: NWO1312.0150.012.0001.03

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32ND ST.
HARRELL ST
TACKET DR
AVE "F"
AVE "G"
8TH ST.
9TH ST.
10TH ST.
11TH ST.
6TH ST.
4TH ST.

LHAAP-35A (58)

35AWW03 (NM)
LHSMW05 (NM)
35AWW22 (186.87)
35AWW13 (194.51)
35AWW07R (NM)
35AWW15 (205.92)
35AWW10 (202.11)
35AWW08 (188.37)
LHSMW04 (Dry)
35AWW12 (186.27)
03WW01 (186.96)
35AWW09 (185.92)
LHSMW06 (204.65)
35AWW21 (185.72)
35AWW20 (204.47)
1004TW001 (NM)
1004TW006 (NM)
LHSMW03 (NM)
35AWW11 (192.20)
204.00
35AWW16 (203.63)
35AWW14 (187.66)
LHSMW07 (203.39)
35AWW23 (200.52)
186.00
202.00
35AWW06 (201.88)
200.00
35AWW17 (198.32)
35AWW18 (197.80)
35AWW19 (198.42)
35AWW24 (195.19)
198.00
196.00
194.00
192.00
190.00
188.00

Aerial Photography Source: Google Earth, April 2018

0 75 150 300 Feet

Legend:

- Shallow Monitoring Well Location
- Shallow Temporary Monitoring Well Location
- (187.66) Potentiometric Surface Elevation in Feet Above Mean Sea Level
- (NM) Not Measured
- Potentiometric Surface Contour
- Direction of Groundwater Flow
- Installation Restoration Program (IRP) Area
- *401* Building Number

December 2020
Shallow Potentiometric Map

Figure 4

Year 7 Annual Remedial Action Operation Report (December 2020 – June 2021)
LHAAP-35A (58), Shops Area
Longhorn Army Ammunition Plant
Karnack, Texas

DRAWN BY: MRM

DATE: 7/30/2021

SCALE: As Shown

PROJECT NO: NWO1312.0150.012.0001.03

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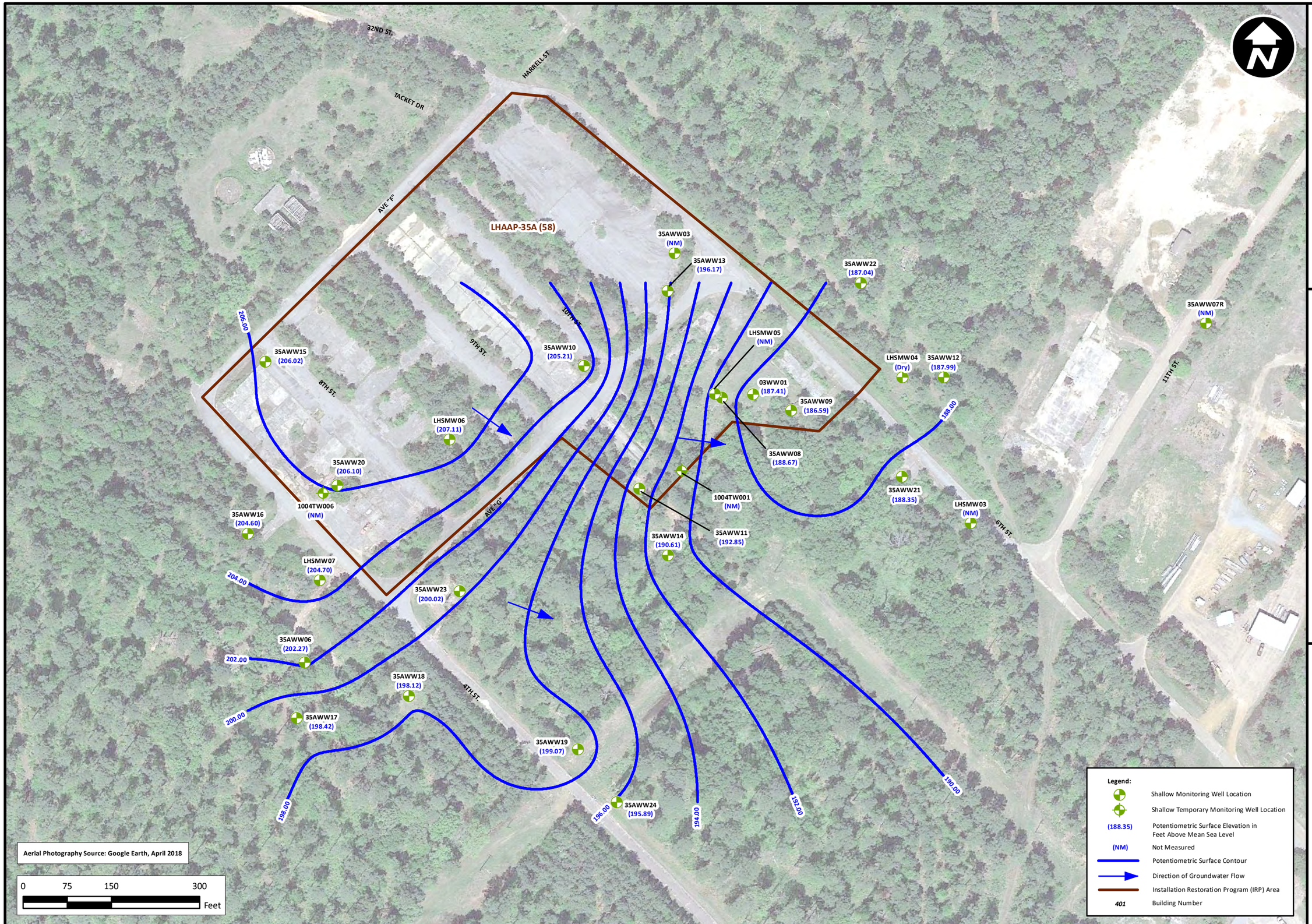

June 2021
Shallow Potentiometric Map

Figure 5

Year 7 Annual Remedial Action Operation Report (December 2020 – June 2021)
LHAAP-35A (58), Shops Area
Longhorn Army Ammunition Plant
Karnack, Texas

DRAWN BY: MRM

DATE: 7/30/2021

SCALE: As Shown

PROJECT NO: NWO1312.0150.012.0001.03

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Legend
J = Estimated value
U = Result is less than the laboratory detection limit
< = less than
COC = Contaminant of Concern
USEPA = United States Environmental Protection Agency
MCL = Maximum Contaminant Limit
DCA = Dichloroethane
DCE = Dichloroethene
PCE = Tetrachloroethene
TCA = Trichloroethane
TCE = Trichloroethene
VC = Vinyl Chloride
Bold Red values exceed the USEPA MCL
All results and MCLs are reported in micrograms per liter (µg/L)

COCs shown on this figure	
COC	MCL
1,1-DCE	7
1,1,2-TCA	5
1,2-DCA	5
Benzene	5
cis-1,2-DCE	70
PCE	5
trans-1,2-DCE	100
TCE	5
VC	2

LHSMW06		12/3/2020	6/3/2021
COC	MCL	Result	Result
1,1-DCE	7	**14**	**11**
cis-1,2-DCE	70	62	**71**
TCE	5	**14**	**19**
VC	2	**4.8**	**3.2**

03WW01		12/1/2020	6/2/2021
COC	MCL	Result	Result
PCE	5	<5.0U	**11**
TCE	5	**24**	3.0
VC	2	<5.0U	1.6

35AWW20		12/3/2020	6/3/2021
COC	MCL	Result	Result
1,1,2-TCA	5	**73**	**73**
1,1-DCE	7	**950**	**1,600**
1,2-DCA	5	**16**	**17**
Benzene	5	**8.2**	**8.9 J**
cis-1,2-DCE	70	63	**87**
TCE	5	**91**	**190**
VC	2	**1,800**	**780**

35AWW09		12/7/2020	6/2/2021	6/2/2021
COC	MCL	Result	Result	Dup. Result
PCE	5	**370**	**350**	**310**
TCE	5	**140**	**130 J**	**130 J**

LHSMW07		12/3/2020	6/2/2021
COC	MCL	Result	Result
1,1-DCE	7	**64**	**12**
VC	2	**42**	<0.5U

35AWW08		12/1/2020	6/2/2021
COC	MCL	Result	Result
PCE	5	<5.0U	<25U
TCE	5	<5.0U	**53**
VC	2	**6.1 J**	**24 J**

35AWW14		12/7/2020	6/1/2021
COC	MCL	Result	Result
1,1-DCE	7	**9.4**	**10.0**
TCE	5	**11**	**14**

35AWW18		12/1/2020	12/1/2020	6/1/2021
COC	MCL	Result	Dup. Result	Result
1,1-DCE	7	**22**	**22**	**20**

Aerial Photography Source: Google Earth, April 2018

0 100 200 400 Feet

Legend:
- Shallow Monitoring Well Location
- Shallow Temporary Monitoring Well Location
- Shallow Monitoring Well Location — No exceedances above MCLs for listed COCs
- Shallow Monitoring Well Location - Removed from RA(O)
- KB1® Plus Injection Point Locations (March 2018)
- KB1® Injection Point Locations (March 2018)
- Injection Locations (2013)
- (NS) Not Sampled
- Installation Restoration Program (IRP) Area
- Direction of Groundwater Flow (June 2021)
- Stream
- 401 Building Number

COC Exceedances in Shallow Groundwater (December 2020 - June 2021)

Figure 6

Year 7 Annual Remedial Action Operation Report (December 2020 – June 2021)
LHAAP-35A (58), Shops Area
Longhorn Army Ammunition Plant
Karnack, Texas

DRAWN BY: MRM
DATE: 8/31/2021
SCALE: As Shown
PROJECT NO: NWO1312.0150.012.0001.03

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Legend
COC = Contaminant of Concern
MCL = Maximum Contaminant Limit
DCA = Dichloroethane
DCE = Dichloroethene
PCE = Tetrachloroethene
TCA = Trichloroethane
TCE = Trichloroethene
VC = Vinyl Chloride
All results and MCLs are reported in micrograms per liter (µg/L)

COCs shown on this figure

COC	MCL
1,1-DCE	7
1,1,2-TCA	5
1,2-DCA	5
Benzene	5
cis-1,2-DCE	70
PCE	5
trans-1,2-DCE	100
TCE	5
VC	2

HARRELL ST.
32ND ST.
TACKET DR
AVE "F"
AVE "G"
8TH ST.
9TH ST.
10TH ST.
11TH ST.
6TH ST.
4TH ST.
LHAAP-35A (58)
35AWW01
35AWW05
207
102
102
102-R
103
AVE "P"
L-6
101
GH-1
401

Aerial Photography Source: Google Earth, April 2018

0 100 200 400 Feet

Legend:
- Intermediate Monitoring Well Location, No exceedances above MCLs for listed COCs
- Installation Restoration Program (IRP) Area
- Stream
- 401 Building Number

COC Exceedances in Intermediate Groundwater (December 2020 and June 2021)

Figure 7

Year 7 Annual Remedial Action Operation Report (December 2020 – June 2021)
LHAAP-35A (58), Shops Area
Longhorn Army Ammunition Plant
Karnack, Texas

DRAWN BY: MRM
DATE: 7/30/2021
SCALE: As Shown
PROJECT NO: NWO1312.0150.012.0001.03

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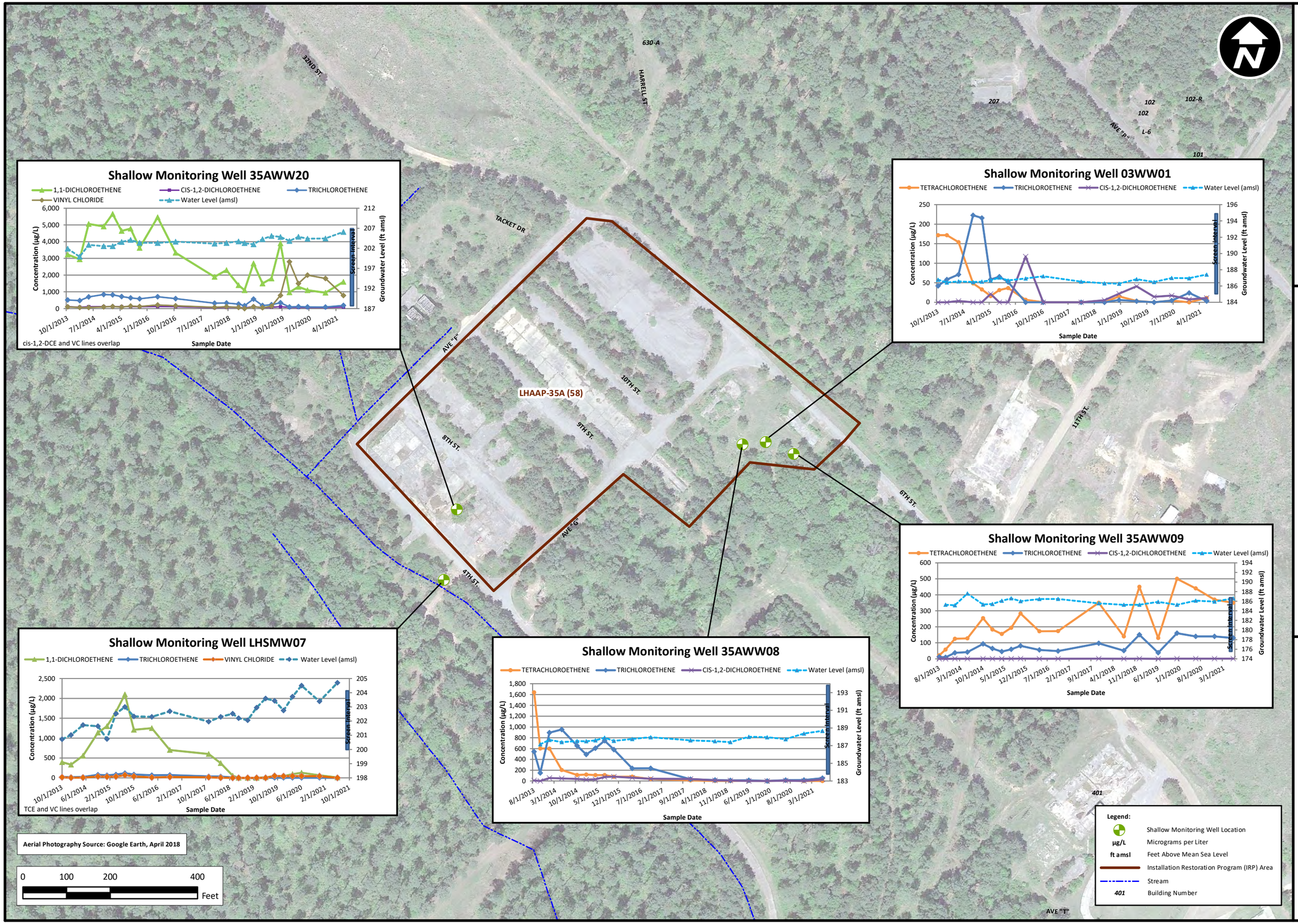

Shallow Monitoring Well 35AWW20

cis-1,2-DCE and VC lines overlap

Shallow Monitoring Well 03WW01

Shallow Monitoring Well 35AWW09

Shallow Monitoring Well LHSMW07

TCE and VC lines overlap

Shallow Monitoring Well 35AWW08

Aerial Photography Source: Google Earth, April 2018

0 100 200 400 Feet

Legend:

- Shallow Monitoring Well Location
- µg/L — Micrograms per Liter
- ft amsl — Feet Above Mean Sea Level
- Installation Restoration Program (IRP) Area
- Stream
- 401 — Building Number

COC Concentration Trends

Figure 8

Year 7 Annual Remedial Action Operation Report (December 2020 – June 2021)
LHAAP-35A (58), Shops Area
Longhorn Army Ammunition Plant
Karnack, Texas

DRAWN BY: MRM

DATE: 7/30/2021

SCALE: As Shown

PROJECT NO: NW01312.0150.012.0001.03

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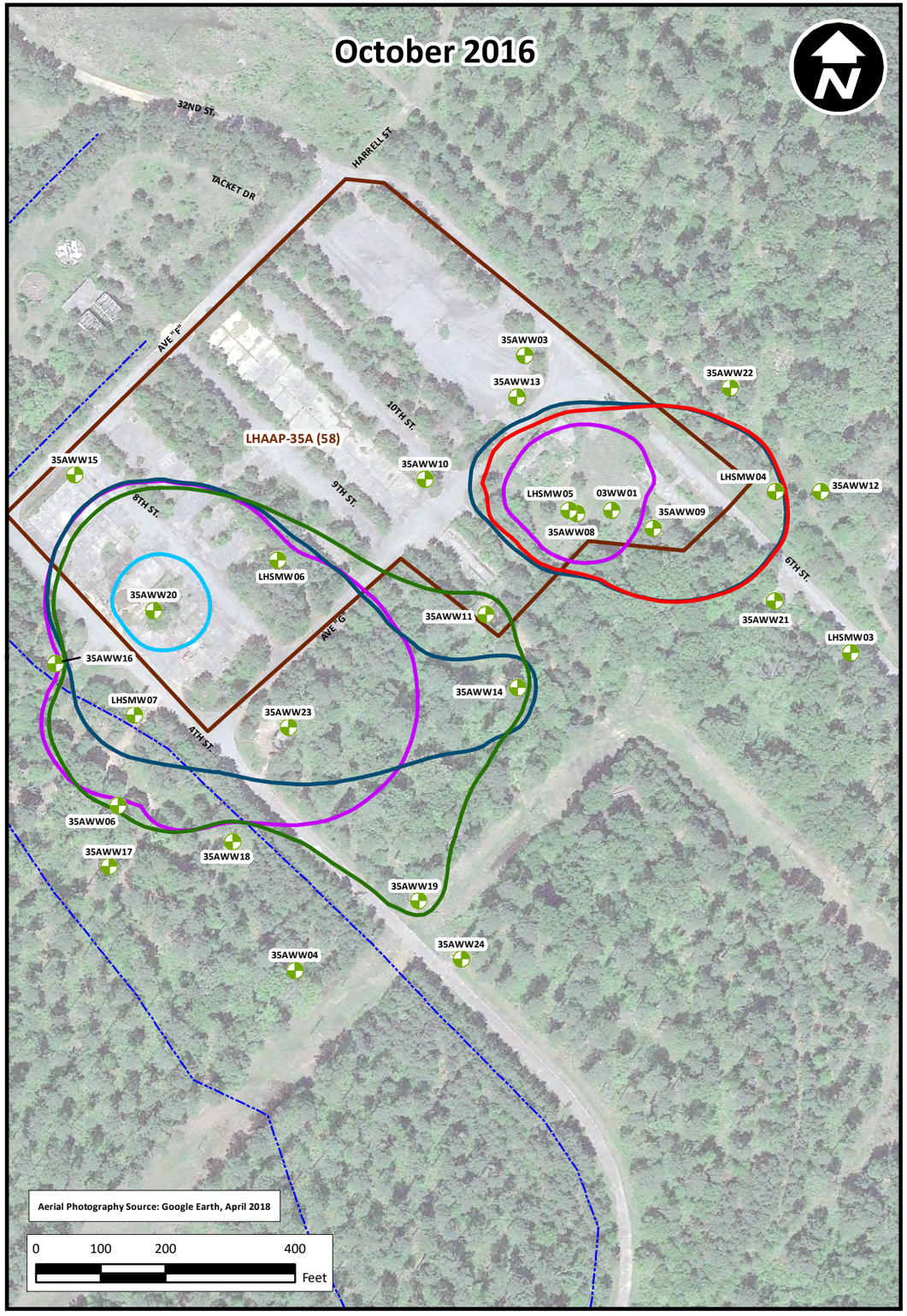

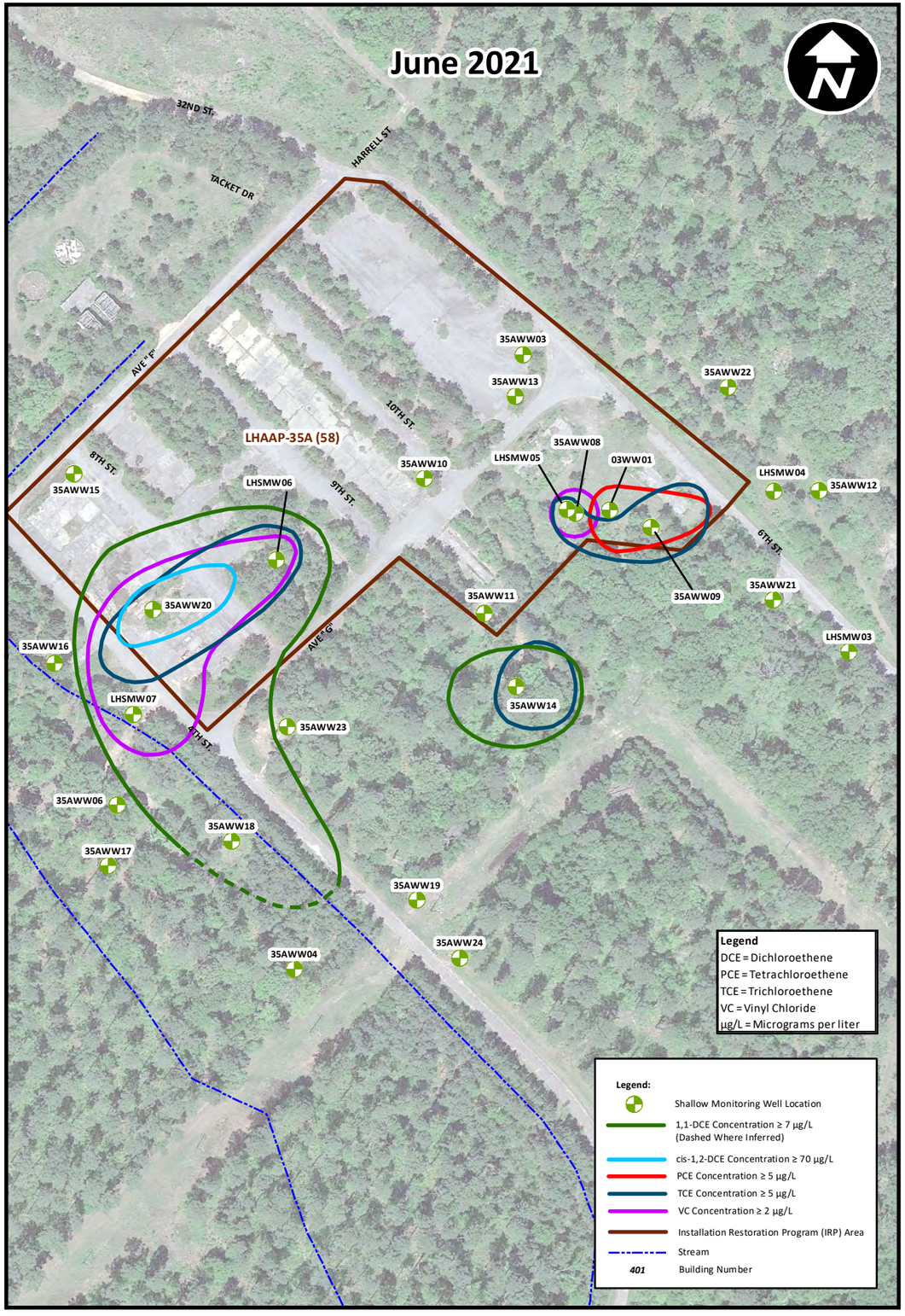

Lateral Extent of Plume Comparison (October 2016 and June 2021)

Figure 9

Year 7 Annual Remedial Action Operation Report (December 2020 – June 2021)
LHAAP-35A (58), Shops Area
Longhorn Army Ammunition Plant
Karnack, Texas

DRAWN BY: MRM

DATE: 10/14/2021

SCALE: As Shown

PROJECT NO: NWO1312.0150.012.0001.03

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TABLES

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Table 1
Groundwater Elevation Data
LHAAP-58, Longhorn Army Ammunition Plant, Karnack, Texas
Year 7 RA(O) Report

Well Identification	Aquifer	Sampling Date	Screen Intervals (ft from Top of Casing)	Top of Casing Elevation (ft)	Depth to Water (ft from Top of Casing)	Groundwater Elevation (ft above msl)
03WW01	Shallow	10/9/2013	22.51-32.51	216.29	29.51	186.78
		1/29/2014	22.51-32.51	216.29	29.86	186.43
		5/20/2014	22.51-32.51	216.29	29.72	186.57
		10/27/2014	22.51-32.51	216.29	29.81	186.48
		1/20/2015	22.51-32.51	216.29	29.75	186.54
		4/14/2015	22.51-32.51	216.29	29.60	186.69
		7/7/2015	22.51-32.51	216.29	29.25	187.04
		10/7/2015	22.51-32.51	216.29	29.60	186.69
		4/12/2016	22.51-32.51	216.29	29.36	186.93
		10/3/2016	22.51-32.51	216.29	29.09	187.20
		12/18/2019	22.51-32.51	216.29	29.80	186.49
		7/18/2018	22.51-32.51	216.29	29.96	186.33
		12/11/2018	22.51-32.51	216.29	30.00	186.29
		6/3/2019	22.51-32.51	216.29	29.45	186.84
		12/18/2019	22.51-32.51	216.29	29.80	186.49
		6/23/2020	22.51-32.51	216.29	29.30	186.99
		12/1/2020	22.51-32.51	216.29	29.33	186.96
		6/2/2021	22.51-32.51	216.29	28.88	187.41
1004TW001	Shallow	5/28/2014	NA	NM	18.05	NC
		10/30/2014	NA	NM	18.40	NC
		7/8/2015	NA	NM	17.00	NC
		4/14/2016	NA	NM	17.75	NC
		10/4/2016	NA	NM	17.46	NC
		11/17/2017	NA	NM	17.84	NC
1004TW006	Shallow	1/31/2014	NA	NM	19.17	NC
35AWW01	Intermediate	10/11/2013	63.07-73.07	218.03	40.58	177.45
		1/31/2014	63.07-73.07	218.03	40.21	177.82
		5/29/2014	63.07-73.07	218.03	39.31	178.72
		10/31/2014	63.07-73.07	218.03	40.17	177.86
		1/27/2015	63.07-73.07	218.03	39.40	178.63
		4/10/2015	63.07-73.07	218.03	40.06	177.97
		7/10/2015	63.07-73.07	218.03	39.10	178.93
		10/6/2015	63.07-73.07	218.03	39.79	178.24
		4/12/2016	63.07-73.07	218.03	38.86	179.17
		10/5/2016	63.07-73.07	218.03	39.01	179.02
		12/20/2019	63.07-73.07	218.03	45.81	172.22
		7/2/2018	63.07-73.07	218.03	43.00	175.03
		12/13/2018	63.07-73.07	218.03	40.27	177.76
		6/10/2019	63.07-73.07	218.03	44.52	173.51
		12/18/2019	63.07-73.07	218.03	45.18	172.85
		6/25/2020	63.07-73.07	218.03	44.22	173.81
		12/7/2020	63.07-73.07	218.03	44.75	173.28
		6/1/2021	63.07-73.07	218.03	44.50	173.53
35AWW02	Deep	10/22/2013	128.59 - 138.59	218.05	42.30	175.75
		4/13/2016	128.59 - 138.59	218.05	42.26	175.79
		10/4/2016	128.59 - 138.59	218.05	42.70	175.35

Table 1
Groundwater Elevation Data
LHAAP-58, Longhorn Army Ammunition Plant, Karnack, Texas
Year 7 RA(O) Report

Well Identification	Aquifer	Sampling Date	Screen Intervals (ft from Top of Casing)	Top of Casing Elevation (ft)	Depth to Water (ft from Top of Casing)	Groundwater Elevation (ft above msl)
35AWW03	Shallow	2/1/2014	11.93 - 21.93	219.66	DRY	NC
		5/29/2014	11.93 - 21.93	219.66	DRY	NC
		10/30/2014	11.93 - 21.93	219.66	DRY	NC
		7/9/2015	11.93 - 21.93	219.66	DRY	NC
		4/13/2016	11.93 - 21.93	219.66	DRY	NC
		10/4/2016	11.93 - 21.93	219.66	DRY	NC
		11/16/2017	11.93 - 21.93	219.66	DRY	NC
35AWW04	Shallow	4/14/2016	16.51 - 26.51	220.66	DRY	NC
		10/4/2016	16.51 - 26.51	220.66	DRY	NC
35AWW05	Intermediate	10/16/2013	62.4 - 72.4	221.41	43.70	177.71
		2/1/2014	62.4 - 72.4	221.41	37.70	183.71
		5/22/2014	62.4 - 72.4	221.41	43.12	178.29
		10/21/2014	62.4 - 72.4	221.41	43.60	177.81
		1/23/2015	62.4 - 72.4	221.41	42.90	178.51
		4/8/2015	62.4 - 72.4	221.41	42.55	178.86
		7/10/2015	62.4 - 72.4	221.41	42.67	178.74
		10/5/2015	62.4 - 72.4	221.41	43.31	178.10
		4/14/2016	62.4 - 72.4	221.41	41.40	180.01
		10/5/2016	62.4 - 72.4	221.41	42.43	178.98
		11/13/2017	62.4 - 72.4	221.41	45.72	175.69
		7/2/2018	62.4 - 72.4	221.41	45.47	175.94
		12/12/2018	62.4 - 72.4	221.41	43.67	177.74
		6/10/2019	62.4 - 72.4	221.41	46.20	175.21
		12/3/2020	62.4 - 72.4	221.41	46.71	174.70
		6/2/2021	62.4 - 72.4	221.41	46.25	175.16
35AWW06	Shallow	10/15/2013	19.05 - 29.05	220.43	21.50	198.93
		1/30/2014	19.05 - 29.05	220.43	21.14	199.29
		5/21/2014	19.05 - 29.05	220.43	20.65	199.78
		10/29/2014	19.05 - 29.05	220.43	20.55	199.88
		1/28/2015	19.05 - 29.05	220.43	20.58	199.85
		4/15/2015	19.05 - 29.05	220.43	18.95	201.48
		7/7/2015	19.05 - 29.05	220.43	19.47	200.96
		10/7/2015	19.05 - 29.05	220.43	19.97	200.46
		4/11/2016	19.05 - 29.05	220.43	19.95	200.48
		10/3/2016	19.05 - 29.05	220.43	19.53	200.90
		9/11/2019	19.05 - 29.05	220.43	18.90	201.53
		12/19/2019	19.05 - 29.05	220.43	19.32	201.11
		3/24/2020	19.05 - 29.05	220.43	18.68	201.75
		9/26/2018	19.05 - 29.05	220.43	20.35	200.08
		12/11/2018	19.05 - 29.05	220.43	19.96	200.47
		3/19/2019	19.05 - 29.05	220.43	19.50	200.93
		6/4/2019	19.05 - 29.05	220.43	18.95	201.48
		9/11/2019	19.05 - 29.05	220.43	18.90	201.53
		12/19/2019	19.05 - 29.05	220.43	19.32	201.11
		3/24/2020	19.05 - 29.05	220.43	18.68	201.75
		4/7/2020	19.05 - 29.05	220.43	18.77	201.66
		6/24/2020	19.05 - 29.05	220.43	18.45	201.98
		12/1/2020	19.05 - 29.05	220.43	18.55	201.88
		6/3/2021	19.05 - 29.05	220.43	18.16	202.27

Table 1
Groundwater Elevation Data
LHAAP-58, Longhorn Army Ammunition Plant, Karnack, Texas
Year 7 RA(O) Report

Well Identification	Aquifer	Sampling Date	Screen Intervals (ft from Top of Casing)	Top of Casing Elevation (ft)	Depth to Water (ft from Top of Casing)	Groundwater Elevation (ft above msl)
35AWW07R	Shallow	10/16/2013	21.55 - 31.25	212.11	27.90	184.21
		2/3/2014	21.55 - 31.25	212.11	28.90	183.21
		5/29/2014	21.55 - 31.25	212.11	25.83	186.28
		10/30/2014	21.55 - 31.25	212.11	26.55	185.56
		7/10/2015	21.55 - 31.25	212.11	24.08	188.03
		4/13/2016	21.55 - 31.25	212.11	24.34	187.77
		10/4/2016	21.55 - 31.25	212.11	24.82	187.29
		11/17/2017	21.55 - 31.25	212.11	26.14	185.97
35AWW08	Shallow	10/9/2013	21.83 - 31.83	216.95	29.80	187.15
		1/29/2014	21.83 - 31.83	216.95	29.30	187.65
		5/20/2014	21.83 - 31.83	216.95	29.55	187.40
		10/27/2014	21.83 - 31.83	216.95	29.43	187.52
		1/20/2015	21.83 - 31.83	216.95	29.45	187.50
		4/14/2015	21.83 - 31.83	216.95	29.35	187.60
		7/7/2015	21.83 - 31.83	216.95	29.05	187.90
		10/7/2015	21.83 - 31.83	216.95	29.41	187.54
		4/12/2016	21.83 - 31.83	216.95	29.20	187.75
		10/3/2016	21.83 - 31.83	216.95	29.00	187.95
		12/18/2019	21.83 - 31.83	216.95	29.00	187.95
		7/18/2018	21.83 - 31.83	216.95	29.45	187.50
		12/11/2018	21.83 - 31.83	216.95	29.55	187.40
		6/3/2019	21.83 - 31.83	216.95	28.95	188.00
		12/18/2019	21.83 - 31.83	216.95	29.00	187.95
		6/23/2020	21.83 - 31.83	216.95	29.22	187.73
		12/1/2020	21.83 - 31.83	216.95	28.58	188.37
		6/2/2021	21.83 - 31.83	216.95	28.28	188.67
35AWW09	Shallow	10/10/2013	26.69 - 41.29	217.47	32.21	185.26
		1/29/2014	26.69 - 41.29	217.47	32.32	185.15
		5/20/2014	26.69 - 41.29	217.47	29.87	187.60
		10/27/2014	26.69 - 41.29	217.47	32.15	185.32
		1/21/2015	26.69 - 41.29	217.47	32.04	185.43
		4/14/2015	26.69 - 41.29	217.47	31.38	186.09
		7/7/2015	26.69 - 41.29	217.47	30.87	186.60
		10/7/2015	26.69 - 41.29	217.47	31.46	186.01
		4/12/2016	26.69 - 41.29	217.47	31.02	186.45
		10/3/2016	26.69 - 41.29	217.47	31.00	186.47
		12/18/2019	26.69 - 41.29	217.47	32.22	185.25
		7/16/2018	26.69 - 41.29	217.47	32.22	185.25
		12/11/2018	26.69 - 41.29	217.47	32.21	185.26
		6/3/2019	26.69 - 41.29	217.47	31.60	185.87
		12/18/2019	26.69 - 41.29	217.47	32.22	185.25
		6/23/2020	26.69 - 41.29	217.47	31.35	186.12
		12/7/2020	26.69 - 41.29	217.47	31.55	185.92
		6/2/2021	26.69 - 41.29	217.47	30.88	186.59

Table 1
Groundwater Elevation Data
LHAAP-58, Longhorn Army Ammunition Plant, Karnack, Texas
Year 7 RA(O) Report

Well Identification	Aquifer	Sampling Date	Screen Intervals (ft from Top of Casing)	Top of Casing Elevation (ft)	Depth to Water (ft from Top of Casing)	Groundwater Elevation (ft above msl)
35AWW10	Shallow	10/10/2013	18.16 - 32.76	220.76	20.15	200.61
		1/29/2014	18.16 - 32.76	220.76	18.85	201.91
		5/20/2014	18.16 - 32.76	220.76	17.10	203.66
		10/28/2014	18.16 - 32.76	220.76	19.55	201.21
		1/27/2015	18.16 - 32.76	220.76	17.78	202.98
		4/14/2015	18.16 - 32.76	220.76	16.45	204.31
		7/7/2015	18.16 - 32.76	220.76	17.17	203.59
		10/7/2015	18.16 - 32.76	220.76	19.45	201.31
		4/13/2016	18.16 - 32.76	220.76	17.41	203.35
		10/3/2016	18.16 - 32.76	220.76	18.98	201.78
		12/19/2019	18.16 - 32.76	220.76	19.72	201.04
		7/12/2018	18.16 - 32.76	220.76	18.95	201.81
		12/12/2018	18.16 - 32.76	220.76	18.75	202.01
		6/4/2019	18.16 - 32.76	220.76	16.05	204.71
		12/19/2019	18.16 - 32.76	220.76	19.72	201.04
		6/29/2020	18.16 - 32.76	220.76	17.25	203.51
		12/7/2020	18.16 - 32.76	220.76	18.65	202.11
		6/1/2021	18.16 - 32.76	220.76	15.55	205.21
35AWW11	Shallow	10/15/2013	22.24 - 36.84	220.15	31.36	188.79
		2/3/2014	22.24 - 36.84	220.15	31.80	188.35
		5/21/2014	22.24 - 36.84	220.15	31.55	188.60
		10/29/2014	22.24 - 36.84	220.15	31.73	188.42
		1/27/2015	22.24 - 36.84	220.15	31.60	188.55
		4/14/2015	22.24 - 36.84	220.15	31.25	188.90
		7/8/2015	22.24 - 36.84	220.15	30.72	189.43
		10/7/2015	22.24 - 36.84	220.15	31.20	188.95
		4/12/2016	22.24 - 36.84	220.15	31.03	189.12
		10/3/2016	22.24 - 36.84	220.15	30.48	189.67
		9/11/2019	22.24 - 36.84	220.15	29.46	190.69
		12/18/2019	22.24 - 36.84	220.15	29.68	190.47
		3/24/2020	22.24 - 36.84	220.15	29.03	191.12
		9/27/2018	22.24 - 36.84	220.15	31.10	189.05
		12/11/2018	22.24 - 36.84	220.15	31.05	189.10
		3/19/2019	22.24 - 36.84	220.15	30.00	190.15
		6/3/2019	22.24 - 36.84	220.15	29.27	190.88
		9/11/2019	22.24 - 36.84	221.15	29.46	191.69
		12/18/2019	22.24 - 36.84	220.15	29.68	190.47
		3/24/2020	22.24 - 36.84	221.15	29.03	192.12
		6/23/2020	22.24 - 36.84	221.15	29.11	192.04
		12/1/2020	22.24 - 36.84	221.15	28.95	192.20
		6/2/2021	22.24 - 36.84	221.15	28.30	192.85

Table 1
Groundwater Elevation Data
LHAAP-58, Longhorn Army Ammunition Plant, Karnack, Texas
Year 7 RA(O) Report

Well Identification	Aquifer	Sampling Date	Screen Intervals (ft from Top of Casing)	Top of Casing Elevation (ft)	Depth to Water (ft from Top of Casing)	Groundwater Elevation (ft above msl)
35AWW12	Shallow	10/18/2013	22.17 - 36.77	215.99	30.05	185.94
		1/31/2014	22.17 - 36.77	215.99	28.10	187.89
		5/29/2014	22.17 - 36.77	215.99	29.00	186.99
		10/30/2014	22.17 - 36.77	215.99	30.11	185.88
		1/28/2015	22.17 - 36.77	215.99	29.45	186.54
		4/7/2015	22.17 - 36.77	215.99	28.70	187.29
		7/9/2015	22.17 - 36.77	215.99	28.22	187.77
		10/5/2015	22.17 - 36.77	215.99	29.35	186.64
		4/12/2016	22.17 - 36.77	215.99	28.54	187.45
		10/5/2016	22.17 - 36.77	215.99	28.87	187.12
		12/18/2019	22.17 - 36.77	215.99	30.33	185.66
		6/29/2018	22.17 - 36.77	215.99	30.05	185.94
		12/14/2018	22.17 - 36.77	215.99	29.66	186.33
		6/10/2019	22.17 - 36.77	215.99	28.59	187.40
		12/18/2019	22.17 - 36.77	215.99	30.33	185.66
		6/25/2020	22.17 - 36.77	215.99	28.95	187.04
		12/7/2020	22.17 - 36.77	215.99	29.72	186.27
		6/2/2021	22.17 - 36.77	215.99	28.00	187.99
35AWW13	Shallow	10/11/2013	24.72 - 39.32	219.12	25.07	194.05
		2/3/2014	24.72 - 39.32	219.12	24.91	194.21
		5/22/2014	24.72 - 39.32	219.12	23.80	195.32
		10/21/2014	24.72 - 39.32	219.12	24.85	194.27
		1/23/2015	24.72 - 39.32	219.12	24.70	194.42
		4/8/2015	24.72 - 39.32	219.12	23.72	195.40
		7/9/2015	24.72 - 39.32	219.12	23.39	195.73
		10/6/2015	24.72 - 39.32	219.12	24.61	194.51
		4/13/2016	24.72 - 39.32	219.12	24.10	195.02
		10/6/2016	24.72 - 39.32	219.12	24.41	194.71
		12/18/2019	24.72 - 39.32	219.12	25.05	194.07
		6/29/2018	24.72 - 39.32	219.12	24.37	194.75
		12/11/2018	24.72 - 39.32	219.12	25.03	194.09
		6/7/2019	24.72 - 39.32	219.12	23.08	196.04
		12/18/2019	24.72 - 39.32	219.12	25.05	194.07
		6/29/2020	24.72 - 39.32	219.12	23.32	195.80
		12/7/2020	24.72 - 39.32	219.12	24.61	194.51
		6/1/2021	24.72 - 39.32	219.12	22.95	196.17

Table 1
Groundwater Elevation Data
LHAAP-58, Longhorn Army Ammunition Plant, Karnack, Texas
Year 7 RA(O) Report

Well Identification	Aquifer	Sampling Date	Screen Intervals (ft from Top of Casing)	Top of Casing Elevation (ft)	Depth to Water (ft from Top of Casing)	Groundwater Elevation (ft above msl)
35AWW14	Shallow	10/18/2013	17.06 - 31.76	218.41	30.80	187.61
		1/31/2014	17.06 - 31.76	218.41	30.95	187.46
		5/28/2014	17.06 - 31.76	218.41	30.57	187.84
		10/29/2014	17.06 - 31.76	218.41	31.00	187.41
		1/20/2015	17.06 - 31.76	218.41	30.85	187.56
		4/7/2015	17.06 - 31.76	218.41	30.48	187.93
		7/8/2015	17.06 - 31.76	218.41	29.75	188.66
		10/1/2015	17.06 - 31.76	218.41	30.19	188.22
		4/12/2016	17.06 - 31.76	218.41	29.67	188.74
		10/5/2016	17.06 - 31.76	218.41	29.31	189.10
		12/19/2019	17.06 - 31.76	218.41	29.55	188.86
		7/18/2018	17.06 - 31.76	218.41	29.58	188.83
		12/13/2018	17.06 - 31.76	218.41	29.55	188.86
		6/7/2019	17.06 - 31.76	218.41	28.65	189.76
		12/19/2019	17.06 - 31.76	218.41	29.55	188.86
		6/25/2020	17.06 - 31.76	218.41	28.77	189.64
		12/7/2020	17.06 - 31.76	218.41	30.75	187.66
		6/1/2021	17.06 - 31.76	218.41	27.80	190.61
35AWW15	Shallow	10/16/2013	25.67 - 40.37	222.97	20.65	202.32
		2/1/2014	25.67 - 40.37	222.97	20.40	202.57
		5/28/2014	25.67 - 40.37	222.97	19.64	203.33
		10/21/2014	25.67 - 40.37	222.97	20.18	202.79
		1/23/2015	25.67 - 40.37	222.97	20.15	202.82
		4/10/2015	25.67 - 40.37	222.97	19.31	203.66
		7/10/2015	25.67 - 40.37	222.97	18.95	204.02
		10/6/2015	25.67 - 40.37	222.97	19.56	203.41
		4/14/2016	25.67 - 40.37	222.97	19.51	203.46
		10/5/2016	25.67 - 40.37	222.97	19.34	203.63
		12/20/2019	25.67 - 40.37	222.97	19.87	203.10
		7/18/2018	25.67 - 40.37	222.97	19.50	203.47
		12/12/2018	25.67 - 40.37	222.97	16.55	206.42
		6/7/2019	25.67 - 40.37	222.97	17.77	205.20
		12/20/2019	25.67 - 40.37	222.97	19.87	203.10
		6/25/2020	25.67 - 40.37	222.97	17.93	205.04
		12/7/2020	25.67 - 40.37	222.97	17.05	205.92
		6/1/2021	25.67 - 40.37	222.97	16.95	206.02
35AWW16	Shallow	10/22/2013	21.75 - 36.45	220.88	19.58	201.30
		1/31/2014	21.75 - 36.45	220.88	19.28	201.60
		5/28/2014	21.75 - 36.45	220.88	18.60	202.28
		10/30/2014	21.75 - 36.45	220.88	19.96	200.92
		1/27/2015	21.75 - 36.45	220.88	18.90	201.98
		4/7/2015	21.75 - 36.45	220.88	18.22	202.66
		7/9/2015	21.75 - 36.45	220.88	17.79	203.09
		10/6/2015	21.75 - 36.45	220.88	18.20	202.68
		4/12/2016	21.75 - 36.45	220.88	18.43	202.45
		10/4/2016	21.75 - 36.45	220.88	17.90	202.98
		12/19/2019	21.75 - 36.45	220.88	18.00	202.88
		6/29/2018	21.75 - 36.45	220.88	18.10	202.78
		12/12/2018	21.75 - 36.45	220.88	18.26	202.62
		6/10/2019	21.75 - 36.45	220.88	17.30	203.58
		12/19/2019	21.75 - 36.45	220.88	18.00	202.88
		6/25/2020	21.75 - 36.45	220.88	16.68	204.20
		12/1/2020	21.75 - 36.45	220.88	17.25	203.63
		6/1/2021	21.75 - 36.45	220.88	16.28	204.60

Table 1
Groundwater Elevation Data
LHAAP-58, Longhorn Army Ammunition Plant, Karnack, Texas
Year 7 RA(O) Report

Well Identification	Aquifer	Sampling Date	Screen Intervals (ft from Top of Casing)	Top of Casing Elevation (ft)	Depth to Water (ft from Top of Casing)	Groundwater Elevation (ft above msl)
35AWW17	Shallow	10/18/2013	26.97 - 41.67	221.44	28.00	193.44
		2/1/2014	26.97 - 41.67	221.44	36.90	184.54
		5/29/2014	26.97 - 41.67	221.44	26.60	194.84
		10/31/2014	26.97 - 41.67	221.44	26.80	194.64
		1/28/2015	26.97 - 41.67	221.44	26.00	195.44
		4/10/2015	26.97 - 41.67	221.44	25.65	195.79
		7/10/2015	26.97 - 41.67	221.44	25.42	196.02
		10/5/2015	26.97 - 41.67	221.44	25.93	195.51
		4/11/2016	26.97 - 41.67	221.44	25.60	195.84
		10/3/2016	26.97 - 41.67	221.44	25.30	196.14
		12/18/2019	26.97 - 41.67	221.44	24.00	197.44
		6/29/2018	26.97 - 41.67	221.44	25.07	196.37
		12/17/2018	26.97 - 41.67	221.44	24.78	196.66
		6/10/2019	26.97 - 41.67	221.44	24.28	197.16
		12/18/2019	26.97 - 41.67	221.44	24.00	197.44
		6/29/2020	26.97 - 41.67	221.44	23.40	198.04
		12/1/2020	26.97 - 41.67	221.44	23.12	198.32
		6/3/2021	26.97 - 41.67	221.44	23.02	198.42
35AWW18	Shallow	10/18/2013	26.85 - 41.55	221.75	28.35	193.40
		2/1/2014	26.85 - 41.55	221.75	27.90	193.85
		5/29/2014	26.85 - 41.55	221.75	27.65	194.10
		10/31/2014	26.85 - 41.55	221.75	27.50	194.25
		1/28/2015	26.85 - 41.55	221.75	27.11	194.64
		4/10/2015	26.85 - 41.55	221.75	25.90	195.85
		7/10/2015	26.85 - 41.55	221.75	26.42	195.33
		10/5/2015	26.85 - 41.55	221.75	26.67	195.08
		4/11/2016	26.85 - 41.55	221.75	26.40	195.35
		10/5/2016	26.85 - 41.55	221.75	25.93	195.82
		12/18/2019	26.85 - 41.55	221.75	24.82	196.93
		6/29/2018	26.85 - 41.55	221.75	24.55	197.20
		12/17/2018	26.85 - 41.55	221.75	25.59	196.16
		6/4/2019	26.85 - 41.55	221.75	24.85	196.90
		12/18/2019	26.85 - 41.55	221.75	24.82	196.93
		6/25/2020	26.85 - 41.55	221.75	24.17	197.58
		12/1/2020	26.85 - 41.55	221.75	23.95	197.80
		6/1/2021	26.85 - 41.55	221.75	23.63	198.12
35AWW19	Shallow	10/22/2013	16.89 - 31.39	219.71	30.65	189.06
		1/31/2014	16.89 - 31.39	219.71	30.68	189.03
		5/28/2014	16.89 - 31.39	219.71	30.30	189.41
		10/29/2014	16.89 - 31.39	219.71	30.45	189.26
		1/20/2015	16.89 - 31.39	219.71	30.15	189.56
		4/7/2015	16.89 - 31.39	219.71	29.84	189.87
		7/8/2015	16.89 - 31.39	219.71	29.16	190.55
		10/1/2015	16.89 - 31.39	219.71	29.46	190.25
		4/12/2016	16.89 - 31.39	219.71	28.87	190.84
		10/5/2016	16.89 - 31.39	219.71	28.13	191.58
		9/11/2019	16.89 - 31.39	219.71	25.55	194.16
		12/18/2019	16.89 - 31.39	219.71	25.90	193.81
		3/24/2020	16.89 - 31.39	219.71	26.00	192.34
		9/27/2018	16.89 - 31.39	219.71	27.79	191.92
		12/10/2018	16.89 - 31.39	219.71	27.58	192.13
		3/19/2019	16.89 - 31.39	219.71	27.00	192.71
		6/3/2019	16.89 - 31.39	219.71	26.45	193.26
		9/11/2019	16.89 - 31.39	219.71	25.55	194.16
		12/18/2019	16.89 - 31.39	219.71	25.90	193.81
		3/24/2020	16.89 - 31.39	219.71	26.00	193.71
		6/24/2020	16.89 - 31.39	223.05	24.92	198.13
		12/3/2020	16.89 - 31.39	223.05	24.63	198.42
		6/3/2021	16.89 - 31.39	223.05	23.98	199.07

Table 1
Groundwater Elevation Data
LHAAP-58, Longhorn Army Ammunition Plant, Karnack, Texas
Year 7 RA(O) Report

Well Identification	Aquifer	Sampling Date	Screen Intervals (ft from Top of Casing)	Top of Casing Elevation (ft)	Depth to Water (ft from Top of Casing)	Groundwater Elevation (ft above msl)
35AWW20	Shallow	10/15/2013	20.94 - 35.64	223.05	21.12	201.93
		2/3/2014	20.94 - 35.64	223.05	23.12	199.93
		5/21/2014	20.94 - 35.64	223.05	20.18	202.87
		10/29/2014	20.94 - 35.64	223.05	20.50	202.55
		1/27/2015	20.94 - 35.64	223.05	20.50	202.55
		4/15/2015	20.94 - 35.64	223.05	19.45	203.60
		7/8/2015	20.94 - 35.64	223.05	18.95	204.10
		10/8/2015	20.94 - 35.64	223.05	19.67	203.38
		4/13/2016	20.94 - 35.64	223.05	19.69	203.36
		10/4/2016	20.94 - 35.64	223.05	19.38	203.67
		9/11/2019	20.94 - 35.64	223.05	18.20	204.85
		12/19/2019	20.94 - 35.64	223.05	19.20	203.85
		3/24/2020	20.94 - 35.64	223.05	18.15	204.90
		9/26/2018	20.94 - 35.64	223.05	19.75	203.30
		12/10/2018	20.94 - 35.64	223.05	20.03	203.02
		3/19/2019	20.94 - 35.64	223.05	18.76	204.29
		6/4/2019	20.94 - 35.64	223.05	17.95	205.10
		9/11/2019	20.94 - 35.64	223.05	18.20	204.85
		12/19/2019	20.94 - 35.64	223.05	19.20	203.85
		3/24/2020	20.94 - 35.64	223.05	18.15	204.90
		6/24/2020	20.94 - 35.64	223.05	18.65	204.40
		12/3/2020	20.94 - 35.64	223.05	18.58	204.47
		6/3/2021	20.94 - 35.64	223.05	16.95	206.10
35AWW21	Shallow	10/16/2013	27.56 - 42.26	219.05	34.36	184.69
		2/4/2014	27.56 - 42.26	219.05	33.55	185.50
		5/22/2014	27.56 - 42.26	219.05	32.40	186.65
		10/21/2014	27.56 - 42.26	219.05	33.90	185.15
		1/23/2015	27.56 - 42.26	219.05	33.06	185.99
		4/8/2015	27.56 - 42.26	219.05	31.73	187.32
		7/9/2015	27.56 - 42.26	219.05	31.11	187.94
		10/6/2015	27.56 - 42.26	219.05	32.74	186.31
		4/13/2016	27.56 - 42.26	219.05	31.44	187.61
		10/4/2016	27.56 - 42.26	219.05	32.10	186.95
		12/20/2019	27.56 - 42.26	219.05	34.18	184.87
		6/29/2018	27.56 - 42.26	219.05	33.77	185.28
		12/13/2018	27.56 - 42.26	219.05	32.90	186.15
		6/10/2019	27.56 - 42.26	219.05	31.38	187.67
		12/20/2019	27.56 - 42.26	219.05	34.18	184.87
		6/29/2020	27.56 - 42.26	219.05	32.28	186.77
		12/7/2020	27.56 - 42.26	219.05	33.33	185.72
		6/1/2021	27.56 - 42.26	219.05	30.70	188.35

Table 1
Groundwater Elevation Data
LHAAP-58, Longhorn Army Ammunition Plant, Karnack, Texas
Year 7 RA(O) Report

Well Identification	Aquifer	Sampling Date	Screen Intervals (ft from Top of Casing)	Top of Casing Elevation (ft)	Depth to Water (ft from Top of Casing)	Groundwater Elevation (ft above msl)
35AWW22	Shallow	10/22/2013	22.27 - 36.77	219.14	32.13	187.01
		1/31/2014	22.27 - 36.77	219.14	32.08	187.06
		5/28/2014	22.27 - 36.77	219.14	32.00	187.14
		10/29/2014	22.27 - 36.77	219.14	32.45	186.69
		1/20/2015	22.27 - 36.77	219.14	33.32	185.82
		4/8/2015	22.27 - 36.77	219.14	32.09	187.05
		7/9/2015	22.27 - 36.77	219.14	31.72	187.42
		10/5/2015	22.27 - 36.77	219.14	32.30	186.84
		4/12/2016	22.27 - 36.77	219.14	32.00	187.14
		10/5/2016	22.27 - 36.77	219.14	31.91	187.23
		12/18/2019	22.27 - 36.77	219.14	32.87	186.27
		7/18/2018	22.27 - 36.77	219.14	33.80	185.34
		12/14/2018	22.27 - 36.77	219.14	32.72	186.42
		6/10/2019	22.27 - 36.77	219.14	32.40	186.74
		12/18/2019	22.27 - 36.77	219.14	32.87	186.27
		6/24/2020	22.77 - 36.77	219.14	32.20	186.94
		12/7/2020	22.77 - 36.77	219.14	32.27	186.87
		6/2/2021	22.77 - 36.77	219.14	32.10	187.04
35AWW23	Shallow	7/17/2018	28.2 - 43.2	223.07	23.55	199.52
		12/10/2018	28.2 - 43.2	223.07	20.71	202.36
		6/3/2019	28.2 - 43.2	223.07	23.97	199.10
		9/11/2019	28.2 - 43.2	223.07	22.00	201.07
		12/18/2019	28.2 - 43.2	223.07	23.45	199.62
		3/24/2020	28.2 - 43.2	223.07	22.60	200.47
		6/24/2020	28.2 - 43.2	223.07	22.44	200.63
		12/3/2020	28.2 - 43.2	223.07	22.55	200.52
		6/3/2021	28.2 - 43.2	223.07	23.05	200.02
35AWW24	Shallow	7/17/2018	25.10 - 35.10	219.04	26.60	192.44
		9/27/2018	25.10 - 35.10	219.04	20.11	198.93
		12/10/2018	25.10 - 35.10	219.04	26.75	192.29
		3/19/2019	25.10 - 35.10	219.04	26.06	192.98
		6/3/2019	25.10 - 35.10	219.04	25.47	193.57
		12/19/2019	25.10 - 35.10	219.04	25.09	193.95
		6/25/2020	25.10 - 35.10	219.04	24.25	194.79
		12/3/2020	25.10 - 35.10	219.04	23.85	195.19
		6/1/2021	25.10 - 35.10	219.04	23.15	195.89
LHSMW03	Shallow	10/9/2013	24.82 - 34.82	217.26	DRY	NC
		2/3/2014	24.82 - 34.82	217.26	31.00	186.26
		5/28/2014	24.82 - 34.82	217.26	29.40	187.86
		10/29/2014	24.82 - 34.82	217.26	31.20	186.06
		7/8/2015	24.82 - 34.82	217.26	28.21	189.05
		4/13/2016	24.82 - 34.82	217.26	28.75	188.51
		10/4/2016	24.82 - 34.82	217.26	29.51	187.75
		11/17/2017	24.82 - 34.82	217.26	31.36	185.90

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Groundwater Elevation Data
LHAAP-58, Longhorn Army Ammunition Plant, Karnack, Texas
Year 7 RA(O) Report

Well Identification	Aquifer	Sampling Date	Screen Intervals (ft from Top of Casing)	Top of Casing Elevation (ft)	Depth to Water (ft from Top of Casing)	Groundwater Elevation (ft above msl)
LHSMW04	Shallow	10/9/2013	21.11 - 31.11	216.95	DRY	NC
		1/31/2014	21.11 - 31.11	216.95	DRY	NC
		5/20/2014	21.11 - 31.11	216.95	DRY	NC
		10/30/2014	21.11 - 31.11	216.95	DRY	NC
		1/20/2015	21.11 - 31.11	216.95	DRY	NC
		4/7/2015	21.11 - 31.11	216.95	DRY	NC
		7/8/2015	21.11 - 31.11	216.95	DRY	NC
		10/1/2015	21.11 - 31.11	216.95	DRY	NC
		3/28/2016	21.11 - 31.11	216.95	29.72	187.23
		4/12/2016	21.11 - 31.11	216.95	29.65	187.30
		10/4/2016	21.11 - 31.11	216.95	DRY	NC
		12/19/2019	21.11 - 31.11	216.95	DRY	NC
		7/17/2018	21.11 - 31.11	216.95	DRY	NC
		12/11/2018	21.11 - 31.11	216.95	DRY	NC
		6/4/2019	21.11 - 31.11	216.95	DRY	NC
		12/19/2019	21.11 - 31.11	216.95	DRY	NC
		6/24/2020	21.11 - 31.11	216.95	DRY	NC
		12/3/2020	21.11 - 31.11	216.95	DRY	NC
		6/3/2021	21.11 - 31.11	216.95	DRY	NC
LHSMW05	Shallow	10/9/2013	14.32 - 24.32	217.59	DRY	NC
		1/31/2014	14.32 - 24.32	217.59	DRY	NC
		5/20/2014	14.32 - 24.32	217.59	DRY	NC
		10/30/2014	14.32 - 24.32	217.59	DRY	NC
		1/20/2015	14.32 - 24.32	217.59	DRY	NC
		4/7/2015	14.32 - 24.32	217.59	DRY	NC
		7/10/2015	14.32 - 24.32	217.59	DRY	NC
		10/1/2015	14.32 - 24.32	217.59	DRY	NC
		4/12/2016	14.32 - 24.32	217.59	DRY	NC
		10/4/2016	14.32 - 24.32	217.59	DRY	NC
LHSMW06	Shallow	10/16/2013	13.32 - 23.32	223.18	20.97	202.21
		1/30/2014	13.32 - 23.32	223.18	20.50	202.68
		5/28/2014	13.32 - 23.32	223.18	19.30	203.88
		10/29/2014	13.32 - 23.32	223.18	19.81	203.37
		1/20/2015	13.32 - 23.32	223.18	19.92	203.26
		4/7/2015	13.32 - 23.32	223.18	18.92	204.26
		7/8/2015	13.32 - 23.32	223.18	18.21	204.97
		10/1/2015	13.32 - 23.32	223.18	18.98	204.20
		4/12/2016	13.32 - 23.32	223.18	19.11	204.07
		10/5/2016	13.32 - 23.32	223.18	18.91	204.27
		11/16/2017	13.32 - 23.32	223.18	19.31	203.87
		7/2/2018	13.32 - 23.32	223.18	18.80	204.38
		12/13/2018	13.32 - 23.32	223.18	19.18	204.00
		6/7/2019	13.32 - 23.32	223.18	16.93	206.25
		12/20/2019	13.32 - 23.32	223.18	18.72	204.46
		6/25/2020	13.32 - 23.32	223.18	17.28	205.90
		12/3/2020	13.32 - 23.32	223.18	18.53	204.65
		6/3/2021	13.32 - 23.32	223.18	16.07	207.11

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Groundwater Elevation Data
LHAAP-58, Longhorn Army Ammunition Plant, Karnack, Texas
Year 7 RA(O) Report

Well Identification	Aquifer	Sampling Date	Screen Intervals (ft from Top of Casing)	Top of Casing Elevation (ft)	Depth to Water (ft from Top of Casing)	Groundwater Elevation (ft above msl)
LHSMW07	Shallow	10/15/2013	19.73 - 29.73	221.27	20.55	200.72
		1/30/2014	19.73 - 29.73	221.27	20.25	201.02
		5/22/2014	19.73 - 29.73	221.27	19.55	201.72
		10/29/2014	19.73 - 29.73	221.27	19.63	201.64
		1/28/2015	19.73 - 29.73	221.27	20.53	200.74
		4/15/2015	19.73 - 29.73	221.27	18.75	202.52
		7/7/2015	19.73 - 29.73	221.27	18.27	203.00
		10/8/2015	19.73 - 29.73	221.27	18.94	202.33
		4/14/2016	19.73 - 29.73	221.27	18.97	202.30
		10/4/2016	19.73 - 29.73	221.27	18.58	202.69
		9/11/2019	19.73 - 29.73	221.27	17.84	203.43
		12/19/2019	19.73 - 29.73	221.27	18.52	202.75
		3/24/2020	19.73 - 29.73	221.27	17.55	202.52
		9/26/2018	19.73 - 29.73	221.27	19.07	202.20
		12/10/2018	19.73 - 29.73	221.27	19.21	202.06
		3/19/2019	19.73 - 29.73	221.27	18.32	202.95
		6/3/2019	19.73 - 29.73	221.27	17.68	203.59
		9/11/2019	19.73 - 29.73	221.27	17.84	203.43
		12/19/2019	19.73 - 29.73	221.27	18.52	202.75
		3/24/2020	19.73 - 29.73	221.27	17.55	203.72
		6/24/2020	19.73 - 29.73	221.27	17.22	204.05
		12/3/2020	19.73 - 29.73	221.27	17.88	203.39
		6/2/2021	19.73 - 29.73	221.27	16.57	204.70

Notes:
ft - feet
msl = mean sea level
NA - not available
NC - not calculated
NM - not measured

Table 2. Eastern Plume Semi-Annual Analytical Data, December 2020 and June 2021
LHAAP-58, Longhorn Army Ammunition Plant, Karnack, Texas
Year 7 RA(O) Report

Location ID: / Sample Date:	Units	MCL/MSC	03WW01_120120 12/1/20	03WW01_060221 6/02/21	35AWW01_120720 12/7/20	35AWW01_060121 6/01/21	35AWW01_060121_a 6/01/21	35AWW08_120120 12/1/20	35AWW08_060221 6/02/21	35AWW09_120720 12/7/20	35AWW09_060221 6/02/21	35AWW09_060221_a 6/02/21	35AWW10_120720 12/7/20	35AWW10_120720-a 12/7/20	35AWW10_060121 6/01/21	35AWW12_120720 12/7/20
			Site 58 - E, inside site boundary.	Site 58 - E, inside site boundary.	Site 58 - E, inside site boundary.	Site 58 - E, inside site boundary.	Site 58 - E, inside site boundary. Field Duplicate.	Site 58 - E, inside site boundary.	Site 58 - E, inside site boundary.	Site 58 - E, inside site boundary.	Site 58 - E, inside site boundary.	Site 58 - E, inside site boundary. Field Duplicate	Site 58 - ESE, inside site boundary.	Site 58 - ESE, inside site boundary. Field Duplicate.	Site 58 - ESE, inside site boundary.	Site 58 - E, outside site boundary.
		Location Depth	Shallow	Shallow	Intermediate	Intermediate	Intermediate	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow
		Lab Package	HS20120090	HS21060181	HS20120479	HS21060181	HS21060181	HS20120090	HS21060181	HS20120479	HS21060181	HS21060181	HS20120479	HS20120479	HS21060181	HS20120479
Total Organic Carbon (415.1/SM5310C)																
Total Organic Carbon	mg/L	NV	**99.9**	**103**	NA	NA	NA	**165**	**119**	NA	**7.50**	**7.68**	NA	NA	**4.69**	NA
Volatile Organic Compounds (8260C)																
1,1,1,2-Tetrachloroethane	µg/L	110	< 5.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 5.0 U	< 25 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,1,1-Trichloroethane	µg/L	200	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 12 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1,2,2-Tetrachloroethane	µg/L	14	< 5.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 5.0 U	< 25 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U
1,1,2-Trichloroethane	µg/L	5	< 5.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 5.0 U	< 25 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U
1,1-Dichloroethane	µg/L	10,000	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 12 U	< 0.5 U	**0.57 J**	**0.63 J**	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U
1,1-Dichloroethene	µg/L	7	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 12 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1-Dichloropropene	µg/L	2.9	< 5.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 5.0 U	< 25 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 1.0 U
1,2,3-Trichlorobenzene	µg/L	310	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U	< 25 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2,3-Trichloropropane	µg/L	0.041	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U	< 25 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2,4-Trichlorobenzene	µg/L	70	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U	< 25 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2,4-Trimethylbenzene	µg/L	5,100	< 10 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 10 U	< 25 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U
1,2-Dibromo-3-chloropropane	µg/L	0.2	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 12 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dibromoethane	µg/L	0.05	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 12 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dichlorobenzene	µg/L	600	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U	< 25 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dichloroethane	µg/L	5	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 12 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dichloropropane	µg/L	5	< 5.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 5.0 U	< 25 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U
1,3,5-Trimethylbenzene	µg/L	5,100	< 5.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 5.0 U	< 25 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 1.0 U
1,3-Dichlorobenzene	µg/L	3,100	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U	< 25 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,3-Dichloropropane	µg/L	29	< 10 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 10 U	< 25 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U
1,4-Dichlorobenzene	µg/L	75	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U	< 25 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2,2-Dichloropropane	µg/L	42	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 12 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
2-Butanone	µg/L	61,000	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U	< 25 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Chlorotoluene	µg/L	2,000	< 10 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 10 U	< 25 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U
2-Hexanone	µg/L	6,100	< 20 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 20 U	< 50 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
4-Chlorotoluene	µg/L	2,000	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U	< 25 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
4-Isopropyltoluene	µg/L	10,000	< 10 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 10 U	< 25 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U
4-Methyl-2-pentanone	µg/L	8,200	< 20 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 20 U	< 50 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
Acetone	µg/L	92,000	< 10 U	< 2.0 U	< 1.0 U	< 2.0 U	< 2.0 U	< 10 U	< 50 U	< 1.0 U	< 2.0 U	< 2.0 U	< 1.0 U	< 1.0 U	< 2.0 U	< 1.0 U
Benzene	µg/L	5	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 12 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromobenzene	µg/L	2,000	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U	< 25 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Bromochloromethane	µg/L	4,100	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 12 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U
Bromodichloromethane	µg/L	4.6	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 12 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromoform	µg/L	36	< 5.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 5.0 U	< 25 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U
Bromomethane	µg/L	140	< 5.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 5.0 U	< 25 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U
Carbon disulfide	µg/L	10,000	< 10 U	< 2.0 U	< 1.0 U	< 2.0 U	< 2.0 U	< 10 U	< 50 U	< 1.0 U	< 2.0 U	< 2.0 U	< 1.0 U	< 1.0 U	< 2.0 U	< 1.0 U
Carbon tetrachloride	µg/L	5	< 5.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 5.0 U	< 25 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U
Chlorobenzene	µg/L	100	< 5.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 5.0 U	< 25 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 1.0 U
Chloroethane	µg/L	41,000	< 5.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 5.0 U	< 25 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U
Chloroform	µg/L	1,000	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 12 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U
Chloromethane	µg/L	220	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 12 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
cis-1,2-Dichloroethene	µg/L	70	**7.2 J**	**11**	< 0.5 U	< 0.5 U	< 0.5 U	**18**	**30**	**1.1**	**0.88 J**	**0.89 J**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
cis-1,3-Dichloropropene	µg/L	5.3	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 12 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Dibromochloromethane	µg/L	34	< 5.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 5.0 U	< 25 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U
Dibromomethane	µg/L	380	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 12 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Dichlorodifluoromethane	µg/L	20,000	< 5.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 5.0 U	< 25 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U
Ethylbenzene	µg/L	700	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U	< 25 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Hexachlorobutadiene	µg/L	20	< 10 U	< 1.0 UJ	< 1.0 U	< 1.0 UJ	< 1.0 UJ	< 10 U	< 25 U	< 1.0 U	< 1.0 UJ	< 1.0 UJ	< 1.0 U	< 1.0 U	< 1.0 UJ	< 1.0 U
Isopropylbenzene	µg/L	10,000	< 10 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 10 U	< 25 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
m,p-Xylene	µg/L	10,000	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U	< 25 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Methylene chloride	µg/L	5	< 10 U	< 2.0 U	< 1.0 U	< 2.0 U	< 2.0 U	< 10 U	< 50 U	< 1.0 U	< 2.0 U	< 2.0 U	< 1.0 U	< 1.0 U	< 2.0 UJ	< 1.0 U
n-Butylbenzene	µg/L	4,100	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U	< 25 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
n-Propylbenzene	µg/L	4,100	< 10 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 10 U	< 25 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Naphthalene	µg/L	2,000	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U	< 25 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U
o-Xylene	µg/L	10,000	< 10 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 10 U	< 25 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
sec-Butylbenzene	µg/L	4,100	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U	< 25 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U

Table 2. Eastern Plume Semi-Annual Analytical Data, December 2020 and June 2021
LHAAP-58, Longhorn Army Ammunition Plant, Karnack, Texas
Year 7 RA(O) Report

Location ID: / Sample Date:	Units	MCL/MSC	03WW01_120120 12/1/20	03WW01_060221 6/02/21	35AWW01_120720 12/7/20	35AWW01_060121 6/01/21	35AWW01_060121_a 6/01/21	35AWW08_120120 12/1/20	35AWW08_060221 6/02/21	35AWW09_120720 12/7/20	35AWW09_060221 6/02/21	35AWW09_060221_a 6/02/21	35AWW10_120720 12/7/20	35AWW10_120720-a 12/7/20	35AWW10_060121 6/01/21	35AWW12_120720 12/7/20
			Site 58 - E, inside site boundary.	Site 58 - E, inside site boundary.	Site 58 - E, inside site boundary.	Site 58 - E, inside site boundary.	Site 58 - E, inside site boundary. Field Duplicate.	Site 58 - E, inside site boundary.	Site 58 - E, inside site boundary.	Site 58 - E, inside site boundary.	Site 58 - E, inside site boundary.	Site 58 - E, inside site boundary. Field Duplicate	Site 58 - ESE, inside site boundary.	Site 58 - ESE, inside site boundary. Field Duplicate.	Site 58 - ESE, inside site boundary.	Site 58 - E, outside site boundary.
		Location Depth	Shallow	Shallow	Intermediate	Intermediate	Intermediate	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow
		Lab Package	HS20120090	HS21060181	HS20120479	HS21060181	HS21060181	HS20120090	HS21060181	HS20120479	HS21060181	HS21060181	HS20120479	HS20120479	HS21060181	HS20120479
Styrene	µg/L	100	< 10 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 10 U	< 25 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 1.0 U
tert-Butylbenzene	µg/L	4,100	< 5.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 5.0 U	< 25 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Tetrachloroethene	µg/L	5	< 5.0 U	**11**	< 0.5 U	< 1.0 U	< 1.0 U	< 5.0 U	< 25 U	**370**	**350**	**310**	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U
Toluene	µg/L	1,000	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 12 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
trans-1,2-Dichloroethene	µg/L	100	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 12 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U
trans-1,3-Dichloropropene	µg/L	29	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	< 12 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Trichloroethene	µg/L	5	**24**	**3.0**	< 0.5 U	< 0.5 U	< 0.5 U	< 5.0 U	**53**	**140**	**130 J**	**130 J**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Trichlorofluoromethane	µg/L	31,000	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 10 U	< 25 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U
Vinyl chloride		2	< 5.0 U	**1.6**	< 0.5 U	< 0.5 U	< 0.5 U	**6.1 J**	**24 J**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Volatile Fatty Acids (HPLC-METACIDS)																
Acetic Acid	mg/L	NV	**1.3 J**	**3.3 J**	NA	NA	NA	**1.1 J**	**1.2 J**	NA	< 2.0 U	**0.63 J**	NA	NA	NA	NA
Butyric Acid	mg/L	NV	**9.6**	< 1.0 U	NA	NA	NA	**17**	< 1.0 U	NA	< 1.0 U	< 1.0 U	NA	NA	NA	NA
Lactic Acid	mg/L	NV	**2.8**	< 1.0 U	NA	NA	NA	**1.9 J**	**2.1**	NA	< 1.0 U	< 1.0 U	NA	NA	NA	NA
Propionic Acid	mg/L	51	< 1.0 U	< 1.5 U	NA	NA	NA	< 1.0 U	< 1.5 U	NA	< 1.5 U	< 1.5 U	NA	NA	NA	NA
Pyruvic Acid	mg/L	NV	**0.068 J**	< 0.10 U	NA	NA	NA	**0.096 J**	< 0.10 U	NA	< 0.10 U	< 0.10 U	NA	NA	NA	NA
ICP-MS Metals (6020A)																
Arsenic	mg/L	0.01	**0.0152**	**0.0169 J**	< 0.0010 U	< 0.00100 U	< 0.00100 U	**0.0244**	**0.00220 J**	NA	**0.000987 J**	**0.000913 J**	NA	NA	NA	NA
Anions (9056A)																
Chloride	mg/L	NV	**870**	**945**	NA	NA	NA	**2,480**	**2,430**	NA	**1,430**	**1,420**	NA	NA	NA	NA
Nitrate	mg/L	10	**0.069 J**	< 0.500 U	NA	NA	NA	**0.188 J**	< 0.500 U	NA	**0.416 J**	< 0.500 U	NA	NA	NA	NA
Sulfate	mg/L	NV	**82.7**	**180**	NA	NA	NA	**63.0**	**148**	NA	**916**	**880**	NA	NA	NA	NA
Dissolved Gases (RSK-175)																
Carbon Dioxide	µg/L	NV	**460,000**	**830,000**	NA	NA	NA	**830,000**	**430,000**	NA	**650,000**	**540,000**	NA	NA	NA	NA
Ethane	µg/L	NV	< 0.47 U	< 0.47 U	NA	NA	NA	< 0.47 U	< 0.47 U	NA	< 0.47 U	< 0.47 U	NA	NA	NA	NA
Ethene	µg/L	NV	**1.1**	< 0.55 U	NA	NA	NA	**5.6**	**33**	NA	< 0.55 U	< 0.55 U	NA	NA	NA	NA
Methane	µg/L	NV	**1,700**	**420**	NA	NA	NA	**320**	**1,600**	NA	**1.6 J**	**2.9 J**	NA	NA	NA	NA
Dechlorinating Bacteria																
BAV1 Vinyl Chloride Reductase	cells/mL	NV	**11.8**	**0.50 J**	NA	NA	NA	**10.2**	**144**	NA	NA	NA	NA	NA	NA	NA
Dehalobacter spp.	cells/mL	NV	**1,610**	**249**	NA	NA	NA	**77,400**	**4,500**	NA	NA	NA	NA	NA	NA	NA
Dehalococoides	cells/mL	NV	**26,600**	**196**	NA	NA	NA	**920,000**	**122,000**	NA	NA	NA	NA	NA	NA	NA
tceA Reductase	cells/mL	NV	**4,060**	**54.2**	NA	NA	NA	**117,000**	**16,400**	NA	NA	NA	NA	NA	NA	NA
Vinyl Chloride Reductase	cells/mL	NV	**2,330**	**102**	NA	NA	NA	**80,900**	**18,700**	NA	NA	NA	NA	NA	NA	NA
Field Parameters																
Temperature	^{0}C	NV	12.88	20.98	16.33	22.03		15.03	21.38	16.20	21.08		18.30		23.63	18.90
pH	s.u.	5-9	6.17	6.25	6.53	5.68		6.05	6.64	5.94	5.57		5.09		5.80	5.21
DO	mg/L	< 0.5	0.10	0.27	0.20	0.17		0.08	0.04	0.79	0.47		2.15		1.97	0.12
ORP	mV	< 0.0	-50	-99	62	78		-25	-144	112	256		239		177	202

Blue Highlighting Indicates concentrations above the MCL/MSC

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations

NA - Not Analyzed

µg/L - micrograms per liter

Table 2. Eastern Plume Semi-Annual Analytical Data, December 2020 and June 2021
LHAAP-58, Longhorn Army Ammunition Plant, Karnack, Texas
Year 7 RA(O) Report

Location ID: / Sample Date:	Units	MCL/MSC	35AWW12_060221 6/02/21	35AWW13_120720 12/7/20	35AWW13_060121 6/01/21	35AWW14_120720 12/7/20	35AWW14_060121 6/01/21	35AWW16_120120 12/1/20	35AWW16_060121 6/01/21	35AWW17_120120 12/1/20	35AWW17_060321 6/03/21	35AWW18_120120 12/1/20	35AWW18_120120_a 12/1/20	35AWW18_060121 6/01/21	34AWW21_120720 12/7/20
			Site 58 - E, outside site boundary.	Site 58 - SE, outside site boundary.	Site 58 - SE, outside site boundary.	Site 58 - SE, outside site boundary.	Site 58 - SE, outside site boundary.	Site 58 - SW, outside site boundary, near Building 744-A.	Site 58 - SW, outside site boundary, near Building 744-A.	Site 58 - SW, outside site boundary.	Site 58 - SW, outside site boundary.	Site 58 - SSW, outside site boundary.	Site 58 - SSW, outside site boundary. Field Duplicate	Site 58 - SSW, outside site boundary.	Site 58 - ESE, outside site boundary, beside Building 725.
		Location Depth	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow
		Lab Package	HS21060181	HS20120479	HS21060181	HS20120479	HS21060181	HS20120090	HS21060181	HS20120090	HS21060226	HS20120090	HS20120090	HS21060181	HS20120479
Total Organic Carbon (415.1/SM5310C)															
Total Organic Carbon	mg/L	NV	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Volatile Organic Compounds (8260C)															
1,1,1,2-Tetrachloroethane	µg/L	110	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U
1,1,1-Trichloroethane	µg/L	200	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1,2,2-Tetrachloroethane	µg/L	14	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U
1,1,2-Trichloroethane	µg/L	5	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U
1,1-Dichloroethane	µg/L	10,000	< 0.5 U	< 0.5 U	< 0.5 U	**13**	**11**	< 0.5 U	**0.46 J**	< 0.5 U	< 0.5 U	**3.6**	**3.5**	**3.1**	< 0.5 U
1,1-Dichloroethene	µg/L	7	< 0.5 U	< 0.5 U	< 0.5 U	**9.4**	**10.0**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**22**	**22**	**20**	< 0.5 U
1,1-Dichloropropene	µg/L	2.9	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U
1,2,3-Trichlorobenzene	µg/L	310	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2,3-Trichloropropane	µg/L	0.041	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2,4-Trichlorobenzene	µg/L	70	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2,4-Trimethylbenzene	µg/L	5,100	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dibromo-3-chloropropane	µg/L	0.2	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dibromoethane	µg/L	0.05	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dichlorobenzene	µg/L	600	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dichloroethane	µg/L	5	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dichloropropane	µg/L	5	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U
1,3,5-Trimethylbenzene	µg/L	5,100	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U
1,3-Dichlorobenzene	µg/L	3,100	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,3-Dichloropropane	µg/L	29	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U
1,4-Dichlorobenzene	µg/L	75	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2,2-Dichloropropane	µg/L	42	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
2-Butanone	µg/L	61,000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Chlorotoluene	µg/L	2,000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Hexanone	µg/L	6,100	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
4-Chlorotoluene	µg/L	2,000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
4-Isopropyltoluene	µg/L	10,000	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U
4-Methyl-2-pentanone	µg/L	8,200	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
Acetone	µg/L	92,000	< 2.0 U	< 1.0 U	< 2.0 U	**12**	< 2.0 U	< 1.0 U	< 2.0 U	< 1.0 U	< 2.0 U	< 1.0 U	< 1.0 U	< 2.0 U	< 1.0 U
Benzene	µg/L	5	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromobenzene	µg/L	2,000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Bromochloromethane	µg/L	4,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromodichloromethane	µg/L	4.6	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromoform	µg/L	36	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U
Bromomethane	µg/L	140	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U
Carbon disulfide	µg/L	10,000	< 2.0 U	< 1.0 U	< 2.0 U	< 1.0 U	< 2.0 U	< 1.0 U	< 2.0 U	< 1.0 U	< 2.0 U	< 1.0 U	< 1.0 U	< 2.0 U	< 1.0 U
Carbon tetrachloride	µg/L	5	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U
Chlorobenzene	µg/L	100	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U
Chloroethane	µg/L	41,000	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U
Chloroform	µg/L	1,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 UJ	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Chloromethane	µg/L	220	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
cis-1,2-Dichloroethene	µg/L	70	< 0.5 U	< 0.5 U	< 0.5 U	**4.5**	**5.0**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
cis-1,3-Dichloropropene	µg/L	5.3	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Dibromochloromethane	µg/L	34	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U
Dibromomethane	µg/L	380	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Dichlorodifluoromethane	µg/L	20,000	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Ethylbenzene	µg/L	700	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U
Hexachlorobutadiene	µg/L	20	< 1.0 UJ	< 1.0 U	< 1.0 UJ	< 1.0 U	< 1.0 UJ	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 UJ	< 1.0 U
Isopropylbenzene	µg/L	10,000	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U
m,p-Xylene	µg/L	10,000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Methylene chloride	µg/L	5	< 2.0 U	< 1.0 U	< 2.0 U	< 1.0 U	< 2.0 U	< 1.0 U	< 2.0 U	< 1.0 U	< 2.0 U	< 1.0 U	< 1.0 U	< 2.0 U	< 1.0 U
n-Butylbenzene	µg/L	4,100	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
n-Propylbenzene	µg/L	4,100	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 1.0 U
Naphthalene	µg/L	2,000	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U
o-Xylene	µg/L	10,000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 1.0 U
sec-Butylbenzene	µg/L	4,100	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U

Table 2. Eastern Plume Semi-Annual Analytical Data, December 2020 and June 2021
LHAAP-58, Longhorn Army Ammunition Plant, Karnack, Texas
Year 7 RA(O) Report

Location ID: / Sample Date:	Units	MCL/MSC	35AWW12_060221 6/02/21	35AWW13_120720 12/7/20	35AWW13_060121 6/01/21	35AWW14_120720 12/7/20	35AWW14_060121 6/01/21	35AWW16_120120 12/1/20	35AWW16_060121 6/01/21	35AWW17_120120 12/1/20	35AWW17_060321 6/03/21	35AWW18_120120 12/1/20	35AWW18_120120_a 12/1/20	35AWW18_060121 6/01/21	34AWW21_120720 12/7/20
			Site 58 - E, outside site boundary.	Site 58 - SE, outside site boundary.	Site 58 - SE, outside site boundary.	Site 58 - SE, outside site boundary.	Site 58 - SE, outside site boundary.	Site 58 - SW, outside site boundary, near Building 744-A.	Site 58 - SW, outside site boundary, near Building 744-A.	Site 58 - SW, outside site boundary.	Site 58 - SW, outside site boundary.	Site 58 - SSW, outside site boundary.	Site 58 - SSW, outside site boundary. Field Duplicate	Site 58 - SSW, outside site boundary.	Site 58 - ESE, outside site boundary, beside Building 725.
		Location Depth	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow
		Lab Package	HS21060181	HS20120479	HS21060181	HS20120479	HS21060181	HS20120090	HS21060181	HS20120090	HS21060226	HS20120090	HS20120090	HS21060181	HS20120479
Styrene	µg/L	100	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 1.0 U
tert-Butylbenzene	µg/L	4,100	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 1.0 U
Tetrachloroethene	µg/L	5	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U
Toluene	µg/L	1,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
trans-1,2-Dichloroethene	µg/L	100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
trans-1,3-Dichloropropene	µg/L	29	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Trichloroethene	µg/L	5	< 0.5 U	< 0.5 U	< 0.5 U	**11**	**14**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Trichlorofluoromethane	µg/L	31,000	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U
Vinyl chloride		2	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Volatile Fatty Acids (HPLC-METACIDS)															
Acetic Acid	mg/L	NV	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Butyric Acid	mg/L	NV	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lactic Acid	mg/L	NV	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Propionic Acid	mg/L	51	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyruvic Acid	mg/L	NV	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ICP-MS Metals (6020A)															
Arsenic	mg/L	0.01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anions (9056A)															
Chloride	mg/L	NV	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate	mg/L	10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	mg/L	NV	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dissolved Gases (RSK-175)															
Carbon Dioxide	µg/L	NV	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethane	µg/L	NV	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethene	µg/L	NV	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methane	µg/L	NV	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dechlorinating Bacteria															
BAV1 Vinyl Chloride Reductase	cells/mL	NV	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dehalobacter spp.	cells/mL	NV	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dehalococoides	cells/mL	NV	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
tceA Reductase	cells/mL	NV	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl Chloride Reductase	cells/mL	NV	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Field Parameters															
Temperature	^{0}C	NV	23.32	16.63	23.72	17.50	22.50	19.18	22.72	15.89	21.65	16.95		22.46	17.89
pH	s.u.	5-9	5.43	5.99	5.93	5.75	5.81	6.54	6.10	6.37	5.75	6.63		6.32	5.06
DO	mg/L	< 0.5	0.68	0.20	0.11	8.74	8.39	0.04	0.31	0.87	0.07	0.97		0.97	0.31
ORP	mV	< 0.0	156	216	154	163	88	70	85	46	127	64		6	193

Blue Highlighting Indicates concentrations above the MCL/MSC

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations

NA - Not Analyzed

µg/L - micrograms per liter

Table 2. Eastern Plume Semi-Annual Analytical Data, December 2020 and June 2021
LHAAP-58, Longhorn Army Ammunition Plant, Karnack, Texas
Year 7 RA(O) Report

Location ID: / Sample Date:	Units	MCL/MSC	34AWW21_060121 6/01/21	35AWW22_120720 12/7/20	35AWW22_060221 6/02/21	35ASW03 December 2020	35ASW03_060321 6/03/21
			Site 58 - ESE, outside site boundary, beside Building 725.	Site 58 - ENE, outside site boundary.	Site 58 - ENE, outside site boundary.	Site 58 - E, inside site boundary.	Site 58 - E, inside site boundary.
Location Depth			Shallow	Shallow	Shallow	Surface Water	Surface Water
Lab Package			HS21060181	HS20120479	HS21060181	NA	HS21060226
Total Organic Carbon (415.1/SM5310C)							
Total Organic Carbon	mg/L	NV	NA	NA	NA	**Dry**	NA
Volatile Organic Compounds (8260C)							
1,1,1,2-Tetrachloroethane	µg/L	110	< 1.0 U	< 0.5 U	< 1.0 U		< 1.0 U
1,1,1-Trichloroethane	µg/L	200	< 0.5 U	< 0.5 U	< 0.5 U		< 0.5 U
1,1,2,2-Tetrachloroethane	µg/L	14	< 1.0 U	< 0.5 U	< 1.0 U		< 1.0 U
1,1,2-Trichloroethane	µg/L	5	< 1.0 U	< 0.5 U	< 1.0 U		< 1.0 U
1,1-Dichloroethane	µg/L	10,000	< 0.5 U	< 0.5 U	< 0.5 U		< 0.5 U
1,1-Dichloroethene	µg/L	7	< 0.5 U	< 0.5 U	< 0.5 U		< 0.5 U
1,1-Dichloropropene	µg/L	2.9	< 1.0 U	< 0.5 U	< 1.0 U		< 1.0 U
1,2,3-Trichlorobenzene	µg/L	310	< 1.0 U	< 1.0 U	< 1.0 U		< 1.0 U
1,2,3-Trichloropropane	µg/L	0.041	< 1.0 U	< 1.0 U	< 1.0 U		< 1.0 U
1,2,4-Trichlorobenzene	µg/L	70	< 1.0 U	< 1.0 U	< 1.0 U		< 1.0 U
1,2,4-Trimethylbenzene	µg/L	5,100	< 1.0 U	< 1.0 U	< 1.0 U		< 1.0 U
1,2-Dibromo-3-chloropropane	µg/L	0.2	< 0.5 U	< 0.5 U	< 0.5 U		< 0.5 U
1,2-Dibromoethane	µg/L	0.05	< 0.5 U	< 0.5 U	< 0.5 U		< 0.5 U
1,2-Dichlorobenzene	µg/L	600	< 1.0 U	< 1.0 U	< 1.0 U		< 1.0 U
1,2-Dichloroethane	µg/L	5	< 0.5 U	< 0.5 U	< 0.5 U		< 0.5 U
1,2-Dichloropropane	µg/L	5	< 1.0 U	< 0.5 U	< 1.0 U		< 1.0 U
1,3,5-Trimethylbenzene	µg/L	5,100	< 1.0 U	< 0.5 U	< 1.0 U		< 1.0 U
1,3-Dichlorobenzene	µg/L	3,100	< 1.0 U	< 1.0 U	< 1.0 U		< 1.0 U
1,3-Dichloropropane	µg/L	29	< 1.0 U	< 1.0 U	< 1.0 U		< 1.0 U
1,4-Dichlorobenzene	µg/L	75	< 1.0 U	< 1.0 U	< 1.0 U		< 1.0 U
2,2-Dichloropropane	µg/L	42	< 0.5 U	< 0.5 U	< 0.5 U		< 0.5 U
2-Butanone	µg/L	61,000	< 1.0 U	< 1.0 U	< 1.0 U		< 1.0 U
2-Chlorotoluene	µg/L	2,000	< 1.0 U	< 1.0 U	< 1.0 U		< 1.0 U
2-Hexanone	µg/L	6,100	< 2.0 U	< 2.0 U	< 2.0 U		< 2.0 U
4-Chlorotoluene	µg/L	2,000	< 1.0 U	< 1.0 U	< 1.0 U		< 1.0 U
4-Isopropyltoluene	µg/L	10,000	< 1.0 U	< 1.0 U	< 1.0 U		< 1.0 U
4-Methyl-2-pentanone	µg/L	8,200	< 2.0 U	< 2.0 U	< 2.0 U		< 2.0 U
Acetone	µg/L	92,000	< 2.0 U	< 1.0 U	< 2.0 U	**Dry**	< 2.0 U
Benzene	µg/L	5	< 0.5 U	< 0.5 U	< 0.5 U		< 0.5 U
Bromobenzene	µg/L	2,000	< 1.0 U	< 1.0 U	< 1.0 U		< 1.0 U
Bromochloromethane	µg/L	4,100	< 0.5 U	< 0.5 U	< 0.5 U		< 0.5 U
Bromodichloromethane	µg/L	4.6	< 0.5 U	< 0.5 U	< 0.5 U		< 0.5 U
Bromoform	µg/L	36	< 1.0 U	< 0.5 U	< 1.0 U		< 1.0 U
Bromomethane	µg/L	140	< 1.0 U	< 0.5 U	< 1.0 U		< 1.0 U
Carbon disulfide	µg/L	10,000	< 2.0 U	< 1.0 U	< 2.0 U		< 2.0 U
Carbon tetrachloride	µg/L	5	< 1.0 U	< 0.5 U	< 1.0 U		< 1.0 U
Chlorobenzene	µg/L	100	< 1.0 U	< 0.5 U	< 1.0 U		< 1.0 U
Chloroethane	µg/L	41,000	< 1.0 U	< 0.5 U	< 1.0 U		< 1.0 U
Chloroform	µg/L	1,000	< 0.5 U	< 0.5 U	< 0.5 U		< 0.5 U
Chloromethane	µg/L	220	< 0.5 U	< 0.5 U	< 0.5 U		< 0.5 U
cis-1,2-Dichloroethene	µg/L	70	< 0.5 U	< 0.5 U	< 0.5 U		< 0.5 U
cis-1,3-Dichloropropene	µg/L	5.3	< 0.5 U	< 0.5 U	< 0.5 U		< 0.5 U
Dibromochloromethane	µg/L	34	< 1.0 U	< 0.5 U	< 1.0 U		< 1.0 U
Dibromomethane	µg/L	380	< 0.5 U	< 0.5 U	< 0.5 U		< 0.5 U
Dichlorodifluoromethane	µg/L	20,000	< 1.0 U	< 1.0 U	< 1.0 U		< 1.0 U
Ethylbenzene	µg/L	700	< 1.0 U	< 0.5 U	< 1.0 U		< 1.0 U
Hexachlorobutadiene	µg/L	20	< 1.0 UJ	< 1.0 U	< 1.0 UJ		< 1.0 U
Isopropylbenzene	µg/L	10,000	< 1.0 U	< 0.5 U	< 1.0 U		< 1.0 U
m,p-Xylene	µg/L	10,000	< 1.0 U	< 1.0 U	< 1.0 U		< 1.0 U
Methylene chloride	µg/L	5	< 2.0 U	< 1.0 U	< 2.0 U		< 2.0 U
n-Butylbenzene	µg/L	4,100	< 1.0 U	< 1.0 U	< 1.0 U		< 1.0 U
n-Propylbenzene	µg/L	4,100	< 1.0 U	< 0.5 U	< 1.0 U		< 1.0 U
Naphthalene	µg/L	2,000	< 1.0 U	< 1.0 U	< 1.0 U		< 1.0 U
o-Xylene	µg/L	10,000	< 1.0 U	< 0.5 U	< 1.0 U		< 1.0 U
sec-Butylbenzene	µg/L	4,100	< 1.0 U	< 1.0 U	< 1.0 U		< 1.0 U

Table 2. Eastern Plume Semi-Annual Analytical Data, December 2020 and June 2021
LHAAP-58, Longhorn Army Ammunition Plant, Karnack, Texas
Year 7 RA(O) Report

Location ID: / Sample Date:	Units	MCL/MSC	34AWW21_060121 6/01/21	35AWW22_120720 12/7/20	35AWW22_060221 6/02/21	35ASW03 December 2020	35ASW03_060321 6/03/21
			Site 58 - ESE, outside site boundary, beside Building 725.	Site 58 - ENE, outside site boundary.	Site 58 - ENE, outside site boundary.	Site 58 - E, inside site boundary.	Site 58 - E, inside site boundary.
Location Depth			Shallow	Shallow	Shallow	Surface Water	Surface Water
Lab Package			HS21060181	HS20120479	HS21060181	NA	HS21060226
Styrene	µg/L	100	< 1.0 U	< 0.5 U	< 1.0 U	**Dry**	< 1.0 U
tert-Butylbenzene	µg/L	4,100	< 1.0 U	< 0.5 U	< 1.0 U		< 1.0 U
Tetrachloroethene	µg/L	5	< 1.0 U	< 0.5 U	< 1.0 U		< 1.0 U
Toluene	µg/L	1,000	< 0.5 U	< 0.5 U	< 0.5 U		< 0.5 U
trans-1,2-Dichloroethene	µg/L	100	< 0.5 U	< 0.5 U	< 0.5 U		< 0.5 U
trans-1,3-Dichloropropene	µg/L	29	< 0.5 U	< 0.5 U	< 0.5 U		< 0.5 U
Trichloroethene	µg/L	5	< 0.5 U	< 0.5 U	< 0.5 U		< 0.5 U
Trichlorofluoromethane	µg/L	31,000	< 1.0 U	< 1.0 U	< 1.0 U		< 1.0 U
Vinyl chloride		2	< 0.5 U	< 0.5 U	< 0.5 U		< 0.5 U
Volatile Fatty Acids (HPLC-METACIDS)							
Acetic Acid	mg/L	NV	NA	NA	NA	**Dry**	NA
Butyric Acid	mg/L	NV	NA	NA	NA		NA
Lactic Acid	mg/L	NV	NA	NA	NA		NA
Propionic Acid	mg/L	51	NA	NA	NA		NA
Pyruvic Acid	mg/L	NV	NA	NA	NA		NA
ICP-MS Metals (6020A)							
Arsenic	mg/L	0.01	NA	NA	NA	**Dry**	NA
Anions (9056A)							
Chloride	mg/L	NV	NA	NA	NA	**Dry**	NA
Nitrate	mg/L	10	NA	NA	NA		NA
Sulfate	mg/L	NV	NA	NA	NA		NA
Dissolved Gases (RSK-175)							
Carbon Dioxide	µg/L	NV	NA	NA	NA	**Dry**	NA
Ethane	µg/L	NV	NA	NA	NA		NA
Ethene	µg/L	NV	NA	NA	NA		NA
Methane	µg/L	NV	NA	NA	NA		NA
Dechlorinating Bacteria							
BAV1 Vinyl Chloride Reductase	cells/mL	NV	NA	NA	NA	**Dry**	NA
Dehalobacter spp.	cells/mL	NV	NA	NA	NA		NA
Dehalococoides	cells/mL	NV	NA	NA	NA		NA
tceA Reductase	cells/mL	NV	NA	NA	NA		NA
Vinyl Chloride Reductase	cells/mL	NV	NA	NA	NA		NA
Field Parameters							
Temperature	^{0}C	NV	21.84	17.16	23.19	**Dry**	NA
pH	s.u.	5-9	5.24	5.55	5.51		NA
DO	mg/L	< 0.5	0.84	0.34	0.75		NA
ORP	mV	< 0.0	259	185	138		NA

Blue Highlighting Indicates concentrations above the MCL/MSC

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations

NA - Not Analyzed

µg/L - micrograms per liter

Table 3. Western Plume Analytical Data, December 2020 and June 2021
LHAAP-58, Longhorn Army Ammunition Plant, Karnack, Texas
Year 7 RA(O) Report

Location ID: / Sample Date:	Units	MCL/MSC	35AWW05_120320 12/3/20	35AWW05_060221 6/02/21	35AWW06_120120 12/1/20	35AWW06_060321 6/03/21	35AWW11_120120 12/1/20	35AWW11_120120_a 12/1/20	35AWW11_060221 6/02/21	35AWW15_120120 12/1/20	35AWW15_060121 6/01/21	35AWW18_120120 12/1/20	35AWW18_120120_a 12/1/20	35AWW18_060121 6/01/21	35AWW19_120320 12/3/20
Location Description			Site 58 - E, inside site boundary.	Site 58 - SW, outside site boundary.	Site 58 - SW, outside site boundary.	Site 58 - SW, outside site boundary.	Site 58 - SE, inside site boundary.	Site 58 - SE, inside site boundary.	Site 58 - SE, inside site boundary.	Site 58 - W, inside site boundary.	Site 58 - W, inside site boundary.	Site 58 - SSW, outside site boundary.	Site 58 - SSW, outside site boundary. Field Duplicate	Site 58 - SSW, outside site boundary.	Site 58 - S, outside site boundary.
Location Depth			Intermediate	Intermediate	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow
Lab Package			HS20120247	HS21060181	HS20120090	HS21060226	HS20120090	HS20120090	HS21060181	HS20120090	HS21060181	HS20120090	HS20120090	HS21060181	HS20120247
Volatile Organic Compounds (8260C)															
1,1,1,2-Tetrachloroethane	µg/L	110	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U
1,1,1-Trichloroethane	µg/L	200	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1,2,2-Tetrachloroethane	µg/L	14	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U
1,1,2-Trichloroethane	µg/L	5	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U
1,1-Dichloroethane	µg/L	10,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**3.6**	**3.5**	**3.1**	**0.89 J**
1,1-Dichloroethene	µg/L	7	< 0.5 U	< 0.5 U	**0.78 J**	**0.90 J**	**0.53 J**	< 0.5 U	**0.62 J**	< 0.5 U	< 0.5 U	**22**	**22**	**20**	**3.2**
1,1-Dichloropropene	µg/L	2.9	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U
1,2,3-Trichlorobenzene	µg/L	310	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2,3-Trichloropropane	µg/L	0.041	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	**26**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2,4-Trichlorobenzene	µg/L	70	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2,4-Trimethylbenzene	µg/L	5,100	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U
1,2-Dibromo-3-chloropropane	µg/L	0.2	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dibromoethane	µg/L	0.05	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dichlorobenzene	µg/L	600	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dichloroethane	µg/L	5	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**1.3**
1,2-Dichloropropane	µg/L	5	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U
1,3,5-Trimethylbenzene	µg/L	5,100	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U
1,3-Dichlorobenzene	µg/L	3,100	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,3-Dichloropropane	µg/L	29	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U
1,4-Dichlorobenzene	µg/L	75	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2,2-Dichloropropane	µg/L	42	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
2-Butanone	µg/L	61,000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Chlorotoluene	µg/L	2,000	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U
2-Hexanone	µg/L	6,100	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
4-Chlorotoluene	µg/L	2,000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
4-Isopropyltoluene	µg/L	10,000	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U
4-Methyl-2-pentanone	µg/L	8,200	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
Acetone	µg/L	92,000	< 1.0 U	< 2.0 U	< 1.0 U	**6.9**	< 1.0 U	< 1.0 U	< 2.0 U	< 1.0 U	< 2.0 U	< 1.0 U	< 1.0 U	< 2.0 U	< 1.0 U
Benzene	µg/L	5	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromobenzene	µg/L	2,000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Bromochloromethane	µg/L	4,100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromodichloromethane	µg/L	4.6	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromoform	µg/L	36	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U
Bromomethane	µg/L	140	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U
Carbon disulfide	µg/L	10,000	< 1.0 U	< 2.0 U	< 1.0 U	< 2.0 U	< 1.0 U	< 1.0 U	< 2.0 U	< 1.0 U	< 2.0 U	< 1.0 U	< 1.0 U	< 2.0 U	< 1.0 U
Carbon tetrachloride	µg/L	5	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U
Chlorobenzene	µg/L	100	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U
Chloroethane	µg/L	41,000	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U
Chloroform	µg/L	1,000	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Chloromethane	µg/L	220	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
cis-1,2-Dichloroethene	µg/L	70	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
cis-1,3-Dichloropropene	µg/L	5.3	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Dibromochloromethane	µg/L	34	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U
Dibromomethane	µg/L	380	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Dichlorodifluoromethane	µg/L	20,000	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Ethylbenzene	µg/L	700	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U
Hexachlorobutadiene	µg/L	20	< 1.0 U	< 1.0 UJ	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 UJ	< 1.0 U	< 1.0 UJ	< 1.0 U	< 1.0 U	< 1.0 UJ	< 1.0 U
Isopropylbenzene	µg/L	10,000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U
m,p-Xylene	µg/L	10,000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Methylene chloride	µg/L	5	< 1.0 U	< 2.0 U	< 1.0 U	< 2.0 U	< 1.0 U	< 1.0 U	< 2.0 U	< 1.0 U	< 2.0 U	< 1.0 U	< 1.0 U	< 2.0 U	< 1.0 U
n-Butylbenzene	µg/L	4,100	< 1.0 U	< 1.0 U	**1.7**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
n-Propylbenzene	µg/L	4,100	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 1.0 U
Naphthalene	µg/L	2,000	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U
o-Xylene	µg/L	10,000	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 1.0 U
sec-Butylbenzene	µg/L	4,100	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 1.0 U
Styrene	µg/L	100	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U
tert-Butylbenzene	µg/L	4,100	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U
Tetrachloroethene	µg/L	5	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U

Table 3. Western Plume Analytical Data, December 2020 and June 2021
LHAAP-58, Longhorn Army Ammunition Plant, Karnack, Texas
Year 7 RA(O) Report

Location ID: / Sample Date:	Units	MCL/MSC	35AWW05_120320 12/3/20	35AWW05_060221 6/02/21	35AWW06_120120 12/1/20	35AWW06_060321 6/03/21	35AWW11_120120 12/1/20	35AWW11_120120_a 12/1/20	35AWW11_060221 6/02/21	35AWW15_120120 12/1/20	35AWW15_060121 6/01/21	35AWW18_120120 12/1/20	35AWW18_120120_a 12/1/20	35AWW18_060121 6/01/21	35AWW19_120320 12/3/20
Location Description			Site 58 - E, inside site boundary.	Site 58 - SW, outside site boundary.	Site 58 - SW, outside site boundary.	Site 58 - SW, outside site boundary.	Site 58 - SE, inside site boundary.	Site 58 - SE, inside site boundary.	Site 58 - SE, inside site boundary.	Site 58 - W, inside site boundary.	Site 58 - W, inside site boundary.	Site 58 - SSW, outside site boundary.	Site 58 - SSW, outside site boundary. Field Duplicate	Site 58 - SSW, outside site boundary.	Site 58 - S, outside site boundary.
Location Depth			Intermediate	Intermediate	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow
Lab Package			HS20120247	HS21060181	HS20120090	HS21060226	HS20120090	HS20120090	HS21060181	HS20120090	HS21060181	HS20120090	HS20120090	HS21060181	HS20120247
Volatile Organic Compounds (8260C)															
Toluene	µg/L	1,000	< 0.5 U	< 0.5 U	**0.55 J**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
trans-1,2-Dichloroethene	µg/L	100	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
trans-1,3-Dichloropropene	µg/L	29	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Trichloroethene	µg/L	5	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Trichlorofluoromethane	µg/L	31,000	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U
Vinyl chloride		2	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Total Organic Carbon (415.1/SM5310C)															
Total Organic Carbon	mg/L	NV	NA	NA	**8.67 J**	**14.4**	**3.63**	**3.81**	**11.0**	NA	NA	NA	NA	NA	**1.63**
Volatile Fatty Acids (HPLC-METACIDS)															
Acetic Acid	mg/L	NV	NA	NA	< 2.0 U	**1.3 J**	< 2.0 U	< 2.0 U	**0.87 J**	NA	NA	NA	NA	NA	< 2.0 U
Butyric Acid	mg/L	NV	NA	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	NA	NA	NA	NA	NA	< 1.0 U
Lactic Acid	mg/L	NV	NA	NA	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	NA	NA	NA	NA	NA	< 1.0 U
Propionic Acid	mg/L	51	NA	NA	< 1.0 U	< 1.5 U	< 1.0 U	< 1.0 U	< 1.5 U	NA	NA	NA	NA	NA	< 1.0 U
Pyruvic Acid	mg/L	NV	NA	NA	< 0.10 UJ	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	NA	NA	NA	NA	NA	< 0.10 U
ICP-MS Metals (6020A)															
Arsenic	mg/L	0.01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anions (9056A)															
Chloride	mg/L	NV	NA	NA	**937**	**940**	**1,990**	**2,030**	**1,790**	NA	NA	NA	NA	NA	**786**
Nitrate	mg/L	10	NA	NA	< 0.200 U	< 0.200 U	**0.248 J**	**0.284 J**	< 0.500 U	NA	NA	NA	NA	NA	< 0.100 U
Sulfate	mg/L	NV	NA	NA	**45.6**	**197**	**415 J**	**295 J**	**460**	NA	NA	NA	NA	NA	**860**
Dissolved Gases (RSK-175)															
Carbon Dioxide	µg/L	NV	NA	NA	**270,000**	**490,000**	**610,000**	**530,000**	**890,000**	NA	NA	NA	NA	NA	**440,000 J**
Ethane	µg/L	NV	NA	NA	< 0.47 U	< 0.47 U	< 0.47 U	< 0.47 U	< 0.47 U	NA	NA	NA	NA	NA	< 0.47 U
Ethene	µg/L	NV	NA	NA	< 0.55 U	< 0.55 U	< 0.55 U	< 0.55 U	< 0.55 U	NA	NA	NA	NA	NA	< 0.55 U
Methane	µg/L	NV	NA	NA	**3,300**	**2,200**	**1,800 J**	**4,400 J**	**1,000**	NA	NA	NA	NA	NA	**4.2**
Dechlorinating Bacteria															
BAV1 Vinyl Chloride Reductase	cells/mL	NV	NA	NA	< 1.4 U	**1.50 J**	< 1.1 U	NA	< 1.0 U	NA	NA	NA	NA	NA	**5.5**
Dehalobacter spp.	cells/mL	NV	NA	NA	**3,700**	**4,170**	**52,700**	NA	**5830**	NA	NA	NA	NA	NA	**30,100**
Dehalococoides	cells/mL	NV	NA	NA	**1,060**	**15**	**368**	NA	**170**	NA	NA	NA	NA	NA	**40.2**
tceA Reductase	cells/mL	NV	NA	NA	**114**	< 2.80 U	**4.5**	NA	**0.30 J**	NA	NA	NA	NA	NA	< 0.60 U
Vinyl Chloride Reductase	cells/mL	NV	NA	NA	**123**	< 2.80 U	**118**	NA	**33.5**	NA	NA	NA	NA	NA	**0.20 J**
Field Parameters															
Temperature	°C	NV	17.21	22.75	16.30	21.72	13.32		21.48	21.98	22.27	16.95		22.46	17.26
pH	s.u.	5-9	5.77	5.48	7.03	6.50	5.99		5.96	6.52	6.05	6.63		6.32	5.64
DO	mg/L	< 0.5	0.25	0.05	0.03	0.03	0.05		0.06	0.54	0.20	0.97		0.97	0.11
ORP	mV	< 0.0	80	52	-55	29	4		-28	78	159	64		6	65

Notes:

Blue Highlighting Indicates concentrations above the MCL/MSC

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations

NA - Not Analyzed

µg/L - micrograms per liter

mg/L - milligrams per liter

J - Estimated: Between the method detection limit and reporting limit and/or due to discrepancies in meeting certain analyte-specific quality control criteria.

UJ - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.

U - Undetected: The analyte was analyzed for, but not detected.

NV - No Value

Table 3. Western Plume Analytical Data, December 2020 and June 2021
LHAAP-58, Longhorn Army Ammunition Plant, Karnack, Texas
Year 7 RA(O) Report

Location ID: / Sample Date:	Units	MCL/MSC	35AWW19_060321 6/03/21	35AWW20_120320 12/3/20	35AWW20_060321 6/03/21	35AWW23_120320 12/3/20	35AWW23_060321 6/03/21	35AWW24_120320 12/3/20	35AWW24_060121 6/01/21	35AWW24_060121_a 6/01/21	LHSMW06_120320 12/3/20	LHSMW06_060321 6/03/21	LHSMW07_120320 12/3/20	LHSMW07_060221 6/02/21
Location Description			Site 58 - S, outside site boundary.	Site 58 - SW, inside site boundary.	Site 58 - SW, inside site boundary.	Site 58 - SW, outside site boundary.	Site 58 - SW, outside site boundary.	Downgradient Western Plume well	Downgradient Western Plume well	Downgradient Western Plume well Field Duplicate.	Site 58 - SW, inside site boundary, beside Building 715.	Site 58 - SW, inside site boundary, beside Building 715.	Site 58 - SW, outside site boundary.	Site 58 - SW, outside site boundary.
Location Depth			Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow
Lab Package			HS21060226	HS20120247	HS21060226	HS20120247	HS21060226	HS20120247	HS21060181	HS21060181	HS20120247	HS21060226	HS20120247	HS21060181
Volatile Organic Compounds (8260C)														
1,1,1,2-Tetrachloroethane	µg/L	110	< 1.0 U	< 1.0 U	< 10 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U
1,1,1-Trichloroethane	µg/L	200	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,1,2,2-Tetrachloroethane	µg/L	14	< 1.0 U	< 0.5 U	< 10 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U
1,1,2-Trichloroethane	µg/L	5	< 1.0 U	**73**	**73**	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U
1,1-Dichloroethane	µg/L	10,000	**0.64 J**	**550**	**480**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**6.1**	**5.3**	**7.8**	**5.7**
1,1-Dichloroethene	µg/L	7	**2.9**	**950**	**1,600**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**14**	**11**	**64**	**12**
1,1-Dichloropropene	µg/L	2.9	< 1.0 U	< 0.5 U	< 10 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U
1,2,3-Trichlorobenzene	µg/L	310	< 1.0 U	< 1.0 U	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2,3-Trichloropropane	µg/L	0.041	< 1.0 U	< 1.0 U	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2,4-Trichlorobenzene	µg/L	70	< 1.0 U	< 1.0 U	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2,4-Trimethylbenzene	µg/L	5,100	< 1.0 U	< 1.0 U	< 10 U	< 1.0 U	**0.51 J**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dibromo-3-chloropropane	µg/L	0.2	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dibromoethane	µg/L	0.05	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dichlorobenzene	µg/L	600	< 1.0 U	**22**	**27**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,2-Dichloroethane	µg/L	5	< 0.5 U	**16**	**17**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
1,2-Dichloropropane	µg/L	5	< 1.0 U	< 0.5 U	< 10 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U
1,3,5-Trimethylbenzene	µg/L	5,100	< 1.0 U	< 0.5 U	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U
1,3-Dichlorobenzene	µg/L	3,100	< 1.0 U	**1.0**	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,3-Dichloropropane	µg/L	29	< 1.0 U	< 1.0 U	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
1,4-Dichlorobenzene	µg/L	75	< 1.0 U	**3.8**	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2,2-Dichloropropane	µg/L	42	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
2-Butanone	µg/L	61,000	< 1.0 U	< 1.0 U	< 10 U	**68**	**160**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Chlorotoluene	µg/L	2,000	< 1.0 U	< 1.0 U	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
2-Hexanone	µg/L	6,100	< 2.0 U	< 2.0 U	< 20 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
4-Chlorotoluene	µg/L	2,000	< 1.0 U	< 1.0 U	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
4-Isopropyltoluene	µg/L	10,000	< 1.0 U	< 1.0 U	< 10 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U
4-Methyl-2-pentanone	µg/L	8,200	< 2.0 U	< 2.0 U	< 20 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
Acetone	µg/L	92,000	< 2.0 U	< 1.0 U	< 20 U	**120**	< 2.0 U	< 1.0 U	< 2.0 U	< 2.0 U	< 1.0 U	< 2.0 U	< 1.0 U	< 2.0 U
Benzene	µg/L	5	< 0.5 U	**8.2**	**8.9 J**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromobenzene	µg/L	2,000	< 1.0 U	< 1.0 U	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Bromochloromethane	µg/L	4,100	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromodichloromethane	µg/L	4.6	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Bromoform	µg/L	36	< 1.0 U	< 0.5 U	< 10 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U
Bromomethane	µg/L	140	< 1.0 U	< 0.5 U	< 10 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U
Carbon disulfide	µg/L	10,000	< 2.0 U	< 1.0 U	< 20 U	< 1.0 U	< 2.0 U	< 1.0 U	< 2.0 U	< 2.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 2.0 U
Carbon tetrachloride	µg/L	5	< 1.0 U	< 0.5 U	< 10 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U
Chlorobenzene	µg/L	100	< 1.0 U	**0.56 J**	< 10 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U
Chloroethane	µg/L	41,000	< 1.0 U	< 0.5 U	< 10 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U
Chloroform	µg/L	1,000	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Chloromethane	µg/L	220	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
cis-1,2-Dichloroethene	µg/L	70	< 0.5 U	**63**	**87**	**2.7**	**1.0**	< 0.5 U	< 0.5 U	< 0.5 U	**62**	**71**	< 0.5 U	< 0.5 U
cis-1,3-Dichloropropene	µg/L	5.3	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Dibromochloromethane	µg/L	34	< 1.0 U	< 0.5 U	< 10 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U
Dibromomethane	µg/L	380	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Dichlorodifluoromethane	µg/L	20,000	< 1.0 U	< 0.5 U	< 10 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U
Ethylbenzene	µg/L	700	< 1.0 U	< 1.0 U	< 10 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U
Hexachlorobutadiene	µg/L	20	< 1.0 UJ	< 1.0 U	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 UJ	< 1.0 UJ	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 UJ
Isopropylbenzene	µg/L	10,000	< 1.0 U	< 0.5 U	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
m,p-Xylene	µg/L	10,000	< 1.0 U	< 1.0 U	< 10 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Methylene chloride	µg/L	5	< 2.0 U	< 1.0 U	< 20 U	< 1.0 U	< 2.0 U	< 1.0 U	< 2.0 U	< 2.0 U	< 1.0 U	< 2.0 U	< 1.0 U	< 2.0 U
n-Butylbenzene	µg/L	4,100	< 1.0 U	< 1.0 U	< 10 U	**1.7**	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
n-Propylbenzene	µg/L	4,100	< 1.0 U	< 1.0 U	< 10 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Naphthalene	µg/L	2,000	< 1.0 U	< 0.5 U	< 10 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U
o-Xylene	µg/L	10,000	< 1.0 U	< 1.0 U	< 10 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U
sec-Butylbenzene	µg/L	4,100	< 1.0 U	< 0.5 U	< 10 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U
Styrene	µg/L	100	< 1.0 U	< 0.5 U	< 10 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
tert-Butylbenzene	µg/L	4,100	< 1.0 U	< 0.5 U	< 10 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U
Tetrachloroethene	µg/L	5	< 1.0 U	< 0.5 U	< 10 U	< 0.5 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	**1.6**	**2.9**	< 0.5 U	< 1.0 U

Table 3. Western Plume Analytical Data, December 2020 and June 2021
LHAAP-58, Longhorn Army Ammunition Plant, Karnack, Texas
Year 7 RA(O) Report

Location ID: / Sample Date:	Units	MCL/MSC	35AWW19_060321 6/03/21	35AWW20_120320 12/3/20	35AWW20_060321 6/03/21	35AWW23_120320 12/3/20	35AWW23_060321 6/03/21	35AWW24_120320 12/3/20	35AWW24_060121 6/01/21	35AWW24_060121_a 6/01/21	LHSMW06_120320 12/3/20	LHSMW06_060321 6/03/21	LHSMW07_120320 12/3/20	LHSMW07_060221 6/02/21
Location Description			Site 58 - S, outside site boundary.	Site 58 - SW, inside site boundary.	Site 58 - SW, inside site boundary.	Site 58 - SW, outside site boundary.	Site 58 - SW, outside site boundary.	Downgradient Western Plume well	Downgradient Western Plume well	Downgradient Western Plume well Field Duplicate.	Site 58 - SW, inside site boundary, beside Building 715.	Site 58 - SW, inside site boundary, beside Building 715.	Site 58 - SW, outside site boundary.	Site 58 - SW, outside site boundary.
Location Depth			Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow
Lab Package			HS21060226	HS20120247	HS21060226	HS20120247	HS21060226	HS20120247	HS21060181	HS21060181	HS20120247	HS21060226	HS20120247	HS21060181
Volatile Organic Compounds (8260C)														
Toluene	µg/L	1,000	< 0.5 U	< 0.5 U	< 5.0 U	**1.5**	**14**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
trans-1,2-Dichloroethene	µg/L	100	< 0.5 U	**6.7**	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**1.3**	**1.2**	< 0.5 U	< 0.5 U
trans-1,3-Dichloropropene	µg/L	29	< 0.5 U	< 0.5 U	< 5.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Trichloroethene	µg/L	5	< 0.5 U	**91**	**190**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**14**	**19**	**2.1**	**0.91 J**
Trichlorofluoromethane	µg/L	31,000	< 1.0 U	< 0.5 U	< 10 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 0.5 U	< 1.0 U	< 1.0 U	< 1.0 U
Vinyl chloride		2	< 0.5 U	**1,800**	**780**	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	**4.8**	**3.2**	**42**	< 0.5 U
Total Organic Carbon (415.1/SM5310C)														
Total Organic Carbon	mg/L	NV	**2.38**	**12 J**	**20.5**	**21.4**	**19.7**	NA	NA	NA	NA	NA	**2.33**	**7.94**
Volatile Fatty Acids (HPLC-METACIDS)														
Acetic Acid	mg/L	NV	**0.62 J**	< 2.0 U	**0.61 J**	**65**	**9.1**	NA	NA	NA	NA	NA	< 2.0 U	**0.65 J**
Butyric Acid	mg/L	NV	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	NA	NA	NA	NA	NA	< 1.0 U	< 1.0 U
Lactic Acid	mg/L	NV	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	NA	NA	NA	NA	NA	< 1.0 U	< 1.0 U
Propionic Acid	mg/L	51	< 1.5 U	< 1.0 U	< 1.5 U	**2.8**	< 1.5 U	NA	NA	NA	NA	NA	< 1.0 U	< 1.5 U
Pyruvic Acid	mg/L	NV	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	< 0.10 U	NA	NA	NA	NA	NA	< 0.10 U	< 0.10 U
ICP-MS Metals (6020A)														
Arsenic	mg/L	0.01	NA	NA	**0.00293 J**	NA	NA	NA	NA	NA	**0.000481 J**	**0.000545 J**	NA	NA
Anions (9056A)														
Chloride	mg/L	NV	**746**	**727**	**615**	**958**	**846**	NA	NA	NA	NA	NA	**1,650**	**1,760**
Nitrate	mg/L	10	< 0.200 U	< 0.100 U	< 0.200 U	< 0.100 U	< 0.200 U	NA	NA	NA	NA	NA	< 0.200 U	< 0.500 U
Sulfate	mg/L	NV	**857**	**1,070**	**955**	< 0.500 U	**0.401 J**	NA	NA	NA	NA	NA	**2,650**	**2,720**
Dissolved Gases (RSK-175)														
Carbon Dioxide	µg/L	NV	**670,000**	**370,000 J**	**690,000**	**540,000 J**	**540,000**	NA	NA	NA	NA	NA	**260,000 J**	**300,000**
Ethane	µg/L	NV	< 0.47 U	< 0.47 U	< 0.47 U	< 0.47 U	< 0.47 U	NA	NA	NA	NA	NA	**0.42 J**	**0.31 J**
Ethene	µg/L	NV	< 0.55 U	**11**	**11**	< 0.55 U	< 0.55 U	NA	NA	NA	NA	NA	**5.9**	**19**
Methane	µg/L	NV	**2.2**	**1,000**	**1,500**	**3,700**	**3,700**	NA	NA	NA	NA	NA	**810**	**680**
Dechlorinating Bacteria														
BAV1 Vinyl Chloride Reductase	cells/mL	NV	< 0.50 U	**6,550**	**55,800**	< 0.50 U	**0.30 J**	NA	NA	NA	NA	NA	**1.2**	< 0.60 U
Dehalobacter spp.	cells/mL	NV	**24,900**	**436**	**13,400**	< 5.3 U	**8,200**	NA	NA	NA	NA	NA	**17,500**	**3,640**
Dehalococoides	cells/mL	NV	**16.1**	**7,800**	**72,200**	**557**	**3,220**	NA	NA	NA	NA	NA	**7,580**	**4,430**
tceA Reductase	cells/mL	NV	< 0.50 U	< 0.50 U	**0.50 J**	**37.6**	**143**	NA	NA	NA	NA	NA	< 0.60 U	**0.70**
Vinyl Chloride Reductase	cells/mL	NV	< 0.50 U	< 0.50 U	**2.10**	**30.1**	**408**	NA	NA	NA	NA	NA	**400**	**8,370**
Field Parameters														
Temperature	^{0}C	NV	20.34	17.72	22.57	16.07	20.84	17.65	22.09		16.92	21.83	15.90	21.20
pH	s.u.	5-9	5.32	6.37	6.25	6.32	6.44	4.88	5.66		6.61	5.98	6.53	6.52
DO	mg/L	< 0.5	0.11	0.61	0.11	0.07	0.04	0.17	0.31		0.16	0.12	0.14	0.13
ORP	mV	< 0.0	122	94	84	-41	-129	156	166		75	166	10	-144

Notes:

Blue Highlighting Indicates concentrations above the MCL/MSC

MCL/MSC - Maximum Contaminant Limit/Medium-Specific Concentrations

NA - Not Analyzed

µg/L - micrograms per liter

mg/L - milligrams per liter

J - Estimated: Between the method detection limit and reporting limit and/or due to disc

UJ - The analyte was not detected; however, the result is estimated due to discrepancies

U - Undetected: The analyte was analyzed for, but not detected.

NV - No Value

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	03WW01-11/24/2008		03WW01-5/9/2011		03WW01-082013 8/20/2013		03WW01-101013 10/10/2013		03WW01-12914 1/29/2014		03WW01-052114 5/21/2014		03WW01-102814 10/28/2014		03WW01-012115 1/21/2015		03WW01-041515 4/15/2015		03WW01-070815 7/8/2015		03WW01-100815 10/8/2015		03WW01-041316 4/13/2016		03WW01-100416 10/4/2016		03WW01-111517 11/15/2017	
1,1-DICHLOROETHENE	µg/L	7	<20	U	<2.5	U	<2	U	<5	U	<10	U	<10	U	<100	U	<100	U	<50	U	<100	U	<100	U	<25	U	<10	U	<2.5	U
CIS-1,2-DICHLOROETHENE	µg/L	70	<20	U	1.1		0.978		<2.5	U	<5	U	3.3		<50	U	<50	U	21.4		<50	U	<50	U	117		<5	U	<2.5	U
TETRACHLOROETHENE	µg/L	5	2,570		418		368		172		172		154		48.6		32.8		15.9		31.4		36.4		6.49		<5	U	<2.5	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<20	U	<2.5	U	<1	U	<2.5	U	<5	U	<5	U	<50	U	<50	U	<25	U	<50	U	<50	U	<12.5	U	<5	U	<2.5	U
TRICHLOROETHENE	µg/L	5	196		69.1		94.8		42.1		58.4		71.2		223		216		131		65.6		51.8		<12.5	U	<5	U	<2.5	U
VINYL CHLORIDE	µg/L	2	<20	U	<2.5	U	<1	U	<2.5	U	<5	U	<5	U	<50	U	<50	U	<25	U	<50	U	<50	U	<12.5	U	<5	U	<2.5	U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCL
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	03WW01-071818 7/18/2018		03WW01_121218 12/12/2018		03WW01_060419 6/4/2019		03WW01_121819 12/18/2019		03WW01_062320 6/23/2020		03WW01_120120 12/1/20		03WW01_060221 6/02/21		35ASW03-101713 10/17/2013		35ASW03-020314 2/3/2014		35ASW03-052814 5/28/2014		35ASW03-012315 1/23/2015		35ASW03-041015 4/10/2015	
1,1-DICHLOROETHENE	µg/L	7	<0.5	U	<0.5	U	<2.5	U	<5.0	U	< 2.5	U	< 5.0	U	< 5.0	U	<1	U	<1	U	<1	U	<1	U	<1	U
CIS-1,2-DICHLOROETHENE	µg/L	70	5.3		22		41		14		17		7.2	J	11		<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TETRACHLOROETHENE	µg/L	5	<0.5	U	15		3.2		<5.0	U	4.5	J	< 5.0	U	11		<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	<0.5	U	<2.5	U	<5.0	U	< 2.5	U	< 5.0	U	< 5.0	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TRICHLOROETHENE	µg/L	5	<0.5	U	5.7		2.9		<5.0	U	4.5	J	24		3.0		<0.5	U	<0.5	U	<0.5	U	<0.5	U	0.259	J
VINYL CHLORIDE	µg/L	2	4.8		7.6		11		5.4	J	7.2		< 5.0	U	1.6		<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	35ASW03-041316 4/13/2016	35ASW03_060321 6/03/21	35AWW01-981108 11/8/1998	35AWW01-981108FD 11/8/1998	35AWW01-040909 9/9/2004	35AWW01-020608 2/6/2008	35AWW01-111908 11/19/2008	35AWW01-101113 10/11/2013	35AWW01-013114 1/31/2014	35AWW01FD-013114 1/31/2014	35AWW01-052914 5/29/2014	35AWW01-103114 10/31/2014
1,1-DICHLOROETHENE	µg/L	7	<1 U	<1 U	<1 U	<1 U	<5 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5 U	<0.5 U	<1 U	<1 U	<5 U	<1 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TETRACHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<1 U	<1 U	<5 U	<1 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5 U	<0.5 U	<1 U	<1 U	<5 U	<1 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRICHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<1 U	<1 U	<5 U	<1 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
VINYL CHLORIDE	µg/L	2	<0.5 U	<0.5 U	<1 U	<1 U	<5 U	<1 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
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Table 4
Historical Monitoring Well COC Concentrations
LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	35AWW01-012715 1/27/2015	35AWW01-041015 4/10/2015	35AWW01FD-041015 4/10/2015	35AWW01-071015 7/10/2015	35AWW01FD-071015 7/10/2015	35AWW01-100615 10/6/2015	35AWW01FD-100615 10/6/2015	35AWW01-041216 4/12/2016	35AWW01FD-041216 4/12/2016	35AWW01-100516 10/5/2016	35WW01-111617 11/16/2017	35AWW01-070218 7/2/2018
1,1-DICHLOROETHENE	µg/L	7	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<0.5 U	<0.5 UJ
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ
TETRACHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRICHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
VINYL CHLORIDE	µg/L	2	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	35AWW01_121318 12/13/2018	35AWW01_061019 6/10/2019	35AWW01_122019 12/20/2019	35AWW01_062520 6/25/2020	35AWW01_062520-a 6/25/2020	35AWW01_120720 12/7/20	35AWW01_060121 6/01/21	35AWW01_060121-a 6/01/21	35AWW02-981108 11/8/1998	35AWW02-040910 9/10/2004	35AWW02-112608 11/26/2008	35AWW02-112608-FD 11/26/2008
1,1-DICHLOROETHENE	µg/L	7	<0.5 U	<0.5 U	<0.5 UJ	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<1 U	<5 U	<1 U	<1 U
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5 U	<0.5 U	<0.5 UJ	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<1 U	<5 U	<1 U	<1 U
TETRACHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 UJ	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<1 U	<5 U	<1 U	<1 U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5 U	<0.5 U	<0.5 UJ	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<1 U	<5 U	<1 U	<1 U
TRICHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 UJ	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<1 U	<5 U	<1 U	<1 U
VINYL CHLORIDE	µg/L	2	<0.5 U	<0.5 U	<0.5 UJ	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<1 U	<5 U	<1 U	<1 U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
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Table 4
Historical Monitoring Well COC Concentrations
LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	35AWW02-102213 10/22/2013	35AWW05-040908 9/8/2004	35AWW05-112108 11/21/2008	35AWW05-101613 10/16/2013	35AWW05-020114 2/1/2014	35AWW05-052214 5/22/2014	35AWW05FD-052214 5/22/2014	35AWW05-102114 10/21/2014	35AWW05-012315 1/23/2015	35AWW05FD-012315 1/23/2015	35AWW05-040815 4/8/2015	35AWW05-071015 7/10/2015
1,1-DICHLOROETHENE	µg/L	7	<1 U	<5 U	0.551 J	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5 U	<5 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TETRACHLOROETHENE	µg/L	5	<0.5 U	<5 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5 U	<5 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRICHLOROETHENE	µg/L	5	<0.5 U	<5 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
VINYL CHLORIDE	µg/L	2	<0.5 U	<5 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
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Table 4
Historical Monitoring Well COC Concentrations
LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	35AWW05-100515 10/2/2015	35AWW05-041416 4/14/2016	35AWW05-100516 10/5/2016	35AWW05-111317 11/13/2017	35AWW05-070218 7/2/2018	35AWW05-070218_a 7/2/2018	35AWW05_121218 12/12/2018	35AWW05_061019 6/10/2019	35AWW05_120320 12/3/20	35AWW05_060221 6/02/21	35AWW06-120308 12/3/2008	35AWW06-110509 5/9/2011
1,1-DICHLOROETHENE	µg/L	7	<1 U	<1 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	57.6	21.3
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	0.37 J	<1 U
TETRACHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	7.19	<1 U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<1 U	<1 U
TRICHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	0.811 J	<1 U
VINYL CHLORIDE	µg/L	2	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<1 U	<1 U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	35AWW06-101513 10/15/2013	35AWW06-013014 1/30/2014	35AWW06-052114 5/21/2014	35AWW06-102914 10/29/2014	35AWW06-012815 1/28/2015	35AWW06-041515 4/15/2015	35AWW06-070715 7/7/2015	35AWW06-100715 10/7/2015	35AWW06-041116 4/11/2016	35AWW06-100316 10/3/2016	35AWW06-111417 11/14/2017	35AWW06-71818 7/18/2018
1,1-DICHLOROETHENE	µg/L	7	15.8	14.2	12	16	13.5	4.17	18.6	12.8	13	7.48	3.9	<0.5 UJ
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ
TETRACHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ
TRICHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ
VINYL CHLORIDE	µg/L	2	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
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Table 4
Historical Monitoring Well COC Concentrations
LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	35AWW06_092 618 9/26/2018		35AWW06_121 118 12/11/2018		35AWW06_031 919 03/19/2019		35AWW06_031 919_a 03/19/2019		35AWW06_060 419 6/4/2019		35AWW06_091 119 9/11/2019		35AWW06_091 119_a 9/11/2019		35AWW06_121 919 12/19/2019		35AWW06_032 420 03/24/2020		35AWW06_062 420 6/24/2020		35AWW06_120 120 12/1/20		35AWW06_060 321 6/03/21	
1,1-DICHLOROETHENE	µg/L	7	<0.5	U	3.4		<0.5	U	1.4		<0.5	U	0.92	J	0.88	J	<0.5	UJ	0.78	J	0.99	J	0.78	J	0.9	J
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	UJ	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TETRACHLOROETHENE	µg/L	5	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	UJ	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	UJ	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TRICHLOROETHENE	µg/L	5	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	UJ	<0.5	U	<0.5	U	<0.5	U	<0.5	U
VINYL CHLORIDE	µg/L	2	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	UJ	<0.5	U	0.51	J	<0.5	U	<0.5	U

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Table 4
Historical Monitoring Well COC Concentrations
LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	35AWW07R-101613 10/16/2013	35AWW08-112408 11/24/2008	35AWW08-110509 5/9/2011	35AWW08-082013 8/20/2013	35AWW08-101013 10/10/2013	35AWW08-012914 1/29/2014	35AWW08-052014 5/20/2014	35AWW08-102714 10/27/2014	35AWW08-012115 1/21/2015	35AWW08-041515 4/15/2015	35AWW08-070815 7/8/2015
1,1-DICHLOROETHENE	µg/L	7	<1 U	<100 U	<25 U	<10 U	<10 U	<10 U	<10 U	<50 U	<50 U	<50 U	<100 U
CIS-1,2-DICHLOROETHENE	µg/L	70	0.709 J	<100 U	13.4 J	9.35 J	<5 U	55.9	47.2	38.6 J	27.2 J	30.7 J	73.5 J
TETRACHLOROETHENE	µg/L	5	0.586 J	9,590	6,480	1,640	603 J	599	204	112	119	110	110
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5 U	<100 U	<25 U	<5 U	<5 U	<5 U	2.82 J	<25 U	<25 U	<25 U	<50 U
TRICHLOROETHENE	µg/L	5	1.03	675	1,150	544	149 J	895	953	653	491	607	746
VINYL CHLORIDE	µg/L	2	<0.5 U	<100 U	<25 U	<5 U	<5 U	<5 U	<5 U	<25 U	<25 U	<25 U	<50 U

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Table 4
Historical Monitoring Well COC Concentrations
LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	35AWW08-100815 10/8/2015	35AWW08-041316 4/13/2016	35AWW08-100416 10/4/2016	35AWW08-111517 11/15/2017	35AWW08-071818 7/18/2018	35AWW08-111517 12/12/2018	35AWW08-071818 6/4/2019	35AWW08_121819 12/18/2019	35AWW08_062320 6/23/2020	35AWW08_120120 12/1/20	35AWW08_060221 6/02/21	35AWW09-082913 8/29/2013
1,1-DICHLOROETHENE	µg/L	7	<25 U	<25 U	<10 U	<5 U	<2.5 UJ	<0.5 U	<2.5 U	< 5.0 U	< 2.5 U	< 5.0 U	< 12 U	<1 U
CIS-1,2-DICHLOROETHENE	µg/L	70	79.6	60.9	41.7	38	12 J	8.9 J	<2.5 U	< 5.0 U	7.3	18	30	<0.5 U
TETRACHLOROETHENE	µg/L	5	79	80.1	36.9	12	<2.5 UJ	< 5.0 U	4.8 J	< 5.0 U	6.7	< 5.0 U	< 25 U	21.9
TRANS-1,2-DICHLOROETHENE	µg/L	100	<12.5 U	<12.5 U	<5 U	<5 U	<2.5 U	<0.5 U	<2.5 U	< 5.0 U	4.5 J	< 5.0 U	< 12 U	<0.5 U
TRICHLOROETHENE	µg/L	5	581	234	235	33	19 J	12	13	< 5.0 U	17	< 5.0 U	53	11.9
VINYL CHLORIDE	µg/L	2	<12.5 U	14.2 J	7.46 J	<5 U	9.0 J	<0.5 U	<2.5 U	< 5.0 U	<2.5 U	6.1 J	24 J	<0.5 U

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LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	35AWW09-101013 10/10/2013		35AWW09-012914 1/29/2014		35AWW09-052014 5/20/2014		35AWW09-102714 10/27/2014		35AWW09-012115 1/21/2015		35AWW09-041415 4/14/2015		35AWW09-070715 7/7/2015		35AWW09-100715 10/7/2015		35AWW09-041216 4/12/2016		35AWW09-100316 10/3/2016		35AWW09-111517 11/15/2017		35AWW09-071618 7/12/2018	
1,1-DICHLOROETHENE	µg/L	7	<1	UJ	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U	<1	U	<0.5	U	2.7	
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5	UJ	0.317	J	0.502	J	0.703	J	0.486	J	0.483	J	0.622	J	0.717	J	0.515	J	0.437	J	0.78	J	0.94	J
TETRACHLOROETHENE	µg/L	5	57.6	J	125		128		254		183		155		194		283		172		173		450		130	
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	UJ	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TRICHLOROETHENE	µg/L	5	8.97	J	37.3		41.7		93		64.3		45		59.5		81.3		55.7		48.2		150		38	
VINYL CHLORIDE	µg/L	2	<0.5	UJ	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U

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LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	35AWW09_121 118 12/11/2018		35AWW09_060 319 6/3/2019		35AWW09_121 819 12/18/2019		35AWW09_062 320 6/23/2020		35AWW09_120 720 12/7/20		35AWW09_060 221 6/02/21		35AWW09_060 221-a 6/02/21		35AWW10-082913 8/29/2013		35AWW10-101013 10/10/2013		35AWW10-012914 1/29/2014		35AWW10-052014 5/20/2014		35AWW10-102814 10/28/2014	
1,1-DICHLOROETHENE	µg/L	7	<0.5	U	<0.5	U	<0.5	U	<0.5	U	< 5.0	U	< 5.0	U	< 5.0	U	<1	U	<1	U	<1	U	<1	U	<1	U
CIS-1,2-DICHLOROETHENE	µg/L	70	0.94	J	<0.5	U	1.1		1.1		1.1		0.88	J	0.89	J	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TETRACHLOROETHENE	µg/L	5	150		130		500		440		370		350		310		<0.5	U	<0.5	U	<0.5	U	0.401	J	<0.5	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TRICHLOROETHENE	µg/L	5	150		38		160		140		140		130	J	130	J	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
VINYL CHLORIDE	µg/L	2	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U

Notes:
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Table 4
Historical Monitoring Well COC Concentrations
LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	35AWW10-012715 1/27/2015	35AWW10-041415 4/14/2015	35AWW10-070715 7/7/2015	35AWW10-100715 10/7/2015	35AWW10-041316 4/13/2016	35AWW10-100316 10/3/2016	35AWW10-111517 11/15/2017	35AWW10-071218 07/12/2018	35AWW10_121218 12/12/18	35AWW10_121218_a 12/12/2018	35AWW10_060419 6/4/2019	35AWW10_060419_a 6/4/2019
1,1-DICHLOROETHENE	µg/L	7	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TETRACHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRICHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
VINYL CHLORIDE	µg/L	2	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U

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Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	35AWW10_121919 12/19/2019	35AWW10_121919-a 12/19/2019	35AWW10_062920 6/29/2020	35AWW10_120720 12/7/20	35AWW10_120720-a 12/7/20	35AWW10_060121 6/01/21	35AWW11-101513 10/15/2013	35AWW11-020314 2/3/2014	35AWW11-052114 5/21/2014	35AWW11-102914 10/29/2014	35AWW11-012715 1/27/2015	35AWW11-041415 4/14/2015
1,1-DICHLOROETHENE	µg/L	7	<0.5 UJ	<0.5 UJ	<0.5 U	<0.5 U	<0.5 U	<0.5 U	7.7	10.1	11.6	21.9	12.5	13.5
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5 UJ	<0.5 UJ	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TETRACHLOROETHENE	µg/L	5	<0.5 UJ	<0.5 UJ	<1.0 U	<1.0 U	<1.0 U	<1.0 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5 UJ	<0.5 UJ	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRICHLOROETHENE	µg/L	5	<0.5 UJ	<0.5 UJ	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
VINYL CHLORIDE	µg/L	2	<0.5 UJ	<0.5 UJ	<0.5 U	<0.5 U	<0.5 U	<0.5 U	0.442 J	<0.5 U	<0.5 U	0.369 J	<0.5 U	0.273 J

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LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	35AWW11-070815 7/8/2015		35AWW11-100715 10/7/2015		35AWW11-041216 4/12/2016		35AWW11-100316 10/3/2016		35AWW11-111417 11/14/2017		35AWW11-071618 07/16/2018		35AWW11_092718 9/27/2018		35AWW11_121118 12/11/2018		35AWW11_031919 03/19/2019		35AWW11_060319 6/3/2019		35AWW11_091119 9/11/2019		35AWW11_121819 12/18/2019	
1,1-DICHLOROETHENE	µg/L	7	16.8		14.7		21.3		16		12		9		2.3		1.6		<0.5	U	<0.5	U	<0.5	U	<0.5	U
CIS-1,2-DICHLOROETHENE	µg/L	70	0.292	J	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TETRACHLOROETHENE	µg/L	5	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TRICHLOROETHENE	µg/L	5	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
VINYL CHLORIDE	µg/L	2	<0.5	U	<0.5	U	0.532	J	0.328	J	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U

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LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	35AWW11_032420 03/24/2020	35AWW11_032420-a 03/24/2020	35AWW11_062320 6/23/2020	35AWW11_120120 12/1/20	35AWW11_120120_a 12/1/20	35AWW11_060221 6/02/21	35AWW12-101813 10/18/2013	35AWW12FD-101813 10/18/2013	35AWW12-013114 1/31/2014	35AWW12FD-013114 1/31/2014	35AWW12-052914 5/29/2014	35AWW12-103014 10/30/2014
1,1-DICHLOROETHENE	µg/L	7	<0.5 U	<0.5 U	<0.5 U	0.53 J	<0.5 U	0.62 J	<0.5 U	<1 U	<1 U	<1 U	<1 U	<1 U
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TETRACHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<1.0 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	0.343 J
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRICHLOROETHENE	µg/L	5	1.4	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
VINYL CHLORIDE	µg/L	2	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	35AWW12-012815 1/28/2015	35AWW12-040715 4/7/2015	35AWW12FD-040715 4/7/2015	35AWW12-070915 7/9/2015	35AWW12-100515 10/5/2015	35AWW12FD-100515 10/5/2015	35AWW12-041216 4/12/2016	35AWW12-100516 10/5/2016	35AWW12FD-100516 10/5/2016	35AWW12-111617 11/16/2017	35AWW12-062918 06/29/2018	35AWW12_121418 12/14/2018
1,1-DICHLOROETHENE	µg/L	7	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<0.5 U	<0.5 U	<0.5 U
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ	<0.5 UJ	<0.5 U
TETRACHLOROETHENE	µg/L	5	0.326 J	0.279 J	0.251 J	<0.5 U	0.511 J	0.426 J	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ	<0.5 UJ	<0.5 U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ	<0.5 UJ	<0.5 U
TRICHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ	<0.5 UJ	<0.5 U
VINYL CHLORIDE	µg/L	2	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
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Table 4
Historical Monitoring Well COC Concentrations
LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	35AWW12_121418 12/14/2018	35AWW12_061019a 6/10/2019	35AWW12_121819 12/18/2019	35AWW12_062520 6/25/2020	35AWW12_120720 12/7/20	35AWW12_060221 6/02/21	35AWW13-101113 10/11/2013	35AWW13FD-101113 10/11/2013	35AWW13-020314 2/3/2014	35AWW13-052214 5/22/2014	35AWW13-102114 10/21/2014	35AWW13FD-102114 10/21/2014
1,1-DICHLOROETHENE	µg/L	7	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TETRACHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 U	<1.0 U	<0.5 U	<1.0 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRICHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
VINYL CHLORIDE	µg/L	2	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
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Table 4
Historical Monitoring Well COC Concentrations
LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	35AWW13-012315 1/23/2015	35AWW13-040815 4/8/2015	35AWW13-070915 7/9/2015	35AWW13-100615 10/6/2015	35AWW13-041316 4/13/2016	35AWW13-100616 10/6/2016	35AWW13-111617 11/16/2017	35AWW13-062818 06/29/2018	35AWW13_121118 12/11/2018	35AWW13_060719 6/7/2019	35AWW13_121819 12/18/2019	35AWW13_062920 6/29/2020
1,1-DICHLOROETHENE	µg/L	7	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TETRACHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRICHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
VINYL CHLORIDE	µg/L	2	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
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Historical Monitoring Well COC Concentrations
LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	35AWW13_120720 12/7/20		35AWW13_060121 6/01/21		35AWW14-101813 10/18/2013		35AWW14-013114 1/31/2014		35AWW14-052814 5/28/2014		35AWW14FD-052814 5/28/2014		35AWW14-103014 10/30/2014		35AWW14-012115 1/21/2015		35AWW14-040715 4/7/2015		35AWW14-070915 7/9/2015		35AWW14-100215 10/2/2015		35AWW14-041316 4/13/2016	
1,1-DICHLOROETHENE	µg/L	7	<0.5	U	<0.5	U	1.63	J	1.63	J	1.22	J	1.07	J	1.57	J	1.8	J	1.78	J	1.7	J	2.47		3.25	
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5	U	<0.5	U	2.04		1.75		1.46		1.47		1.94		1.91		2.08		1.7		1.96		1.78	
TETRACHLOROETHENE	µg/L	5	<0.5	U	<1.0	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TRICHLOROETHENE	µg/L	5	<0.5	U	<0.5	U	0.663	J	0.669	J	0.612	J	0.565	J	0.806	J	0.707	J	0.786	J	0.632	J	1.06		1.79	
VINYL CHLORIDE	µg/L	2	<0.5	U	<0.5	U	0.272	J	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
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Table 4
Historical Monitoring Well COC Concentrations
LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	35AWW14-100616 10/6/2016		35AWW14-111717 11/17/2017		35AWW14-071818 07/18/2018		35AWW14_121318 12/13/2018		35AWW14_060719 6/7/19		35AWW14_121919 12/19/2019		35AWW14_062520 6/25/2020		35AWW14_120720 12/7/20		35AWW14_060121 6/01/21		35AWW15-101613 10/16/2013		35AWW15FD-101613 10/16/2013		35AWW15-020114 2/1/2014	
1,1-DICHLOROETHENE	µg/L	7	10.4		8.7		9.7	J	10		12		15	J	9.3		9.4		10		<1	U	<1	U	<1	U
CIS-1,2-DICHLOROETHENE	µg/L	70	5.09		3.5		4.0	J	4.6		5.2		3.7	J	4.6		4.5		5.0		<0.5	U	<0.5	U	<0.5	U
TETRACHLOROETHENE	µg/L	5	<0.5	U	<0.5	U	<0.5	UJ	<0.5	U	<0.5	U	<0.5	UJ	<1.0	U	<0.5	U	<1.0	U	<0.5	U	<0.5	U	<0.5	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	<0.5	U	<0.5	UJ	<0.5	U	<0.5	U	<0.5	UJ	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TRICHLOROETHENE	µg/L	5	10.2		7.4		8.4	J	9.4		12		11	J	11		11		14		<0.5	U	<0.5	U	<0.5	U
VINYL CHLORIDE	µg/L	2	0.303	J	0.303	J	<0.5	UJ	1.3		<0.5	U	0.75	J	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U

Notes:
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µg/L - micrograms per liter
MCL - Maximum Contaminant Level
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J - Estimated value; analyte concentration was less than the limit of quantification
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Table 4
Historical Monitoring Well COC Concentrations
LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	35AWW15-052814 5/28/2014	35AWW15-102114 10/21/2014	35AWW15-012315 1/23/2015	35AWW15-041015 4/10/2015	35AWW15-071015 7/10/2015	35AWW15-100615 10/6/2015	35AWW15-041416 4/14/2016	35AWW15-100516 10/5/2016	35AWW15-111617 11/16/2017	35AWW15-071818 07/18/2018	35AWW15-071818_a 07/18/2018	35AWW15_121218 12/12/2018
1,1-DICHLOROETHENE	µg/L	7	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<0.5 U	<0.5 UJ	<0.5 UJ	<0.5 U
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ	<0.5 UJ	<0.5 U
TETRACHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ	<0.5 UJ	<0.5 U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ	<0.5 UJ	<0.5 U
TRICHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ	<0.5 UJ	<0.5 U
VINYL CHLORIDE	µg/L	2	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ	<0.5 UJ	<0.5 U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
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LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	35AWW15_060719 6/7/2019	35AWW15_122019 12/20/2019	35AWW15_062520 6/25/2020	35AWW15_120120 12/1/20	35AWW15_060121 6/01/21	35AWW16-102213 10/22/2013	35AWW16-013114 1/31/2014	35AWW16-052814 5/28/2014	35AWW16-103014 10/30/2014	35AWW16-012715 1/27/2015	35AWW16FD-012715 1/27/2015	35AWW16-040715 4/7/2015
1,1-DICHLOROETHENE	µg/L	7	<0.5 U	<0.5 UJ	<0.5 U	<0.5 U	<0.5 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5 U	<0.5 UJ	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TETRACHLOROETHENE	µg/L	5	<0.5 U	<0.5 UJ	<1.0 U	<0.5 U	<1.0 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5 U	<0.5 UJ	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRICHLOROETHENE	µg/L	5	<0.5 U	<0.5 UJ	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
VINYL CHLORIDE	µg/L	2	<0.5 U	<0.5 UJ	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
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LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	35AWW16-070915 7/9/2015	35AWW16FD-070915 7/9/2015	35AWW16-100615 10/6/2015	35AWW16-041216 4/12/2016	35AWW16-100416 10/4/2016	35AWW16FD-100416 10/4/2016	35AWW16-111317 11/13/2017	35AWW16-111317_a 11/13/2017	35AWW16-062918 06/29/2018	35AWW16-062918_a 06/29/2018	35AWW16_121218 12/12/2018	35AWW16_061019 6/10/2019
1,1-DICHLOROETHENE	µg/L	7	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	1.4
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TETRACHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRICHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
VINYL CHLORIDE	µg/L	2	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
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LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: Sample Date:	Units	MCL	35AWW16_121919 12/19/2019	35AWW16_062520 6/25/2020	35AWW16_120120 12/1/20	35AWW16_060121 6/01/21	35AWW17-101813 10/18/2013	35AWW17-020114 2/1/2014	35AWW17-052914 5/29/2014	35AWW17-103114 10/31/2014	35AWW17-012815 1/28/2015	35AWW17-041015 4/10/2015	35AWW17-071015 7/10/2015	35AWW17-100515 10/2/2015
1,1-DICHLOROETHENE	µg/L	7	<0.5 UJ	<0.5 U	<0.5 U	<0.5 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 UJ	<1 U
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5 UJ	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ	<0.5 U
TETRACHLOROETHENE	µg/L	5	<0.5 UJ	<1.0 U	<0.5 U	<1.0 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ	<0.5 U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5 UJ	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ	<0.5 U
TRICHLOROETHENE	µg/L	5	<0.5 UJ	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ	<0.5 U
VINYL CHLORIDE	µg/L	2	<0.5 UJ	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ	<0.5 U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
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Table 4
Historical Monitoring Well COC Concentrations
LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	35AWW17-041116 4/11/2016	35AWW17-100316 10/3/2016	35AWW17-111317 11/13/2017	35AWW17-062918 06/29/2018	35AWW17_121718 12/17/2018	35AWW17_061019 6/10/2019	35AWW17_121819 12/18/2019	35AWW17_062920 6/29/2020	35AWW17_120120 12/1/20	35AWW17_060321 6/03/21	35AWW18-101813 10/18/2013	35AWW18-020114 2/1/2014
1,1-DICHLOROETHENE	µg/L	7	<1 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<1 U	<1 U
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TETRACHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<1.0 U	<0.5 U	<1.0 U	<0.5 U	<0.5 U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRICHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
VINYL CHLORIDE	µg/L	2	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
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Historical Monitoring Well COC Concentrations
LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	35AWW18-052914 5/29/2014	35AWW18-103114 10/31/2014	35AWW18-012815 1/28/2015	35AWW18-041015 4/10/2015	35AWW18-071015 7/10/2015	35AWW18-100515 10/2/2015	35AWW18-041116 4/11/2016	35AWW18FD-041116 4/11/2016	35AWW18-100516 10/5/2016	35AWW18-111317 11/13/2017	35AWW18-062918 06/29/2018	35AWW18_121718 12/17/2018
1,1-DICHLOROETHENE	µg/L	7	<1 U	0.792 J	0.726 J	0.78 J	<1 UJ	<1 U	2.13	2.09	0.97 J	<0.5 U	1.2	2
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TETRACHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRICHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
VINYL CHLORIDE	µg/L	2	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
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LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	35AWW18_121718_a 12/17/2018		35AWW18_060419 6/4/2019		35AWW18_121819 12/18/2019		35AWW18_062520 6/25/2020		35AWW18_120120 12/1/20		35AWW18_120120_a 12/1/20		35AWW18_060121 6/01/21		35AWW19-102213 10/22/2013		35AWW19-013114 1/31/2014		35AWW19-052814 5/28/2014		35AWW19-103014 10/30/2014		35AWW19-012115 1/21/2015	
1,1-DICHLOROETHENE	µg/L	7	2.3		3.5		4.1		18		22		22		20		6.45		9.31		9.98		10.9		17.4	
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TETRACHLOROETHENE	µg/L	5	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<1.0	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TRICHLOROETHENE	µg/L	5	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	0.379	J	0.619	J	0.596	J	0.81	J	0.941	J
VINYL CHLORIDE	µg/L	2	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U

Notes:
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µg/L - micrograms per liter
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LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	35AWW19-040715 4/7/2015		35AWW19-070915 7/9/2015		35AWW19FD-070915 7/9/2015		35AWW19-100215 10/2/2015		35AWW19-041216 4/13/2016		35AWW19-100616 10/6/2016		35AWW19-111717 11/17/2017		35AWW19-071818 07/18/2018		35AWW19_092718 9/27/2018		35AWW19_121018 12/10/2018		35AWW19_031919 03/19/2019		35AWW19_060319 6/3/2019	
1,1-DICHLOROETHENE	µg/L	7	17.5		13.4		11.7		14.7		13.5		12.9		7.7		13	J	8.8		7.5		3.6		2.6	
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	UJ	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TETRACHLOROETHENE	µg/L	5	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	UJ	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	UJ	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TRICHLOROETHENE	µg/L	5	1.13		0.807	J	0.751	J	0.939	J	0.899	J	0.754	J	<0.5	U	<0.5	UJ	0.59	J	0.59	J	<0.5	U	<0.5	U
VINYL CHLORIDE	µg/L	2	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	UJ	<0.5	U	<0.5	U	<0.5	U	<0.5	U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
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Table 4
Historical Monitoring Well COC Concentrations
LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	35AWW19_091 119 9/11/2019		35AWW19_121 819 12/18/2019		35AWW19_032 420 03/24/2020		35AWW19_062 420 6/24/2020		35AWW19_120 320 12/3/20		35AWW19_060 321 6/03/21		35AWW20-101513 10/15/2013		35AWW20-020314 2/3/2014		35AWW20-052114 5/21/2014		35AWW20-102914 10/29/2014		35AWW20-012715 1/27/2015		35AWW20-041515 4/15/2015	
1,1-DICHLOROETHENE	µg/L	7	5.3		4.5		4.4		4.6		3.2		2.9		3,230		2,950		5,060		4,910		5,660		4,640	
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	110		87.7		110		119		123		120	
TETRACHLOROETHENE	µg/L	5	<0.5	U	<0.5	U	<0.5	U	<1.0	U	<0.5	U	<1.0	U	1.65		1.53		<10	U	<10	U	<10	U	<12.5	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	3.77		3.52		<10	U	<10	U	<10	U	<12.5	U
TRICHLOROETHENE	µg/L	5	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	513		479		695		843		820		718	
VINYL CHLORIDE	µg/L	2	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	105		62.4		65.7		102		122		90.6	

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LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	35AWW20-070815 7/8/2015		35AWW20-100815 10/8/2015		35AWW20-041316 4/13/2016		35AWW20-100416 10/4/2016		35AWW20-111417 11/14/2017		35AWW20-111417_a 11/14/2017		35AWW20-071618 07/16/2018		35AWW20_092618 9/26/2018		35AWW20_092618-a 9/26/2018		35AWW20_121018 12/10/2018		35AWW20_031919 03/19/2019		35AWW20_060419 6/4/2019	
1,1-DICHLOROETHENE	µg/L	7	4,780		3,630		5,460		3,440		1,900		2,000		1,400		1,100		970		2,700		1,500		1,800	
CIS-1,2-DICHLOROETHENE	µg/L	70	118		105		126		115		53		50		69		45		40		120		49	J	79	
TETRACHLOROETHENE	µg/L	5	<12.5	U	<12.5	U	<12.5	U	<10	U	0.80	J	0.77	J	<0.5	U	0.81	J	0.71	J	1.3		<0.5	UJ	<2.5	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<12.5	U	<12.5	U	5.16	J	<10	U	6.7		5.6		2.9		1.8		1.7		6.1		4.9	J	13	
TRICHLOROETHENE	µg/L	5	636		582		707		594		320		320		270		170		140		570		180		230	
VINYL CHLORIDE	µg/L	2	151		126		216		166		78		75		71		<0.5	U	<0.5	U	110		54	J	140	

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LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	35AWW20_091 119 9/11/2019		35AWW20_121 919 12/19/2019		35AWW20_032 420 03/24/2020		35AWW20_062 420 6/24/2020		35AWW20_120 320 12/3/20		35AWW20_060 321 6/03/21		35AWW21-101613 10/16/2013		35AWW21-020414 2/4/2014		35AWW21-052214 5/22/2014		35AWW21-102114 10/21/2014		35AWW21-012315 1/23/2015		35AWW21-040815 4/8/2015	
1,1-DICHLOROETHENE	µg/L	7	3,900		970	J	1,300		1,100		950		1,600		<1	U	<1	U	<1	U	<1	U	<1	U	<1	U
CIS-1,2-DICHLOROETHENE	µg/L	70	110		70	J	71		63		63		87		<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TETRACHLOROETHENE	µg/L	5	<0.5	U	<5.0	UJ	<2.5	U	0.61	J	<0.5	U	<10	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TRANS-1,2-DICHLOROETHENE	µg/L	100	14		9.1	J	6.6		7.2		6.7		<5.0	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
TRICHLOROETHENE	µg/L	5	350		99	J	120		94		91		190		<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U
VINYL CHLORIDE	µg/L	2	790		2,800	J	1,500		2,000		1,800		780		<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U

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Historical Monitoring Well COC Concentrations
LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	35AWW21-070915 7/9/2015	35AWW21-100615 10/6/2015	35AWW21-041316 4/13/2016	35AWW21FD-041316 4/13/2016	35AWW21-100416 10/4/2016	35AWW21FD-100416 10/4/2016	35AWW21-111317 11/13/2017	35AWW21-062918 06/29/2018	34AWW21_121318 12/13/2018	35AWW21_060419 6/4/2019	34AWW21_122019 12/20/2019	34AWW21_122019-a 12/20/2019
1,1-DICHLOROETHENE	µg/L	7	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TETRACHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRICHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
VINYL CHLORIDE	µg/L	2	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U

Notes:
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LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	34AWW21_062920 6/29/2020	34AWW21_062920_a 6/29/2020	34AWW21_120720 12/7/20	34AWW21_060121 6/01/21	35AWW22-102213 10/22/2013	35AWW22-013114 1/31/2014	35AWW22-052914 5/29/2014	35AWW22-103014 10/30/2014	35AWW22FD-103014 10/30/2014	35AWW22-012115 1/21/2015	35AWW22FD-012115 1/21/2015	35AWW22-040715 4/7/2015
1,1-DICHLOROETHENE	µg/L	7	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U	<1 U
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TETRACHLOROETHENE	µg/L	5	<1.0 U	<1.0 U	<0.5 U	<1.0 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRICHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
VINYL CHLORIDE	µg/L	2	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
U - Analyte was not detected.
UJ - The analysis was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. 'UJ' not detects are not definite; the analyte may be present.

Table 4
Historical Monitoring Well COC Concentrations
LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	35AWW22-070915 7/9/2015	35AWW22-100515 10/5/2015	35AWW22-041316 4/13/2016	35AWW22-100616 10/6/2016	35AWW22-111717 11/17/2017	35AWW22-071818 07/18/2018	35AWW22_121418 12/14/2018	35AWW22_061019 6/10/2019	35AWW22_121819 12/18/2019	35AWW22_062420 6/24/2020	35AWW22_120720 12/7/20	35AWW22_060221 6/02/21
1,1-DICHLOROETHENE	µg/L	7	<1 U	<1 U	<1 U	<1 U	<0.5 U	<0.5 UJ	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TETRACHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ	<0.5 U	<0.5 U	<0.5 U	<1.0 U	<0.5 U	<1.0 U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRICHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
VINYL CHLORIDE	µg/L	2	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
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Historical Monitoring Well COC Concentrations
LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	35AWW23-071718 07/17/2018	35AWW23_121018 12/10/2018	35AWW23_060319 6/3/2019	35AWW23_091119 9/11/2019	35AWW23_121819 12/18/2019	35AWW23_032420 03/24/2020	35AWW23_062420 6/24/2020	35AWW23_120320 12/3/20	35AWW23_060321 6/03/21	35AWW24-071718 07/17/2018	35AWW24_092718 9/27/2018	35AWW24_121018 12/10/2018
1,1-DICHLOROETHENE	µg/L	7	2.1	2.5	<0.5 U	0.7 J	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
CIS-1,2-DICHLOROETHENE	µg/L	70	12	20	4.3	7.8	7.6	6.5	5.0	2.7	1.0	<0.5 U	<0.5 U	<0.5 U
TETRACHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<1.0 U	<0.5 U	<0.5 U	<0.5 U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRICHLOROETHENE	µg/L	5	2.6	5.3	1.8	3.8	2.7	1.3	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
VINYL CHLORIDE	µg/L	2	<0.5 U	<0.5 U	<0.5 U	<0.5 U	1.1	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U

Notes:
Blue Highlighting Indicates Analyte Detected Above MCl
µg/L - micrograms per liter
MCL - Maximum Contaminant Level
NA - not analyzed
J - Estimated value; analyte concentration was less than the limit of quantification
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Historical Monitoring Well COC Concentrations
LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	35AWW24_031919 03/19/2019	35AWW24_060319 6/3/2019	35AWW24_121919 12/19/2019	35AWW24_062520 6/25/2020	35AWW24_062520-a 6/25/2020	35AWW24_120320 12/3/20	35AWW24_060121 6/01/21	35AWW24_060121-a 6/01/21	LHSMW04-941201 12/1/1994	LHSMW04-960812 8/12/1996	LHSMW04-980513 5/13/1998	LHSMW04-040909 9/9/2004
1,1-DICHLOROETHENE	µg/L	7	0.81 J	<0.5 U	<0.5 UJ	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<5 U	<0.2 U	<1 U	<5 U
CIS-1,2-DICHLOROETHENE	µg/L	70	<0.5 U	<0.5 U	<0.5 UJ	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA	<0.2 U	<1 U	<5 U
TETRACHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 UJ	<1.0 U	<1.0 U	<0.5 U	<1.0 U	<1.0 U	<5 U	<0.25 U	<1 U	<5 U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5 U	<0.5 U	<0.5 UJ	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA	<0.29 U	<1 U	<5 U
TRICHLOROETHENE	µg/L	5	<0.5 U	<0.5 U	<0.5 UJ	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<5 U	<0.25 U	<1 U	<5 U
VINYL CHLORIDE	µg/L	2	<0.5 U	<0.5 U	<0.5 UJ	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	NA	<0.24 U	<1 U	<5 U

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Table 4
Historical Monitoring Well COC Concentrations
LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	LHSMW04-FEB2007 2/20/2007	LHSMW04-013008 1/30/2008	LHSMW04-112508 11/25/2008	LHSMW04-032916 3/29/2016	LHSMW04-041316 4/13/2016	LHSMW05-941201 12/1/1994	LHSMW05-960131 1/31/1996	LHSMW05-960812 8/12/1996	LHSMW05-980513 5/13/1998	LHSMW05-040909 9/9/2004	LHSMW06-941201 12/1/1994	LHSMW06-960813 8/13/1996
1,1-DICHLOROETHENE	µg/L	7	<2 U	<1 U	<1 U	<1 U	<2.5 U	<5 U	<1 U	<0.2 U	<40 U	<5 U	<5 U	2
CIS-1,2-DICHLOROETHENE	µg/L	70	<2 U	<1 U	0.292 J	0.666 J	0.851 J	NA	<1 U	0.21	<40 U	<5 U	NA	0.98
TETRACHLOROETHENE	µg/L	5	6.4	8.74	25.7	419	397	870	4,884	2,700	4,900	5,100 J	<5 U	0.27
TRANS-1,2-DICHLOROETHENE	µg/L	100	<2 U	<1 U	<1 U	<0.5 U	<1.25 U	NA	<1 U	<0.29 U	<40 U	<5 U	NA	<0.29 U
TRICHLOROETHENE	µg/L	5	4.6	5.74	11.3	106	86.1	49	99	39.7	160	230 J	<5 U	0.43
VINYL CHLORIDE	µg/L	2	<2 U	<1 U	<1 U	<0.5 U	<1.25 U	NA	<1 U	<0.24 U	<40 U	<5 U	NA	0.62

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Table 4
Historical Monitoring Well COC Concentrations
LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	LHSMW06-980513 5/13/1998	LHSMW06-040908 9/8/2004	LHSMW06-FEB2007 2/21/2007	LHSMW06-111908 11/19/2008	LHSMW06-101713 10/17/2013	LHSMW06-013114 1/31/2014	LHSMW06-052814 5/28/2014	LHSMW06-103014 10/30/2014	LHSMW06-012115 1/21/2015	LHSMW06-040715 4/7/2015	LHSMW06-070915 7/9/2015	LHSMW06-100215 10/2/2015
1,1-DICHLOROETHENE	µg/L	7	1.3	<5 U	<2 U	<1 U	1.23 J	0.884 J	1.68 J	4.03	3.28	5.95	8.2	12.1
CIS-1,2-DICHLOROETHENE	µg/L	70	1.4	<5 U	5.1	2.26	4.01	1.85	2.59	5.2	3.25	5.52	7.24	10.4
TETRACHLOROETHENE	µg/L	5	0.69	2 J	<2 U	<1 U	0.663 J	<0.5 U	0.255 J	0.381 J	0.255 J	0.454 J	0.443 J	0.518 J
TRANS-1,2-DICHLOROETHENE	µg/L	100	<1 U	<5 U	<2 U	<1 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRICHLOROETHENE	µg/L	5	0.53	<5 U	0.77 J	0.486 J	1.87	0.751 J	1.41	2.77	1.75	3.02	3.23	5.66
VINYL CHLORIDE	µg/L	2	<1 U	<5 U	<2 U	<1 U	0.627 J	0.5 J	0.597 J	1.15	0.924 J	0.967 J	1.36	2.1

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Historical Monitoring Well COC Concentrations
LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	LHSMW06-041316 4/13/2016		LHSMW06-100616 10/6/2016		LHSMW06-111717 11/17/2017		LHSMW06-070218 07/02/2018		LHSMW06_121318 12/13/2018		LHSMW06_121318_a 12/13/2018		LHSMW06_060719 6/7/2019		LHSMW06_122019 12/20/2019		LHSMW06_122019_a 12/20/2019		LHSMW06_062520 6/25/2020		LHSMW06_120320 12/3/20		LHSMW06_060321 6/03/21	
1,1-DICHLOROETHENE	µg/L	7	13.7		19.2		12.0		2.3		19.0		20.0		4.3		19	J	20	J	22		14		11	
CIS-1,2-DICHLOROETHENE	µg/L	70	11.9		19		14		12		55		55		29		68	J	68	J	65		62		71	
TETRACHLOROETHENE	µg/L	5	0.563	J	0.9	J	<0.5	U	1.6		1.5		1.4		<0.5	U	1.9	J	1.9	J	2.1		1.6		2.9	
TRANS-1,2-DICHLOROETHENE	µg/L	100	<0.5	U	0.391	J	<0.5	U	<0.5	U	<0.5	U	<0.5	U	<0.5	U	1.4	J	1.5	J	1.4		1.3		1.2	
TRICHLOROETHENE	µg/L	5	6.5		9.06		5.8		2.8		16.0		16.0		7.5		17	J	17	J	16		14		19	
VINYL CHLORIDE	µg/L	2	2.38		2.94		2.2		<0.5	U	5.0		5.0		1.2		5.7	J	5.6	J	5.5		4.8		3.2	

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LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	LHSMW07-941201 12/1/1994	LHSMW07-941201FD 12/1/1994	LHSMW07-960131 1/31/1996	LHSMW07-960812 8/12/1996	LHSMW07-980513 5/13/1998	LHSMW07-040908 9/8/2004	LHSMW07-FEB2007 2/21/2007	LHSMW07-111908 11/21/2008	LHSMW07-110509 5/9/2011	LHSMW07-101513 10/15/2013	LHSMW07-013014 1/30/2014	LHSMW07-052214 5/22/2014	LHSMW07-102914 10/29/2014	LHSMW07-012815 1/28/2015
1,1-DICHLOROETHENE	µg/L	7	750	660	1,341	311	950	590 J	394	576	669	396	334	558 J	1,140	1,300
CIS-1,2-DICHLOROETHENE	µg/L	70	NA	NA	NA	2.5	11	6	3.6	7.96	10.1	6.1	4.66	7.17	21	19.3
TETRACHLOROETHENE	µg/L	5	<5 U	<5 U	7	2.7	<1 U	<5 U	<2 U	<1 U	0.253 J	<0.5 U	<1 U	<0.5 U	<1 U	<2.5 U
TRANS-1,2-DICHLOROETHENE	µg/L	100	NA	NA	NA	<0.29 U	0.73	<5 U	<2 U	0.421 J	0.384 J	0.282 J	<1 U	0.296 J	1.06 J	<2.5 U
TRICHLOROETHENE	µg/L	5	16	19	24	5.9	25	24	15.8	25	41.3	23.9	17.6	23.1	78.1	64.3
VINYL CHLORIDE	µg/L	2	NA	NA	10	1.1	7.2	9	3	14.4	9.47	15.9	5.43	7.98	35.4	28.8

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Table 4
Historical Monitoring Well COC Concentrations
LHAAP-58, Longhorn Army Ammunition Plan, Karnack, Texas
Year 7 RA(O) Report

Sample Identification: / Sample Date:	Units	MCL	LHSMW07-041515 4/15/2015	LHSMW07-070715 7/7/2015	LHSMW07-100815 10/8/2015	LHSMW07-041416 4/14/2016	LHSMW07-100416 10/4/2016	LHSMW07-111417 11/14/2017	LHSMW07-071718 07/17/2018	LHSMW07_092618 9/26/2018	LHSMW07_121018 12/10/2018	LHSMW07_031919 03/19/2019	LHSMW07_060319 6/3/2019	LHSMW07_091119 9/11/2019	LHSMW07_121919 12/19/2019	LHSMW07_032420 03/24/2020	LHSMW07_062420 6/24/2020	LHSMW07_120320 12/3/20	LHSMW07_060221 6/02/21
1,1-DICHLOROETHENE	µg/L	7	1,660	2,100	1,210	1,250	701	600	56	3.1	<0.5 U	<0.5 U	16	46	46 J	94	130	64	12
CIS-1,2-DICHLOROETHENE	µg/L	70	31.4	32.4	22.5	19.6	22.1	11	5.0	1.1	<0.5 U	<0.5 U	0.7 J	1.1	1.2 J	1.0	1.0	<0.5 U	<0.5 U
TETRACHLOROETHENE	µg/L	5	<5 U	<2.5 U	<2.5 U	0.397 J	<2.5 U	<0.5 U	<0.5 U	0.397 J	<2.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ	<0.5 U	<0.5 U	<0.5 U	<1.0 U
TRANS-1,2-DICHLOROETHENE	µg/L	100	<5 U	1.29 J	<2.5 U	0.681 J	<2.5 U	<0.5 U	<0.5 U	0.681 J	<2.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 UJ	<0.5 U	<0.5 U	<0.5 U	<0.5 U
TRICHLOROETHENE	µg/L	5	82.1	118	84.9	67.5	71.6	39.0	12	2.4	<0.5 U	1.1	1.8	3.1	3.1 J	2.8	2.5	2.1	0.91 J
VINYL CHLORIDE	µg/L	2	34.1	69.4 J	37.1	10.8	21.8	15.0	<0.5 U	<0.5 U	<0.5 U	<0.5 U	<0.5 U	49	42 J	46	44	42	<0.5 U

Notes:
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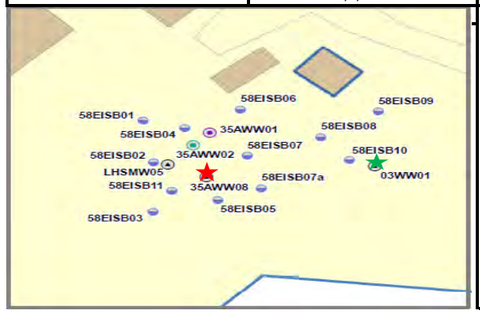
Table 5
Enhanced In-situ Bioremediation Performance Data Summary - Eastern Plume
LHAAP-58, Longhorn Army Ammunition Plant, Karnack, Texas
Year 7 RA(O) Report

Monitoring Location	Sample Date	Field Parameters					Electron Donor	cVOCs				Dissolved Gases				Wet Chemistry						Dechlorinating Bacteria	
		pH	DO	ORP	Spec Cond	Turb	TOC	PCE	TCE	cDCE	VC	Ethane	Methane	Ethene	CO_2	Fe^{2+}	NO_3	NO_2	SO_4	Cl^-	Alk	DHC	DHBt
		SU	mg/L	mV	ms/cm	NTU	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	cells/mL	cells/mL
★ 35AWW08	8/20/2013	6.05	NR	NR	8.23	26.9	16.5	1,640	544	9.35 J	< 5 U	< 2 U	10.1	< 2 U	143,000	0.04	< 4 U	< 4 U	1,480	2,510	174	< 0.9 U	< 5.3 U
	10/10/2013	6.7	NR	NR	47.7	4.1	66,400	603 J	149 J	<5	< 5 U	< 2 U	5.38	< 2 U	NA	52.4	12.3 J	<20	703	905	35,600	3.6	1,300
	1/29/2014	6.68	NR	NR	23.4	79.8	43,500	599	895	55.9	< 5 U	< 2 U	345	< 2 U	428,000	144	< 10 U	< 10 U	285	2,190	27,700	< 0.8 U	12,900
	5/20/2014	5.57	NR	NR	18.2	90.4	16,900	204	953	47.2	< 5 U	< 2 U	NA	< 2 U	NA	< 800 U	< 10 U	< 10 U	262	1,590	18,300	4,880	574,000
	10/27/2014	6.86	NR	NR	19.5	213	13,900	112	653	38.6 J	< 25 U	< 2 U	4,420	< 2 U	505,000	478	< 20 U	< 20 U	< 100 U	2,020	11,800 J	70.4	3,050,000 J
	1/21/2015	6.82	NR	NR	18.1	225	6,030	119	491	27.2 J	< 25 U	< 40 U	2,540	< 40 U	152,000 J	10.9 J	< 3 U	< 3 U	< 15 U	1,900	20,400	NA	NA
	4/15/2015	8.06	NR	NR	16.4	448	8,330	110	607	30.7 J	< 25 U	< 20 U	3,380	< 20 U	249,000	< 80 U	< 2 U	< 2 U	< 10 U	2,250	18,800 J	NA	NA
	7/8/2015	8.07	NR	NR	13.9	325	2,540	110	746	73.5 J	< 50 U	< 20 U	5,600	< 20 U	370,000	123	< 2 U	< 2 U	< 10 U	2,250	10,100 J	NA	NA
	10/8/2015	7.22	NR	NR	11.3	300	2,240	79	581	79.6	< 12.5 U	< 20 U	5,510	< 20 U	374,000	21.1	< 5 U	< 5 U	< 25 U	2,130 J	20,600	448	72,900
	4/13/2016	6.86	NR	-162	13.9	74.6	NA	80.1	234	60.9	14.2 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	10/4/2016	6.92	NR	NR	11.8	50.4	918	36.9	235	41.7	7.46 J	< 20 U	7,350	< 20 U	424,000	17.6	< 2 U	< 2 U	< 10 U	2,000	9,160 J	25,600,000	625,000
	11/15/2017	6.58	NR[3]	NR[3]	11.8	63.6	581	12	33	38	< 5 U	< 0.23 U	670	0.56 J	190,000	17.4 J	0.249	< 0.05 U	2.03	2,060	4,360	3,060,000	< 38.5 U
	7/18/2018	7.15	NR[3]	NR[3]	14.9	31.4	484 J	< 2.5 UJ	19 J	12 J	9.0 J	< 0.47 U	920	0.49 J	350,000	13.7 J	< 0.200 UJ	< 0.200 UJ	0.9	2460	3,050 J	1,410,000	47,000
	12/11/2018	7.28	NR[3]	NR[3]	10.9	82.5	392	< 0.5 U	12	8.9 J	< 0.5 U	< 0.47 U	< 1.0 U	< 0.55 U	290,000	21 J	0.147 J	< 0.100 U	4.76	2,240	3,420	1,200,000	173,000
	6/3/2019	8.67	NR[3]	NR[3]	9.93	86.9	306	4.8 J	13	< 2.5 U	< 2.5 U	< 0.47 U	3,000	4.1	260,000	2.03	0.219 J	NA	1.42 J	2,510	NA	3,790,000	139,000
	12/18/2019	6.65	0.04	-161	9.62	60.5	291	<5.0 U	<5.0 U	<5.0 U	<5.0 U	< 0.47 U	760	6.2	240,000	2.55	0.704	NA	<2.5 U	2,290	NA	NA	NA
	6/23/2020	6.77	0.07	-172	8.54	27.3	208	6.7	17	7.3	<2.5 U	< 0.47 U	1,500	12	230,000	NA	< 0.200 U	NA	15.5	2,510	NA	594,000	29,500
	12/1/2020	6.05	0.08	-25	9.67	63.2	165	< 5.0 U	< 5.0 U	18	6.1 J	< 0.47 U	320	5.6	830,000	NA	0.188 J	NA	63.0	2,480	NA	920,000	77,400
	6/2/2021	6.64	0.04	-144	9.29	3.2	119	< 25 U	53	30	24 J	< 0.47 U	1,600	33	430,000	NA	< 0.500 U	NA	148	2430	NA	122,000	4,500
★ 03WW01	8/20/2013	6.18	NR	NR	3.64	33	10.5	368	94.8	0.978 J	< 1 U	< 2 U	3.22	< 2 U	143,000	0.04	< 1 U	< 1 U	534	892	142	1.2	0.4 J
	10/10/2013	6.55	NR	NR	39.2	10	49,200	172	42.1	< 2.5 U	< 2.5 U	< 2 U	4.35	< 2 U	NA	35.4	< 20 U	< 20 U	487	398	39,700	< 2.1 U	15.7 J
	1/29/2014	6.58	NR	NR	20.2	256	30,200	172	58.4	< 5 U	< 5 U	< 2 U	5.09	< 2 U	337,000	110	< 10 U	< 10 U	457	906	27,500	< 0.9 U	639,000
	5/21/2014	5.52	NR	NR	16	152	29,100	154	71.2	3.3 J	< 5 U	< 2 U	479	< 2 U	564,000	0.0217	< 10 U	< 10 U	376	780	25,700	2,870	2,700,000
	10/28/2014	5.87	NR	NR	14.2	171	8,440	48.6 J	223	< 50 U	< 50 U	< 2 U	910	< 2 U	564,000 J	107	< 1 U	< 1 U	11	940	12,300 J	10.9	192,000
	1/21/2015	6.51	NR	NR	13.6	93.3	7,720	32.8 J	216	< 50 U	< 50 U	< 10 U	393	< 10 U	333,000	40.6	< 2 U	< 2 U	10.2	881	19,000 J	NA	NA
	4/15/2015	7.11	NR	NR	12.8	387	7,800	15.9 J	131	21.4 J	< 25 U	< 20 U	3,170	< 20 U	396,000	27.8 J	< 1 U	< 1 U	18	976	24,100	NA	NA
	7/8/2015	7.62	NR	NR	11.8	847	3,640	31.4 J	65.6 J	< 50 U	< 50 U	< 20 U	16,100	< 20 U	408,000	96.1	< 1 U	< 1 U	3.62 J	1,020	12,400 J	NA	NA
	10/8/2015	6.65	NR	NR	11.4	525	1,700	36.4 J	51.8 J	< 50 U	< 50 U	< 20 U	5,880	< 20 U	500,000	0.835	< 5 U	< 5 U	< 25 U	1,200	20,300	78	8,800
	4/13/2016	7.19	NR	-127	7.99	127	NA	6.49 J	<12.5U	117	< 12.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	10/4/2016	6.81	NR	NR	6.38	70	292	< 5 U	< 5 U	< 5 U	< 5 U	<20	5,950	< 20 U	657,000	8.02	< 1 U	< 1 U	< 5 U	762	5,500 J	9,460,000	53,300
	11/15/2017	7.25	NR[3]	NR[3]	6.59	135	191	< 2.5 U	< 2.5 U	< 2.5 U	< 2.5 U	< 0.23 U	620	1.2	310,000	18.9 J	< 0.05 U	< 0.05 U	40.8	1,020	3,310	35,300	< 20.8 U
	7/18/2018	6.8	NR[3]	NR[3]	6.23	9.5	118 J	< 0.5 UJ	< 0.5 UJ	5.3 J	4.8 J	< 0.47 U	590	0.89 J	490,000	40 J	< 0.200 UJ	< 0.200 UJ	161	977	2,290	7.5	6
	12/11/2018	6.24	NR[3]	NR[3]	2	54.1	42	15	5.7	22	7.6	< 0.47 U	1,800	2.3	390,000	27.5 J	< 0.100 U	< 0.100 U	42.8	336	862	10,100	599
	6/3/2019	8.1	NR[3]	NR[3]	4.95	14.8	66	3.2 J	2.9 J	41	11	< 0.47 U	2,900	1.6	520,000	0.84	0.196 J	NA	239	809	NA	6,040	292
	12/18/2019	6.41	0.05	-128	5.62	24.8	92	< 5 U	< 5 U	14	5.4 J	< 0.47 U	540	0.61 J	340,000	3.15	<0.500 U	NA	155	940	NA	22,240	2,480
	6/25/2020	6.44	0.04	-139	4.68	6.3	69.8	4.5 J	4.5 J	17	7.2	< 0.47 U	640	0.46	300,000	1.74	< 0.200 U	NA	231	965	NA	6,500	699
	12/1/2020	6.17	0.10	-50	4.89	10.7	99.9	< 5.0 U	24	7.2 J	< 5.0 U	< 0.47 U	1,700	1.1	460,000	NA	0.069 J	NA	82.7	870	NA	26,600	1,610
	6/2/2021	6.25	0.27	-99	5.24	158	103	11	3.0	11	1.6	< 0.47 U	420	< 0.55 U	830,000	NA	< 0.500 U	NA	180	945	NA	196	249



Slight decrease in pH noted during May 2014 sampling event, potentially related to excessive substrate fermentation and organic acid production, need to monitor closely. System has continued to self buffer over time.

-Initial spike in TOC indicates effective substrate distribution.
-Residual electron donor present to support desired biogeochemical reactions.
-Declining TOC concentrations over time indicative of substrate consumption.
-Electron donor nearly depleated.

PCE is degrading fully to VC. Residual degradation products of TCE, cDCE, and VC continue to degrade.

Reduced methane and ethene indicates slowing of reductive dechlorination due to limited substrate and eletron acceptors remaining.

Increasing sulfate concentration indicates that reductive dechlorination is starting to stall.

-Initial spike in dechlorinating bacteria counts suggest effective distribution of the bioaugmentation culture.
-Elevated dechlorinating bacteria counts in 2016 indicated rapid proliferation.
-Since 2016 generally declining bacteria counts

Notes:

1. Electron donor injections completed in Sept. 2013
2. Bioaugmentation performed in Nov. 2013
3. Data recorded but not used since bailer was used to collect the sample.

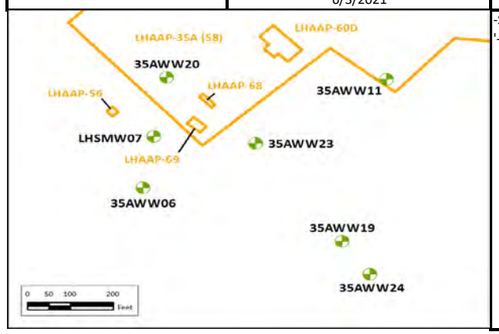
pH = potential of hydrogen
SU = standard units
DO = dissolved oxygen
mg/L = milligrams per liter
ORP = oxidation-reduction potential
mV = millivolts
Spec Cond = specific conductivity
ms/cm = millisiemens per centimeter
Turb = turbidity
NTU = nephelometric turbidity units
TOC = total organic carbon
cVOC = chlorinated volatile organic compounds
PCE = tetrachloroethene
TCE = trichloroethene
cDCE = cis-1,2-dichloroethene
VC = vinyl chloride
µg/L = micrograms per liter
CO_2 = carbon dioxide
Fe^{2+} = ferrous iron
NO_3 = nitrate
NO_2 = nitrite
SO_4 = sulfate
Cl^- = chloride
Alk = alkalinity
DHC = dehalococcoides
DHBt = dehalobacter spp.
cells/mL = cells per milliliter
NA = not analyzed
NR = not recorded
U - Undetected: The analyte was analyzed for, but not detected and reported to the limit of detection
U - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
J - Estimated: Between the method detection limit and reporting limit and/or due to discrepancies in meeting certain analyte-specific quality control criteria.

Table 6
Enhanced In-situ Bioremediation Performance Data Summary-Western Plume
LHAAP-58, Longhorn Army Ammunition Plant, Karnack, Texas
Year 7 RA(O) Report

Monitoring Location	Sample Date	Field Parameters					Electron Donor	cVOCs				Dissolved Gases				Wet Chemistry						Dechlorinating Bacteria		
		pH	DO	ORP	Spec Cond	Turb	TOC	PCE	TCE	cDCE	VC	Ethane	Methane	Ethene	CO_2	Fe^{2+}	NO_3	NO_2	SO_4	Cl^-	Alk	DHC	DHBt	BAV1 VC
		SU	mg/L	mV	ms/cm	NTU	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	cells/mL	cells/mL	cells/mL
LHSMW07	11/14/2017	5.94	0.09	159	11	40.9	6.81	< 0.5 U	39	11	15	< 0.23 U	18	< 0.22 U	220,000	0.4 J	< 0.0500 U	< 0.100 U	2,940	2,540	750	NA	NA	NA
	3/7/2018	6.1	0.65	180	12.1	5.1	6.67	< 1.0 U	34	11	5	< 0.47 U	3	< 0.55 U	350,000	0.07 J	< 0.0500 U	< 0.0500 U	2,700	2,420	757	11.8	< 4.8 U	NA
	7/17/2018	6.23	0	-389	14.1	13.2	321	< 0.5 U	12	5	< 0.5 U	< 0.47 U	1.4	< 0.55 U	540,000	2.58 J	< 0.200 U	< 0.200 U	1,090	2,270	1,990	17.2	6,570,000	NA
	9/26-27/2018	5.99	0	-222	9.24	20.3	14.2	< 0.50 U	2.4	1.1	< 0.50 U	< 0.47 U	27	4.0	760,000	0.93 J	< 0.200 U	< 0.200 U	1,120	2,180	2,060	11,600	3,540,000	0.8 J
	12/10/2018	6.7	0.02	-324	10.8	10.7	7.53	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	0.46 J	170	28	460,000	0.43 J	< 0.200 U	< 0.200 U	1,530	2,030	1,640	6,080	166,000	<2.1 U
	3/19/2019	6.57	0.17	-311	11	27.5	4.11	< 0.5 U	1.1	< 0.5 U	< 0.5 U	0.52 J	270	25	440,000	0.67	< 0.500 U	NA	2,390	1,980	NA	10,000	61,400	3
	6/3/2019	6.27	0.07	-96	10.4	17.5	4.13	< 0.5 U	1.8	0.70 J	< 0.5 U	0.20 J	78	3.9	660,000	0.25	< 0.500 U	NA	2,470	1,780	NA	7,580	< 9.5 U	<1.0 U
	9/11/2019	6.65	0.05	-48	9.19	5.8	3.42	< 0.5 U	3.1	1.1	49	0.20 J	240	6.1	340,000	1.72	< 0.100 U	< 0.100 U	2,530	1,820	NA	49.8	1,320	<0.5 U
	12/19/2019	6.43	0.09	-47	9.59	6.6	3.48 J	< 0.5 UJ	3.1 J	1.2 J	42 J	< 0.47 U	100	2.8	250,000	1.85	< 0.500 U	NA	2,560	1,770	NA	949	5,230	3
	3/24/2020	6.65	0.06	-87	10.1	0	3.29 J	< 0.5 U	2.8	1.0	46	< 0.47 U	77	2.3	250,000	1.76	< 0.500 U	NA	2,750	1,960	NA	2,280	10,300	5
	6/24/2020	6.37	0.08	-43	9.24	0	3.00	< 1.0 U	2.5	1.0	44	< 0.47 U	140	2.2	250,000	2.07	< 0.100 U	< 0.100 U	3,000	2,010	NA	1,090	42,100	1
	12/3/2020	6.53	0.14	10	9.87	0	2.33	< 0.5 U	2.1	< 0.5 U	42	0.42 J	810	5.9	260,000 J	NA	< 0.200 U	NA	2,650	1,650	NA	7,580	17,500	1
	6/2/2021	6.52	0.13	-144	9.60	0.8	7.94	< 1.0 U	0.91 J	< 0.5 U	< 0.5 U	0.31 J	680	19	300,000	NA	< 0.500 U	NA	2,720	1,760	NA	4,430	3,640	< 0.60 U
35AWW06	11/14/2017	5.86	0.06	197	5.87	8.7	2.29	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.23 U	0.32 J	< 0.22 U	200,000	0.09 J	2.12	< 0.0500 U	1,560	1,040	666	NA	NA	<1.8 U
	3/8/2018	5.67	0.26	136	5.91	4.4	2.32	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.47 U	< 1.0 U	< 0.55 U	500,000 J	0.12 J	< 0.0500 U	< 0.0500 U	1,480	1,000	666	1.5	291	<3.8 U
	7/2/2018	4.9	0	-35	5.86	96.7	4,200 J	< 0.5 UJ	< 0.5 UJ	< 0.5 UJ	< 0.5 UJ	< 0.47 U	< 1.0 U	0.58 J	780,000 J	14 J	< 0.200 UJ	< 0.200 UJ	811	904	386	< 1.8 U	52,900	<0.5 U
	9/26-27/2018	4.75	0	78	4.95	55.5	2860	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 UJ	3.0 J	< 0.55 UJ	860,000	27.8 J	< 0.200 U	< 0.200 U	508	910	775	3.60	705,000	<2.5 U
	12/11/2018	5.9	0.02	-177	5.2	36.8	685	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	890	0.44 J	790,000	88.1 J	< 0.200 U	< 0.200 U	13.4	858	1,210	2.50	144,000	<0.9 U
	3/19/2019	6.39	0.16	-234	5.09	31.8	407	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	3,100	< 0.55 U	720,000	0.44	< 0.500 U	NA	2.33 J	919	NA	12.3	21,200	<0.8 U
	6/4/2019	6.61	0.06	-99	5.15	46.1	331	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	1,500	< 0.55 U	750,000	0.65	0.180 J	NA	2.08 J	964	NA	26.8	159	0.8 J
	9/11/2019	6.99	0.06	-120	4.92	57.6	84.9	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	3,300	< 0.55 U	350,000	3.3	<0.100 U	<0.100 U	1.28 J	921	NA	28.6	<25.6 U	0.7 J
	12/19/2019	6.81	0.05	-152	4.97	86	13.8	<0.5 UJ	<0.5 UJ	<0.5 UJ	<0.5 UJ	< 0.47 U	1,500	< 0.55 U	270,000	3.3	<0.100 U	NA	0.845	935	NA	80.3	<10.2 U	30
	3/24/2020	6.83	0.07	-179	5.5	34	15.6	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	1,300	< 0.55 U	360,000	2.24	<0.100 U	NA	1.51	968	NA	9.6	1,220	5
	6/24/2020	6.65	0.08	-100	4.93	256	10.2	< 1.0 U	< 0.5 U	< 0.5 U	0.51 J	< 0.47 U	1,400	< 0.55 U	270,000	3.3	< 0.100 U	< 0.100 U	35.1	1,080	NA	3.5	1,990	<0.6 U
	12/1/2020	7.03	0.03	-55	5.33	277	8.67 J	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	3,300	< 0.55 U	270,000	NA	< 0.200 U	NA	45.6	937	NA	1,060	3,700	< 1.4 U
	6/3/2021	6.5	0.03	29	5.19	313	14.4	< 1.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	2,200	< 0.55 U	490,000	NA	< 0.200 U	NA	197	940	NA	15	4,170	1.50 J
35AWW11	11/14/2017	5.64	0.37	278	8.88	65.2	5.05	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.23 U	< 0.63 U	< 0.22 U	230,000	0.08 J	< 0.0500 U	< 0.0500 U	1,290	2,650	452	NA	NA	NA
	3/7/2018	5.94	0.59	211	9.49	90.8	5.28	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.47 U	16	0.38 J	360,000	0.10 J	< 0.0500 U	< 0.0500 U	1,260	2,530	446	0.6	< 5.0 U	NA
	7/16/2018	5.31	0	-56	8.77	15.5	1,650	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	0.80 J	< 0.55 U	450,000	27.6 J	< 0.100 U	< 0.100 U	652	2,440	649	4.60	910,000	0.7 J
	9/26-27/2018	5.64	0	-194	8.4	116	1,120	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	0.63	1,300	2.1	320,000	36.5 J	< 0.200 U	< 0.200 U	285	2,110	1,190	2.10	394,000	<0.7 U
	12/11/2018	6.02	0.05	-247	9.31	14.2	701	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	5.5	< 0.55 U	820,000	20.6 J	< 0.200 U	< 0.200 U	127	2,120	1,430	10.6	220,000	<0.5 U
	3/19/2019	5.92	0.11	-142	9	36.2	485	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	450	< 0.55 U	940,000	0.43	< 0.500 U	NA	172	2,150	NA	231	818,000	<0.9 U
	6/3/2019	5.7	0.09	-136	7.81	54.6	94.6	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	590	< 0.55 U	750,000	1.33	< 0.500 U	NA	210	1,920	NA	2,100	2,570,000	<0.5 U
	9/11/2019	6.23	0.07	-100	7.15	39.6	28 J	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	1,300	< 0.55 U	690,000	2.05	< 0.100 U	< 0.100 U	259	1,990	NA	1,240	115,000	<0.9 U
	12/18/2019	6.28	0.09	-95	7.95	22.1	9.94	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	750	< 0.55 U	330,000	3.3	< 0.500 U	NA	192	2,080	NA	900	213,000	<0.6 U
	3/24/2020	6.08	0.08	-100	7.82	7.2	7.86	< 0.5 U	1.4	< 0.5 U	< 0.5 U	< 0.47 U	860	< 0.55 U	510,000	1.41	< 0.500 U	NA	282 J	2,110	NA	940	40,600	20
	6/23/2020	6.10	0.05	-46	6.65	5.4	7.28	< 1.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	1,000	< 0.55 U	390,000	2.45	< 0.100 U	NA	416	2,040	NA	382	41,100	<1.1 U
	12/1/2020	5.99	0.05	4	8.34	21.3	3.81	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	4,400 J	< 0.55 U	610,000	NA	0.284 J	NA	415 J	2,030	NA	368	52,700	< 1.1 U
	6/2/2021	5.96	0.06	-28	6.51	4.3	11.0	< 1.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	1,000	< 0.55 U	890,000	NA	< 0.500 U	NA	460	1,790	NA	170	5,830	< 1.0 U
35AWW19	11/17/2017	5.27	NR[3]	NR[3]	5.97	26.5	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/8/2018	5.28	NA	NA	6.08	26.4	2.51	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.47 U	< 1.0 U	< 0.55 U	97,000	1.10 J	< 0.0500 U	< 0.0500 U	1,220	1,430	159	0.4 J	< 11.9 U	NA
	7/18/2019	6.08	NR[3]	NR[3]	5.67	12	2.38 J	< 0.5 UJ	< 0.5 UJ	< 0.5 UJ	< 0.5 UJ	< 0.47 U	0.65 J	< 0.55 U	180,000 J	2.78 J	< 0.200 UJ	< 0.200 UJ	983	1,370	199	0.30 J	20,400	<0.5 U
	9/26-27/2018	5.77	0.01	42	5.46	36.1	2.21	< 0.5 U	0.59 J	< 0.5 U	< 0.5 U	< 0.47 U	27	0.32 J	250,000	3.99 J	< 0.200 U	< 0.200 U	989	1,230	213	0.8	148,000	<0.5 U
	12/10/2018	5.94	0.04	-72	5.7	5.2	2.17	< 0.5 U	0.59 J	< 0.5 U	< 0.5 U	< 0.47 U	5.7	< 0.55 U	330,000	4.19 J	< 0.200 U	< 0.200 U	998	1,190	198	0.50 J	99,000	<0.5 U
	3/19/2019	5.37	0.14	70	5.67	80.1	2.20	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	1.3 J	< 0.55 U	790,000	0.38	< 0.500 U	NA	994	1,140	NA	< 0.50 U	91.5	<0.5 U
	6/3/2019	5.69	0.05	93	5.46	16.6	1.88	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	1.4	< 0.55 U	560,000	0	< 0.500 U	NA	966	1,080	NA	3.30	62,700	<0.5 U
	9/11/2019	6.1	0.19	77	4.91	8.8	1.19	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	3.0	<0.55 U	230,000	1.62	< 0.100 U	< 0.100 U	1,010	1,050	NA	18.4	23,600	<0.5 U
	12/18/2019	5.97	0.08	37	4.81	73.5	1.75	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	2.0	<0.55 U	160,000	2.08	< 0.500 U	NA	997	979	NA	14.8	12,200	<0.5 U
	3/24/2020	5.97	0.04	46	4.61	25.5	1.79	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	3.1	<0.55 U	200,000	1.86	< 0.100 U	NA	989	922	NA	9.4	12,200	2
	6/24/2020	5.89	0.04	56	4.14	34	1.75	< 1.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	3.0	<0.55 U	160,000	1.97	< 0.100 U	< 0.100 U	1,020	934	NA	2.0	19,700	<0.5 U
	12/3/2020	5.64	0.11	65	4.00	4.5	1.63	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	4.2	<0.55 U	440,000 J	NA	< 0.100 U	NA	860	786	NA	40.2	30,100	5.5
	6/3/2021	5.32	0.11	122	3.92	10.4	2.38	< 1.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	2.2	<0.55 U	670,000	NA	< 0.200 U	NA	857	746	NA	16.1	24,900	<0.5 U
35AWW20	11/14/2017	5.97	0.04	138	7.71	27.5	13.8	0.80 J	320	53	78	< 0.23 U	18	0.41 J	230,000	0.45 J	< 0.0500 U	< 0.0500 U	2,150	1,730	834	NA	NA	NA
	3/7/2018	6.16	0.6	106	7.97	21.3	14.5	< 5.0 U	330	76	110	< 0.47 U	< 1.3 U	< 0.55 U	370,000	0.69 J	< 0.0500 U	< 0.0500 U	1,840	1,510	848	5.5	1,120	NA
	7/16/2018	6.18	0	-357	7.19	0	43	< 0.5 U	270	69	71	< 0.47 U	0.93 J	< 0.55 U	360,000	1.18 J	< 0.100 U	< 0.100 U	882	1,420	1,450	1.50	5,970,000	<0.9 U
	9/26-27/2018	5.95	0	-206	6.34	11.1	53	0.81 J	170	45	< 0.5 U	< 0.47 U	37	0.66 J	770,000	1.41 J	< 0.200 U	< 0.200 U	922	1,220	1,470	< 1.30 U	3,770,000	<1.3 U
	12/10/2018	6.21	0.07	-270	7.14	48.1	19	1.3	570	120	110	< 0.47 U	440	1.3	720,000	5.01 J	< 0.200 U	< 0.200 U	1,010	1,010	1,190	< 1.90 U	283,000	<1.9 U
	3/19/2019	6.26	0.11	-247	6.94	28.1	12	< 0.5 UJ	180	49 J	54 J	< 0.47 UJ	840	1.94 J	890,000	0.17	< 0.500 U	NA	1,120	1,090	NA	< 1.50 U	14,000	<1.5 U
	6/4/2019	6.65	0.1	-56	6.79	47.1	12.9	< 2.5 U	230	79	140	0.19 J	920	1.3	730,000	0.09	0.194 J	NA	1,240	1,180	NA	15,500	< 21.7 U	2,370
	9/11/2019	6.67	0.03	-45	6.03	9.7	15.0	< 0.5 U	350	110	790	0.24 J	640 J	5.9	290,000 J	1.59	< 0.100 U	< 0.100 U	1,200	902	NA	16,000	386	10,300
	12/19/2019	6.4	0.08	-52	5.78	24.2	13.1	< 5.0 UJ	99 J	70 J	2,800 J	< 0.47 U	310	6.3	270,000	1.34	< 0.100 U	NA	1,170	821	NA	27,800	6,070	49,100
	3/24/2020	6.5	0.05	-94	5.45	7.8	18.3	< 2.5 U	120	71	1,500	< 0.47 U	410	6.0 J	260,000	2.29	< 0.100 UJ	NA	1,020 J	718 J	NA	13,000	954	19,800
	6/24/2020	6.33	0.07	-47	5.45	0	13.9	0.61 J	94	63	2,000	< 0.47 U	260	5.5	250,000	2.5	0.747	< 0.100 U	1,270	911	NA	115,000	3,830	18,400
	12/3/2020	6.37	0.61	94	5.14	5.1	12 J	< 0.5 U	91	63	1,800	< 0.47 U	1,000	11.0	370,000 J	NA	< 0.100 U	NA	1070	727	NA	7,800	436	6,550
	6/3/2021	6.25	0.11	84	5.00	13.3	20.5	< 1.0 U	190	87	780	< 0.47 U	1,500	11	690,000	NA	< 0.200 U	NA	955	615	NA	72,200	13,400	55,800

Table 6
Enhanced In-situ Bioremediation Performance Data Summary-Western Plume
LHAAP-58, Longhorn Army Ammunition Plant, Karnack, Texas
Year 7 RA(O) Report

Monitoring Location	Sample Date	Field Parameters					Electron Donor	cVOCs				Dissolved Gases				Wet Chemistry						Dechlorinating Bacteria		
		pH	DO	ORP	Spec Cond	Turb	TOC	PCE	TCE	cDCE	VC	Ethane	Methane	Ethene	CO_2	Fe^{2+}	NO_3	NO_2	SO_4	Cl^-	Alk	DHC	DHBt	BAV1 VC
		SU	mg/L	mV	ms/cm	NTU	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	cells/mL	cells/mL	cells/mL
35AWW23	3/8/2018	5.92	0.76	185	3.58	89.5	3.31	< 1.0 U	27	21	3.1	< 0.47 U	< 1.0 U	< 0.55 U	500,000	0.13 J	1.2	< 0.0500 U	761	487	608	< 0.5 U	< 4.8 U	NA
	7/17/2018	5.67	0	-167	3.4	178	856	< 0.5 U	2.6	12	< 0.5 U	< 0.47 U	49	0.38 J	370,000	25.1 J	< 0.100 U	< 0.100 U	< 0.500 U	482	914	45.1	9,530	1.7 J
	9/26-27/2018	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/10/2018	5.6	0.05	-86	3.99	32.5	879	< 0.5 U	5.3	20	< 0.5 U	< 0.47 U	2,200	< 0.55 U	810,000	50 J	< 0.200 U	< 0.200 U	4.19	578	1,110	149	< 25.0 U	5
	3/19/2019	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/3/2019	5.74	0.02	-50	4.86	47.7	1,360	< 0.5 U	1.8	4.3	< 0.5 U	< 0.47 U	1,300	< 0.55 U	750,000	0.57	< 0.500 U	NA	14.1	732	NA	652	< 38.5 U	2.5 J
	9/11/2019	6.24	0.02	-44	4.76	26.3	108	< 0.5 U	3.8	7.8	<0.5 U	< 0.47 U	2,700	< 0.55 U	590,000	3.3	< 0.100 U	< 0.100 U	4.63	857	NA	326	< 13.9 U	1.1 J
	12/18/2019	6.17	0.02	-104	4.85	43.2	127	< 0.5 U	2.7	7.6	1.1	< 0.47 U	1,400	< 0.55 U	360,000	1.83	<0.500 U	NA	1.62 J	868	NA	689	< 5.6 U	0.4 J
	3/24/2020	6.23	0.05	-102	4.72	28.6	250	< 0.5 U	1.3	6.5	<0.5 U	< 0.47 U	1,400	< 0.55 U	600,000	2.33	< 0.100 U	NA	1.84	925	NA	136	<5.5 U	1
	6/24/2020	6.17	0.04	-117	4.29	22.6	849	< 1.0 U	< 0.5 U	5.0	<0.5 U	< 0.47 U	1,300	< 0.55 U	310,000	3.01	< 0.100 U	< 0.100 U	1.26	1,160	NA	765	< 5.6 U	13
	12/3/2020	6.32	0.07	-41	4.67	11.5	21.4	< 0.5 U	< 0.5 U	2.7	< 0.5 U	< 0.47 U	3,700	< 0.55 U	540,000 J	NA	< 0.100 U	NA	< 0.500 U	958	NA	557	< 5.3 U	< 0.50 U
	6/3/2021	6.44	0.04	-129	4.95	9.7	19.7	< 1.0 U	< 0.5 U	1.0	< 0.5 U	< 0.47 U	3,700	< 0.55 U	540,000	NA	< 0.200 U	NA	0.401 J	846	NA	3,220	8,200	0.30 J
35AWW24	3/8/2018	5.31	0.66	224	0.487	99.5	1.45	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 0.47 U	< 1.0 U	< 0.55 U	290,000	0.33 J	0.11	< 0.0500 U	85.7	119	66.5	< 2.0 U	79.9	NA
	7/17/2018	4.98	0	71	0.484	449	1.58	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	< 1.0 U	< 0.55 U	430,000	0.16 J	0.0640 J	< 0.100 U	73.6	117	52.4	< 1.90 U	137	<1.9 U
	9/26-27/2018	4.52	0	252	0.584	352	0.87	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	190	< 0.55 U	330,000	0.31 J	< 0.100 U	< 0.100 U	69.9	110	50.8	< 0.50 U	4.6 J	<0.5 U
	12/10/2018	4.41	0.05	38	0.489	514	1.67	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	68	< 0.55 U	660,000	0.54 J	0.157 J	< 0.100 U	69.9	109	45.9	< 1.20 U	1.50 J	<1.2 U
	3/19/2019	4.79	0.08	154	0.485	213	1.68 J	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	7.8	< 0.55 U	680,000	1.17	< 0.100 U	NA	70	115	NA	< 0.80 U	< 8.30 U	<0.8 U
	6/3/2019	4.53	0.06	347	0.574	74	1.55 J	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.47 U	4.2	< 0.55 U	530,000	1.17	< 0.100 U	NA	74.9	106	NA	0.90	24.7	<0.5 U
	12/19/2019	5.62	0.03	147	0.551	55.1	NA	< 0.50 UJ	< 0.50 UJ	< 0.50 UJ	< 0.50 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/25/2020	5.55	0.98	143	0.515	25.3	NA	< 1.0 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/3/2020	4.88	0.17	156	0.490	109	NA	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	6/3/2021	5.66	0.31	166	0.537	71.1	NA	< 1.0 U	< 0.5 U	< 0.5 U	< 0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA



-Slight increase in pH following injection is favorable.
'-pH has remained favorable.

-Initial spike in TOC indicates effective substrate distribution to several of the areas.
'-TOC is generally low after the initial spikes observed after the injections.

-Decreasing concentrations of cVOCs.
-Additional time/monitoring necessary to observe complete dechlorination at 35AWW20.

-Increased carbon dioxide indicates metabolism of the injected substrate is occurring.
'-The presence of ethene indicates that complete dechlorination is occuring.

-Decreasing sulfate concentration indicates the onset/development of reducing conditions conducive to reductive dechlorination.

-Initial spike in dechlorinating bacteria counts suggest effective distribution of the bioaugmentation culture.
'-Elevated dechlorinating bacteria still present in the western plume.

Notes:

1. Electron donor injections completed in March 2018
2. Bioaugmentation performed in April 2018
3. Data recorded but not used since bailer was used to collect the sample.

pH = potential of hydrogen
SU = standard units
DO = dissolved oxygen
mg/L = milligrams per liter
ORP = oxidation-reduction potential
mV = millivolts
Spec Cond = specific conductivity
ms/cm = millisiemens per centimeter
Turb = turbidity
NTU = nephelometric turbidity units
TOC = total organic carbon
cVOC = chlorinated volatile organic compounds
PCE = tetrachloroethene
TCE = trichloroethene
cDCE = cis-1,2-dichloroethene
VC = vinyl chloride
µg/L = micrograms per liter
CO_2 = carbon dioxide
Fe^{2+} = ferrous iron
NO_3 = nitrate
NO_2 = nitrite
SO_4 = sulfate
Cl^- = chloride
Alk = alkalinity
DHC = dehalococcoides
DHBt = dehalobacter spp.
cells/mL = cells per milliliter
NA = not analyzed
NR = not recorded
U - Undetected: The analyte was analyzed for, but not detected and reported to the limit of detection
U - The analyte was not detected; however, the result is estimated due to discrepancies in meeting certain analyte-specific quality control criteria.
J - Estimated: Between the method detection limit and reporting limit and/or due to discrepancies in meeting certain analyte-specific quality control criteria.

Table 7
Year 8 RA(O) Groundwater Monitoring Plan
LHAAP-58, Longhorn Army Ammunition Plant, Karnack, Texas
Year 7 RA(O) Report

Well Identification	Well description	Year 6 RA(O)				Year 7 RA(O)		Year 8 RA(O)	
		Sep-19	Dec-19	Mar-20	Jun-20	Dec-20	Jun-21	Dec-21	Jun-22
LHAAP-35A(58)		Western Plume Quarterly Performance Sampling	Western Plume Quarterly Performance Sampling/Eastern Plume Semi-Annual Sampling	Western Plume Quarterly Performance Sampling	Western Plume Quarterly Performance Sampling/Eastern Plume Semi-Annual Sampling	Eastern and Western Plume Semi-Annual Sampling	Eastern and Western Plume Semi-Annual Sampling	Western Plume Semi-Annual Sampling	Western Plume Semi-Annual/Eastern Plume Annual Sampling
35ASW03	Surface Water Sample		Dry		Dry	Dry	VOCs		VOCs
03WW01	Shallow		VOCs, MNA, VFA, DHB/DHC, As		VOCs, MNA, VFA, DHB/DHC, As	VOCs, MNA, VFA, DHB/DHC, As	VOCs, MNA, VFA, DHB/DHC, As		VOCs, As
35AWW01	Intermediate		VOCs		VOCs	VOCs, As	VOCs, As		VOCs, As
35AWW04	Shallow							VOCs, MNA, As	VOCs, As
35AWW05	Intermediate					VOCs	VOCs	VOCs	VOCs
35AWW06	Shallow	VOCs, MNA, VFA, DHB/DHC	VOCs, MNA, VFA, DHB/DHC	VOCs, MNA, VFA, DHB/DHC	VOCs, MNA, VFA, DHB/DHC	VOCs, MNA, VFA, DHB/DHC	VOCs, MNA, VFA, DHB/DHC	VOCs, MNA, VFA, DHB/DHC	VOCs, MNA, VFA, DHB/DHC
35AWW08	Shallow		VOCs, MNA, VFA, As		VOCs, MNA, VFA, DHB/DHC, As	VOCs, MNA, VFA, DHB/DHC, As	VOCs, MNA, VFA, DHB/DHC, As		VOCs, As
35AWW09	Shallow		VOCs, MNA, VFA, DHB/DHC, As		VOCs, MNA, VFA, As	VOCs, MNA, VFA, As	VOCs, MNA, VFA, As		VOCs, As
35AWW10	Shallow		VOCs, MNA, VFA		VOCs	VOCs	VOCs		VOCs
35AWW11	Shallow	VOCs, MNA, VFA, DHB/DHC	VOCs, MNA, VFA, DHB/DHC	VOCs, MNA, VFA, DHB/DHC	VOCs, MNA, VFA, DHB/DHC	VOCs, MNA, VFA, DHB/DHC	VOCs, MNA, VFA, DHB/DHC	VOCs, MNA, VFA, DHB/DHC	VOCs, MNA, VFA, DHB/DHC
35AWW12	Shallow		VOCs		VOCs	VOCs	VOCs		VOCs
35AWW13	Shallow		VOCs		VOCs	VOCs	VOCs		VOCs
35AWW14	Shallow		VOCs		VOCs	VOCs	VOCs		VOCs
35AWW15	Shallow		VOCs		VOCs	VOCs	VOCs	VOCs	VOCs
35AWW16	Shallow		VOCs		VOCs	VOCs	VOCs		VOCs
35AWW17	Shallow		VOCs		VOCs	VOCs	VOCs		VOCs
35AWW18	Shallow		VOCs		VOCs	VOCs	VOCs		VOCs

Table 7
Year 8 RA(O) Groundwater Monitoring Plan
LHAAP-58, Longhorn Army Ammunition Plant, Karnack, Texas
Year 7 RA(O) Report

Well Identification	Well description	Year 6 RA(O)				Year 7 RA(O)		Year 8 RA(O)	
		Sep-19	Dec-19	Mar-20	Jun-20	Dec-20	Jun-21	Dec-21	Jun-22
LHAAP-35A(58)		Western Plume Quarterly Performance Sampling	Western Plume Quarterly Performance Sampling/Eastern Plume Semi-Annual Sampling	Western Plume Quarterly Performance Sampling	Western Plume Quarterly Performance Sampling/Eastern Plume Semi-Annual Sampling	Eastern and Western Plume Semi-Annual Sampling	Eastern and Western Plume Semi-Annual Sampling	Western Plume Semi-Annual Sampling	Western Plume Semi-Annual/Eastern Plume Annual Sampling
35AWW19	Shallow	VOCs, MNA, VFA, DHB/DHC	VOCs, MNA, VFA, DHB/DHC	VOCs, MNA, VFA, DHB/DHC	VOCs, MNA, VFA, DHB/DHC	VOCs, MNA, VFA, DHB/DHC	VOCs, MNA, VFA, DHB/DHC	VOCs, MNA, VFA, DHB/DHC	VOCs, MNA, VFA, DHB/DHC
35AWW20	Shallow	VOCs, MNA, VFA, DHB/DHC	VOCs, MNA, VFA, DHB/DHC	VOCs, MNA, VFA, DHB/DHC	VOCs, MNA, VFA, DHB/DHC, As	VOCs, MNA, VFA, DHB/DHC, As	VOCs, MNA, VFA, DHB/DHC, As	VOCs, MNA, VFA, DHB/DHC, As	VOCs, MNA, VFA, DHB/DHC, As
35AWW21	Shallow		VOCs		VOCs	VOCs	VOCs		VOCs
35AWW22	Shallow		VOCs		VOCs	VOCs	VOCs		VOCs
35AWW23	Shallow, New Wells South of Avenue G in center of Western Plume	VOCs, MNA, VFA, DHB/DHC	VOCs, MNA, VFA, DHB/DHC	VOCs, MNA, VFA, DHB/DHC	VOCs, MNA, VFA, DHB/DHC	VOCs, MNA, VFA, DHB/DHC	VOCs, MNA, VFA, DHB/DHC	VOCs, MNA, VFA, DHB/DHC	VOCs, MNA, VFA, DHB/DHC
35AWW24	Shallow, Downgradient Western Plume well		VOCs		VOCs	VOCs	VOCs	VOCs	VOCs
LHSMW04	Shallow		Dry		Dry	VOCs, MNA, As	VOCs, MNA, As	VOCs, MNA, As	VOCs, As
LHSMW06	Shallow		VOCs, As		VOCs, As	VOCs, As	VOCs, As	VOCs, As	VOCs, As
LHSMW07	Shallow	VOCs, MNA, VFA, DHB/DHC	VOCs, MNA, VFA, DHB/DHC	VOCs, MNA, VFA, DHB/DHC	VOCs, MNA, VFA, DHB/DHC	VOCs, MNA, VFA, DHB/DHC	VOCs, MNA, VFA, DHB/DHC	VOCs, MNA, VFA, DHB/DHC	VOCs, MNA, VFA, DHB/DHC

Notes:
VOCs - Volatile Organic Compounds
MNA - Monitored Natural Attenuation (parameters include: total organic carbon, anions [sulfate, chloride, nitrate, and nitrite], and dissolved gasses [carbon dioxide, methane, ethane, and ethene
VFA - Volatile Fatty Acids
DHB - Dehalobacter
DHC - Dehalococcoides
As - Arsenic

APPENDIX A
ANNUAL LAND USE CONTROL COMPLIANCE CERTIFICATION DOCUMENTATION

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Annual Land Use Control Compliance Certification Documentation

In accordance with the Remedial Design dated September 2011, for LHAAP-58, a certification of site was conducted by Bhate Environmental Associates, Inc. on 6/23/21.

A summary of land use control mechanism is as follows:

- Groundwater restriction – restriction of the use of groundwater to environmental monitoring and testing until cleanup levels are met

A Summary of compliance with land use and restriction covenants is as follows:

- No use of groundwater, installation of new groundwater wells, or tampering with existing wells at LHAAP-58.

I, the undersigned, do document that the certification was performed as indicated above, and that the above information is true and correct to the best of my knowledge, information and belief.

Date: June 23, 2021

Name/Title: Kennie Moore / Field Tech

Signature: Kennie Moore

APPENDIX B
PHOTOGRAPHIC LOG

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Longhorn Army Ammunition Plant Site LHAAP-35A (58) Photograph Log June 2021

Photo 1: 03WW01 in good condition.

Photo 2: Surface water sampling location 35ASW03 with surface water present in June 2021.

Longhorn Army Ammunition Plant Site LHAAP-35A (58) Photograph Log June 2021

Photo 3: 35AWW01 in good condition.

Photo 4: 35AWW05 in good condition.

Longhorn Army Ammunition Plant Site LHAAP-35A (58) Photograph Log June 2021

Photo 3: 35AWW06 in good condition.

Photo 4: 35AWW08 in good condition.

Longhorn Army Ammunition Plant Site LHAAP-35A (58) Photograph Log June 2021

Photo 5: 35AWW08 in good condition.

Photo 6: 35AWW10 in good condition.

Longhorn Army Ammunition Plant Site LHAAP-35A (58) Photograph Log June 2021

Photo 7: 35AWW11 in good condition.

Photo 8: 35AWW12 in good condition.

Longhorn Army Ammunition Plant Site LHAAP-35A (58) Photograph Log June 2021

Photo 9: 35AWW13 in good condition.

Photo 10: 35AWW14 in good condition.

Longhorn Army Ammunition Plant Site LHAAP-35A (58) Photograph Log June 2021

Photo 11: 35AWW15 in good condition.

Photo 12: 35AWW16 in good condition.

Longhorn Army Ammunition Plant Site LHAAP-35A (58) Photograph Log June 2021

Photo 13: 35AWW17 in good condition.

Photo 14: 35AWW18 in good condition.

Longhorn Army Ammunition Plant Site LHAAP-35A (58) Photograph Log June 2021

Photo 15: 35AWW19 in good condition.

Photo 16: 35AWW20 in good condition.

Longhorn Army Ammunition Plant Site LHAAP-35A (58) Photograph Log June 2021

Photo 17: 35AWW21 in good condition.

Photo 18: 35AWW22 in good condition.

Longhorn Army Ammunition Plant Site LHAAP-35A (58) Photograph Log June 2021

Photo 19: 35AWW23 in good condition.

Photo 20: 35AWW24 in good condition.

Longhorn Army Ammunition Plant Site LHAAP-35A (58) Photograph Log June 2021

Photo 21: LHSMW04 in good condition.

Photo 22: LHSMW06 in good condition.

Longhorn Army Ammunition Plant Site LHAAP-35A (58) Photograph Log June 2021

Photo 23: LHSMW07 in good condition.

APPENDIX C
WELL INSPECTION FORMS

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01149968

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW01312.0150
Client: Army
Site Name: 58
Well ID: 03WW01
Inspection Date: 12/1/20
Well Completion Depth/ Measured Depth: 33.40
Inspector: Scott Bressinger

☒ ABOVE GROUND
Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☐ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED
Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:
Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:
Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:
Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01149969

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW01312.0150
Client: Army
Site Name: 58
Well ID: 35AWW08
Inspection Date: 12/1/20
Well Completion Depth/ Measured Depth: 33.30
Inspector: Scott Beesinger

☒ ABOVE GROUND
Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED
Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:
Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:
Inner Diameter (inches): 2 11
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:
Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01149970

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW01312.0150
Client: Army
Site Name: 58
Well ID: 35AWW11
Inspection Date: 12/1/20
Well Completion Depth/ Measured Depth: 37.88
Inspector: Scott Bassinger

ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☐ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED

Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW01312.0150
Client: Army
Site Name: 58
Well ID: 35AWW06
Inspection Date: 12/1/20
Well Completion Depth/ Measured Depth: 30, 30
Inspector: Scott Bassinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED

Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☒ Yes ☐ No
Is well open to completed depth? (complete when gauging)
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01149972

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW01312.0150
Client: Army
Site Name: 58
Well ID: 35HWW17
Inspection Date: 12/1/20
Well Completion Depth/ Measured Depth: 42.31
Inspector: Scott Bassinger

ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: MetAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☐ Good ☐ Less than 50% rusted ☒ More than 50% rusted

FLUSH MOUNTED

Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☒ Yes ☐ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01149973

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW01312.0150
Client: Army
Site Name: 58
Well ID: 35AWW18
Inspection Date: 12/1/20
Well Completion Depth/ Measured Depth: 42.11
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED

NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01149974

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW01312.0150
Client: ARMY
Site Name: 58
Well ID: 35ANW16
Inspection Date: 12/1/20
Well Completion Depth/ Measured Depth: 37.36
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☒ Yes ☐ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01149975

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NWD1312.0150
Client: ARmy
Site Name: 58
Well ID: 35 AWW15
Inspection Date: 12/1/20
Well Completion Depth/ Measured Depth: 4.35
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☐ Good ☐ Less than 50% rusted ☒ More than 50% rusted

☐ FLUSH MOUNTED

Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2 11
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☒ Yes ☐ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01149976

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW01312.0150
Client: Army
Site Name: 58
Well ID: 35AWW20
Inspection Date: 12/3/20
Well Completion Depth/ Measured Depth: 42.88
Inspector: Scott Bessinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED

Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01149977

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW013I2.0150
Client: Army
Site Name: 58
Well ID: LHSMW07
Inspection Date: 12/3/20
Well Completion Depth/ Measured Depth: 30.41
Inspector: Scott Beesinger

☒ ABOVE GROUND
Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA
Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:
Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:
Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:
Bailer present? ☐ Yes ☒ No
Visual obstruction? [illegible]
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

WELL INSPECTION FORM

Job Name: HAAP
Job No.: AW01312.0150
Client: ARMY
Site Name: 58
Well ID: 35AWW05
Inspection Date: 12/3/20
Well Completion Depth/ Measured Depth: 72.35
Inspector: Scott Beesinger

ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED

NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01149979

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW01312.0150
Client: ARMY
Site Name: 58
Well ID: 35MW023
Inspection Date: 12/3/20
Well Completion Depth/ Measured Depth: 43.72
Inspector: Scott Baysinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01149980

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NWO 1312.0150
Client: ARMY
Site Name: 58
Well ID: 35AWW19
Inspection Date: 12/3/20
Well Completion Depth/ Measured Depth: 32.42
Inspector: Scott Bassinger

ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☐ Cracked
Hinge Condition: ☐ Good ☐ Less than 50% rusted ☒ More than 50% rusted

☐ FLUSH MOUNTED

Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☒ Yes ☐ No
Is well open to completed depth? (complete when gauging)
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW013I2.0150
Client: ARMY
Site Name: 58
Well ID: LHSMW06
Inspection Date: 12/3/20
Well Completion Depth/ Measured Depth: 23.50
Inspector: Scott Beesinger

☒ ABOVE GROUND
Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED
Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:
Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:
Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:
Bailer present? ☐ Yes ☒ No
Visual obstruction? ☒ Yes ☐ No
Is well open to completed depth? (complete when gauging)
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01149982

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW01312.0150
Client: ARMY
Site Name: 58
Well ID: LHSMW04
Inspection Date: 12/3/20
Well Completion Depth/ Measured Depth: 31.00
Inspector: Scott Beesinger

ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01149983

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW01312.0150
Client: Army
Site Name: 58
Well ID: 35AWW24
Inspection Date: 12/3/20
Well Completion Depth/ Measured Depth: 35.00
Inspector: Scott Barsinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED

NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging)

COMMENTS:

01149984

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW01312.0150
Client: Army
Site Name: 58
Well ID: 35AWW14
Inspection Date: 12/7/20
Well Completion Depth/ Measured Depth: 32.35
Inspector: Scott Roesinger

ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW013L2.0150
Client: Army
Site Name: SB

Well ID: 35AWW10
Inspection Date: 12/7/20
Well Completion Depth/ Measured Depth: 33.65
Inspector: Scott Beesinger

ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☐ Good ☐ Less than 50% rusted ☒ More than 50% rusted

☐ FLUSH MOUNTED

Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☒ Yes ☐ No
Is well open to completed depth? (complete when gauging)
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01149986

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW01312.0150
Client: ARNG
Site Name: 58
Well ID: 35AMW13
Inspection Date: 12/7/20
Well Completion Depth/ Measured Depth: 40.20
Inspector: Scott Baggenger

ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01149987

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW01312.0150
Client: ARMY
Site Name: 58
Well ID: 35AWN01
Inspection Date: 12/7/20
Well Completion Depth/Measured Depth: 72.45
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01149988

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW01312.0150
Client: Army
Site Name: 58
Well ID: 35AWW09
Inspection Date: 12/7/20
Well Completion Depth/ Measured Depth: 42.08
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☐ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED

NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01149989

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW01312.0150
Client: Army
Site Name: 58
Well ID: 35AWW21
Inspection Date: 12/7/20
Well Completion Depth/ Measured Depth: 42.81
Inspector: Scott Bassinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☐ Good ☐ Less than 50% rusted ☒ More than 50% rusted

☐ FLUSH MOUNTED

Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): Ø 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☒ Yes ☐ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01149990

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW01312.0150
Client: ARMY
Site Name: 58
Well ID: 35AWW22
Inspection Date: 12/7/20
Well Completion Depth/Measured Depth: 37.68
Inspector: Scott BEESINGER

ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☐ Cracked
Hinge Condition: ☐ Good ☐ Less than 50% rusted ☒ More than 50% rusted

☐ FLUSH MOUNTED

Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☒ Yes ☐ No
Is well open to completed depth? (complete when gauging)
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01149991

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW01312.0150
Client: ARMY
Site Name: 58

Well ID: 35AWW12
Inspection Date: 12/7/20
Well Completion Depth/ Measured Depth: 37.55
Inspector: Scott Bassinger

ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☐ Good ☐ Less than 50% rusted ☒ More than 50% rusted

FLUSH MOUNTED

Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2 11
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☒ Yes ☐ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01149992

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW01312.0150
Client: ARMY
Site Name: 58
Well ID: 35AWW14
Inspection Date: 6/1/21
Well Completion Depth/Measured Depth: 32.28
Inspector: Scott BEESINGER

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☐ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED

Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01149993

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NWO 1312.0150
Client: Army
Site Name: 58
Well ID: 35AWW001
Inspection Date: 6/1/21
Well Completion Depth/ Measured Depth: 72.62
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☐ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED

NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01149994

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW01312.0150
Client: Army
Site Name: 58
Well ID: 35AWW13
Inspection Date: 6/1/21
Well Completion Depth/Measured Depth: 39.28
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☐ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED

Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☒ Yes ☐ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

WELL INSPECTION FORM

Job Name: LTAAP
Job No.: NW01312.0150
Client: Army
Site Name: 58
Well ID: 35AWW10
Inspection Date: 6/1/21
Well Completion Depth/ Measured Depth: 33.65
Inspector: Scott Baggenger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☐ Good ☐ Less than 50% rusted ☒ More than 50% rusted

☐ FLUSH MOUNTED

Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☒ Yes ☐ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01149996

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW01312.0150
Client: ARMY
Site Name: 58
Well ID: 35AWW15
Inspection Date: 6/1/21
Well Completion Depth/ Measured Depth: 41.30
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☐ Good ☐ Less than 50% rusted ☒ More than 50% rusted

☐ FLUSH MOUNTED

Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☒ Yes ☐ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01149997

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW01312.0150
Client: Army
Site Name: 58
Well ID: 35AWW16
Inspection Date: 6/1/21
Well Completion Depth/ Measured Depth: 37.45
Inspector: Scott Bassinger

ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☐ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED

NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01149998

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW01312.0150
Client: ARmy
Site Name: 58
Well ID: 35AWW18
Inspection Date: 6/1/21
Well Completion Depth/ Measured Depth: 42.08
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED

Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01149999

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW01312.0150
Client: Army
Site Name: 58
Well ID: 35AWW24
Inspection Date: 6/1/21
Well Completion Depth/ Measured Depth: 35.03
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☐ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED

Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): ~~6~~ 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☒ Yes ☐ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01150000

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW01312.0150
Client: ARMY
Site Name: 58
Well ID: 35HWW21
Inspection Date: 6/1/21
Well Completion Depth/ Measured Depth: 42.80
Inspector: Scott Baesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☐ Cracked
Hinge Condition: ☐ Good ☐ Less than 50% rusted ☒ More than 50% rusted

☐ FLUSH MOUNTED

Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches) 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☒ Yes ☐ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01150001

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NWO 1312.0150
Client: Army
Site Name: 58
Well ID: 35AWW09
Inspection Date: 6/2/21
Well Completion Depth/ Measured Depth: 42.12
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☒ Yes ☐ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01150002

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NWD1312.0150
Client: ARMY
Site Name: 58
Well ID: 03WW01
Inspection Date: 6/2/21
Well Completion Depth/ Measured Depth: 33.36
Inspector: Scott Baessler

☑ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED

Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☒ Yes ☐ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01150003

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW01312.0150
Client: Army
Site Name: 58
Well ID: 35A NW08
Inspection Date: 6/2/21
Well Completion Depth/Measured Depth: 33.33
Inspector: Scott Bagsinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED

Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01150004

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW01312.0150
Client: Army
Site Name: 58
Well ID: 35AWW11
Inspection Date: 6/2/21
Well Completion Depth/ Measured Depth: 37.88
Inspector: Scott Baessinger

☒ ABOVE GROUND
Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA
Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:
Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:
Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:
Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01150005

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW01312.0150
Client: Army
Site Name: 58
Well ID: LHSMW07
Inspection Date: 6/2/21
Well Completion Depth/ Measured Depth: 30.45
Inspector: Scott Bassinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01150006

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW01312.0150
Client: Army
Site Name: 58
Well ID: 35AWW05
Inspection Date: 6/2/21
Well Completion Depth/ Measured Depth: 72.08
Inspector: Scott Bassinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED

NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01150007

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW01312.0150
Client: ARmy
Site Name: 58
Well ID: 35A MW22
Inspection Date: 6/2/21
Well Completion Depth/ Measured Depth: 37.68
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☐ Good ☐ Less than 50% rusted ☒ More than 50% rusted

☐ FLUSH MOUNTED

Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☒ Yes ☐ No
Is well open to completed depth? (complete when gauging)
Is silt present in well? (complete when gauging) ☒ Yes ☐ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW01312.0150
Client: ARmy
Site Name: 58
Well ID: 35AWW12
Inspection Date: 6/2/21
Well Completion Depth/Measured Depth: 37.55
Inspector: Scott Bassinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☐ Good ☐ Less than 50% rusted ☒ More than 50% rusted

☐ FLUSH MOUNTED

Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☒ Yes ☐ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01150009

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW01312.0150
Client: ARMY
Site Name: 58
Well ID: 35AWW19
Inspection Date: 6/3/21
Well Completion Depth/ Measured Depth: 32.43
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☐ Good ☐ Less than 50% rusted ☒ More than 50% rusted

☐ FLUSH MOUNTED

Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☒ Yes ☐ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01150010

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW0 1312.0150
Client: Army
Site Name: 58
Well ID: 35AWW23
Inspection Date: 6/3/21
Well Completion Depth/ Measured Depth: 43.72
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED

Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW0312.0150
Client: Army
Site Name: 58
Well ID: 35AWW20
Inspection Date: 6/3/21
Well Completion Depth/ Measured Depth: 36.05
Inspector: Scott Beesinger

☒ ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED

Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01150012

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW01312.0150
Client: ARmy
Site Name: 58
Well ID: LHSmw04
Inspection Date: 6/3/21
Well Completion Depth/ Measured Depth: 31.02
Inspector: Scott Bressinger

ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED

Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☒ Yes ☐ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01150013

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW01312.0150
Client: Army
Site Name: 58
Well ID: LHSmw06
Inspection Date: 6/3/21
Well Completion Depth/ Measured Depth: 23.45
Inspector: Scott Beesinger

ABOVE GROUND

Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☒ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☒ More than 50% rusted

☐ FLUSH MOUNTED

NA

Well cover present? ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:

Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:

Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:

Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☐ Yes ☒ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW01312.0150
Client: Army
Site Name: 58
Well ID: 35AWW06
Inspection Date: 6/3/21
Well Completion Depth/ Measured Depth: 30.30
Inspector: Scott Baessinger

☒ ABOVE GROUND
Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☒ Cracked
Hinge Condition: ☒ Good ☐ Less than 50% rusted ☐ More than 50% rusted

☐ FLUSH MOUNTED
Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:
Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:
Inner Diameter (inches): 4"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:
Bailer present? ☐ Yes ☒ No
Visual obstruction? ☐ Yes ☒ No
Is well open to completed depth? (complete when gauging) ☒ Yes ☐ No
Is silt present in well? (complete when gauging) ☒ Yes ☐ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

01150015

WELL INSPECTION FORM

Job Name: LHAAP
Job No.: NW01312.0150
Client: ARmy
Site Name: 58
Well ID: 35AWW17
Inspection Date: 6/3/21
Well Completion Depth/ Measured Depth: 42.30
Inspector: Scott Beesinger

☒ ABOVE GROUND
Well Accessible? ☒ Yes ☐ No
Protective casing? ☒ Yes ☐ No
Material: METAL
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Need Paint
Lid Condition: ☒ Good ☐ Broken ☐ Cracked
Hinge Condition: ☐ Good ☐ Less than 50% rusted ☒ More than 50% rusted

☐ FLUSH MOUNTED
Well cover present? NA ☐ Yes ☐ No
Condition: ☐ Good ☐ Broken ☐ Cracked
Condition of Sump: ☐ Clean ☐ Dry ☐ Standing Water

CONCRETE PAD:
Sloped away from casing? ☒ Yes ☐ No
Pad Area Cleared of Vegetation? ☒ Yes ☐ No
Check any of the following features that apply:
☐ Many Cracks ☐ Gap Around Casing ☐ Few Cracks ☐ Ponded Water ☐ No Pad Present

WELL CONDITION:
Inner Diameter (inches): 2"
Condition: ☒ Good ☐ Broken ☐ Cracked ☐ Other (describe)
Cap present? ☒ Yes ☐ No
Well lock present? ☒ Yes ☐ No
Lock functioning properly? ☒ Yes ☐ No
Are bollards present and stable? ☒ Yes ☐ No
Well ID visible? ☒ Yes ☐ No

WELL INTEGRITY:
Bailer present? ☐ Yes ☒ No
Visual obstruction? ☒ Yes ☐ No
Is well open to completed depth? (complete when gauging)
Is silt present in well? (complete when gauging) ☒ Yes ☐ No
Is silt greater than 10% of well screen length? (complete when gauging) ☐ Yes ☒ No

COMMENTS:

APPENDIX D
TECHNICAL MEMORANDUM - MONITORED NATURAL ATTENUATION MONITORING PARAMETERS

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

February 26, 2019

DAIM-ODB-LO

Mr. Rich Mayer
U.S. Environmental Protection Agency
Federal Facilities Section R6
1445 Ross Avenue
Dallas, TX 75202-2733

Re: Final Technical Memorandum – Monitored Natural Attenuation Monitoring Parameters, Longhorn Army Ammunition Plant, Karnack, Texas, February 2019

Dear Mr. Mayer,

One hard copy and one compact disc (CD) of the above-referenced document is being transmitted to you for your records. Comments, not requiring revisions, were received on the Draft version of the document from Environmental Protection Agency (EPA) and from Texas Commission on Environmental Quality (TCEQ) on February 15, 2019.

The document was prepared by Bhate Environmental Associates, Inc., (Bhate) team, on behalf of the Army as part of Bhate's Performance Based Remediation contract for the facility. I ask that Kim Nemmers, Bhate's Project Manager, be copied on any communications related to the project.

The point of contact for this action is the undersigned. I may be contacted at 479-635-0110, or by email at rose.m.zeiler.civ@mail.mil.

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Copies furnished:
A. Palmie, TCEQ, Austin, TX (1 HC and 1 CD)
P. Bruckwicki, Caddo Lake NWR, TX (1 HC and 1 CD)
A. Williams, USACE, Fort Worth District, TX (1 CD)
A. Maly, USAEC, San Antonio, TX (1 CD)
K. Nemmers, Bhate, Lakewood, CO (1 HC and 1 CD)
P. Srivastav, APTIM, Houston, TX (letter)

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

February 26, 2019

DAIM-ODB-LO

Ms. April Palmie
Texas Commission on Environmental Quality
Superfund Section, MC-136
12100 Park 35 Circle, Bldg D
Austin, TX 78753

Re: Final Technical Memorandum – Monitored Natural Attenuation Monitoring Parameters, Longhorn Army Ammunition Plant, Karnack, Texas, February 2019

Dear Ms. Palmie,

One hard copy and one compact disc (CD) of the above-referenced document is being transmitted to you for your records. Comments, not requiring revisions, were received on the Draft version of the document from Environmental Protection Agency (EPA) and from Texas Commission on Environmental Quality (TCEQ) on February 15, 2019.

The document was prepared by Bhate Environmental Associates, Inc., (Bhate) team, on behalf of the Army as part of Bhate's Performance Based Remediation contract for the facility. I ask that Kim Nemmers, Bhate's Project Manager, be copied on any communications related to the project.

The point of contact for this action is the undersigned. I may be contacted at 479-635-0110, or by email at rose.m.zeiler.civ@mail.mil.

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Copies furnished:
R. Mayer, USEPA Region 6, Dallas, TX (1 HC and 1 CD)
P. Bruckwicki, Caddo Lake NWR, TX (1 HC and 1 CD)
A. Williams, USACE, Fort Worth District, TX (1 CD)
A. Maly, USAEC, San Antonio, TX (1 CD)
K. Nemmers, Bhate, Lakewood, CO (1 HC and 1 CD)
P. Srivastav, APTIM, Houston, TX (letter)

Final

Technical Memorandum – Monitored Natural Attenuation Monitoring Parameters

Longhorn Army Ammunition Plant
Karnack, Texas

Prepared for U.S. Army Corps of Engineers, Tulsa District
Contracting Division
2488 East 81st Street
Tulsa, Oklahoma 74137-4290

Prepared by

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Prepared by

APTIM

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Houston, Texas 77042

Contract No. W9128F-13-D-0012
Task Order No. W9128BV17F0150
Project No. 501032
Rev 0
February 2019

Table of Contents

List of Tables i
Acronyms and Abbreviations iii

1.0 Introduction 1-1
2.0 Current Remedial Action Operation (RA-O) Monitoring 2-1
3.0 Proposed Path Forward 3-1
4.0 Conclusion 4-1

List of Tables

Table 1 MNA Parameter and LHAAP Site Comparison
Table 2 Proposed LHAAP MNA Parameters

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Final • Rev 0 • February 2019

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Final • Rev 0 • February 2019

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Acronyms and Abbreviations

APTIM	Aptim Federal Services, LLC
LHAAP	Longhorn Army Ammunition Plant
LUC	land use controls
MNA	monitored natural attenuation
RACR	Remedial Action Completion Report
RA-O	Remedial Action Operation
RAWP	Remedial Action Work Plan
TCE	trichloroethene

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Final • Rev 0 • February 2019

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Final • Rev 0 • February 2019

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1.0 INTRODUCTION

The purpose of this Technical Memorandum is to create a standard list of monitored natural attenuation (MNA) parameters across Longhorn Army Ammunition Plant (LHAAP) sites and eliminate analysis that are either redundant or not useful for the evaluation of MNA effectiveness. MNA with land use controls (LUCs) is the selected remedy to remediate trichloroethene (TCE) plumes in the groundwater at sites LHAAP-37, LHAAP-67, LHAAP-50, LHAAP-46, and LHAAP-58. On **Table 1**, each site and the three documents, Remedial Action Work Plan (RAWP), Remedial Action Completion Report (RACR), and Remedial Action Operation (RA-O), are listed and cross-referenced with the MNA parameters cited in each document.

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Final • Rev 0 • February 2019

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Final • Rev 0 • February 2019

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2.0 CURRENT REMEDIAL ACTION OPERATION (RA-O) MONITORING

Currently the list of MNA analytical parameters inclusive of all the sites includes anions (sulfate, sulfide, nitrate, nitrite, and chloride), methane, ethane, ethene, carbon dioxide, total iron, dissolved iron (ferrous) conducted in the lab and in the field, dissolved manganese, total phosphorus, alkalinity, total organic and inorganic carbon as shown on **Table 1**. Some of these analyses are redundant or are not required for the evaluation of MNA at LHAAP sites.

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Final • Rev 0 • February 2019

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Final • Rev 0 • February 2019

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3.0 PROPOSED PATH FORWARD

The proposed path is to optimize the MNA analytical list so that it is consistent across all sites. The optimization of analytical list will make the sampling and evaluation more accurate and efficient. The optimization includes eliminating MNA parameters that are redundant or nonessential, including alkalinity, nitrite, sulfide, total inorganic carbon, total iron, the lab analysis for dissolved iron and dissolved manganese, and total phosphorous.

Rationale for eliminating these parameters is as follows:

- Alkalinity is used as an indicator of microbial growth, because it is affected by microbial respiration off gases like carbon dioxide. Since alkalinity is affected by carbon dioxide, which is currently being analyzed, it is recommended that alkalinity be removed from the analytical list.
- Nitrate and sulfate concentrations at LHAAP sites are below levels that may inhibit reductive dechlorination, and therefore the reduced states of these chemicals, nitrite and sulfide, are not expected to be observed, and are recommended to be removed from the analytical list. Nitrate and sulfate will remain on analytical list to evaluate increased levels that may inhibit biological reactions in the future.
- Total organic carbon is essential for the MNA analysis; however, total inorganic carbon does not provide useful data and is recommended to be removed from the analytical list.
- The analysis for ferrous iron is being conducted in the field during sample collection and provides the most representative data to determine if iron reducing conditions are present in the groundwater. Total iron analysis for groundwater includes both solid (ferric) and dissolved (ferrous) forms of iron and does not provide useful data in the evaluation of MNA. Therefore, it is recommended that the lab analysis for total iron, and dissolved iron be removed from the analytical list. The field analysis for ferrous iron will remain on the on the analytical list.
- Dissolved manganese is also used to evaluate the reduced state in groundwater, like dissolved iron. The dissolved manganese analysis is redundant, because field analysis for dissolved iron is being retained, and recommended be removed from the analytical list.
- Total phosphorus does not provide essential data the analysis of MNA and is recommended for removal from the analytical list.

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Final • Rev 0 • February 2019

The proposed list of analysis which are consistent across each site include nitrate, sulfate, chloride, methane, ethane, ethene, carbon dioxide, total organic carbon, and field analyzed ferrous iron and is provided on **Table 2**.

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Final • Rev 0 • February 2019

4.0 CONCLUSION

Currently, each of the sites where MNA and LUC are the selected remedy, there is a different list and some of the analyses are redundant or not useful. It is recommended that the following analyses are removed from the MNA parameter list for all sites: alkalinity, nitrite, sulfide, total inorganic carbon, total iron, lab analyzed ferrous iron, dissolved manganese, and total phosphorus. The updated list includes nitrate, sulfate, chloride, methane, ethane, ethene, carbon dioxide, total organic carbon, and field analyzed ferrous iron. The recommended list of parameters will remove redundancy and create more consistent evaluations of the MNA processes in the future.

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Final • Rev 0 • February 2019

Contract No. W9128F-13-D-0012, Task Order No. W9128BV17F0150 • Final • Rev 0 • February 2019

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Tables

Table 1
MNA Parameter and LHAAP Site Comparison

	LHAAP-37			LHAAP-67			LHAAP-50			LHAAP-46			LHAAP-58		
MNA Parameter	RAWP	RACR	RA-O	RAWP	RACR	RA-O	RAWP	RACR	RA-O	RAWP	RACR	RA-O	RAWP	RACR	RA-O
Alkalinity							x	x	x	x	x	x	x	x	x
Nitrate	x	x		x	x	x	x	x	x	x	x	x	x	x	x
Nitrite		x		x	x	x	x	x	x	x	x	x	x	x	x
Sulfate	x	x		x	x	x	x	x	x	x	x	x	x	x	x
Sulfide		x				x	x	x	x	x	x	x	x	x	x
Chloride	x	x		x	x	x	x	x	x	x	x	x	x	x	x
Methane	x	x		x	x	x	x	x	x	x	x	x	x	x	x
Ethane	x	x		x	x	x	x	x	x	x	x	x	x	x	x
Ethene	x	x		x	x	x	x	x	x	x	x	x	x	x	x
Carbon Dioxide						x	x	x	x	x	x	x	x	x	x
Total Organic Carbon	x	x		x	x	x	x	x	x	x	x	x	x	x	x
Total Inorganic Carbon	x	x		x	x	x									
Iron (dissolved) -field	x	x		x	x	x									x
Iron (dissolved) -lab							x	x	x	x	x	x	x	x	x
Total Iron							x	x	x	x	x	x	x	x	x
Manganese (dissolved)							x	x	x	x	x	x	x	x	x
Total Iron							x	x	x	x	x	x	x	x	x
Total Phosphorous							x	x	x	x	x	x	x	x	x

Notes:

LHAAP-37 RA-O does not list MNA parameters because the Y1Q1 report has not been finalized.

LHAAP - Longhorn Army Ammunition Plant

MNA - monitored natural attenuation

RAWP - Remedial Action Work Plan

RACR - Remedial Action Completion Report

RA-O - Remedial Action Operation

Table 2
Proposed LHAAP MNA Parameters

MNA Parameter	LHAAP-37	LHAAP-67	LHAAP-50	LHAAP-46	LHAAP-58
Nitrate	X	X	X	X	X
Sulfate	X	X	X	X	X
Chloride	X	X	X	X	X
Methane	X	X	X	X	X
Ethane	X	X	X	X	X
Ethene	X	X	X	X	X
Carbon Dioxide	X	X	X	X	X
Total Organic Carbon	X	X	X	X	X
Iron (dissolved) -field	X	X	X	X	X

Notes:

MNA - monitored natural attenuation

LHAAP - Longhorn Army Ammunition Plant